DELINEATING DISSEMINATED COPPER SULFIDES AT LAGALOCHAN Cu PORPHYRY PROSPECT (Scotland)

Executive Summary

- Adrok has undertaken an in-depth review of the Atomic Dielectric Resonance (ADR) data against drill log information provided for LD84-1 and is confident the signature of disseminated copper sulfides can be extracted from the ADR data.
- A comparison of the three scans H1, H2 and H3 with decreasing sulfide content (based on drilling) suggests that low values in 5-10MHz frequency combined with near coincident peaks in relative energy appear to be indicative of copper sulfides.
- An interpretation was also provided for H3 suggesting minor copper sulfides at approximately 300m depth.
- Adrok has achieved its aim of testing the ADR technique in extracting the signature of sulfides at Lagalochan. The survey
- implies that the country rocks are similar across the areas so the same criteria may not be sued at other sites.
- Proof of concept has been demonstrated for this survey site.

PROJECT BACKGROUND

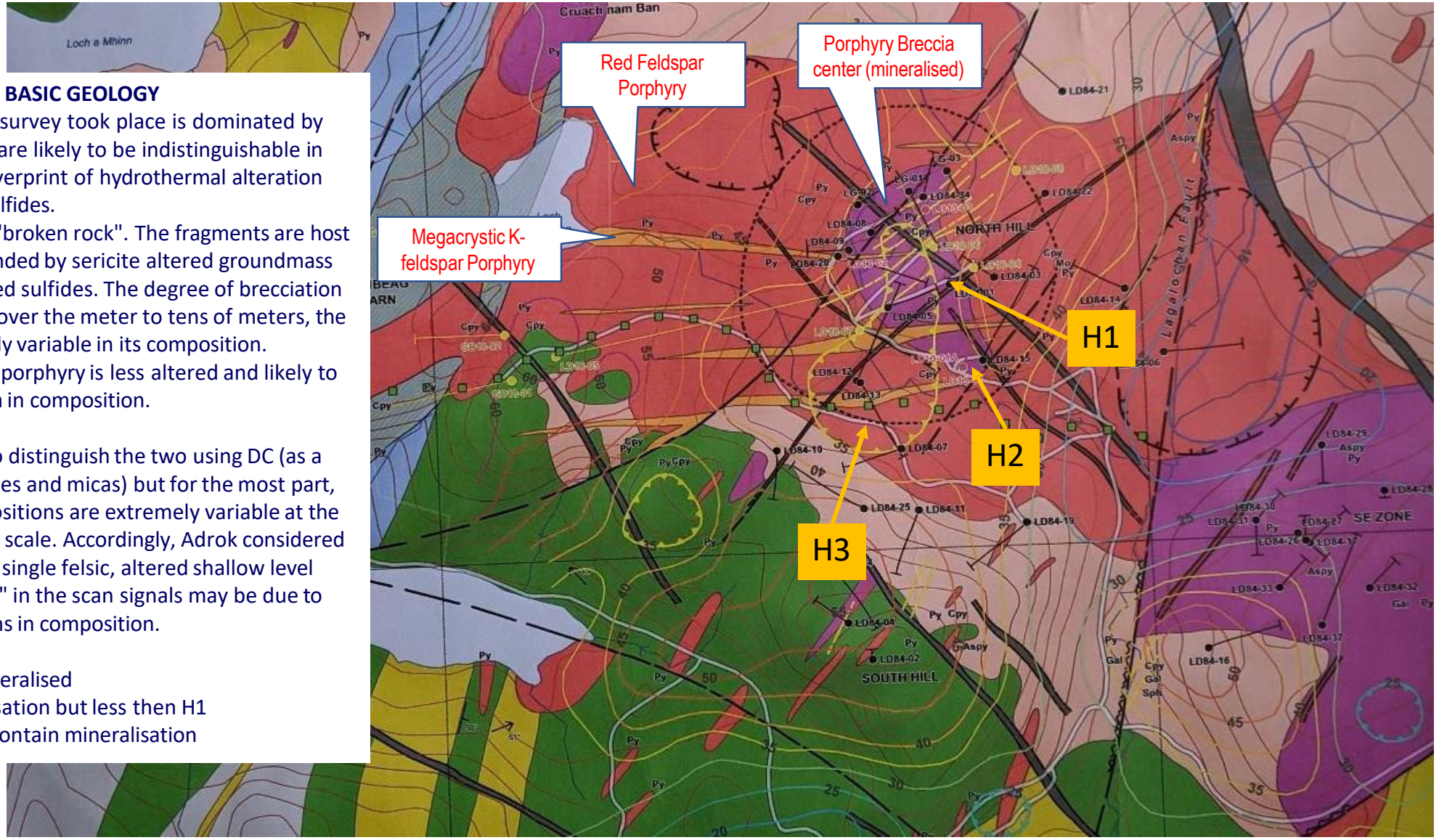
BASIC GEOLOGY

