

**SECTION A. Project Title: Advanced Instrumentation for Transient Reactor Testing – University of Wisconsin****SECTION B. Project Description**

The University of Wisconsin proposes to focus on five distinct task areas for advanced instrumentation for transient reactor testing:

1. Development of innovations for real-time, 'line-of-sight' imaging for a transient test using the current hodoscope concept with advancements in detection and image resolution;
2. Development of novel sensors to measure local displacements and temperatures of fuel rod under transient conditions as well as local measurements of neutron fast and thermal flux;
3. Out-of-pile testing of these novel sensors under a common test protocol and geometry;
4. In-pile testing of these instruments in a TRIGA reactor to demonstrate the capability to measure these key parameters in a radiation environment under transient conditions; and
5. Design of Standard Transient Reactor Experiment Test Capsules with Advanced Instrumentation.

**SECTION C. Environmental Aspects / Potential Sources of Impact**

Radioactive Material Use/Radioactive Waste Generation – The project will be using instruments and surrounding structural materials that will be exposed and slightly activated by the neutron flux of the university's TRIGA nuclear reactor. The use of the TRIGA reactor is governed under its NRC license. The handling of the slightly activated material and disposal of that material will be conducted under the university's State of Wisconsin license.

**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 developing advanced instrumentation for transient reactor testing.

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 09/04/2014