

HONDURAS  
INVESTIGATION OF MINERAL RESOURCES  
IN SELECTED AREAS

YAMALA AREA

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ABSTRACT

The mineralization in Yamala occurs in small pockets in the conglomerates and sandstones of the Valle de Angeles formation (Upper Cretaceous).

The minerals found are mainly copper minerals i.e. malachite and azurite and some cuprite, native copper and chalcopyrite. Other minerals found in the area are cinnabar, tetrahedrite and in one locality uranium minerals. Over the years about twenty tons of hand sorted copper ore has been shipped.

The geochemical survey did not reveal any significant anomalies, while the radio metric survey showed only at one locality above back ground values.

The small size of the mineralized pockets, that have been mined, their scattered distribution and the negative results in the search for new deposits do not justify any further exploration in this area.

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## I. INTRODUCTION

The Yamalá prospect, known also as the Venado, Coyalito and Capitan prospects, is located in the department of Santa Bárbara just south of the Jicatuyo river. It can be reached by road via San José de las Colinas up to the river, which can be crossed by canoe or during a few months in the dry season by car.

During May and July 1970 the United Nations conducted a preliminary survey. Besides the previously reported minerals; malachite, azurite, cuprite, native copper, copper sulfides and cinnabar in the Venado prospect uranium bearing minerals were detected.

A follow-up survey was carried out during the period January 11 - January 26, 1971. This included magnetometer, geochemical and scintillation surveys. The magnetometer broke down and this survey had to be suspended. The investigation was carried out in a 800 x 920 mt grid, with the base line in a direction N53° E.

## II PREVIOUS WORK

R. J Roberts and E. M Irving (1957) reported in the Mineral Deposits of Central America, Geological Survey Bulletin 1034, the presence of copper, mercury and silver along shear zones as veinlets and pockets in limestone, conglomerate and sandstone. In Coyalito a 15 cm wide

vein assayed 0.1% Hg; 8.85% Cu and 8.5 ounces of Ag. In Venado two samples of a conglomerate, partly replaced by native copper, cuprite, cinnabar, malachite and azurite assayed 0.07% Hg; 1.66% Cu and 0.7 ounces of Ag. and 0.05 Hg, 0.47% Cu and 0.3 ounces of Ag respectively. The width of this mineralized horizon ranged from 15-45 cm. In El Capitan pockets and veinlets of tetrahedrite, cinnabar, malachite and azurite were reported to replace the altered limestone. A sample taken from the open pit assayed 0.9% Hg, 1.82% Cu and 2.8 ounces of silver to the ton.

J. Svanholm reported in a internal United Nations report the presence of copper, mercury and uranium in fissures and in disseminated form in the Ilama formation.

A rock sample from one of the pits was sent to Technical Service Laboratories, Toronto, Canada for analysis and give 0.44% U, 4.44% Cu and traces of Hg.

### III PRESENT INVESTIGATION

With the uranium occurrences particularly in mind a grid was laid out over an area 920 by 800 metres. It included all the known Venado prospects. The base line was placed in such a way that it could be easily extended to cover, if necessary, the Coyolito and

Capitan prospects. The lines in the grid were spaced every 80 meters and in the immediate vicinity of the pits every 40 metres. Geochemical soil and rock samples were taken every 40 meters and the scintillation survey was conducted along the lines and in the old workings.

#### IV GENERAL GEOLOGY

The area is composed of upper cretaceous rocks i.e. the Yojoa group and the Valle de Angeles formation, including the Ilama member. The general strike of these sediments is N70°E, with some local deviation of the general pattern. South of the river Jicatuyo an anticlinal structure occurs on which northern flank the investigated area is located.

The regional faulting appears predominantly parallel to the general strike, with cross faults at irregular distances.

The Yojoa group is exhibited on the southern fringes of the grid and is composed of a dense fractured, grey coloured limestone.

The Valle de Angeles formation and its Ilama member (c) are exposed in the entire area. The former is composed of red beds and sandstones, while the latter occurs within the Valle de Angeles formation and is formed by a limestone conglomerate.

V. MINERALIZATION

The mineralization consists of malachite, azurite, cuprite, native copper, some chalcopyrite and bornite, some cinnabar and in one location uranium bearing minerals. Of the latter uraninite, zeunerite, metazeunerite and boltwoodite have been identified\*. These minerals are confined to small isolated pockets in the conglomerates and sandstones. Only small quantities of copper ore up to a few tons have been mined from each of the small surface workings. After handsorting the ore was shipped.

Roughly estimated some 20 tons have been mined over the past.

