EL TRANSITO

# REPORTE DE PROGRESO
# DE LAMINA DEL TRANSITO
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Por

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# I
# INTRODUCTION

The Transito Mine, owned by Mrs. G. T. Pekarik of Tegucigalpa, is located at 13°30'48" North, 87°35'46" West, in the Department of Valle, about 12 km. west of Nacome (fig. 1).

Exploration is being carried out by Honduras Minera Placer, S. de R. L. ( a subsidiary of Placer Development Limited of Canada) as manager for a joint venture with the Rosario Resources Company. Work has been in progress continuously since 28 June, 1973; only preliminary examinations were carried out prior to this date.

Exploration (detailed in sections 2 to 7 folowing) included geological mapping, diamond drilling, surface prospecting and sampling, and a geochemical survey. One geologist has been employed continuously and has been assisted by one or more trained technical officers, depending on requirments at different times. Drilling was carried out by Canadian Drillers assisted by locally trained Honduran helpers.

The total expenditures to 31 December, 1973 is L. , details are given in Appendix 7.4.

# DIAMOND DRILLING

## 3.1 Statistics of Program

A diamond drilling program of 16 holes totaling 2,624 m. was carried out between July and November, 1973, using a Longyear "34" wireline diamond drill. Overall core recovery was about 97%. Only one of the sections of interest (that in PRT 3) was troubled by lower core recovery. Full geological logs of the holes are presented in Appendix 7.1. In addition to being shown on fig. 2, the holes are listed together with their coordinates, elevations, depressions and azimuths in Appendix 7.2. Assays are tabulated on drill logs in Appendix 7.1.

## 3.2 Summary of Drilling Results

Summaries only of assay results are presented here. For full details see plates. A full tabulation of all assays will be included in the next progress report.

## DRILLING RESULTS

summary of El Transito drilling results in terms of significant gold-silver mineralized intersections may be tabulated follows:-

| ole No. | Total Drilling & approx. width of silicified zone | Drilling width of significant mineralization | Au g/tonne | Ag g/tonne |
|---|---|---|---|---|
| LT - 1 | 34 meters | 10 meters | 1.3 | 8 |
| RT - 2 | - | - | - | - |
| RT - 3 | 42 meters | 12 meters | 3.5 | 21 |
| RT - 4 | 24 meters<br>9 " | 3 meters | 13.5 | 15 |
| RT - 5 | 10 meters | 3 meters | 1.1 | - |
| RT - 6 | 12 meters | - | - | - |
| RT - 7 | 15 meters<br>10 meters | 4 meters | 2 | - |
| RT - 8 | 12 meters | 2.1 meters | 4.2 | 19 |
| RT - | 33 meters | 1 meter | 1.5 | - |
| | 14 meters | 4 meters | 1 | - |
| | 12 meters | 3 meters | 9.3 | 17 |
| | 15 meters | 4 meters | 1.9 | 4 |
| | 15 meters + | 1 meter | 1.9 | 17 |
| | 16 meters | - | - | - |
| | 20 meters | - | - | - |
| PRT | 10 meters | - | - | - |

3.3 Discussion of Drilling Results

The holes drilled were designed to test three targets. These were the extension of the El Turbia ore shoot (where most previous mining had taken place, holes PRT 1, 2, 11, 12,and 13), the Veta Sta Anita (holes PRT 3, 4, 5, 9, 14, 15, and 16), and a north-trending zone of rhyolitic rocks laced with quartz veins (holes 6, 7, 8, and 10).

3.3.1 The El Turbia ore shoot

This zone was outlined by underground development prior to 1946, but was found to be uneconomic at the then existing price of gold. Re-evaluation at the 1973 price of gold suggested that a moderately sized body suitable for open cutting might be present, if reasonable extensions could be found.

Drilling NW, SE and below the old underground workings, together with re-interpretation of previous channel sampling results, indicated the best gold values occur a shoot within the main El Turbia quartz mass. In the upper levels this shoot has rather diffuse margins, giving a low grade aureole that could possibly be mined by open-cut methods. At depth however, this aureole decreases in size and grade though it is still recognizable on the underground workings on the zero level (fig. 3). The shoot appears to plunge NW at about 20° within the silicificied body that dips at about 30° to the north.

