DOE-ID NEPA CX DETERMINATION

CX Posting No.: DOE-ID-17-066

SECTION A. Project Title: Infrastructure Upgrade for Nuclear Engineering Research and Education at Virginia Tech

SECTION B. Project Description

The Virginia Polytechnic Institute and State University proposes to enhance the infrastructures for the nuclear engineering research and education at Virginia Tech in the following experimental and computational areas: 1) Development of advanced measuring techniques to quantify the effects of turbulent coolant flow on flow-assisted corrosion-erosion of reactor materials; 2) Development of 3-D light field techniques to measure singleand two-phase flows; 3) Development of computational nuclear engineering infrastructure for Nuclear Energy Advanced Modeling and Simulation (NEAMS). These objectives will be accomplished by purchasing the following equipment: a phase array ultrasonic pipe thickness monitor, a wall shear stress monitoring system, a constant temperature anemometer system, two corrosion system data loggers, a fluid-motion 3D light-field camera system, and parallel computing clusters and workstations.

SECTION C. Environmental Aspects / Potential Sources of Impact

Chemical Use/Storage / Chemical Waste Disposal - The requested equipment will be used in conjunction with the Virginia Tech High Turbulence corrosion loop which is used to study aqueous solutions of deionized water-3500 ppm boric acid-20 ppm lithium hydroxide monohydrate which simulates coolant for a light water reactor. Protocols for the safe and environmentally responsible means for handling, storage and disposal of these solutions have been developed. These procedures have been approved by the University Environmental and Health Safety Department. None of the equipment to be purchased will, in and of itself, generates any waste chemicals. 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: B1.31 Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts.

Justification: The activity consists of purchasing and installing equipment for teaching and 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 NEPA Compliance Officer on 07/18/2017