

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: A New Paradigm for Understanding Multi-phase Ceramic Waste Form Performance – Clemson University

SECTION B. Project Description

Clemson University will fabricate model multiphase ceramic waste forms with processing-controlled microstructures followed by advanced characterization with synchrotron and electron microscopy-based 3D tomography to provide elemental and chemical state specific information resulting in compositional phase maps of ceramic composites.

SECTION C. Environmental Aspects / Potential Sources of Impact

The project will be using chemicals and surrogates so no radioactive materials will be used. Disposal of all waste will be in accordance with Clemson's existing policies and procedures. The action will not create additional environmental impacts above those already occurring 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 fabricating multiphase ceramics targeting four principle phases (hollandite, perovskite, pyrochlore, and zirconolite), followed by 3D imagining and model development.

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 08/14/2014