

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Study of intermetallic nanostructures for light-water reactor materials – Regents of the University of California

SECTION B. Project Description

This project will investigate if intermetallic coherent particles can be used to remove the radiation damage from the matrix in material to create a radiation tolerant structural material. It is the aim of this proposal to perform systematic experimental and computational investigations to understand the role of the interfaces and misfit strain fields induced by these particles on radiation damage, while understanding the precipitate formation mechanism under radiation on a fundamental level. The experimental work will be performed on a selected cobalt free intermetallic forming material which is commercially available.

SECTION C. Environmental Aspects / Potential Sources of Impact

Radioactive Material Use/Radioactive Waste Generation/Mixed Waste Generation – Reactor irradiated samples will be handled through the NSUF user program at INL, and all samples will be looked at through the ATR-NSUF program. Therefore, all national lab rules in respect to radioactive samples will be followed. Ion beam irradiated samples will be tested. Small amounts of short-lived isotopes can be produced. However, by the time the tests are conducted on the samples, all radioactive isotopes will be decayed. UC-Berkley has a site license to handle the material and subsequent waste stream. All material handled is standard procedure at UCB and proper documentation is in place.

Chemical Use/Storage/Chemical Waste Disposal/ Hazardous Waste Generation – UC-Berkley has a site license to handle the material and subsequent waste stream. All material handled is standard procedure at UCB and proper documentation is in place.

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 evaluating alloy materials irradiated with an ion accelerator or reactor for research purposes.

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

Approved by Jack Depperschmidt, DOE-ID NEPA Compliance Officer on 8/20/2012