

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Development and Experimental Validation of Pitting and SCC Models for Welded Stainless Steel Dry Storage Containers – University of Virginia and Sandia National Laboratory

SECTION B. Project Description

The University of Virginia, in collaboration with Sandia National Laboratory, proposes to develop and test a model for predicting the effects of coupled localized corrosion and stress-corrosion cracking (SCC) on the lifespan of welded stainless steel dry storage canisters (DSCs) under expected repository condition. The tasks associated with this project are (1) Define plausible extremes for corrosion scenarios; (2) Extend maximum pit size model to DSC-relevant conditions; (3) Generate da/dt vs. K relationships in DSC-relevant conditions; (4) Develop and evaluate prognosis approaches; and (5) Validate models. Existing testing equipment will be used.

SECTION C. Environmental Aspects / Potential Sources of Impact

Chemical Use/Storage, Chemical Waste Disposal, and Hazardous Waste Generation – The experiments make use of non-hazardous standard chemicals such as chloride salts and acidic solutions may be used to clean metal surfaces to characterize damage areas after testing. A few liters of waste solution might be generated. The activities fall within the scope of existing work at UVA and in the Sandia corrosion laboratory and will follow the procedures already in place under the UVA Office of Environmental Health and Safety, UVA laboratory protocols, Sandia standard operating procedures.

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 and test a model to quantify the risk of stress-corrosion cracking in dry storage canisters in a repository based on environmental factors.

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 07/29/2019