

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Corrosion Testing of New Alloys and Accompanying On-Line Redox Measurements in ORNL FLiNaK and FLiBe Molten Salt Flow Loops – Georgia Institute of Technology

SECTION B. Project Description

Georgia Tech, in collaboration with Oak Ridge National Laboratory (ORNL), proposes to conduct corrosion tests in the existing FLiNaK salt loop and new FLiBe salt loop. The main objectives of this project are to: (1) Generate fundamental corrosion data for commercially available low chromium alloys as well as for the new alloys, developed at ORNL, for the fluoride salt-cooled high-temperature reactor (FHR) applications, in FLiNaK and FLiBe under flow conditions; and (2) Develop robust and stable reference electrodes for the two molten fluoride salt flow loops to measure the reduction-oxidation (redox) potential in molten salts and correlate it to the corrosion behavior of selected alloys in respective environments.

SECTION C. Environmental Aspects / Potential Sources of Impact

Chemical Use/Storage/Waste Disposal – Chemicals used in this project include sodium fluoride, lithium fluoride, and potassium fluorides in small quantities (~100 grams/test). The university’s ES&H department has procedures in place for safe disposal of chemicals that will be followed throughout this project. Tests conducted at ORNL will not generate any project-specific chemical waste. Proper procedures are in place at ORNL to handle molten fluoride salts in their test loops.

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: This activity consists of university-scale research activities aimed at generating corrosion data for low chromium alloys developed for high-temperature reactor applications.

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 08/02/2018