DOE-ID NEPA CX DETERMINATION

CX Posting No.: DOE-ID-13-049

SECTION A. Project Title: Advanced High Temperature Inspection Capabilities for Small Modular Reactors – Iowa State University

SECTION B. Project Description

Iowa State University proposes to develop nondestructive evaluation techniques for advanced small modular reactors employing novel ultrasound and eddy currents approaches which enable in-coolant deployment of probes, while providing the modeling and experimental capabilities needed to analyze and understand the phenomena that limit performance and to enable optimization of in-service inspection capabilities. To assess the effects of varying levels of conductivity in a fluid on the performance of both ultrasound and eddy-current transducers, a test cell will be built and used at room temperature with a liquid metal, a surrogate molten salt, and water.

SECTION C. Environmental Aspects / Potential Sources of Impact

Chemical Use/Storage – Liquid metal (Indalloy©)will be used. Approximately 250-500 cc will be used in a fume hood and closed systems.

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 evaluating ultrasonic and eddy-current sensors for research purposes.

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 11/14/2013