Drill holes PRT 1 and 2 were drilled to determine the SE end of the El Turbia quartz body. Hole PRT 1 intersected a drilled width of 34 m of strong silicification, of which the first 10 m. averaged 1.4 g/tonne gold and 7.5 g/tonne silver. The rest of the zone averaged 0.4 g/tonne gold and 3.5 g/tonne silver from 10 m. to 23 m., and 0.18 g/tonne gold and 2.99 g/tonne

silver from 23 m. to 34 m. At the end of the zone of silicification, both the gold and silver content decreased abruptly, gold more than so silver.

Drill hole PRT 2 failed to intersect the silicified zone because of displacement by,or of ending of the zone against a fault (fig. 2).

The rocks intersected in hole PRT 2 were different from those intersected in hole PRT 1 (plate 1, 2) indicating that considerable movement has taken place on this fault, and that the El Turbia silicified body does not simply die out along strike to the SE, hidden by a mantle of talus. Whether or not this fault is pre-ore or post ore is not clear; but pre-ore is suspected as no faulted extension is known to exist. Hole PRT 3 was aimed to intersect any possible extension, but intersected instead the Veta Sta Anita as described in section 3.3.2.

Hole PRT 1 showed that most of the gold occurred where almost complete replacement by greyish-coloured quartz had taken place. In the rest of the zone of silicification intersected, the bulk of the replacing mineral is chalcedony, or less commonly, white quartz. Both are clearly less favourable than the grey quartz. Where replacement by chalcedony has taken place there is less distruction of the original rock structures. Beyond the zone of silicification, only calcite veins occur, and although abundant in some sections, they contain little or no gold. The entire core of drill hole 1 was split and assayed, but gold was restricted to the silicified section.

Hole PRT 12, drilled on the same section as PRT 1 (plate 1) but below it, intersected 15 m. of silicification, of which only 4 m. is of interest. This assayed 1.9 g/tonne gold, and 4 g/tonne silver.

As in Hole 1, the best gold values were associated with complete replacement by grey quartz, rather than by chalcedony. This hole also indicated that the thickness of both the quartz body and the mineralization decrease with depth.

Drill hole PRT 13, sited to intersect the El Turbia silicified zone immediately below the underground workings, intersected 15 m. of mainly barren, highly vuggy quartz and massive chalcedony (plate 11). Silicification of this type had previously been seen in the lowest level of the underground workings, where the gold content is also low. This hole was abandoned while still in chalcedonic silica, due to caving, but from comparison with the section in PRT 1, no more quartz was expected. The highest assay in PRT 13 was 1.9 g/tonne gold and 5.2 g/tonne silver over 1 m. The rest of the zone averaged 0.34 g/tonne gold and low silver.

The change to highly vuggy quartz in this hole suggests that the bottom of the mineralization may be approaching, though this change may not everywhere occur at the same depth, especially if the plunge of the ore shoot is related to the dip of the country rocks (the plunge is roughly parallel to the regional dip). Similar changes in the type of quartz with depth, have been observed in other epithermal quartz lodes, and are usually accompanied by a marked decrease in gold content. The change may be related to pressure-temperature variations in the hydrothermal solutions at the time of deposition of the quartz. Similar barren vuggy quartz occurs elsewhere at Transito.

Hole PRT 11 (plate 10) was designed to test the interpretation of a NW plunging ore shoot, but because of the flattening of the lode with depth

in this direction, passed significantly above where the shoot was expected. Twelve meters of silicification was intersected, the best 3 m. of which averaged 9.3 g/tonne gold and 17 g/tonne silver. The best gold content occurred in grey quartz which had completely replaced the country rock.

Although this drilling extended the El Turbia body to the SE, and indicated a depth extension to the NW, it showed that both the width and grade of mineralization is much less than in the underground workings.

