

# DOE-ID NEPA CX DETERMINATION

**SECTION A. Project Title: Demonstration of Self-Powered Neutron Detectors Performance and Reliability – Idaho National Laboratory**

**SECTION B. Project Description**

Idaho National Laboratory (INL) proposes to demonstrate by in-pile testing in a high-power test reactor, the operation and reliability of self-powered neutron detectors (SPNDs). INL will fabricate micro-pocket fission detectors (MPFDs) that will be supplied with the SPNDs to the Massachusetts Institute of Technology's Nuclear Reactor Laboratory (MIT-NRL) to be incorporated into a test rig with a passive dosimetry package designed by MIT-NRL staff. The test rigs will be irradiated for 1-2 cycles with one control set of detectors (SPND/MPFD/passive detector) tuned to a fast neutron spectrum and another control tuned to a thermal spectrum. The results for each control set will be internally compared to verify response.

**SECTION C. Environmental Aspects / Potential Sources of Impact**

Air Emissions – This project will procure several Self-Powered Neutron Detectors and give them a functional test in a furnace prior to supplying them to the institution conducting the irradiation test (MIT reactor laboratory). This heating test will be in a furnace purged with inert gas (typically argon), so there will be a small quantity of inert gas discharged to the environment (<30 kg).

**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 an investigation into performance and reliability of self-powered neutron detectors.

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 8/3/2020