DOE-ID NEPA CX DETERMINATION

CX Posting No.: DOE-ID-16-076

SECTION A. Project Title: Two-Phase Flow Facility for Dynamic Characterization of Thermal Hydraulics in Light Water Reactors – Texas A&M University

SECTION B. Project Description

Texas A&M University proposes to construct an experimental facility that will enable single and two-phase flow experimental data to be acquired in a 3x3 fuel rod array under a wide range of steady-state and transient conditions. The neutronic behavior of a light water reactor will be simulated in real-time and coupled to the electrical heat generation rate of a test loop. Coolant will flow past the full-height vertical test section, consisting of 24 locally controlled heat sources for a 3x3 fuel rod array. The local void fraction and temperature data is fed into the neutronic simulations which are in turn coupled to the heat generations itself.

SECTION C. Environmental Aspects / Potential Sources of Impact

Texas A&M University has 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 aimed at investigating single and two-phase flow in a light water reactor.

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 08/01/2016