

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Understand the Phase Transformation of Thermally Aged and Neutron Irradiated Duplex Stainless Steels Used in LWRs – University of Florida

SECTION B. Project Description

The University of Florida, in collaboration with Argonne National Laboratory (ANL), proposes to use the capability of the high energy X-ray MRCAT facility at ANL, including X-ray diffraction (XRD), Extended X-ray Absorption Fine Structure Spectroscopy (EXAFS) and in-situ tensile testing with wide angle X-ray scattering (WAXS) to probe the elemental segregation, phase precipitations, and lattice strain status under tensile load of different phases in selected cast austenitic stainless steels (CASS) and welds.

SECTION C. Environmental Aspects / Potential Sources of Impact

Radioactive Material Use – The samples of neutron irradiated duplex structure stainless steels (3 mm TEM disks) will be non-destructively studied using the X-ray beam at ANL. It is anticipated that no contaminants will be generated during this study and those pre-irradiated samples will be shipped back to IML lab at ANL for storage. The work on irradiated materials will follow the requirements implemented by ANL.

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 small-scale research and development aimed at investigating the structural evolutions of stainless steel under neutron irradiation conditions.

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

Approved by Jason Sturm, DOE-ID Deputy NEPA Compliance Officer on 07/25/2016