

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Advanced Instrumentation for In-Situ Diagnostics in Reactor Conditions

SECTION B. Project Description

The University of Wisconsin (UW), in collaboration with Oregon State University (OSU), proposes to develop in-situ measurements of distributed temperatures and local strain for a test rod in out-of-pile test loops. The research will consist of the following actions: (1) Review of the various types of fiber optic sensors that are suitable for the nuclear environment (i.e., radiation, pressure, temperatures) and identify the fiber optic sensor system to be installed in test rods; (2) Develop the optimized fiber optic sensor systems for use in distributed temperature measurements as well as local strain measurements and test; (3) Design and modify the current OSU transient Loss of Coolant Accident (LOCA) test facility to allow for transient LOCA testing that is prototypic of planned Transient Reactor Test Facility (TREAT) experiments; (4) Perform the LOCA tests in OSU transient LOCA facility with fiber optic sensors installed; and (5) Analysis of the LOCA test results using state-of-the-art safety analysis computer codes.

SECTION C. Environmental Aspects / Potential Sources of Impact

The 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 activities to develop sensor systems for nuclear test loops.

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 8/10/2020