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***Evaluation of high temperature  
gas cooled reactor performance:  
Benchmark analysis related to initial  
testing of the HTTR and HTR-10***



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BENCHMARK ANALYSIS RELATED TO INITIAL TESTING OF THE HTTR AND HTR-10

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## FOREWORD

The Co-ordinated Research Project (CRP) on Evaluation of High Temperature Gas Cooled Reactor (HTGR) Performance was initiated by the IAEA in 1998 on the recommendation of the Technical Working Group on Gas Cooled Reactors. This CRP was established to foster the sharing of research and associated technical information between participating Member States in the ongoing development of the HTGR as a future source of nuclear energy for high temperature process heat applications and the production of electricity.

The IAEA has facilitated an extensive programme that addresses the technical development of advanced gas cooled reactor technology. This CRP complements other recently completed CRPs in validating safety and performance capabilities of the HTGR. For this CRP, computer codes and models are verified through actual test results from operating reactor facilities. Specifically, the IAEA is grateful to the Japan Atomic Energy Research Institute for providing the HTTR, China's Institute of Nuclear Energy Technology for the HTR-10 and the Russian Federation's OKBM and the Kurchatov Institute for the ASTRA critical facility in support of this CRP.

The focus of this TECDOC is on core physics benchmarks in conjunction with initial testing of the HTTR and HTR-10 and also selected thermal hydraulic benchmarks on the HTTR. The following Member State national institutions participated in the performance of this CRP:

- Institute of Energy Technology (INET), Beijing, China
- SACLAY (CEA), Gif-sur-Yvette, France
- Research Centre Juelich (ISR), Juelich, Germany
- National Nuclear Energy Agency (BATAN), Serpong, Indonesia
- Japan Atomic Energy Research Institute (JAERI), Oarai, Japan
- Nuclear Research and Consultancy (NRG), Petten, Netherlands
- OKBM/Kurchatov Institute, Nizhny Novgorod, Russian Federation
- Pebble Bed Modular Reactor (PBMR), Centurion, South Africa
- Department of Nuclear Engineering, Hacettepe University, Ankara, Turkey
- Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, United States of America

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