84-#837 - 12767

GEOLOGICAL BRANCH ASSESSMENT REPORT

12,767

REPORT ON THE GEOLOGICAL, GEOCHEMICAL, ELECTROMAGNETIC, AND MAGNETOMETER SURVEYS CONDUCTED ON THE TOMMY, GOLDEN GATE, AND WATERFALL CLAIMS

> ALBERNI MINING DIVISION 92F/3W 125° 24.5° LONGITUDE 49° 10.5' LATITUDE

> > BY

T.W. SPILSBURY, M.Sc.

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TECK EXPLORATIONS LIMITED

FOR

INTERNATIONAL PHOENIX ENERGY CORPORATION

September, 1984

Vancouver, B.C.

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INTRODUCTION

During the 1983 field season employees of Teck Explorations Limited conducted a program of soil and rock sampling, geological mapping, and magnetic and VLF-electromagnetic surveys over portions of three claims comprising 34 units located near Kennedy Lake on Vancouver Island. These claims owned by W. Ejtel are under option to International Phoenix Energy Corporation of Vancouver, B.C. Work described herein was performed by Teck Explorations on behalf of International Phoenix Energy Corportion to evaluate gold occurrences within volcanic rocks of the Triassic Karmutsen Formation.

LOCATION, ACCESS, PHYSIOGRAPHY (Figure 1)

The claims are located on the east side of the Kennedy River about 33 km from Ucuelet and 54 km from Port Alberni. Access to the claims is by the Alberni-Tofino highway which passes through the Tommy claim. Unused logging roads which are in poor repair allow some access to a small portion of the property. Topography is typically steep and rugged with dangerous and impassable areas. The surface is covered with an over-mature forest of cedar and fir with some hemlock and balsam. Lower elevations support a dense undergrowth of alder, willow and salal. Most of the lower elevations have been logged off and provide for difficult traversing in thick and thorny underbrush.

HISTORY

The literature records that gold had been discovered in the Kennedy River area as early as 1898 and that staking of some of the more notable



Fig. 1

nroperties occurred in 1902. Production of gold from the immediate area has, however, been minimal with a reported 312 ounces of gold being produced from the Tommy K, Leora (largest producer) and Rose Marie properties. Old Minister of Mines reports mention several narrow goldbearing veins in the vicinity of the present claims. An unsuccessful arrastra was constructed around 1903 on what may now be the Tommy claim. Although an adit and old trenches have been found on the Tommy claim, there is no trace of the described arrastra.

CLAIMS (Figure 2)

Name	Record No.	<u>Units</u>	L.C.P. Tag No.	Expiry Date
TOMMY	1029(9)	16	60975	Sept. 19, 1984
GOLDEN GATE	1035(9)	6	61165	Sept. 19, 1984
WATER FALL	1560(12)	2	83767	Sept. 19, 1984

WORK DONE

Cut line	9,700 metres
Flagged line	21,700 metres
Magnetometer survey	21,700 metres
VLF-EM survey	21,700 metres
Geological mapping	1/3 of the grid
Soil survey	1,180 soil samples
Silt survey	115 silt samples



CLAIM MAP

GEOLOGY

General

The area is underlain by Karmutsen volcanics of Upper Triassic age which are intruded by and in faulted contact with granitic rocks of the Jurassic Island Intrusions. A geology map of the grid at 1:5,000 scale is included (Figure 3).

Lithology

Unit 1 - Karmutsen Formation, breccia.

A thick section of volcanic breccia is comprised of sub-angular to rounded green felsic clasts usually less than 10 cm in diameter in a matrix of finer fragments. Fragments up to 70 cm in diameter were noted with fine chilled margins or alteration rims. The breccia is interpreted as being of volcanic origin.

Unit 2 - Karmutsen Formation, andesite.

The andesite is a finely mottled light to dark green homogeneous massive series of flows. It contains some finely porphyritic sections with milky anhedral feldspar phenocrysts and some clear quartz eyes. Near intrusive rocks the andesites are hornfelsed and mapped as 2a. Unit 3 - Island Intrusion, biotite granite.

An equigranular to porphyritic granite locally contains quartz phenocrysts up to 2 cm in diameter.

Unit 4 - Island Intrusion, quartz feldspar porphyry.

The quartz feldspar porphyry occurs as an intrusive plug and discontinuous dyke-like features. It contains feldspar and quartz phenocrysts up to 1 cm in diameter in a fine grained light green siliceous matrix.

