4.3 BOREHOLE IP LOGGING

Applications in Mineral Exploration

- Records intrinsic resistivity and chargeability values of mineralized and host rocks in order to:
  - better define a surface or borehole IP exploration program.
  - carry out quantitative interpretation of those surveys.
- Where gold concentration is proportional to sulphide content:
  - provides a selection of core samples to be assayed for gold.
  - allows a direct estimation of gold grade.
- Evaluation of the off-hole extension of a mineralized intersection.

Pros and Cons

- Delivers more accurate physical property values than lab or outcrop measurements.
- Intrinsic polarizability may be impossible to measure within a highly conductive massive sulphides intersection.

Survey Parameters

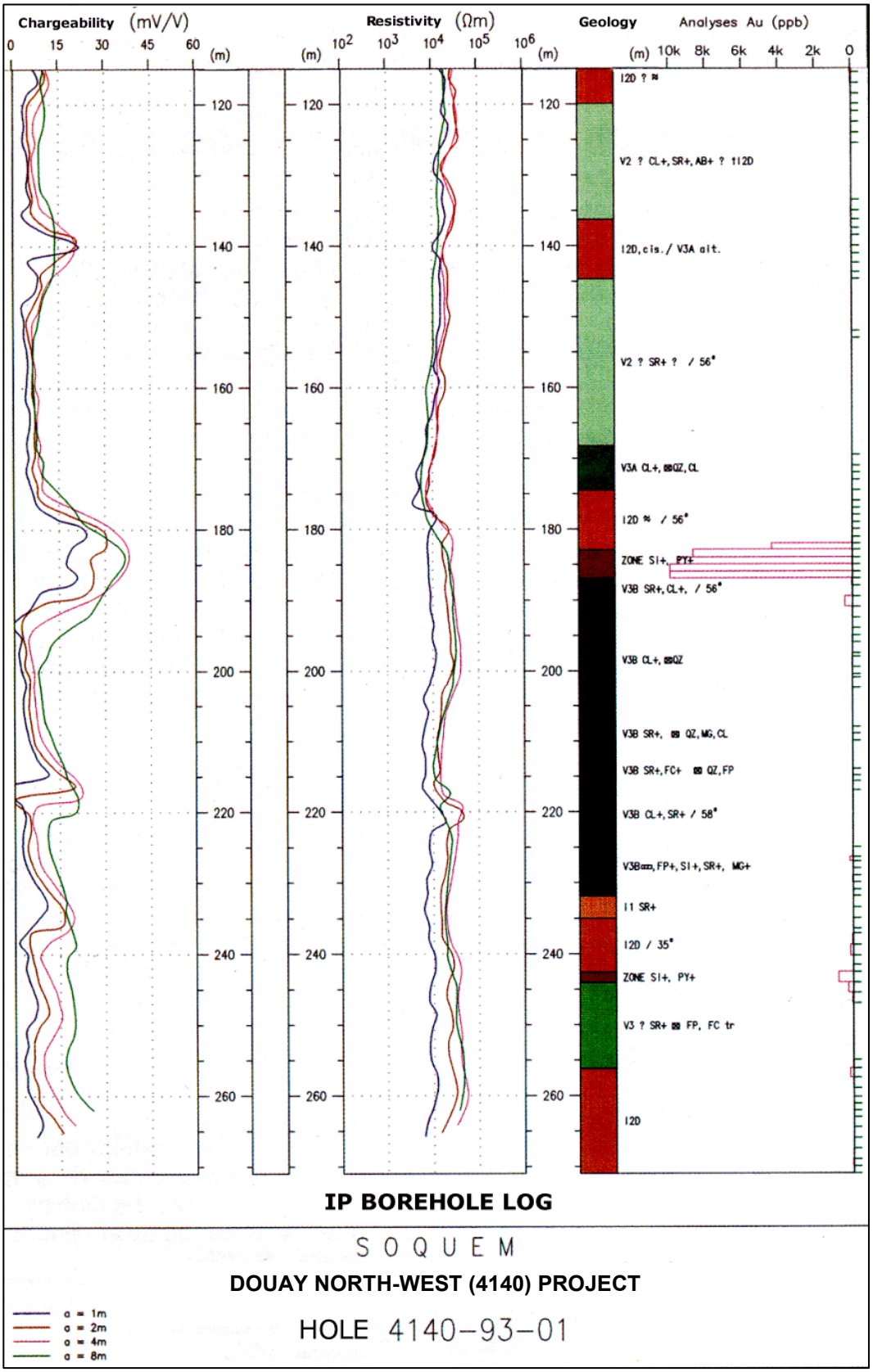
- Choice of three arrays:
  - Three-electrodes, a= 1, 2, 4 and 8 m.
  - Pole-Dipole, a= 0.25 m, n = 1 to 6.
  - Gradient, MN = 0.25 to 5 m.
  - In-Field QC, processing and plotting are performed using our proprietary Refusilo® software.
- Instrumentation:
  - Abitibi Geophysics' custom winch and cable (1050 m) avoids EM and capacitive coupling.
  - ELREC-PRO receiver from IRIS instruments (10 input channels and 20 decay curve sampling windows).
  - VIP-30 (Abitibi Geophysics') transmitter.

Supplied Products

- Stacked profiles of apparent resistivity and chargeability plotted for all survey spacings.
- DDH log may be summarized and assay results plotted in colour.

Example (next page)

- Resistivity/IP log recorded in drill-hole 93-01, "A" zone, Douay project (Abitibi, Québec), with geological log and gold assay results.
- Results released with the consent of SOQUEM inc.


Chargeability (mV/V)
0 15 30 45 60
Resistivity (Ωm)
10² 10³ 10⁴ 10⁵ 10⁶
Geology
Analyses Au (ppb)
10k 8k 6k 4k 2k 0
(m)
120 140 160 180 200 220 240 260
I2D ? ≈
V2 ? CL+, SR+, AB+ ? I12D
I2D, cis. / V3A alt.
V2 ? SR+ ? / 56°
V3A CL+, ⊠QZ, CL
I2D ≈ / 56°
ZONE SI+, PY+
V3B SR+, CL+, / 56°
V3B CL+, ⊠QZ
V3B SR+, ⊠ QZ, MG, CL
V3B SR+, FC+ ⊠ QZ, FP
V3B CL+, SR+ / 58°
V3B⊠, FP+, SI+, SR+, MG+
I1 SR+
I2D / 35°
ZONE SI+, PY+
V3 ? SR+ ⊠ FP, FC tr
I2D
IP BOREHOLE LOG
SOQUEM
DOUAY NORTH-WEST (4140) PROJECT
HOLE 4140-93-01
a = 1m
a = 2m
a = 4m
a = 8m