The known mineral localities in the grid (see map) are the following:

1. VENADO # 1: Small amounts of malachite and azurite occur along fractures and in disseminated form in a 1.20 m thick conglomerate bed, striking N70°E and dipping 35°N. The conglomerate is composed of quartz, reddish sandstone and grey limestone. The mineralization is too weak for continued exploitation at this locality.
2. VENADO # 2: At this locality a shallow pit exists but no mineralization in situ was seen.

\* Data obtained by J. Svanholm from U.S. Atomic Energy Commission.

3. VENADO # 3: Scattered malachite and azurite along fracture zones in conglomerate. The thickness of the conglomerate is approximately 3 m, the strike N60°E and the dip 20°N. This exposure does not warrant further exploration.

4. VENADO # 4: Some malachite and azurite and specks of bornite and native copper occur along fracture zones in the conglomerate. The thickness of the conglomerate is 1.80 m with a band of sandstone of 0.34 m in the middle. The strike is N 60°E and the dip 20° NW. Further exploitation does not seem justified.

5. VENADO # 5: Besides malachite and azurite uranium minerals were encountered in a conglomerate striking N 60E and dipping 41°NW. Only mineralized blocks left behind after the better grade copper ore had been mined were found. Approximately 1/2 ton was extracted from this locality. No more in situ mineralization could be found in the shallow cut, while the spectrometer did not react above background.

6. MINA DE MARCOS: A shallow cut exposing conglomerates and sandstones. Due to a possible fault structure no clear picture could be obtained from this exposure. Some azurite and specks of cinnabar were found.



Outside the grid area the following mineral occurrences were visited:

7. CAPITAN: Situated east of the grid. The workings in El Capitán consist of a 50 m long trench that intersects on one end a quartzitic vein structure 40 cm wide, striking N60°E and dipping 40°SE. In the trench, which is perpendicular to the strike conglomerates, sandstones and red beds are exposed.

8. COYOLITO: Situated west of the grid. The workings in Coyolito consist of a 19 m long trench dug along a mineralized (azurite and malachite) fault structure striking N50E and dipping 60° - 80°NW. The fault occurs in conglomerates that strike the same as the fault and dip 25°NW. Though the width of the mineralization is only 20-25 cm, cross trenches on both sides of this working could be dug to see if the structure continues along the strike.

## VI RADIOMETRIC SURVEY

After the discovery of uranium minerals during the reconnaissance survey in the area it was decided to carry out a radiometric survey. For this purpose a Gamma Ray Integrating Spectrometer GIS-3 of Scintrex Ltd was used. The surveying was performed as a broad band survey, with a range setting of 100 counts/second.

With the exception of the Venado # 5 site, only background readings were recorded when measuring along the lines inside the grid or along the trails outside the grid. At Venado # 5 a reading of 4 times background was recorded by placing the instrument on blocks extracted from a shallow working. In the working itself and in its immediate vicinity only background values were measured. This suggests that the uranium minerals occur even more irregularly distributed than the copper minerals.

#### VII ORIGIN OF MINERAL DEPOSITS

The mineral assemblage as encountered during this investigation and previous investigations makes it difficult to say if these deposits are syngenetic or epigenetic. The geological environment and most of the minerals found suggest a syngenetic origin, but the presence of uraninite and to some extent tetrahedrite suggest an epigenetic origin. The evidence for either hypothesis is too scarce to give a final answer in this respect.

#### VIII GEOCHEMISTRY

The geochemical survey was carried out on a 80 x 40 and 40 x 40 density. A total of 332 soil samples were collected and analyzed

for copper, lead and zinc. The samples were usually taken at a depth of 0.30 metres. Due to the thin soil cover, in some places the sample was taken at a depth of 0.20 metres.

The survey detected only one small copper anomaly near Venado 4, apparently caused by contamination from old workings. The two isolated anomalous copper values (2.5 NE/200NW and 4SW/80W) were considered insignificant. For lead no anomalous values were recorded and for zinc only a few isolated ones. The geochemical survey did not indicate any new areas for possible occurrences of copper, lead or zinc.

More details of the geochemical survey can be found in the separate report "Prospección Geoquímica Detallada Yamala".

#### IX CONCLUSIONS AND RECOMMENDATIONS

The mineral occurrences in the Yamala area are confined to the conglomerates and sandstones that form part of the Valle de Angeles formations. The minerals occur along fracture zones and in disseminated form. Though the minerals occur in the same hostrocks, it is not clear if they occur in the same horizon. It appears from field observations that Venado 2,3 and 4 are located in the same horizon, but Venado 5 might be part of another.