The area where the survey took place is dominated by two rock types that are likely to be indistinguishable in ADR owing to the overprint of hydrothermal alteration and disseminated sulfides.

1) The Breccia is a "broken rock". The fragments are host porphyry surrounded by sericite altered groundmass with disseminated sulfides. The degree of brecciation varies therefore over the meter to tens of meters, the rock type is highly variable in its composition.
2) The red-feldspar porphyry is less altered and likely to be more uniform in composition.

It may be possible to distinguish the two using DC (as a proxy for clay, sericites and micas) but for the most part, the host-rock compositions are extremely variable at the centimeter to meter scale. Accordingly, Adrok considered the background as a single felsic, altered shallow level intrusive. The "noise" in the scan signals may be due to many small variations in composition.

H1 – Most likely mineralised
H2 – Some mineralisation but less then H1
H3 – Least likely to contain mineralisation

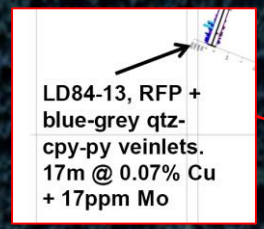


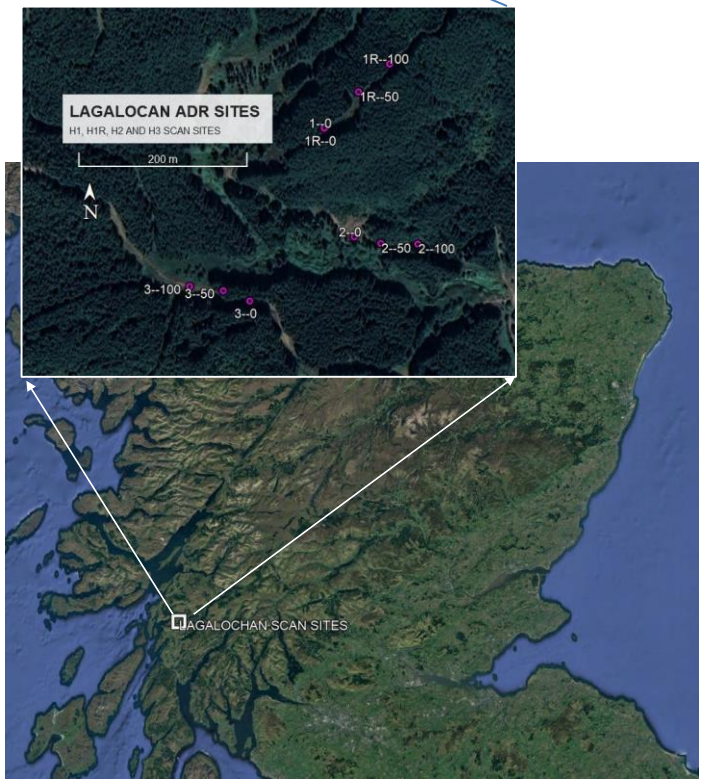
ADR SCAN LOCATIONS OVER AERIAL PHOTOGRAPH