Unit 5 - Island Intrusions, felsite

Felsite dykes of limited extent are recognized as beige to dark grey, fine grained quartzo-feldspathic bodies. They cross-cut the volcanic rocks and exhibit irregular chilled or sheared contacts.

Alteration and Mineralization

All of the above rock types are cut by two stages of quartz veining. The first stage veining is an irregular discontinuous group of quartz-carbonate veinlets which may be related to the development of chlorite alteration. The second stage veining is comprised of a set of NNE trending steeply dipping mineralized veinlets which vary in thickness from hairline fracture fillings to veins 10 cm thick. Locally, in the Adit and Canyon Creek areas these parallel veins have a maximum density of 5 veins per metre. The vein system has a strike length of more than 2 Km although some zones are only poorly developed. Thicker veins contain drusy cavities with evidence of banding and mineral zoning suggesting several stages of emplacement. Pyrite, sphalerite, chalcopyrite, pyrrhotite and galena have been identified but native gold, although reported, has not been seen by this author.

Two thicker veins have been mapped in the Adit and Golden Gate creek areas. The Adit vein was traced for seventy metres, striking from N 55 E to N 75 E and reaches a maximum thickness of 0.8 m. The Golden Gate vein attains a thickness of one metre in an open cut just south of Golden Gate Creek. It consists of a coarse crystalline quartzcarbonate gangue containing pyrrhotite, sphalerite, chalcopyrite and galena. Its strike length has not been delineated.

Areas of the volcanic rocks are pervasively altered to chlorite and carbonate while the granitic rocks have undergone some silicificaton and clay alteration. Hornfels has been developed at the graniticvolcanic contact.

GEOCHEMISTRY

1180 soil samples and 115 silt samples were collected throughout the three prospected claims. Silt sample results are plotted on figures 10 to 12.

Soil Geochemistry (Figures 4-9)

Soil samples were taken at 25 metre intervals along lines 100 m apart. Later, in a selected area south of the base line, further sampling was undertaken along intermediate lines.

Soil samples were taken at the top of the "B" soil horizon at depths of approximately 25 cm. When this was not possible because of a lack of soil development over outcrop exposures, no sample was taken. In some instances talus fines or broken bedrock ("C" horizon) was taken in the absence of "B" horizon material. Generally speaking, soil development on the property has not reached a mature stage and only a thin layer of brown soil underlies moss and a thin black humic layer. Dispersion of gold is minimal and anomalous values occur, with some exceptions because of mechanical transportation by water, in the immediate vicinity of bedrock sources.

Soil samples were collected in kraft paper bags, numbered and sent to MIN-EN Laboratories in Vancouver. There they were prepared and analyzed for Au, Cu, As, Pb, Zn and Ag by ICP and atomic absorption techniques. Analytical details are included in the Appendix.

Gold values (Figure 4) are contoured arbitrarily at 20 PPB and 100 PPB. Anomalies correspond partly with gold mineralization in and to the south of Adit Creek and Canyon Creek. The other parts of these anomalies are may be the result of downhill dispersion of gold values from known showings. Many of the other anomalies outlined probably reflect essentially untransported vein gold mineralization. These anomalies require further follow-up. In particular a linear two-pronged anomaly in the northern half of the Tommy claim from line 6E to line 11E crossing Canoe Creek demands careful examination values are high, up to 4,600 PPB Au and the anomaly seems to be continuous over a strike length of 500 metres.

Silver values are contoured at 2 and 2.5 PPM (Figure 5). There seems actually to be very little relation between the gold and silver geochemistry and silver geochemistry and known mineralization. A broad anomaly 350 m by 200 m at the north end of lines 5E, 6E, 7E is neither easily related to known showings nor expressed as an anomaly in any other elements and could therefore be spurious.

Arsenic values (Figure 6) are contoured at 5 and 20 PPM. Anomalies are found near to but not directly corresponding with known gold showings or the best gold geochemical anomalies. A mineralogical zonation, although not observed in the field, may be indicated by this antipathetic geochemical expression.

Copper values (Figure 7) are contoured at 50 and 100 PPM. Although traces of chalcopyrite are found in the gold bearing quartz veins, copper does not appear to be a good geochemical indicator of gold mineralization. Likewise the lead (Figure 8) and zinc (Figure 9) geochemical expression is erratic and not easily related to gold mineralization or anomalies.

