

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Thermal Conductivity of Metallic Fuels – Virginia Polytechnic Institute and State University

SECTION B. Project Description

Virginia Tech, in collaboration with Idaho National Laboratory and Oak Ridge National Laboratory, proposes to determine the electronic structure and phonon spectrum of U-Zr and Np-Zr alloys with and without the presence of noble gases. U-Zr and Np-Zr alloys will be fabricated for a composition range from 0 to 20% Zr. The thermal conductivity of these alloys will be determined using a Laser Flash measurement system and a Differential Scanning Calorimeter. The phonon dispersion relation and carrier mobility measurement to determine electron relaxation time will be performed by inelastic neutron scattering.

SECTION C. Environmental Aspects / Potential Sources of Impact

The research would involve non-destructive analysis of metallic alloys. The action would not create additional environmental impacts above those already occurring at the university and national labs.

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 the thermal conductivity of metallic alloys.

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 09/23/2014