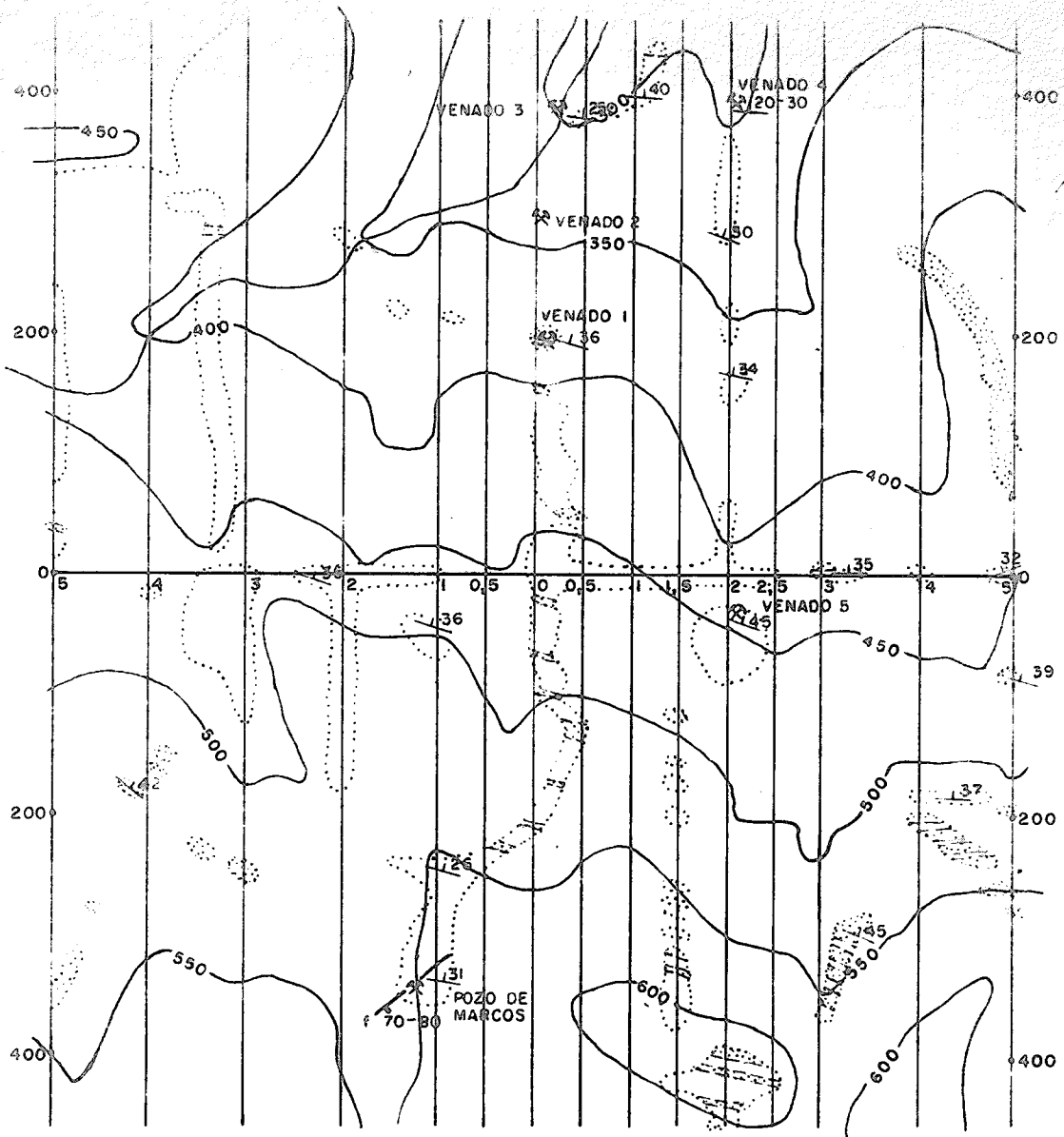
From the detailed survey it became clear that only small isolated mineralized pockets exist in the area, which produced a few tons of ore after handsorting.

Inside the grid a small geochemical anomaly was revealed near Venado 4, probably caused by contamination from the old working.

Other anomalous points occur at the locations 2.5 NE - 200 NW and 4 SW - 80 NW.

Outside the grid the narrow fault controlled vein in Coyolito does not look encouraging, but some trenches could be dug to explore extensions along the strike. For El Capitan no further exploration is recommended.