Silt Geochemistry

Silt sampling results are plotted graphically on figures 10 to 12. As expected, the stream below the adit is anomalous in all elements. There is, however, a strongly anomalous sample 100 metres upstream from the adit with gold, silver, arsenic and copper values decreasing gradually upstream. A similar situation but with weaker values occurs on Walkout Creek above the known mineralization. It is likely, therefore, that undiscovered gold mineralization is present above the

known vein system in the Adit Creek - Walkout Creek area. Other areas of interest are: 1) A small tributary of Canoe Creek correlates well with the Au soil anomaly in the central north part of the Tommy claim. 2) An area near the northwestern corner of the Waterfall claim. 3) Weakly anomalous results in upper Canyon Creek and lower Golden Gate Creek.

MAGNETOMETER SURVEY (Figure 13)

A Geometrics proton precession total field magnetometer was used to conduct a magnetic survey of the grid. A base station magnetometer was used for corrections of diurnal variations which were generally within 60 gammas during the course of the survey. Results have not been corrected for topographic effects. The results, which are plotted on figure 4, are relative to an arbitrary base station value and are not comparable to absolute values. Essentially, the survey shows no magnetic expression in the volcanic rocks but anomalous values related to quartz feldspar porphyry dykes. The trend of alteration zones and mineralized vein systems is not apparent in the magnetic data.

VLF-EM SURVEY (Figure 14)

A VLF-electromagnetic survey was conducted using a CRONE RADEM unit with the Hawaii signalling station as the electromagnetic source. Data was reduced via the Fraser Filter method to produce a contoured plan map (Figure 14).

As expected, the powerline along Highway No. 4 produced a very good E-M response. There are, however, two conductive zones parallel to the highway

which are not readily explained. The first is a strong linear anomaly about 200 m east of the highway and the second is a weaker zone 100 m east of that. These two unexplained anomalies are parallel to the mineralized vein system found in the Adit Creek - Walkout Creek area and could possibly represent parallel fault zones. The E-M survey also indicates a fault in the Adit Creek bed and some complex conductors in the vicinity of the unexplained gold anomaly in the north-central portion of the Tommy claim.

ROCK SAMPLING

Continuous chip samples were taken over parts of the quartz vein zone between Adit and Walkout creeks. The rock samples were assayed geochemically and any samples over 1,000 PPB were re-assayed using fire assay. The results are plotted on Figure 15. Although values as high as 1.015 oz. Au/T were returned, the best results from a mining point of view are from trenches #3 and #4 which returned a grade of .123 oz. Au/T over 5 m and .068 oz. Au/T over 7.5 m. These two areas are within the main fracture zone 170 metres apart. Wall rock material without quartz veining is essentially barren. Although other veins were noted during the course of the various surveys, sampling is incomplete.

DISCUSSION

Geological mapping and rock sampling indicate that a set of gold mineralized veins and veinlets occurs between Adit and Walkout creeks and could extend southwesterly for a total length of 2 Km. Although sampling data is only very rudimentary, initial results indicate values of interest over significant widths - up to 7.5 m. The gold showings have a gold geochemical expression but are not geophysically unique. Other unexplained

gold anomalies, particularly a two pronged linear anomaly in the north central portion of the Tommy claim, near Canoe Creek, require further work.

CONCLUSIONS AND RECOMMENDATIONS

Further rock sampling is warranted to expand and supplement the sampling already completed. It is recommended that shallow trenches be drilled and blasted in bedrock in order to sample fresh material below a 15 cm depth. To reduce the "nugget effect" large samples should be gathered from the trenches and fire assayed. In addition, a careful follow-up to the geochemical survey is required by means of prospecting, mapping and trenching.

Respectfully Submitted

T.W. Spilstern T.W. Spilsbury (M.Sc.)

September, 1984

CERTIFICATE OF QUALIFICATIONS T. WAYNE SPILSBURY, M.Sc.

I, hereby certify that:

- 1. I am a graduate of the University of British Columbia (B.Sc. (Honors) Geology - 1973) and Queens University (M.Sc. Geology - 1982).
- 2. I have worked since graduation as an exploration geologist in Canada and the United States.
- 3. The work described within was done under my direct supervision.

September 17, 1984 Vancouver

T.Wayne Spinsbury, M.Sc.