3.3.2 Veta Sta Anita

Drill holes 3, 4, 5, 9, 14, 15, and 16 (plates 2, 3, 4, 8, 12, 13, 14) tested this zone, but significant mineralization was found only in holes 3 and 4 (12 m., 3.5 g/tonne gold, 21 g/tonne silver; 3 m., 13.5 g/tonne gold, 15 g/tonne silver respectively). The best of the other holes, PRT 9, had a 1m.section assaying 1.5 g/tonne gold. The intersections in holes PRT 3 and 4 are possibly related, though hole PRT 14 sited midway between was barren. This may have been a consequence of drill hole PRT 14 intersecting the lode much nearer to the surface. Elevations (relative to sea level) of the intersections in these holes are as follows:

| | |
|---|---|
| PRT 3 | -44m |
| PRT 4 | -49m |
| PRT 14 | +24m |

Alternatively the PRT 3 and 4 intersections represent unrelated steeply-plunging ore shoots.

Interpretation of the significance of the PRT 3 intersection is complicated by its nearness to the fault that forms the SE limit to the El Turbia body. Core recovery was less than ideal because of fracturing

and oxidation.

The further potential of the Veta Sta Anita appears to be limited to small though possibly high-grade ore shoots, which would require much drilling to locate and delineate.

3.3.3 The North-Trending Zone of Rhyolitic Rocks

This zone was drilled (holes 5, 6, 7, and 9) because of the presence of silicified rhyolitic breccias containing gold. Results were generally disappointing. The best section (in PRT 7) had 1.97 g/tonne gold and over 4 m. Several other 1 m. sections contained .1 to 3 g/tonne gold. A quartz lode near the bottom of drill hole PRT 8 assayed 2.6 g/tonne gold and 7 g/tonne silver over 7.1 m. A 4 m quartz zone in PRT 10 assayed 1 g/tonne gold.

A fairly closely related geolgical section was intersected in holes PRT 6 and 7 (plate 5,6). Although considerable facies changes have occurred in the intervening 200 m.,correlation can be made with some confidence. In both holes, silicification and gold content tend to be restricted to units of spherolitic rhyolite, rhyolitic tuff and rhyolitic conglomerate within an overall andesitic sequence. In addition virtually all the rhyolitic rocks are silicified. Silicification and mineralization therefore appear to have been selective. The association of mineralization with one particular composition of volcanic rock within a variegated sequence sometimes results from association with a particular phase of volcanic activity, especially in near-vent areas. Best mineralization is to be expected where capping has caused entrapment of solutions. Further mapping may therefore develop new targets in this zone.

# SURFACE SAMPLING

## 4.1 Outcrop Sampling

All outcrop samples taken in the period August, 1973 - February, 1974, are shown in Figure 2. These generally confirm the results of previous sampling carried out in the area prior to 1950. The only new significant area to be sampled was the northern extension of the Veta Sta Anita. In this area a 10 m. chip sample over scree contained 1.78 g/tonne gold, and 5.5 g/tonne silver.

The purpose of the sampling was to locate targets for concurrent diamond drilling, and to determine which varieties of silicification were the most favorable for mineralization. In accord with observations made from drill core, it is concluded that quartz with a grey appearance is the most favorable. Chalcedony, even when grey to black, and white quartz often contain little gold. Pyrite is present in most samples of silicification, even on the surface, but its presence does not serve as an indication of gold.

## 4.2 Geochemical Sampling

An area of approximately 450 m. by 150 m. was geochemically sampled. This area is a pediment developed at the base of the steep Transito ridge, and though it is largely soil covered, the presence of quartz boulders in the soil, and projection of lodes from the hill, indicate that mineralization may be present. Bed rock in the area is mainly soft andesitic lavas and tuffs.

Samples were taken at 25 m. intervals on three lines 50 m. apart (fig. 4). Sample depth varied from 0.45 m. to 1.75 m.

Where possible the C horizon, distinctly composed of weathered bedrock, was sampled, because the A and B horizons are partly composed of colluvium derived from the nearby hills, and undoubtedly contaminated by mining activity over the last 70 years or more. Soils were generally immature latosols. The B horizon tended to contain small concretionary limonite pebbles, and to be marked at the top by a stone line.

Two possible anomalies were located (fig. 4) together with two spot highs that need further investigation. Further sampling on a closer spacing and test pitting will be carried out in the coming period.

As was expected from an orientation survey carried out in 1973, silver is a more useful element for sampling than gold, because of its higher primary mobility. Assaying of drill core has shown that unlike gold, silver forms a halo beyond the limits at silicification.

