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## Benchmark Analysis of EBR-II SHRT45R using MARS-LMR

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KAERI has joined the International Atomic Energy Agency (IAEA) coordinated research project (CRP) on Benchmark Analysis of an EBR-II Shutdown Heat Removal Test (SHRT). The major goal for this program is to validate MARS-LMR, which is a newly developed safety analysis code for PGSFR. One of benchmark tests is a SHRT-45R, which is an unprotected loss of flow test in an EBR-II. Thus, sodium natural circulation and reactivity feedbacks are major phenomena of interest. The EBR-II SHRT45R is analyzed using MARS-LMR. Overall prediction of the EBR-II SHRT45R by MARS-LMR shows good agreement with experimental results. Except the results of the XX10, the temperature and flow in the XX09 agreed well with the experiments. In addition, sensitivity tests are carried out for a decay heat model, reactivity feedback model, inter-subassembly heat transfer, internal heat structures and so on. The decay heat model of ANS-94 shows better results of fission power, however, the fission power is still over-estimated in the long-term transient region by the reactivity feedbacks. The inter-subassembly heat transfer is the most influential parameter, especially for the non-fueled XX10, which has a low flow and power subassembly. In addition, the appropriate internal heat structure model can be an influential parameter. Finally, the corrected results are proposed with reasonably conjectured parameters. This study can give the validation data for the MARS-LMR and better understanding of the EBR-II SHRT-45R.

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