DOE-ID NEPA CX DETERMINATION

CX Posting No.: DOE-ID-16-087

SECTION A. Project Title: Enhancement of EM Pump Performance Through Modeling and Testing – University of Wisconsin

SECTION B. Project Description

The University of Wisconsin proposes to develop empirical and computer generated data to accurately predict or minimize end effects in new electromagnetic (EM) pumps. For this project, experimental data will be obtained using novel local velocity, temperature, and three-dimensional magnetic field assessment instruments. The techniques involved for the utilization of these measurement techniques in sodium will be further developed throughout the course of this project. In turn, the experimental data will benchmark sophisticated computer models that can be used to optimize new EM pump designs. Overall, this project takes advantage of significant previous infrastructure of sodium-cooled fast reactor technology and EM pump construction to further the understanding of EM pump design and optimization.

SECTION C. Environmental Aspects / Potential Sources of Impact

Chemical Use/Storage – The project will use 5 gallons of sodium metal within the flow loop with the EM pump. The sodium will not be consumed and will be stored on site after the project for continued work with regard to sodium fast reactors. The sodium needed is already on site, no new sodium is planned to be used. The University of Wisconsin 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 electromagnetic pump performance for use in sodium fast reactors.

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 09/06/2016