

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Development of a Comprehensive Two-phase Flow Database for the Validation of NEK-2P – Virginia Tech

SECTION B. Project Description

Virginia Polytechnic Institute and State University, in collaboration with Ohio State University and Argonne National Laboratory, proposes to perform detailed uncertainty quantification to determine the applicable ranges and associated measurement uncertainties in simulated two-phase boiling flows. The best combination of these techniques will be determined for different flow regimes in test sections of different geometries. Tests will be performed in two existing air-water flow loops in PI's and university co-PI's laboratories: the first one consisting of a test section of a 30 mm × 10 mm rectangular channel and the second a 50-mm inner diameter (ID) round pipe test section. The third validation experiment will be performed in a heated rod bundle test facility that will be designed and constructed under this project.

SECTION C. Environmental Aspects / Potential Sources of Impact

Virginia Tech and collaborators have procedures in place to handle any waste that will be generated through this project. The action would not create additional environmental impacts above those already permitted 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 university-scale research on two-phase flow to improve modeling applications.

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 06/30/2016