

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: – Development and Optimization of Voltammetric Methods for Real Time Analysis of Electrorefiner Salt with High Concentrations of Actinides and Fission Products – University of Utah

SECTION B. Project Description

The University of Utah proposes to develop a robust, accurate method for measuring key component concentrations in molten LiCl-KCl that can readily be implemented into real-time process monitoring systems. This will be accomplished by utilizing fundamental electrochemical modeling in unison with experimental studies.

SECTION C. Environmental Aspects / Potential Sources of Impact

Radioactive material use includes depleted or natural uranium in the form of anhydrous UCl_3 dissolved in fused LiCl-KCl eutectic salt. Quantity to be used for the entire project is nominally < 200 grams. This material will be used inside of radiological material-approved glove boxes. Radioactive waste generation includes crucibles containing up to about 5 grams of UCl_3 (depleted or natural uranium) mixed with LiCl-KCl and other non-radioactive chloride salts. No more than 2 such crucibles will be generated as waste each week, and they will be disposed of as low level radioactive waste in accordance with university radiological material procedure. Other chemicals to be used include non-radioactive, non-hazardous chloride salts. Non-radiological waste disposal will be handled according to university policy and will not exceed approximately 100 grams per week. The only hazardous waste will be the salts and other materials that are contaminated with the above-mentioned natural or depleted uranium.

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 aimed at developing component concentrations in molten LiCl-KCl.

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 09/09/2014