

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Novel Miniature Creep Tester for Virgin and Neutron Irradiated Clad Alloys with Benchmarked Multiscale Modeling and Simulations – North Carolina State University

SECTION B. Project Description

North Carolina State University proposes to develop and demonstrate a novel miniature creep testing system for testing samples at multiple scales and configurations. The mini creep testers will be designed to work inside a scanning electron microscope to allow *in situ* loading tests. The tasks associated with this project are (1) Develop a novel miniature-specimen creep test system; (2) Perform creep tests with the miniature tester and Perform limited conventional creep and load relaxation tests; (3) TEM/XRD examination on virgin/crept samples; (4) Mesoscale discrete dislocation dynamics simulations; and (5) Develop creep constitutive models to predict long-term response. Existing laboratory facilities will be used.

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 permitted 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: 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 university-scale research activities to develop a miniature creep testing system to allow analysis of small, irradiated samples.

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 08/12/2019