perfiles ...YOUR GEOPHYSICAL NEWSLETTER

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

CHEERS!

Welcome to the last edition of *Perfiles* of 2004. This has been a very busy year for our company and we've had many improvements in instrumentation. We purchased three new induced polarization units and we have just placed an order for a last generation magnetometer, which should arrive in Perú sometime around March. We are also very involved with a whole new range of software for processing of geophysical data in various new applications, which we will be presenting in the following months.

We are very pleased with the favorable comments we have received on *Perfiles*, which encourages us to keep working and presenting the latest applications of our geophysical methods.

José R. Arce

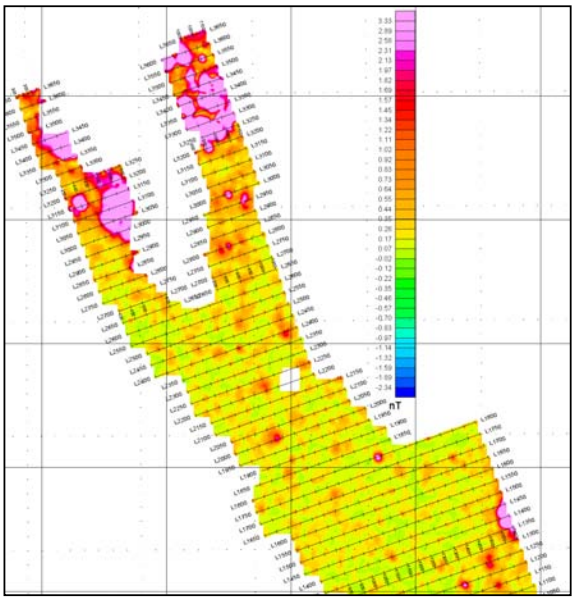
INSTRUMENTS

On November 25th, we placed an order for our first cesium vapor technology magnetometer, the Navmag SM5. Production of this model by Scintrex will start on February 2005, and will have many new improvements to increase survey productivity and significant improvements in data quality. Some of its new features will be an internal GPS, Windows CE operating system, full color VGA screen and the ability for the operator to see the survey lines overlaying available topography and geological information as well as survey progress. The cesium vapor technology used in the sensor will allow higher quality measurements of the total magnetic field as well as higher stability. The Navmag also includes a variety of communication ports and advanced internal software for immediate data quality control.

TOTAL FIELD MAGNETOMETRY

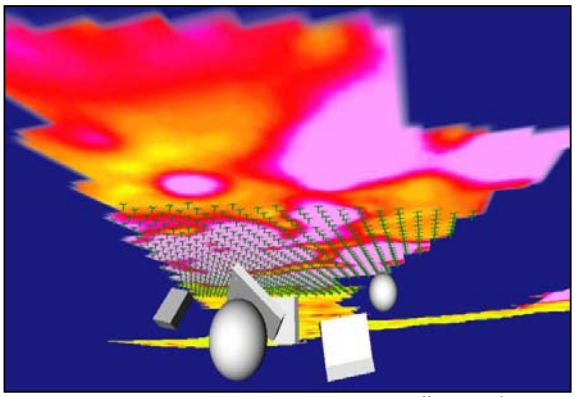
The example we will show is part of a survey we completed in 2002 in the central Peruvian Andes. Prior to our survey, the company had contracted some geophysical surveys with unclear results. Since the mineralization occurred in discrete bodies with a high content of sphalerite and pirrotite, we suggested employing a total field ground magnetometer survey. Some of the challenges were the extremely rough topography, target size (commonly less than 50m in diameter) and target depth (usually exceeding 200m).

The survey lines were 50m apart, with a station interval of 5m. A total of some 120 km of magnetic lines was completed over a period of two weeks in accessible areas. We used our Scintrex ENVI proton precession magnetometers, one permanently assigned as base station. The following map is the resulting analytic signal of one of the surveyed areas. Here we can clearly see the mineralized magnetic bodies as discrete "pink" targets.



3D MAGNETOMETRY MODELLING

Potential field methods are difficult to model because they have no controlled signal depth, which is an advantage in methods like IP, seismics or electromagnetics. Magnetic modeling is done with simple geometrical bodies, which may be representative of some geological environments. Some of the most commonly used bodies are the sphere, lens, dyke, slab, cylinder and prism, among others. For the last two years we have been testing this type of modeling until recently, when we permanently incorporated 3D magnetic modeling to our processing & interpretation software tools. This type of modeling provides additional information on depth, strike dip and remnant magnetization of the bodies so that drilling may be better planned. The image below represents the proposed models on the analytic signal anomalies mentioned before on the Northeast sector of the map. Please note this image is viewed Northwest to Southeast.



Until next time….

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