

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Imagining a Dry Storage Cask with Cosmic Ray Muons– Oregon State University

SECTION B. Project Description

Oregon State University will build a prototype system for monitoring spent nuclear fuel dry storage casks (DSCs) using cosmic ray muon imaging technique. Such a system will have the capability of verifying and measuring the content inside a DSC without opening it. This proposal has six major tasks: i) a literature survey on the current state-of-knowledge related to muon imaging, ii) design of a prototype that could be implemented on a cask currently in storage at an ISFSI, iii) Monte Carlo simulation to evaluate the performance of the prototype design, iv) systematic study and optimization of image reconstruction techniques, v) experimental study with a scaled version in the laboratory, and vi) final field trials at the national laboratory partner's facility.

SECTION C. Environmental Aspects / Potential Sources of Impact

The action will not create additional environmental impacts above those already occurring at the university. Work will be performed in the Radiation Center of Oregon State University. Radioactive sources will be used and all activities will follow existing rules and regulations set by OSU Radiation Safety Department and NRC.

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 conducting university laboratory scale research.

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 08/12/2014