

REPORT ON FIELD TRIP TO
BELO HORIZONTE, SALVADOR, AND JUAZEIRO

June 17-23, 1973

by

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Accompanied by

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Following the presentation of a course in Elementary Geophysics for Geologists by USGS specialists, the CPRM suggested that visits be made to various field offices to discuss specific geophysical projects and problems. Unfortunately Mr. Frischknecht had previous commitments that prevented his spending more time in Brazil, and Mr. Dempsey was limited to a one-week extension. Therefore a short intensive trip was scheduled.

Sunday, June 17, we flew to Belo Horizonte to be ready for an early start on Monday. Belo Horizonte was selected because Dr. Harry Seigl, President of Syntrex Geophysical Company, while visiting CPRM, had extended an invitation to Nagib Chamon and W.J. Dempsey to visit a Syntrex field party, conducting induced polarization surveys at Morro Velho Mine at Nova Lima near Belo Horizonte. Since Syntrex manufactures and sells IP and other geophysical equipment as well as making surveys, it was desirable to see their equipment at use in the field. While in Belo we also visited the Convenio Geofísica Brasil-Alemanha.

Though we had an invitation to visit the Syntrex party, it was also necessary to receive an invitation from the Morro Velho Mines. On Monday, June 18, we were graciously received at the Mine offices by Drs. M. Orlandi and Cecil Jones, fiscal officer and superintendent respectively of the Morro Velho Mines. After a brief visit we were conducted to the Mine geological offices and shown the geological setting of this famous old mine. We met Mr. William Bailey, the Syntrex geophysicist responsible for the surveys and spent the afternoon in the field inspecting the mode of surveying and observing Mr. Bailey demonstrating sample measurement procedures and results. It was inappropriate for Mr. Bailey to discuss specific survey results even in general terms but the visit provided an interesting and useful exchange of ideas.

The main conclusion to be drawn from this brief visit is that there are major logistical problems presented by the extremely steep topography and dense vegetation in the valley bottoms in this area. Also high resistance of the surface material, even when wet, increases the difficulty of conducting and interpreting the surveys.

On Tuesday, June 19, we visited the Convenio Geofísica Brasil-Alemanha and were received by Dr. Koji Jino, coordinator. The aims, objectives and survey methods of this tremendous undertaking of airborne surveying, about 1,000,000 square kilometers, provided valuable discussion.

Dr. William Bosum, of the German group, displayed the aeromagnetic results to date, an impressive collection of maps. Dr. Bosum described the regional magnetic features and their probable geological significance. No effort to enumerate these results will be made in this report. However it is apparent that a considerable advance in knowledge of the regional geologic terrane has been gained and that specific areas of possible economical significance have been located. Dr. Jaime Paulino showed the results of ground magnetic follow-up of one of the airborne magnetic anomalies, and Dr. Bosum showed some IP and EM results. The general impression was of a competent professional group advancing with their studies.

Tuesday evening we went to Salvador and spent Wednesday at the CPRM offices there. Dr. Iracio de Medeiros Delgado, Chief of the copper project and coordinator of the agency, outlined the program for copper prospecting. It consists of:

1. Detailed geological mapping at 1:24,000.
2. Reconnaissance geochemistry.

3. Detailed geochemical studies and geophysical surveys in specific areas of interest indicated by 1 and 2.
4. Drilling of areas where positive geological, geochemical, and geophysical evidence has been found.

Dr. Antonio Carlos Motta showed us the results and interpretation of a gravity surveys of one probable ore body. The interpretation is complete and presentation of the results as a report should be the next stage.

Thursday we proceeded to Juazeiro by CPRM vehicle. At Juazeiro on Friday we talked with all members of the prospecting team under the guidance of Dr. Fragomeno, Party Chief at Juazeiro. Further discussions about gravity surveys with Dr. Motta were continued. Dr. Paulo Eduardo presented the results of some IP surveys, the electrode configuration selected and its justification. Anomalies near possible ore bodies are apparent though the anomalies seem small in amplitude.

We returned to Salvador on Saturday, June 23, and Mr. Dempsey proceeded to Rio de Janeiro Saturday night.

My impression of the copper project is one of order and progress. Specifically with regard to geophysical work related to the copper prospecting it should be borne in mind that drilling results have indicated some bodies which are probably economically viable. Drilling of some favorable indications have also disclosed negative results. These two drilling outcomes should provide a test of any geophysical technique. Can the technique distinguish the favorable results from the unfavorable? A method which gives the same evidence over each of these categories cannot be expected to assist the program.

Some instrumental problems were brought to our attention and it is evident that a moderate inventory of electrical - electronics test equipment should be placed in the Juazeiro field office. As a minimum, a good set of the wrenches, screwdrivers, and needle-nose pliers, a good volt-ohm-milleampmeter, a vacuum tube voltmeter, and a small soldering iron should be available.

A half-hour or so was spent in getting a Rustrack recorder operating (there was a mechanical difficulty with the gear train), and more time on trouble shooting a Geoscience magnetometer with no success in fixing it. Nagib brought the magnetometer to Salvador to more fully test it there and to determine whether a qualified electronic firm such as Philipps would be willing to repair this or other pieces of CPRM electronic equipment when necessary.

Search should be made in Rio for an identical Briggs & Stratton gas engine used in the engine generator set supplying the Electro-Technical IP generator. The original gas engine is nearly worn out. Perhaps a Brazilian electronic supplier could be convinced that he should stock Mallory batteries no. 50263-1. This battery is used in the receiver and must be obtained from the States through USGS. A more assured supply should be found.

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