Scan numbers (LD…) were labeled in the field based on the closest drill hole

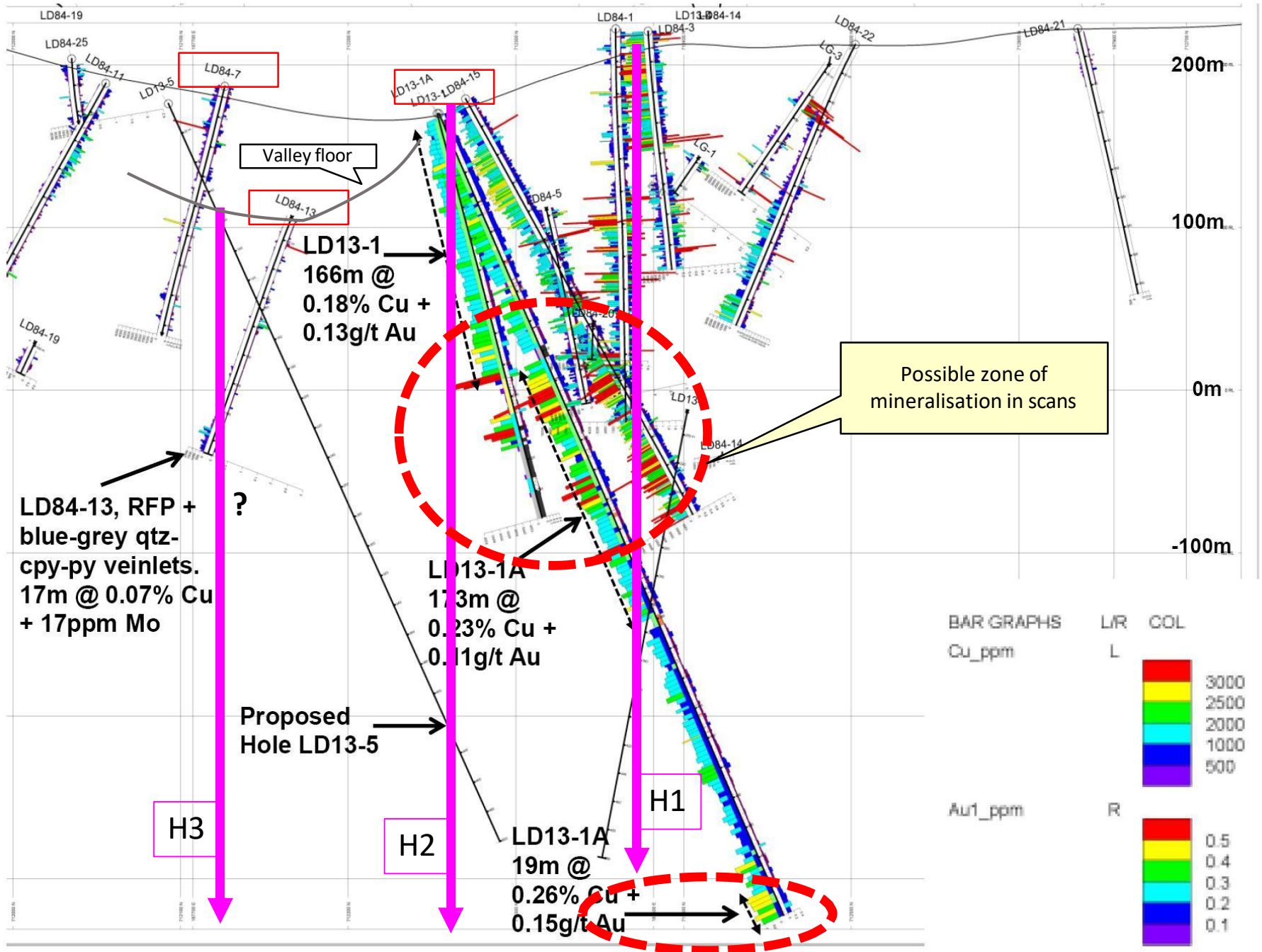
ADR SCAN #
- H1 = LD84-01
- H1R = LD84-01
- H2 = LD13-01
- H3 = LD84-13

