

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Development of Nuclear Grade Nanoparticle Ink Synthesis Capabilities for Advanced Manufacturing of Nuclear Sensors – Boise State University

SECTION B. Project Description

Boise State University proposes to establish a unique capability within the National Science User Facility (NSUF) framework to produce nanoparticle based nuclear grade inks compatible with a variety of additive manufacturing equipment. In order to establish the capability, Boise State will purchase a ball mill, glove box, probe tip sonicator, ultracentrifuge, and lyophilizer.

SECTION C. Environmental Aspects / Potential Sources of Impact

Chemical Use/Storage / Chemical Waste Disposal – The proposed infrastructure upgrades will enable a new line of research in nuclear grade nanoparticle ink development. The enabled research will result in increased chemical use and storage as well as chemical waste disposal. The nature of the chemicals used in ink synthesis may vary. In general, solvents such as acetone, isopropanol, and methanol are commonly used. Additional solvents such as cyclohexanone and terpineol are used to tune suspend nanoparticles in solutions compatible with additive manufacturing technologies. Current total chemical use related to ink synthesis is approximately 2 gallons/year. Chemical waste produced is approximately 1.5 gallons/year. Boise State University’s Environmental Health, Safety, and Sustainability (EHS) office maintains a rigorous chemical safety program. Part of the campus EHS office’s chemical safety program includes dealing with chemical waste disposal.

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 purchasing and installing equipment for teaching and research purposes.

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 4/6/2017