# DOE-ID NEPA CX DETERMINATION



CX Posting No.: DOE-ID-21-016

**SECTION A. Project Title: CSU Accurate Neutron Dosimetry Research and Teaching Infrastructure – Colorado State University**

**SECTION B. Project Description**

Colorado State University (CSU) proposes to procure a new and well-characterized set of neutron detectors (Bonner Spheres) to provide additional neutron detection capacity and neutron spectroscopy capabilities. These will be incorporated in existing laboratory courses and student research projects and will be supplemented by novel computational tools for neutron field evaluation and neutron dosimetry. CSU will supplement existing facilities and equipment by a new set of well-characterized Bonner Spheres and the ATTILA4MC computer code. The former will be used for neutron spectroscopy measurements, with properly determined and evaluated response functions to allow for the deconvolution of the measurement results into the neutron spectrum. The latter provides special field and dosimetry visualization tools and variance reductions methods through its intrinsic deterministic Boltzmann Equation solver as well as for MCNP-generated field and dosimetry results. The proposed project will enhance CSU's understanding of its neutron irradiation facilities' neutron fields, the spectral distribution of neutrons, and the dose rates. The proposed project is designed to benefit the education and training of health physics graduate students. Upon graduation, these students will enter the workforce equipped with knowledge and skills which will allow them to participate in the design, testing, and operation of novel nuclear technologies. The health physics program at CSU supplies experienced graduates to DOE's Nuclear Science User Facilities (NSUF) facilities and the DOE Complex.

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

This proposed project will utilize radiological / neutron at the CSU Irradiation Services Laboratory for calibration and measurement / benchmarking. The university has procedures in place to handle any waste that will be generated through this project. The action would not create additional environmental impacts above those already occurring at the university.

**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: B1.31 Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts.

Justification: The activity consists of procuring and utilizing equipment to accurately measure and model neutron fields and educating students on neutron interactions, spectrometry, and dosimetry.

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 07/23/2021.