1R--100
1R--50
1--0
1R--0
LD84-01
LD84-15
2--0
2--50
2--100
LD84-13
3--100
3--50
3--0
LD84-07

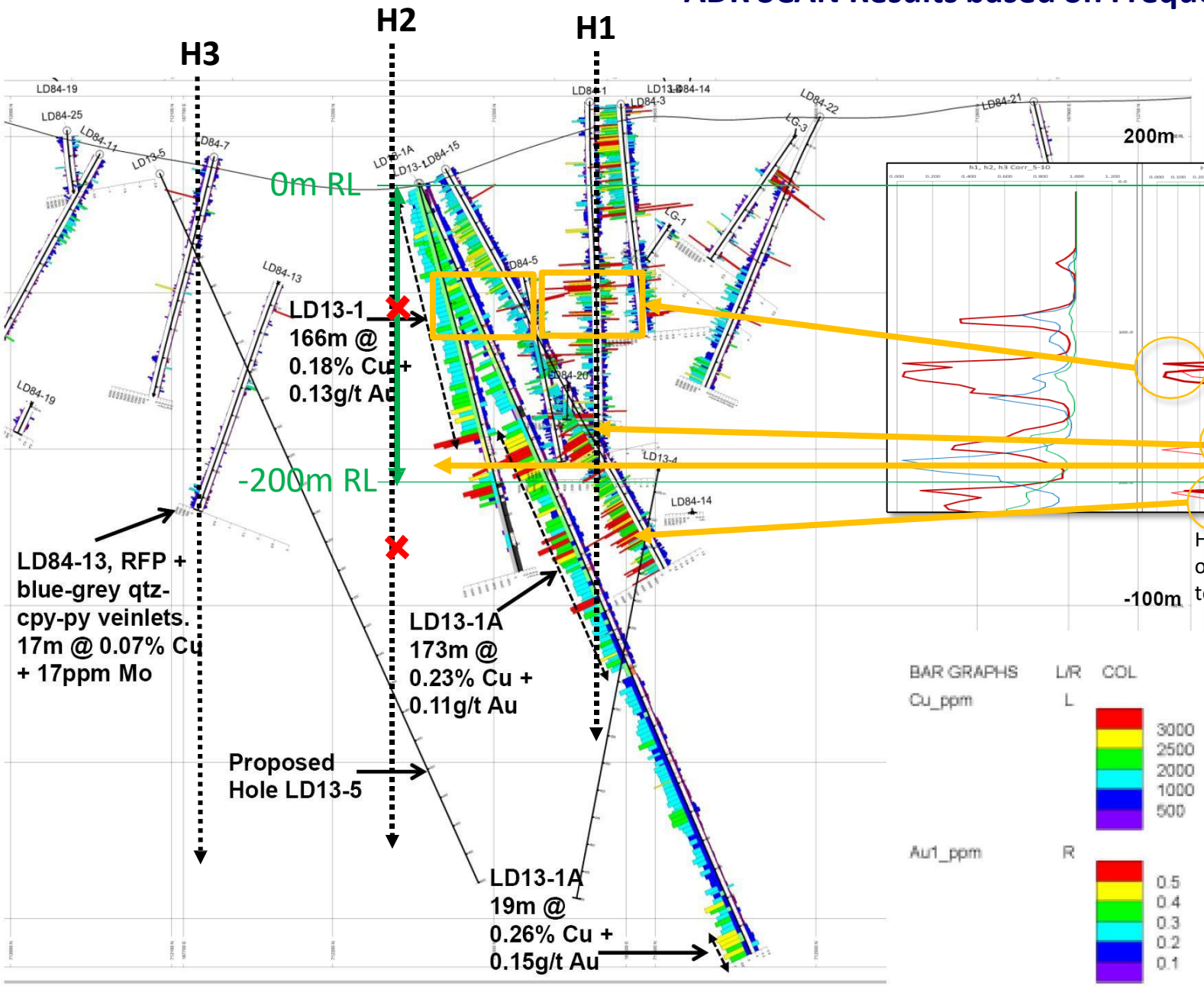


