

DOE-ID NEPA CX DETERMINATION

Idaho National Laboratory

SECTION A. Project Title: Thermophysical Property Measurements on Pu-Bearing Salt at FMF for Molten Salt Reactor Campaign

SECTION B. Project Description and Purpose:

As part of the Molten Salt Reactor (MSR) campaign, INL will perform thermophysical property measurements on Pu-bearing salt in the molten phase. The MSR campaign is a multi-laboratory working group led by Pacific Northwest National Laboratory focusing on research needs for development and deployment of commercial molten salt reactors. The MSR campaign is part of the Advanced Reactor Technologies (ART) Program. This activity will be funded by the ART Program.

Work will be performed at the Materials and Fuel Complex (MFC) in the MFC-704, Fuel Manufacturing Facility (FMF), and MFC-752, Analytical Laboratory (AL), with equipment that is already deployed in those facilities (e.g., furnace, differential scanning calorimeter, balance). Specifically, the work will be conducted in the Advanced Fuel-Cycle Initiative (AFCI) glove box in FMF and the Fresh Fuels Glovebox in AL. The purpose of the activity is to understand the thermophysical properties of molten salts. For this activity, INL will use PuCl₃ and NaCl salts as the starting material that will be blended together at the appropriate compositions for characterization and thermophysical property determination. The salts are currently in FMF. The project will generate less than 100 g of Pu-bearing salt waste.

SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions

This project could result in an increase in radioactive and toxic air pollutant emissions from the FMF stack. The FMF suspect exhaust system is equipped with filtration and monitoring systems to limit the release of these materials to the atmosphere. An APAD may be required to establish whether or not PER-152 will need to be modified.

Discharging to Surface-, Storm-, or Ground Water

N/A

Disturbing Cultural or Biological Resources

N/A

Generating and Managing Waste

The project will generate radioactive waste with Pu-bearing salt. The final waste form or final waste package may not be TRU waste.

Releasing Contaminants

When chemicals are used, there is the potential the chemicals could be spilled and become airborne.

Using, Reusing, and Conserving Natural Resources

N/A

SECTION D. Determine Recommended Level of Environmental Review, Identify Reference(s), and State Justification: Identify the applicable categorical exclusion from 10 Code of Federal Regulation (CFR) 1021, Appendix B, give the appropriate justification, and the approval date.

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, or similar requirements of Department of Energy (DOE) or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment or facilities; (3) disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources (see 10 CFR 1021). In addition, no extraordinary circumstances related to the proposal exist that would affect the significance of the action. In addition, the action is not "connected" to other action actions (40 CFR 1508.25(a)(1)) and is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1608.27(b)(7)).

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References: 10 CFR 1021, Appendix B to subpart D, items B3.6, "Small-scale research and development, laboratory operations, and pilot projects"

Justification: B3.6 Small-scale research and development, laboratory operations, and pilot projects. 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 deployment.

ACQUIRING AND DISPOSITIONING CHEMICALS - For any proposed activity involving the purchase or acquisition of chemicals, contact the facility Chemical Coordinator to obtain approval of any new chemical before acquisition. All chemicals will be managed in accordance with laboratory procedures. When dispositioning surplus chemicals, contact the facility Chemical Coordinator for disposition instructions.

WASTE GENERATION - For any proposed activity that involves waste generation, all waste generated would be managed in accordance with laboratory procedures. Pollution prevention/waste minimization would be implemented where economically practicable to reduce the volume and/or toxicity of waste generated. All waste generated would be transferred to WGS for appropriate disposition. All waste generated from an activity will have an identified disposition path prior to it being generated.

SPIILLS AND RELEASES - Although not anticipated, there is a potential for spills when using chemicals. In the event of a spill, notify the facility Environmental Staff. If Environmental Staff cannot be contacted, report the release to the Spill Notification Team (208-241-6400). Clean up the spill and turn over spill cleanup materials to WGS.

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

Approved by Jason L. Anderson, DOE-ID NEPA Compliance Officer on: 11/09/2021