

4.1 RESISTIVITY / INDUCED POLARIZATION

Applications in Mineral Exploration

- Identification of disseminated metallic-luster mineral occurrences (gold-bearing veins with sulphides for instance).
- Discrimination between barren and mineralized conductive features (screening of EM anomalies).
- Identification of poorly to non-conductive massive sulphide occurrences (sphalerite-rich, discontinuous banded mineralization, insulated sulphide grains, etc.).
- Identification of disseminated sulphides or stringers surrounding a VMS deposit.
- Mapping of alteration zones and structural features controlling mineral deposition (porphyry copper systems).
- Mapping of clay minerals and/or magnetite associated with kimberlitic rocks.

Pros and Cons

- Identification of resistive, conductive and polarizable features.
- Investigation depth may exceed 400 m for large porphyry systems (as the response is volume dependant) but may be restricted to ~ 50 m for thin non-conductive sheet-like structures (veins). Investigation depth is a function of target body size (larger bodies can be found at greater depths)
- Source origin (graphite/sulphides/oxides/clay) may be differentiated using Spectral IP (see sheet 4.5).
- Conductive overburden masking effects may be surmounted by choice of electrode spacing "n" and configuration.
- Cultural features (railroads, pipelines, power lines, fences, etc.) produce artificial anomalies which may be resolved by Spectral IP.

Survey Parameters

- Gradient profiling array used for reconnaissance surveying.
- Multi-spacing dipole-dipole, pole-dipole and pole-pole arrays for 2D & 3D environments.
- Electrode spacing and configuration are key parameters that will ensure the success of any IP program. These may be selected by numerical modelling in the planning stage.
- In-Field QC, processing and plotting are performed using our proprietary Refusilo[®] software.
- Receiver: ELREC-PRO from IRIS Instruments (10 input channels and 20 decay curve sampling windows).
- Transmitter: Tx-III from GDD Instruments (up to 7.8 kW).

Supplied Products

- Apparent resistivity and IP pseudosections along with *image2D*[®] inverted True-depth sections.
- Colour contoured plan maps of resistivity, IP, time constant and metal factor plotted at various depths.
- Plan map of stacked pseudosections or stacked true-depth *image2D*[®] sections.
- Complete interpretation report including DDH target diagrams along True-depth sections:

image2D[®] chargeability
true-depth section and
proposed DDH.

