

SECTION A. Project Title: High Fidelity Ion Beam Simulation of High Dose Neutron Irradiation – University of Michigan**SECTION B. Project Description**

The University of Michigan proposes to demonstrate the capability to predict the evolution of microstructure and properties of structural materials in-reactor and at high doses, using ion irradiation as a surrogate for reactor irradiations. Tasks within this proposal include expansion of capabilities at the Michigan Ion Beam Laboratory, ion beam irradiations, microscopy of ion beam irradiations and reactor irradiations, and simulations. In addition to the University of Michigan, ion beam irradiation microscopy and simulation work will also occur at the University of Wisconsin, U.C. Berkeley, University of South Carolina, Penn State University, and the University of Tennessee. Idaho National Laboratory, Argonne National Laboratory, and Lawrence Livermore National Laboratory will perform ion beam irradiation work. Oak Ridge National Laboratory will conduct low activation and simulation work. Los Alamos National Laboratory will conduct work requiring a hot cell.

SECTION C. Environmental Aspects / Potential Sources of Impact

Radioactive Material Use – Metal alloy samples irradiated in reactor will be analyzed in this project. All analysis is expected to be done at Oak Ridge National Laboratory, so samples will not be received or handled at UM.

Chemical Use/Storage – Chemicals are used and stored routinely at University of Michigan laboratories. All storage and use are managed appropriately according to current environmental guidelines and regulations.

Chemical Waste Disposal – The University of Michigan operate a chemical waste collection program managed by the OSEH Hazardous Materials Management Program. It complies with all applicable RCRA rules and regulations.

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.

B1.31 Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts.

Justification: The activity consists of installation of equipment and evaluating irradiated material 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 11/13/2013