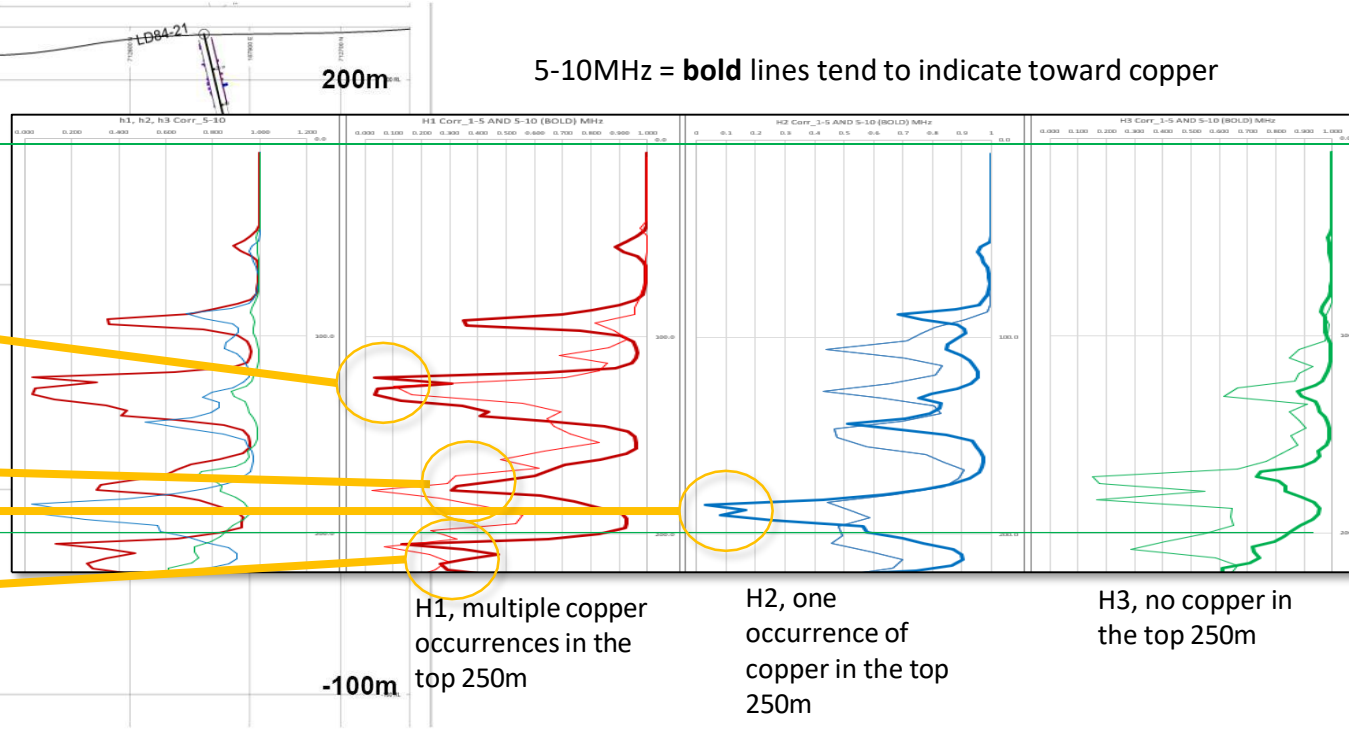


ADR SCAN LOCATIONS in Cross-Section in relation to Drilled Holes



ADR SCAN Results based on Frequency returns