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ITEMIZED COST STATEMENT

R. DURFELD - Contract Geologist August 22-25, 27-30 = 8 days @ \$220/day	\$ 1,760.00
K. LEHMAN O- Geophysical Operator July 23-31, August 1-31 = 40 days @ \$131/day	5,240.00
J. BACON - Prospector July 26-31, August 1-30 = 36 days @ \$128/day	4,608.00
D. NIKRIK - Soil Sampling July 15-31, August 1-31 = 46 days @ \$88/day	4,048.00
G. MAY - Soil Sampling July 23-31, August 1-24 = 34 days @ \$110/day	3,740.00
<pre>T. SPILSBURY - Supervisor July 23 (1/2 day) August 8-10 (2 1/2 days), September 20 = 4 days @ \$195/day</pre>	780.00
G. LOVANG - Prospector and Camp Manager July 20-31, August 1-31 = 43 days @ \$165/day	7,095.00
Assays	
107 Au-Ag rock analyses @ \$16.50/sample	1,766.00
1295 soll and silt geochem Au, Ag, As, PD, Zn, Cu @ \$11.60	15,022.00
Transportation and Vehicle Rental	3,414.00
Living Expenses 211 man day @ \$25/day	5,275.00
Drafting and Maps	769.00
Camp Rental 46 days @ \$40/day	1,840.00
	\$55,357.00

APPENDIX I

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Assay Techniques

PHONE 980-5814

MIN-EN Laboratories Ltd.

Specialists in Mineral Environments

Corner 15th Street and Bewicke 705 WEST 15TH STREET NORTH VANCOUVER, B.C. CANADA V7M 1T2

GOLD GEOCHEMICAL ANALYSIS BY MIN-EN LABORATORIES LTD.

Geochemical samples for Gold processed by Min-En Laboratories Ltd., at 705 W. 15th St., North Vancouver Laboratory employing the following procedures.

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

A suitable sample weight 5.0 or 10.0 grams are pretreated with HNO_3 and $HClO_4$ mixture.

After pretreatments the samples are digested with <u>Aqua Regia</u> solution, and after digestion the samples are taken up with 25% HCl to suitable volume.

Further oxidation and treatment of at least 75% of the original sample solutions are made suitable for extraction of gold with Methyl Iso-Butyl Ketone.

With a set of suitable standard solution gold is analysed by Atomic Absorption instruments. The obtained detection limit is 0.005 ppm (5ppb).

RECOMMENDED PROCEDURE FOR FIRE ASSAY GOLD AND SILVER

Samples are dried at 120° F and after being crushed on a primary crusher to , inch size they are crushed on a secondary crusher to minus 10 mesh before being split on Jone's riffle. (In accordance with Gy's statistical rules).

At the splitting a 500 gram subsample is obtained which is pulverized to minus 100 mesh. After that the sample is mixed, rolled and quartered.

The assay is carried out on a one half assay ton sample, fire assayed at 1750°C with appropriate fluxes.

The lead bottom is than cupeled. (The silver bid can be weighed and the amount calculated, but it's accuracy is questionable.) Than the small bid is dissolved in aqua regia and analysed on the atomic absorption instrument for gold.

Results can be reported either in oz/ton 0.001 sensitivity or gram per metric ton upon request.

In every batch of 20 samples we have one in house natural standard.

For silver a completely separate assay is preferred on a 5.000 gram of subsample, where the sample is dissolved in aqua regia with a chemical separation and filtering. The amount of silver is determined by Atomic Absorption instrumentation. PHONE 980-5814

MIN-EN Laboratories Ltd. Specialists in Mineral Environments

Corner 15th Street and Bewicke 705 WEST 15TH STREET NORTH VANCOUVER, B.C. CANADA V7M 1T2

ANALYTICAL PROCEDURE REPORT FOR ASSESSMENT WORK - 24 ELEMENT ICP

Ag,Al,As,B,Bi,Ca,Cd,Co,Cu,Fe,K,Mg,Mn,Mo, Na,Ni,P,Pb,Sb,Sr,Th,U,V,Zn

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

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

1.0 gram of the samples are digested for 6 hours with ${\rm HNO}_3$ and ${\rm HClO}_{\text{A}}$ mixture.

After cooling samples are diluted to standard volume. The solutions are analysed by Computer operated Jarrell Ash 9000ICP. Inductively coupled Plasma Analyser. Reports are formated by routing computer dotline print out.













