

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Enhanced Shielding Performance of HLW Storage Packages via Multi-Component Coatings – Virginia Polytechnic Institute and State University

SECTION B. Project Description

Virginia Polytechnic Institute and State University, in collaboration with North Carolina State University, proposes to develop an outer shield material for use in packaging that is not only resistant to the corrosion, radiation, diffusion, and thermal cycling processes that affect fuel packages during long-term storage, but that is also wear tolerant and mechanically robust so that it can survive repeated handling and transportation. To accomplish this goal, they propose a new multi-layer composite coating that will provide the robust material needed to enhance long-term HLW storage and facilitate safe transport of storage packages.

SECTION C. Environmental Aspects / Potential Sources of Impact

Air Emissions – Some deposition systems may use process gasses for synthesis. It is impossible to know at this time exactly what will be used as the end result is to define and optimize the deposition process. All deposition systems to be used at Virginia Tech and NC State operate within established safety and environmental guidelines.

Radioactive Material Use – Existing Cesium-137 and Cobalt-60 sources will be used for gamma attenuation experiments. An existing PuBe source will be used for neutron attenuation experiments.

Chemical Use/Storage – The potential exists to use basic laboratory solvents such as acetone and isopropyl alcohol for cleaning. They will be handled and stored in accordance with existing procedures at Virginia Tech and NC State as necessary.

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 waste package shield 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 01/22/2014