5-10MHz = **bold** lines tend to indicate toward copper

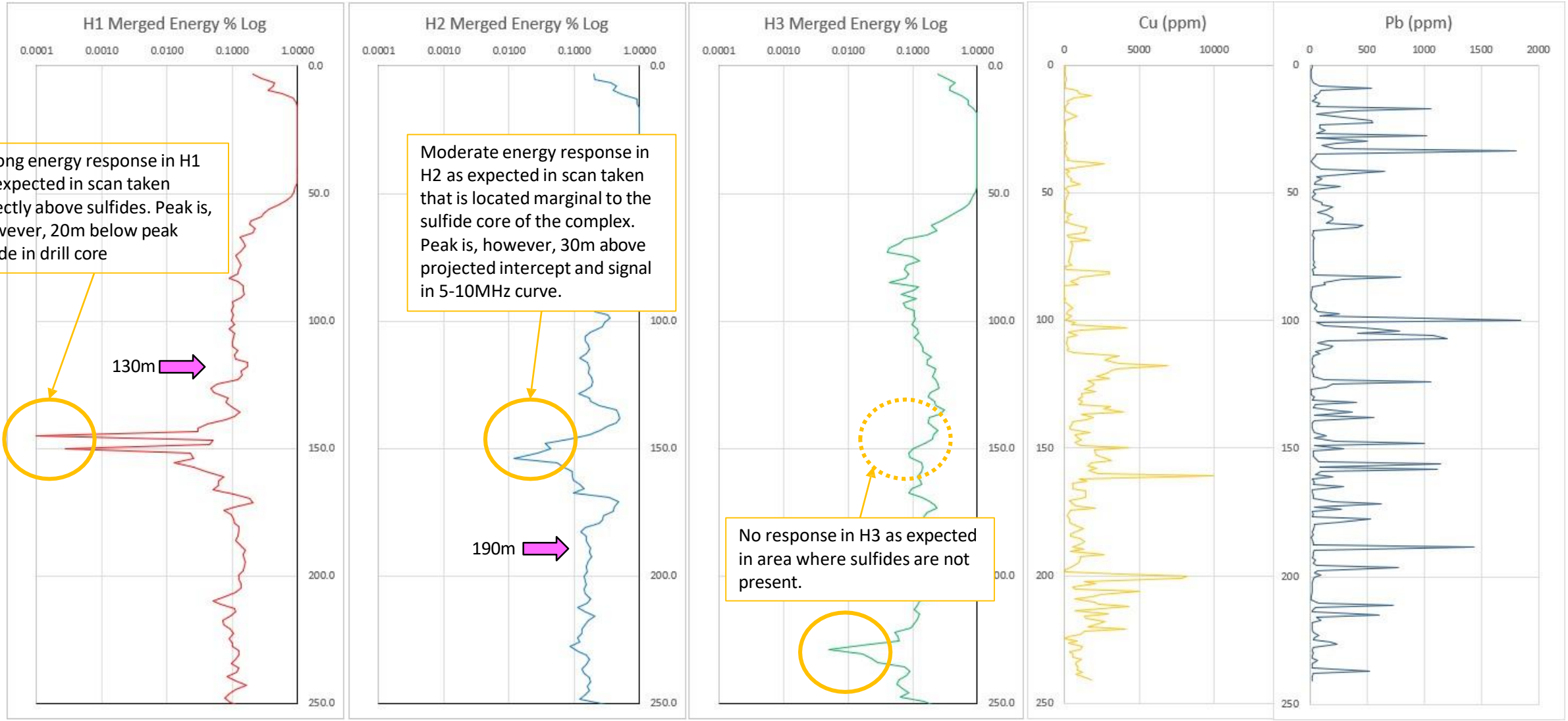
H1, multiple copper occurrences in the top 250m

