

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Structural Health Monitoring of Nuclear Spent Fuel Storage Facilities – University of South Carolina

SECTION B. Project Description

The University of South Carolina, in collaboration with Savannah River National Laboratory, proposes to develop a state-of-the-art nuclear structural health monitoring (N-SHM) system based on in-situ sensing technologies that monitors material degradation and aging for nuclear spent fuel dry cask storage system (DCSS) and similar structures. Work will include evaluating the sensors and sensing system under harsh nuclear environments to determine the effects of DCSS environments including high temperature and radiation.

SECTION C. Environmental Aspects / Potential Sources of Impact

Radioactive Material Use – This effort will utilize a fixed source Co-60 for irradiations at an already existing facility at Savannah River National Laboratory which is a partner and collaborator on this project. No radioactive waste will be generated as a result of this effort beyond that which the laboratory handles ordinarily since samples will only be exposed to the gamma-ray source. Incidental surveys will be conducted to confirm the absence of any radioactive materials contaminating the samples so exposed.

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 in-situ sensing technologies for nuclear spent fuel dry cask storage systems 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 11/19/2013