perfiles

...YOUR GEOPHYSICAL NEWSLETTER

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induced polarization – electrical resistivity – self-potential – magnetics – electromagnetics - seismics – well-logging
MINING – GROUNDWATER- ENGINEERING - ARCHAEOLOGY

CHEERS!

Once again, we welcome you and apologize for the delay we experienced in preparing this issue of *Perfiles*. The various projects we are currently involved in leave us less time than we would like to give to our newsletter.

We want to dedicate this issue to the Pataz Batholith, known for the various unsuccessful attempts to employ geophysical techniques in its exploration. Our experience in the area has been positive through the last decades, but we know that a high level of care on data acquisition and processing is required in order to obtain meaningful results. We leave our doors open for anybody who wants to comment on the issues we discuss in this newsletter.

José R. Arce

INSTRUMENTATION

During the first days of May, we received a brand new IP transmitter. It is a 3 kW Iris VIP 3000 unit, which has a maximum output of 3000V and 5 amps. This unit is very similar to our VIP 4000, both being microprocessor-controlled allowing a very stable current output for high quality IP readings. They also constantly monitor anomalous variations in field current injection parameters, which may prevent an accident or even an injury. The new VIP 3000 will be a useful addition to our pool of five IP transmitters, with power outputs ranging from 200W to 4000W, for all possible IP applications.

THE PATAZ BATHOLITH

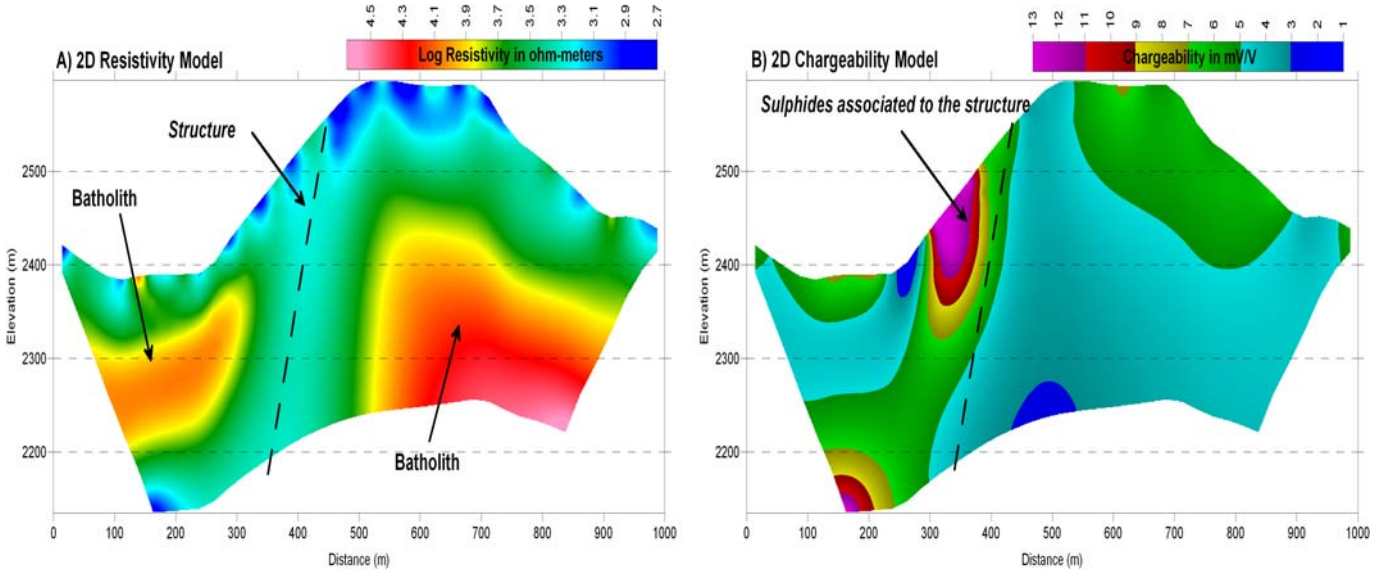
This batholith is famous in Perú for its several mining operations with numerous gold bearing silicified structures. It is also important to mention the difficult terrain morphology, which makes many areas inaccessible or at least very difficult to properly perform geophysical surveys. Our experience with geophysics in this area spans for some 20 years. Among the work we have completed in the area we must mention the survey that lead to the discovery of the continuation of the Mercedes vein at the Poderosa mine in 1987. This vein was lost at a fault junction, and several drilling attempts to find its continuation had failed. Our IP work pointed out the location of the missing target.

IP 2D & 3D modeling requires careful compensation for topographical deformation of the electric fields. In this particular case, mathematical modeling incorporating the Schwarz-Cristoffel transform proves extremely useful to compensate for the difficult morphology. This technique deforms the electric field's cells in all directions, and will be the subject of discussion in a future *Perfiles*.

RESULTS

The Pataz Batholith is composed of precambrian igneous rocks with very high resistivity responses. The silicified gold-bearing structures are associated with a propilitic halo, which lowers their average resistivities, marking a contrast with the batholith. Our geophysical targets in this area are low resistivity structures with corresponding medium to high chargeabilities, due to associated sulphides.

Those structures, which are usually hard to detect with geophysical techniques, tend to show as larger anomalies than they really are. For the particular example shown below, the actual structure is probably 1m thick at the most, but the model shows an anomaly around 20 to 30 meters thick, but located with a high degree of precision.



...Until next time

Av. Petit Thouars 4380, Miraflores, Lima 18, Perú. Telephone:4227205/2215406, Fax:4426946.
perfiles@geofisicos.com.pe http://www.geofisicos.com