H2, one occurrence of copper in the top 250m

H3, no copper in the top 250m

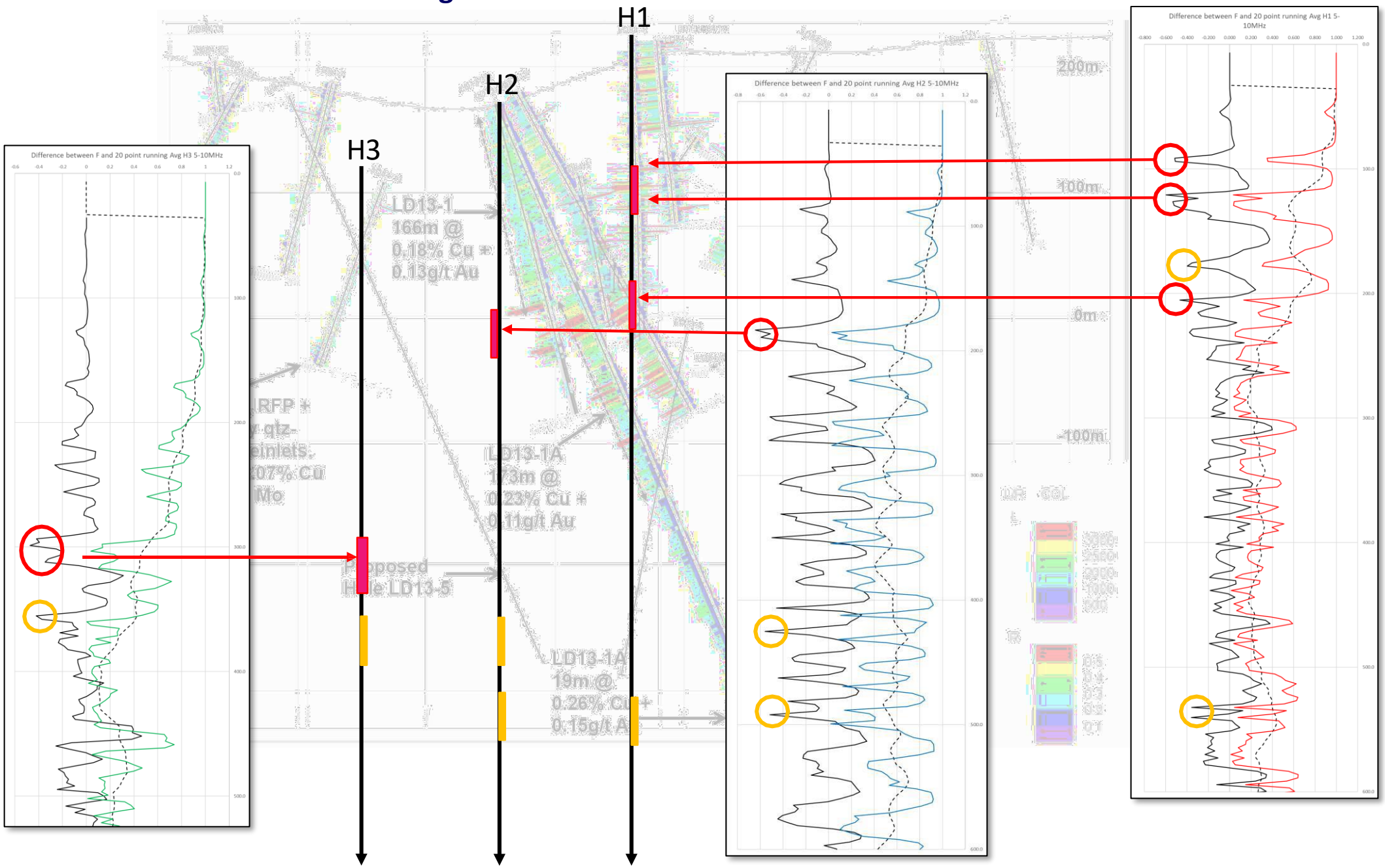
✖ = sulfides or signal not present

ENERGY RESPONSE IN H1-H3 scans relative to Cu and Pb grades (bulk mineralisation)