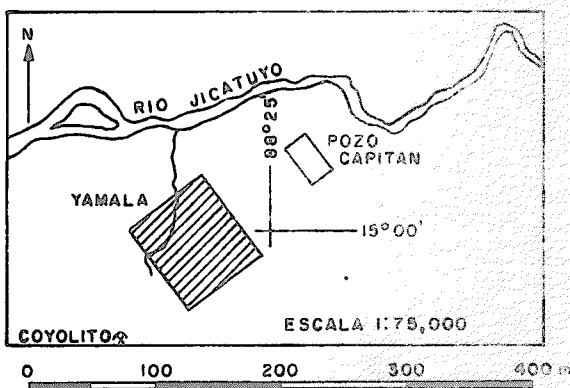
Summarizing, the scattered distribution and the small size of the deposits discard the possibility of any economic exploitation.



**LEYENDA**

- LINEA DE INVESTIGACION
- CURVA DE NIVEL (UNIDAD METRO)
- RIO
- LIMITE INFERIDO DE AFLORAMIENTO DE CONGLOMERADO DE CALIZA
- LIMITE INFERIDO DE AFLORAMIENTO DE CAPAS ROJAS (ARENISCAS, LUTITAS Y CONGLOMERADOS)
- RUMBO Y BUZAMIENTO DE LAS CAPAS
- CONTACTOS ENTRE CAPAS ROJAS Y CONGLOMERADOS DE CALIZA
- FALLA CON INDICACION DE BUZAMIENTO
- POZO CON MINERALIZACION DE COBRE

**MAPA INDICE**

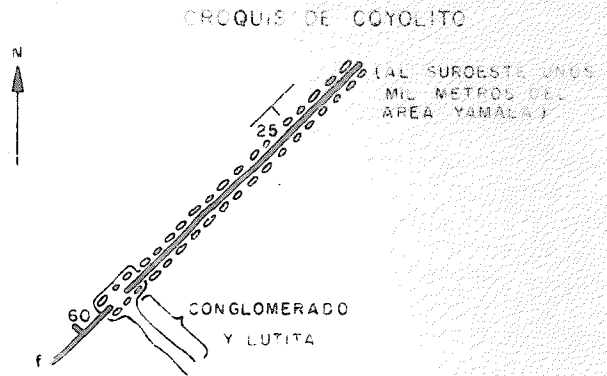
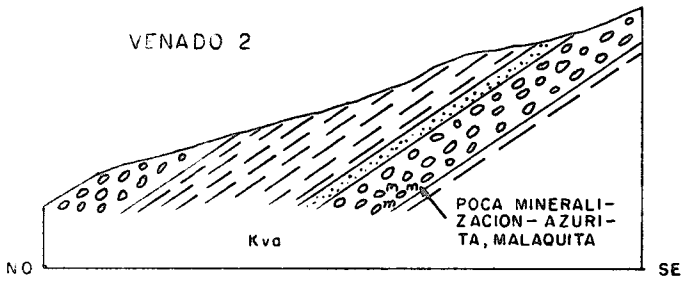


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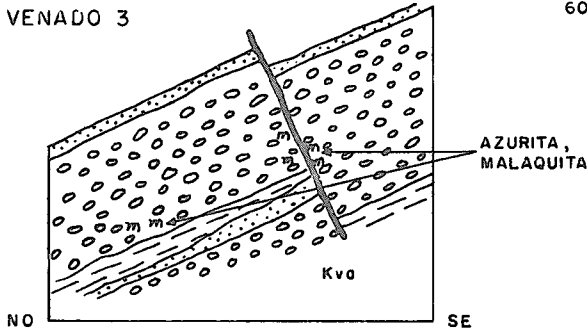
MAPA GEOLOGICO DETALLADO

**AREA YAMALA**

FECHA: 17/XI/72      CUAD.: SAN NICOLAS/S. J. D. COLINAS

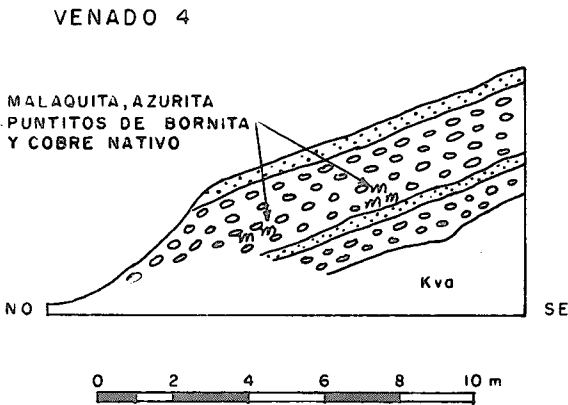


MALAQUITA Y AZURITA EN FALLA 20-25 cm DE ANCHO CON BUZAMIENTO 60°-80° NORTE



LEYENDA

-  ARENISCA
-  CONGLOMERADO
-  CAPAS ROJAS
-  MINERALIZACION DISEMINADA
-  FALLA MINERALIZADA



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