# GENERAL GEOLOGY

## 5.1 Lithologies

The Transito area is underlain by a sequence of andesitic tuffs, together with lesser thicknesses of andesitic lavas, conglomerates and agglomerates, and rhyolitic spheroidal lavas, tuffs, and conglomerate. Dykes of andesite, rhyolite and occasionally olivine basalt occur.

The age of the volcanic sequence at Transito is believed to be Tertiary, though Quaternary volcanics occur several miles to the south, around the Gulf of Fonseca. The olivine basalt may possibly be related to this more recent volcanic activity, as unlike the andesites and rhyolites, it is not associated with lavas and volcanic sediments of similar composition.

Small thicknesses of water laid sediments, mainly carbonaceous tuffaceous shales and limestones were intersected in several drill holes. These frequently have patchy silicification (chalcedony) but are not mineralized. The silicification is believed to have developed during sedimentation from concurrent deposition of silica, possibly derived from diatoms. The limestones are brown and medium grained, atypical of those formed by normal marine deposition.

Andesitic rocks intersected in drill holes include porphyritic lava, with chlorite filled vesicles (hole PRT 1),tuffs, including crystal tuffs (drill hole PRT 2), conglomerates believed to be water laid in part, and agglomerates. Although general sequences can be recognized, the thickness of individual units varies considerably even over 100 m. making correl-

ation over greater distances hazardous.

Most of the rhyolitic rocks intersected in drill core are silicified and brecciated, and near the surface partly oxidized and limonite stained. Consequently, except for conglomerate exact differentiation is difficult. Spheroidal lavas have been recognized, however, and rhyolitic bedded-tuffs and flow-banded lavas are known from the surface. Two rhyolite dykes have been mapped a few hundred meters east of the area shown in Fig. 2.

5.2 Structure

The most important structure at Transito is a WNW trending zone of strike-slip faulting. The amount of movement has not been determined, but associated tensional structures suggest a left-lateral sense of slip. Near the El Turbia silicified body, this fault occupies the point of break in slope near the base of the ridge. In other parts of the Transito area, it is chiefly known from air photos,as it forms a prominent photo lineation. Another important structural direction is represented by NNE to NE striking shears and faults, and is also reflected in the topography to some extent (fig. 2).

There is a greater variety of rocks at Transito than in the surrounding area, and they have a more complex distribution. For several kilometers around Tranisto the dominant bedding attitude is strike N, dip 20°to 30° W and long strike ridges occur. This regular trend is broken at Transito, indicating a more complex structure. Part of this complexity may be depositional in origin, if Transito is very near an old intrusive centre, as seems likely from the rapid facies changes in the volcanics and the presence of agglomerates and more than usually abundant dykes.

## 5.3 Mineralization

Prominent lenses of massive silicification are common at Transito. Generally their true width is difficult to determine, due to accumulation and down-slope movement of silicified boulders, but some lenses are up to 600 m. in length and 40 m. wide (the El Turbia quartz body). Most are only a few meters wide and persits for less than 100 m.

The only metallic mineral commonly seen is pyrite; it is almost ubiquilous in silicified rocks even on the surface. Native gold is closely associated with the pyrite, occurring both free and in combination. It is invariably very fine grained, and can only be seen after crushing and panning.

Silver is closely associated with the gold, probably occurring in the form of electrum, but near the surface, very erratic variations in the gold/silver ratio, suggest that some leaching and redeposition have occurred.

Minor amounts of other sulphides are occasionally observed, mainly chalcopyrite. Galena, sphalerite and possbily tetrahedrite have been noted by previous workers. At other mines in the district galena, chalcopyrite and stibnite are abundant in gold-quartz veins.

The presence of hot springs, some saline, in the area, is typical of this type of epithermal gold mineralization, occurring in an andesite-rhyolite volcanic province.

## 5.4 Wall Rock Alteration

The general sequence of wall rock alteration and rock preparation at Transito appears to be as follows:

First, was an initial period of brecciation, probably related to movement on the hanging wall shear of the El Turbia body. Following the brecciation, the permeable zone formed was infilled with chalcedony, generally as a pervasive soaking, with little macroscopic [illegible] of original

rock structures, and few cross cutting veins. This silicification was largely restricted to the main body of breccia, but minor thin veins occur up to 16 m. out into the hanging wall.

