

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Measurements of Fission Gas Release from Nuclear Fuel in Support of BISON Fuel Performance Analysis – North Carolina State University

SECTION B. Project Description

North Carolina State University proposes to investigate the fission gas (xenon and krypton) release phenomenon in nuclear fuel. A fuel irradiation and gas release loop that has been designed for implementation at the university reactor will be used to conduct gas release experiments. Uranium dioxide (UO₂) and uranium silicide (U₃Si₂) fuel samples will be characterized and supplied by a national laboratory to the university.

SECTION C. Environmental Aspects / Potential Sources of Impact

Radioactive Material Use /Radioactive Waste Generation – During installation and testing, the project involves irradiations that will be conducted at the North Carolina State University PULSTAR research reactor. The irradiations will produce minor amounts of radioactive material that will be handled and disposed of according to the established procedures at the reactor.

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 aimed at investigating fission gas release in nuclear fuel.

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 08/25/2015