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Electric self-potential monitoring of hydraulic fracturing experiments in the Äspö Hard Rock Laboratory, Sweden.

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A number of six *in situ* hydraulic fracturing experiments were carried out at the Äspö Hard Rock Laboratory (Sweden) in 2017 in a depth of 410 m. Here we present electric self-potential monitoring during the conventional and the step-wise cyclic injection experiments HF2 and HF3. Electric self-potential data were acquired through a two-sensor array, each including nine measuring probes and one base probe, that were installed at the 410 m and 280 m levels. The experimental borehole F1 is drilled in the direction of S_{hmin}, perpendicular to the expected fracture plane. The self-potential sensors are installed sub-parallel to S_{hmin} at level 410 at a distance of 50-75 m to the borehole F1 and sub-perpendicular to S_{hmin} at level 280 m at a distance of 150-200 m to F1. The self-potential data were measured with a sampling rate of 1 Hz. Here, we propose a 1-D modelling of the streaming potential that approximates the measured self-potential data. These streaming potential gradients ΔV are estimated from the simulated pressure signals and the coupling coefficient.