Further brecciation, possibly due to reactivation of the hanging wall shear, fractured the chalcedony, and the resulting breccia was infilled and to some extent replaced by white and grey vein quartz. Brecciation and veining may have continued together for some time, because several generations of cross-cutting veins are present. Only minor amounts of quartz were deposited in veins outside the chalcedony body, probably due to the more permeable breccia formed in the chalcedonic zone. By contrast, the hanging wall rocks are soft and incompetent, because of fracturing and argillic alteration. This alteration may be due to near surface weathering. The foot wall rocks are relatively unfractured and unaltered.

Pyritic alteration extends for considerable distances out into both the hanging wall and foot wall,depending on local conditions. In drill hole PRT 12, it extended for 16 m. into the hanging wall, but only 1 m. into the unaltered footwall.

Wallrock alteration has not been studied by laboratory methods, therefore the presence of such minerals as allanite can not be confirmed. Extensive chloritization and carbonitization of the andesitic rocks is commonly present, but often appears to be a deuteric alteration feature, unrelated to mineralization.

## WORK IN PROGRESS OR PLANNED

Transito is but one of several known deposits in the area being investigated. Several of these, Chiflon, Amparo, Titiritero, are being investigated concurrently, in anticipation of finding a number of targets that can be drilled in one program, with consequent lowering of costs and increased efficiency. Any further drilling could not commence before the start of the wet season because of a shortage of drill water, especially for the outlying deposits.

Concurrent with the examination of other prospects in the area, a geological map is being prepared, and this is expected to aid understanding of the detailed Transito structure, and possibly suggest further potential targets.

Apart from drilling, the silver geochemical anamaly will be investigated by further close sampling and pitting, and this work may lead to further drilling targets.

APPENDIX 7.2

Drill Hole Coordinate, Elevations, Depressions, Azimuths and Depths

| Drill Hole | North Coordinates | East Coordinates | Elevation | Azimuths | Depressions | Depth |
|---|---|---|---|---|---|---|
| DT 1 | 9,857 | 10,144 | 61.2 m | 230° | -50° | 152.5 m |
| DT 2 | 9,804 | 10,225 | 65.0 | 230° | -50° | 182.1 |
| DT 3 | 9,927 | 10,357 | 46.1 | 230° | -50° | 131.8 |
| DT 4 | 9,833 | 10,402 | 47.8 | 230° | -50° | 185.0 |
| DT 5 | 9,813 | 10,526 | 45.9 | 230° | -50° | 152.5 |
| DT 6 | 9,715 | 10,549 | 57.5 | 136° | -50° | 190 |
| DT 7 | 9,549 | 10,425 | 73.3 | 136° | -50° | 193.0 |
| DT 8 | 9,352 | 10,411 | 134.6 | 136° | -50° | 145.2 |
| DT 9 | 9,445 | 10,373 | 118.8 | 230° | -50° | 178.9 |
| DT 10 | 9,147 | 10,142 | 89.7 | - | -90° | 173.2 |
| DT 11 | 10,036 | 9,899 | 44.2 | 200° | -70° | 153.7 |
| DT 12 | 9,927 | 10,219 | 45.7 | 230° | -60° | 215.6 |
| DT 13 | 10,040 | 10,041 | 32.8 | 200° | -60° | 84.8 |
| DT 14 | 9,813 | 10,287 | 59.9 | 260° | -85° | 103.1 |
| DT 15 | 9,547 | 10,423 | 73.7 | 262° | -62° | 176.0 |
| DT 16 | 9,653 | 10,344 | 77.6 | 260° | -62° | 163.5 |

Note: Elevations above sea level, Coordinates based on triangulation stations Transito and Pepianza Hills, Horning 1944.

7.3 Assay Procedure

All the El Transito split drill core of the gold-silver bearing silicified zones, the altered volcanics and other selected sections of core was air-freighted to Vancouver assay offices. A total of about 950 kilos of mostly BQ split core samples was thus shipped to Vancouver at an average cost of U. S. $1.30 per kilo. The time interval between shipping from Tegucigalpa and delivery of samples to the Vancover assayers was from four to ten days.

