

# DOE-ID NEPA CX DETERMINATION

## Idaho National Laboratory

### SECTION A. Project Title: High Density Fuel Material for Light Water Reactors (LWRs)

### SECTION B. Project Description

This project proposes to install glove boxes, laboratory equipment and laboratory hoods in the east wing of the Experimental Fuels Facility (EFF), building 794, at the Materials and Fuels Complex (MFC) at the Idaho National Laboratory (INL). The building was previously known as the Contaminated Equipment Storage Building (CESB). The purpose of this project is to support a high density fuel material development activity for LWRs. The proposed action transfers process equipment from the Idaho Nuclear Technology and Engineering Center (INTEC) Chemical Processing Plant (CPP)-1634 to EFF. Activities at CPP-1634 were approved in environmental checklist (EC) Idaho National Laboratory (INL)-10-062 (OA 12). The EFF was modified to house and support scientific research and development related to fuel fabrication in EC INL-10-074 (OA 12), and the proposed action is consistent with the general mission of the EFF.

The possible fuel materials include uranium oxide, uranium silicide, and uranium nitride. These materials would be processed in the gloveboxes, hoods and on the floor (with suitable enclosures as necessary and appropriate) using process equipment designed for modifying powder characteristics such as particle size, agglomeration size, green density and sinter density.

The scope of the activity for facility modification includes electrical to support the equipment, heating, ventilating, and air conditioning (HVAC) for connection to high-efficiency particulate air (HEPA) filtration/suspect exhaust, equipment transfer and installation, hood installation, and glovebox installation. Some process equipment would be separately enclosed and vented to the suspect exhaust/HEPA filtration system. In addition to process equipment, instruments such as scales, balances, a moisture analyzer, and a NOVA BET Analyzer would be installed for characterizing the feedstock and product materials from the process equipment.

The transfers of equipment and setup of the glovebox and hoods are projected to begin in December 2012 and conclude for the most part in fiscal year (FY) 2013. A fraction of the equipment installation would likely occur in FY 2014. The budget for modifications and producing a first batch of high density fuel is approximately \$1,000,000.

Process equipment to be used in this facility will include a sonic sifter, Turbula mixer, Vee-blender, roll compactor, granulator, Caleva spheroidizer, wire saw, hand press, auto tap (vibrator), planetary ball mill, dry-bag isostatic press, several furnaces, sedigraph (for particle size distribution), particle surface area analyzer, small lathe and a welder. Work performed under separate laboratory instructions will require separate environmental checklists.

### SECTION C. Environmental Aspects or Potential Sources of Impact:

**Air Emissions:** Air Emissions would include minor amounts of radionuclides and toxic air pollutants. A new Air Permit Applicability Determination (APAD) would be generated to cover all emissions from MFC-794. The previous APAD (INL-10-015) would be canceled.

**Generating and Managing Waste:** Hazardous/Radioactive Material or Waste Handling and Transportation: Project personnel would work with Waste Generator Services (WGS) to properly package and transport regulated, hazardous or radioactive material or waste according to laboratory procedures. Low-Level Waste Generation: Personal Protective Equipment (PPE) and towels used for cleaning and polishing are estimated at ~2 ft<sup>3</sup> per week. Industrial Waste Generation and Management: Project activities would likely result in the generation of small amounts of industrial waste. Project personnel would work with WGS to characterize and properly dispose of all waste.

**Releasing Contaminants:** All chemicals utilized by the project would be managed in accordance with laboratory procedures.

**Using, Reusing, and Conserving Natural Resources:** All materials would be reused and recycled where economically practicable. All applicable waste would be diverted from disposal in the landfill where conditions allow.

**SECTION D. Determine the Recommended Level of Environmental Review (or Documentation) and Reference(s):** Identify applicable categorical exclusion from 10 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 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 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 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:** 10 CFR 1021, Appendix B to Subpart D categorical exclusion B1.31 "Installation or relocation of machinery and equipment."

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**Justification:** The proposed action is consistent with 10 CFR 1021, Appendix B to Subpart D categorical exclusion B1.31 "Installation or relocation of machinery and equipment" which includes "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 or 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 Jack Depperschmidt, DOE-ID NEPA Compliance Officer on: 1/14/2013