

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Effects of Metallic Li on the Behavior of Metals and Alloys in Molten Salts – The University of Nevada Reno

SECTION B. Project Description

The University of Nevada Reno proposes to understand how the presence of Li^0 in molten $\text{LiCl-Li}_2\text{O}$ affects the degradation of two classes of alloys by correlating their accelerated and long-term electrochemical behavior to the surface chemistry of the alloys and the chemistry of the electrolyte. Electrochemical studies, including cyclic voltammetry, potentiodynamic polarization, and electrochemical impedance, will be conducted on select alloys in molten $\text{LiCl-Li}_2\text{O} - \text{Li}^0$ electrolyte, with varying Li_2O and Li^0 concentrations. Following these experiments, the surface chemistry of the material will be studied using advanced surface characterization techniques to understand the nature of the films formed on the material surface.

SECTION C. Environmental Aspects / Potential Sources of Impact

Chemical Use/Storage / Chemical Waste Disposal – Small quantities of Li containing salts such as LiCl and Li_2O will be generated. Quantities will amount to approximately 50 grams per experiment. All these materials will be kept and used in an anoxic glovebox with double door. The waste will be disposed by UNR's EH&S division. Alloys with surfaces containing these chemicals will be rinsed and disposed as solid waste. Rinse water will be disposed as liquid waste.

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 investigating the performance of alloys in molten $\text{LiCl-Li}_2\text{O} - \text{Li}^0$ electrolyte.

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 09/16/2014