

## Seismic images providing glimpse into the deep geology of Pyhäsalmi mining district in Finland

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Seismic reflection method is one of the few methods capable in imaging geological interfaces of the subsurface to the depth of several kilometers with high resolution. Method relies on sharp changes of density or seismic velocity between different geological formations. Physical rock properties provide important background knowledge about feasibility of imaging certain rock contacts. In Pyhäsalmi-Mullikkoräme volcanic hosted massive sulfide district in Finland geophysical drill hole logging results indicate that contact of interest, interface between felsic and mafic volcanic rocks, can be seismically imaged (Heinonen et al., 2012). Fourteen high resolution seismic reflection profiles acquired in the Pyhäsalmi-Mullikkoräme mining district reveal the subsurface continuation of the reflective volcanic strata underneath seismically transparent intrusive granites. The 3D-modeling of the seismic reflections revealed a major reverse fault dividing Pyhäsalmi and Mullikkoräme volcanic units to blocks with varying deformation style. Fault and difference of deformation style is also evident in the crustal scale seismic profile acquired close by the mining camp.

### References:

Heinonen, S., Imaña, M., Snyder, D.B., Kukkonen, I.T., and Heikkinen, P.J., 2012. Seismic reflection profiling of the Pyhäsalmi VHMS-deposit: A complementary approach to the deep base metal exploration in Finland. *Geophysics*. 77, p. WC15-WC23.