

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Experimental and Computational Investigations of Plenum-to-Plenum Heat Transfer under Natural Circulation in a Prismatic Very High Temperature Reactor – University of Missouri

SECTION B. Project Description

The University of Missouri proposes to experimentally and computationally examine intra-core natural circulation phenomena in a scaled separate-effects and integrated-effects experimental set-up of prismatic blocks that simulate High Temperature Test Facility (HTTF) core and the two plena during natural circulation. This will be accomplished by implementing in a novel way sophisticated measurement techniques that will measure simultaneously heat transfer coefficient from the coolant channels to the circulating gas and local gas velocity, gas residence time distribution, dispersion, and back-mixing.

SECTION C. Environmental Aspects / Potential Sources of Impact

The research would use a scaled facility mimicking Very High Temperature Reactor (VHTR) natural circulation operation. The action would not create additional environmental impacts above those already occurring at the university.

SECTION D. Determine the Level of Environmental Review (or Documentation) and Reference(s): Identify the applicable categorical exclusion from 10 CFR 1021, Appendix B, give the appropriate justification, and the approval date.

Note: For Categorical Exclusions (CXs) the proposed action must not: 1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, including requirements of DOE orders; 2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities; 3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; 4) adversely affect environmentally sensitive resources. In addition, no extraordinary circumstances related to the proposal exist which would affect the significance of the action, and the action is not “connected” nor “related” (40 CFR 1508.25(a)(1) and (2), respectively) to other actions with potentially or cumulatively significant impacts.

References: B3.6 Siting, construction, modification, operation, and decommissioning of facilities for small-scale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial development.

Justification: The activity consists of studying plenum-to-plenum heat transfer for research purposes.

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) Yes No

Approved by Jason Sturm, DOE-ID Deputy NEPA Compliance Officer on 11/25/2013