

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Experimental Investigation and CFD Analysis of Steam Ingress Accidents in HTGRs – Ohio State University

SECTION B. Project Description

Ohio State University The goal of the proposed research is to better understand steam ingress phenomenon in High-Temperature Gas Reactors. The specific objectives are to:

1. Experimentally investigate steam ingress accidents caused by a postulated SG tube rupture initiating event, focusing on the integral effects of both the thermal-hydraulic behavior and graphite oxidation in the lower support structures in the hot plenum and reactor core;
2. Study graphite oxidation by steam using separate-effects tests (SETs) and improve existing models;
3. Develop and validate predictive Computational Fluid Dynamics (CFD) models for the steam ingress phenomenon.

SECTION C. Environmental Aspects / Potential Sources of Impact

The action will 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 conducting university laboratory scale research.

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

Approved by Jack Depperschmidt, DOE-ID NEPA Compliance Officer on 08/12/2014