

DOE-ID NEPA CX DETERMINATION

Idaho National Laboratory

SECTION A. Project Title: Fuel Cycle Laboratory Glove Box in Fuel Conditioning Facility (FCF)

SECTION B. Project Description and Purpose:

In order to establish a Fuel Cycle Laboratory in the Fuel Conditioning Facility (FCF), a 22 foot long glove box will be installed in Room 26. The three-section glove box is manufactured by MBraun Corporation and includes an atmosphere regeneration bed. Three pieces of equipment will be installed in the glove box to provide the capability for molten-salt electrorefining development, vacuum distillation, and fuel casting. The three pieces of equipment are a prototype electrorefiner, a distillation furnace, and a casting development system. All three pieces of equipment include mobile cabinets for instrumentation and control which would be placed against the walls of Room 26 in convenient locations.

Test batches will consist of 1 - 10 kilograms (kg) of natural uranium. The glove box could contain several tens of kilograms of depleted uranium at any particular time.

The prototype electrorefiner can accommodate up to tens of kilograms of natural uranium; however, batches of approximately 2 kg would be the norm. The casting development system is currently capable of approximately 2 kg castings; a planned upgrade will increase that capability to 5 kg of natural uranium.

The Fuel Cycle Laboratory will utilize depleted or natural uranium in the form of metal (primarily) as well as oxide or chloride. The crucible in the prototype electrorefiner will contain 10 -12 kg of molten LiCl-KCl salt; that could increase to approximately 65 kg of salt when a larger crucible insert is potentially installed at a future date. No increase in waste generation is expected when the larger crucible is installed. Casting development will primarily be performed with uranium but some experiments could include castings with zirconium, molybdenum, and/or small quantities of rare earth metals. Total metal mass could be as high as 5 kg.

The glove box will exhaust to the FCF Air Cell Exhaust System. Penetrations will be made in the floor of room 26 in order to connect the glove box to the FCF Air Cell Exhaust System, the FCF argon supply system, and the 480V electrical supply system in the basement of FCF (rooms 126 and 129). The floor in room 26 is covered in tiles that may contain asbestos.

Projects using the Fuel Cycle Laboratory glovebox must have project specific ECs.

SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions

The project has the potential to increase the amount of radioactive air emissions from FCF.

Installation of the glovebox will involve cutting and removing some of the tiles in Room 26; these tiles may contain asbestos. The FCF Air Cell Exhaust System ducting may contain asbestos and some of the piping in the immediate area of the work is covered in asbestos containing insulation.

Disturbing Cultural or Biological Resources

MFC-765 is eligible for nomination to the National Register of Historic Places and is considered a Category 2 historic property. Removal of and/or changes to original features may adversely impact this historic property. However, the glovebox installation activities as described are exempt and may proceed as described without further cultural resource review. The described project activities fall under exemptions 6 (safety systems), and 8 (internal reconfiguration of active laboratories) listed in Table 2 (Idaho National Laboratory Cultural Resource Management Office. Idaho National Laboratory Cultural Resource Management Plan. DOE/ID10997, revision 6, Idaho Falls, Idaho: U.S. Department of Energy, Idaho Operations Office, 2016. pg 51).

Generating and Managing Waste

Installation of the glovebox would generate waste such as asbestos floor tiles, pieces of pipe, and pieces of wall. In addition, suspect polychlorinated biphenyls (PCBs) in paint could result in generation of PCB waste.

Project activities will take place in a Radiological Buffer Area (RBA)/Radioactive Management Area (RMA), therefore all waste may be characterized as radioactive. Radioactive waste would consist mainly of sample equipment, used personal protective equipment (PPE), high-efficiency particulate air (HEPA) filters, metal and ceramic debris, and lithium chloride (at project completion). Project activities are expected to generate the types and volumes of radioactive waste:

- contact-handled low level waste (CH-LLW)--5 ft³ per year
- contact-handled mixed low level waste (CH-MLLW)--1 ft³ per year

The project will not generate transuranic (TRU) waste or remote handled waste.

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Releasing Contaminants

Typical construction chemicals such as lubricants, paints, adhesives, etc., will be used during the project.

Using, Reusing, and Conserving Natural Resources

All materials would be reused and/or recycled where economically practicable. All applicable waste would be diverted from disposal where conditions allow.

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)).

References: National Environmental Policy Act (NEPA) Implementing Procedures, Final Rule, 10 CFR 1021, Appendix B to Subpart D, Categorical Exclusion B1.31 "Installation or relocation of machinery and equipment."

Justification: The proposed activities are consistent with CX B1.31 "Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts."

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

Approved by Jason Sturm for Jack Depperschmidt, DOE-ID NEPA Compliance Officer on: 5/25/2016