

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: A Customized Creep Frame to Enable High-Throughput Characterization of Creep Mechanism Maps – Utah State University

SECTION B. Project Description

Utah State University proposes to acquire a modified creep frame which features environmental chambers with windows to perform camera-based strain measurements on nuclear materials under sustained loads at elevated temperatures. The proposed system, combined with existing thermomechanical measurement systems, will expand the University's nuclear materials research capabilities. Using a camera-based system will not influence the system under observation, are able to record the full field of deformation, can be adapted to any scenario, and are able to measure harsh testing environments through protective windows. The proposed system will be used to 1) Measure long-term creep performance of key nuclear structural materials in current reactors for the Light Water Reactor Sustainability (LWRS) program, 2) Identify and characterize candidate materials under relevant sustained creep loads and temperatures for next-generation reactors, and 3) Support experimental validation for computational efforts regarding creep of nuclear materials.

SECTION C. Environmental Aspects / Potential Sources of Impact

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 purchasing and installing equipment to expand nuclear materials research capabilities.

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 7/21/2020