Assaying of the El Transito gold, which occurs mostly as "spotted" native highly segregated fine gold, failed occsionally, at the onset of the drilling program, to yield concordant resutls on duplicate samples. In order to obtain accurate concordant results using different assaying methods on varying weights of the same samples, the following procedure was followed:

7.3.1. All the drill core was fire assayed for gold and silver by General Testing rather than using atomic absorption assaying first and later checking by fire assaying only the samples with a significant gold content.

7.3.2. The split drill core was sent directly to Vancouver, thus eliminating the crushing to one quarter of an inch, and the splitting stage carried out at El Transito. This step was taken to eliminate the possibility that the sub-samples assayed were not representative of the whole because of the large size of the crushed fragments making up the sub-samples and/or the mixing of the samples being inadequate.

7.3.3. The core samples were crushed and pulverized to minus

10 mesh before mixing and splitting. Screening and weighing for gold in metallics was carried out when warranted.

Rebucking and repeating analyses on the same samples were carried out using:-

Geochemical analyses on three gram samples pulverized to 200 mesh and digested in hydrobromic acid-bromine solution solvent extracted and estimated by atomic absorption;

AND

Wet analyses on twenty gram samples digested in agua regia-hydrofluoric acid mixture filtered and solvent extracted and estimated by atomic absorption;

AND

Fire assaying, using 30 gram samples.

Results obtained by these three methods did correlate with a permissive margin of error. In the case of the PRT 4 drill core samples, fire assaying carried out independently on the same samples by El Mochito Mine Assay Office and by General Testing of Vancouver gave concordant results.

The final gold-silver assay results of the El Transito drill core checked and rechecked by different methods in different laboratories on varying weights of sample are deemed accurate and totally reliable.

APPENDIX 7.4

## FACTORS AFFECTING PRODUCTION

1. LOCATION:

The El Transito Mine is located in the southern part of Honduras, close to the Pacific shore. It lies close to the Pan American Highway, a few miles northeast from the harbour of Amapala and approximately 7 miles due west of Nacaome.

2. ACCESS:

The property is easily reached as it is only 3 km. by good gravel road off the Pan American Highway.

3. ELECTRIC POWER:

Electric Power is available from Nacaome, at the reasonable price of 6-8 centavos a kw. hour. Transmission line would be installed by ENEE at a cost of £800.00 - £1,000.00 a km. ENEE pays 40% of the cost and the operator 60%. Installation time 3 to 4 months. This would be a big saving not only at the commencement of production but also in actual operation considering today's price of fuel and cost of Electric Generator.

4. WATER:

Not much running water can be expected in the vicinity of the mine even during the rainy season. However, water from the zero level would be enough to supply the operation with water when pumped to surface. Drinking water is available from the village water supply.

5. LABOR:

Labor is plentiful and inexpensive. A certain number of skilled miners are also available.

6. OPERATING SUPPLIES:

Although the use of wood would be minor, Honduras materials are plentiful and of high quality. To minimize warehouse supplies, the industrial agents in Tegucigalpa are conveniently located.

7. ORE TREATMENT:

The Denver Equipment Company, in Denver, Colorado, conducted mill tests on a 125-lb. sample representative of ore from

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the El Transito Mine. The object of the test was to determine the flowsheet and conditions necessary to obtain the highest economic recovery of the contained gold and silver values.

The tests included gravity concentration, amalgamation and flotation. Best results were obtained by flotation producing high grade concentrate readily marketable and at a high concentration ratio. This would be a big saving in capital cost to get in production considering today's cost of steel and equipment; although the report states that the ore is ideal for straight cyanidation.

8. GOVERNMENT REGULATIONS:

The laws of Honduras concerning the operations of mines are relatively practical, and long, profitable operations have been enjoyed by the New York & Honduras Rosario Mining Company and Compañia Minera Los Angeles without trouble. The writer was General Superintendent, Associate and Director of the latter company for 12 years.

9. CONCLUSIONS:

The El Transito Mining Claims proper and the Mineral Concession surrounding same holds a definite though not yet fully delineated tonnage of commercial gold-silver ore. The quantity of ore available and foreseeable can be extracted profitably considering the features above mentioned. During the operation of the mine, the development of additional ore, which has been well indicated by present work, would further increase the profit on the capital investment required to put El Transito Mine in production.

L.F. Pekarik.