
Integral System Testing for Prismatic Block Core Design HTGR

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Program: Reactor Concepts

ABSTRACT:

It is proposed under this work that eight integral thermal-fluid tests be completed investigating a range of gas reactor events. This is planned as a two-year project and will be conducted at the Oregon State University High Temperature Test Facility (HTTF). During the first year, preparations for the testing program will be conducted including any required training and the development of detailed instrumentation and testing plans. The overall objective of the test program will be to collect data that will fully cover the anticipated range of conditions relevant to loss of cooling in a modular High Temperature Gas Reactor (HTGR). It is anticipated that the test matrix will include Depressurized Conduction Cooldown (DCC) scenarios, Pressurized Conduction Cooldown (PCC) scenarios, and detailed evaluations of local phenomena present during these scenarios such as buoyant flows within the system during a PCC event. The final test matrix will be confirmed during the first year by the project participants considering anticipated licensing analysis requirements, HTGR design characteristics, current and future test facility capabilities, and project resources and schedule. Scoping analyses of the test facility will also be performed using current participant safety analysis methods to guide test planning and provide comparison between test results and analytical predictions.