Potential minor sulfides in H3

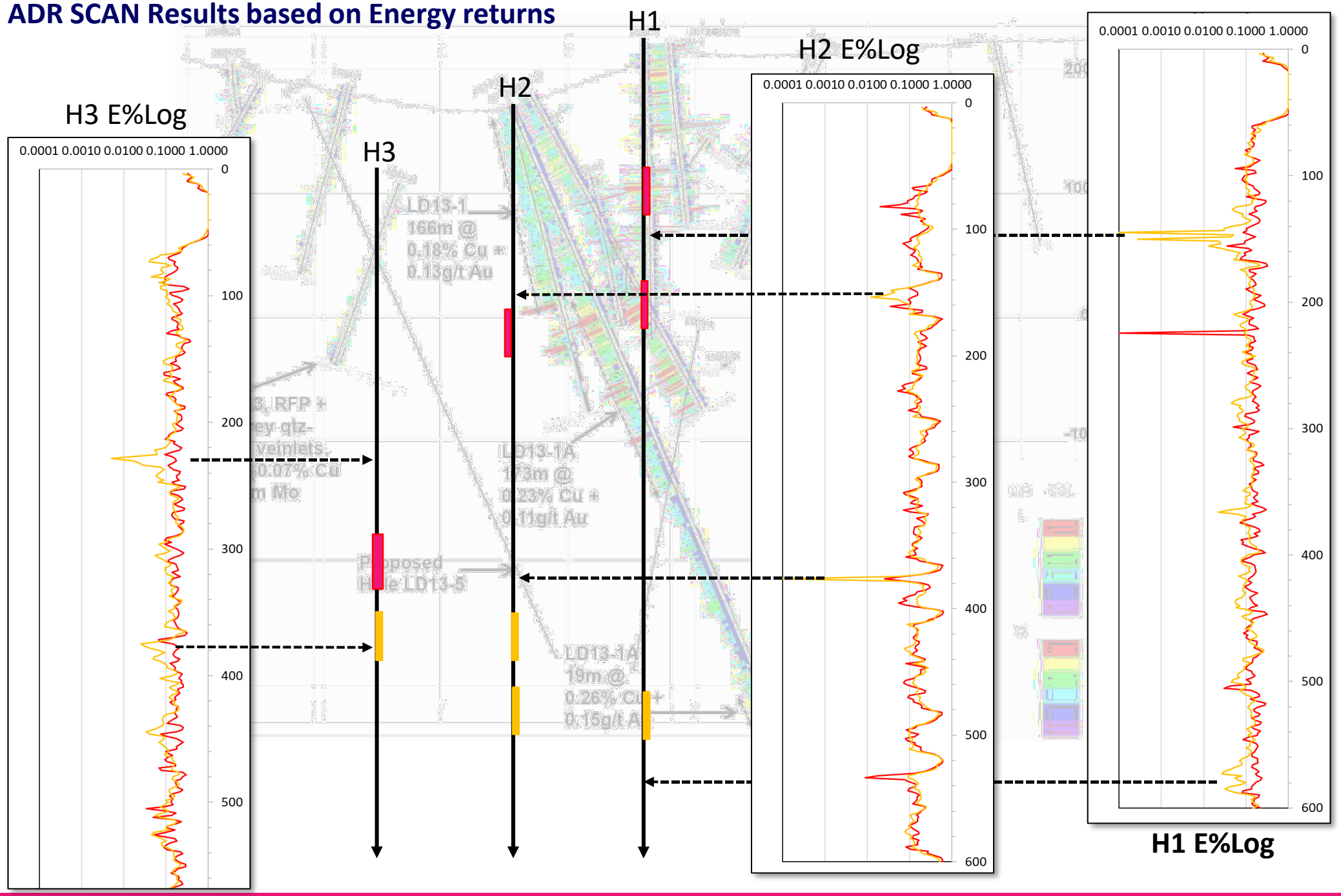
ADR SCAN Results based on Raw Signal returns



Charts show 5-10 MHz raw signal returns

black line - difference from 20 point running average

ADR SCAN Results based on Energy returns



Charts show
Relative energy % log
Red – single scan
Orange - merged

Conclusions

1) The relative energy response curves (data) show a positive anomaly in the vicinity of the copper results in the drill core, however, the results are variable in terms of depth relative to the intercepts. It appears that the energy results are picking the presence of sulfides and therefore may still be used as an indicator.

2) Detailed analysis of the Frequency curves shows that 5-10MHz is the most reliable indicator for copper sulfides at tis location. An experiment was undertaken that involved removing the background signal from the signal of the copper sulfides in the three scans. After carrying out the comparison, it appears that low values (in 5-10HMz) appear to indicate almost the exact position of high-grade copper results in drill core relative to non-sulfide bearing core which shows near to no response.

3) In order to determine the "significant" from non-significant peaks in frequency results, a 20-point running average was calculated and the results re-plotted resulting in a more apparent response at the intervals where sulfides are found. In addition, the correction against the running average had shown that there are potentially undrilled sulfides in H3.

4) When used together, energy and a derivative of frequency may be used to discriminate copper sulfides at the disseminated sulfide copper porphyry investigated at this survey location. This is work in progress but the ability to carry out this work was due primarily to access to drill assay results, a parallel drill hole with grade and lithology provided as well as the ability to carry out a scan in an area with proven copper sulfides between 0-300m (H1) and an area where no sulfides have been found between 0-300m (H3). This allowed for a direct comparison between sulfide bearing and non-sulfide bearing results in the ADR.