

COUPLED HYDRO-MECHANICAL MODELLING OF FLOW IN FRACTURED ROCKS

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Flow pathways through waste repository host rocks will be subjected to alterations due to changes in the stress distributions in the rock arising from thermal and mechanical processes. To understand the need to model the impacts of such changes for the performance assessment of a repository, a programme of work has been initiated under DECOVALEX III, an international collaborative research programme. The work is being carried out through a benchmarking exercise (BMT 3) in which data on rock characteristics for a specified repository setting are provided to several research teams. Each team is exploring the changes in flow distribution arising from changes to the stress distributions using a range of coupled thermo-hydro-mechanical codes spanning spatial scales from a few centimetres to several kilometres. To ensure the tractability of the computations two dimensional simulations have been adopted. Issues arising from the study, in the early stages of its development, are concerned with the bias and uncertainty arising from the characterisation of the fracture networks. In the poster, the research strategy is presented and descriptions of the preliminary quantification of the structure of the fracture systems and preliminary calculations on local scale changes in flow response to stress alterations are given.