

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Engineered composite patch with NDE inspection for repair and mitigation of SCC in nuclear spent fuel dry storage canister

SECTION B. Project Description

The University of South Carolina, in collaboration with Savannah River National Laboratory (SRNL) and the Electric Power Research Institute, proposes to develop an innovative engineered composite patch on spent fuel dry storage containers that can absorb moisture, and prevent stress corrosion cracks (SCC) from further growth while providing nondestructive evaluation (NDE) inspection capability. The research will consist of the following actions: (1) development of the engineered patching system; (2) development of NDE inspection capability; (3) repair and mitigation laboratory validation; and (4) transition to field deployment. Experimental validation of the proposed laser based NDE will be applied and evaluated on stainless steel samples with laboratory grown SCC in a laboratory setup.

SECTION C. Environmental Aspects / Potential Sources of Impact

Chemical Use/Storage, Chemical Waste Disposal: Chemical waste could be generated during the composite patch development performed at SRNL. Chemicals will be used at SRNL in lab-scale quantities. SRNL procedures and safety analyses will be applied for chemical use and disposal of generated chemical waste.

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 activities to develop an engineered composite patch for spent fuel dry storage containers.

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) Yes No

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on 8/10/2020