

SECTION A. Project Title: Documenting the Unique Physics Properties of the UNM AGN-201M Reactor – University of New Mexico**SECTION B. Project Description**

The University of New Mexico (UN) proposes to enhance the coverage of the ICSBEP and IRPhEP benchmark libraries by developing a benchmark evaluation for the UNM AGN-201M reactor. If successful, this work will result in a new benchmark evaluation with unique reactor physics properties that is useful for validating modeling and simulation tools for advanced reactor concepts and advanced fuel production facilities. Specific aims of this work include: 1. Understanding how low-dominance ratio, HALEU-fueled systems can address gaps in the existing validation benchmark libraries; 2. Understanding the impact of uncertainty in graphite thermal scattering cross sections on graphite-moderated reactor concepts; and 3. To better understand the impact of nuclear data uncertainty on TRISO-fueled advanced reactor concepts and in TRISO fuel production facilities. Developing a benchmark evaluation for the AGN-201M reactor is likely to provide significant value for modeling and simulation code validation. Documenting the AGN-201M reactor and its extremely small dominance ratio will expand the coverage of the ICSBEP/IRPhEP libraries to a presently undocumented region of reactor physics.

SECTION C. Environmental Aspects / Potential Sources of Impact

This work will involve disassembling the UNM AGN-201M reactor to take a small number of measurements on the reactor core's dimensions. Radioactive waste generated will be limited to PPE, temporary anti-contamination surface coverings, and wipe tests that are part of the contamination control protocol for fuel handling. This waste already has a disposal pathway at UNM.

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). For purposes of this category, "demonstration actions" means actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment. Demonstration actions frequently follow research and development and pilot projects that are directed at establishing proof of concept.

Justification: The activity consists of an investigation to develop a benchmark evaluation that provides additional information to apply in the validation of graphite thermal scattering law data, HALEU fuel, polyethylene scattering law data, and TRISO-fueled reactor concepts, further reducing uncertainties in modeling safe operations in TRISO fuel production facilities.

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) Yes No

Approved by Jason Anderson, DOE-ID NEPA Compliance Officer, on 09/17/2021.