DOE-ID NEPA CX DETERMINATION
IDAHO NATIONAL LABORATORY

CX Posting No.: DOE-ID-ICP-16-007

SECTION A. **Project Title: INTEC –** INTEC – Transfer ATR Fuel From Wet (CPP-666) to Dry (CPP-603) Irradiated Fuel Storage Facility Fuel Conditioning Station

SECTION B. Project Description

The purpose of this project is to transfer approximately 1,000 ATR fuel elements from wet fuel storage located at the CPP-666 Fuel Storage Area (FSA) at the Idaho Nuclear Technology and Engineering Center (INTEC) to the dry fuel storage located within CPP-603B, Irradiated Fuels Storage Facility (IFSF). The transfer from wet spent fuel storage to dry spent fuel storage will satisfy the October 16, 1995 Settlement Agreement terms and conditions between the State of Idaho, the Department of Energy, and the U.S. Navy. The 1995 Settlement Agreement requires that all spent fuel shall be transferred from wet storage facilities at the INL by December 31, 2023.

To support the transfer of spent fuel from wet storage to dry storage, the Fuel Conditioning Station (FCS) located in the CPP-603B Fuel Handling Cave (FHC) will be returned to service and undergo equipment upgrades. The FCS was installed in 1996 and was last used in 2010. The FCS currently consist of a heated vacuum drying system that includes a heating insert, thermocouples, vacuum lid assembly, vacuum pump, valves, purge air system, cooling air system, and an operator work station. The primary purpose of the FCS is to dry spent fuel previously stored underwater prior to placing the spent fuel into dry storage. The drying of the fuel elements increases the safety of the dry fuel storage configuration and increases long term safety by reducing the potential for corrosion in the fuel storage containers.

The ATR spent fuel transfer from wet storage to dry storage consists of loading eight ATR fuel elements stored at the FSA basin into a stainless steel bucket which is equipped with drain holes around the bottom to allow for excess pool water to drain from the bucket. A single bucket would be loaded into a high load charging (HLC) cask for transport to the CPP-603 facility using a diesel fueled straddle carrier. Once at CPP-603, the FCS would be loaded with two buckets (16 ATR fuel elements), where the fuel elements will be dried. During the drying evolution, the temperature of the fuel elements will not exceed 100 °C. Based on numerous analytical tests performed on the aluminum clad ATR fuel, fission products (include gaseous radionuclides) are not released from the fuel matrix until the temperature exceeds 500 °C. Therefore, the only radiological emissions from the drying process will be from residual pool water that will be evaporated from the buckets. Although the residual pool water will evaporate, the dissolved solids, including Cs-137, will remain due to low volatility of the dissolved solids at temperatures below 100 °C. The purge air system helps to prevent condensation in the offgas line. A small condensate tank is provided at the vacuum pump discharge to trap any condensate that may form. Dryness of the fuel elements is determined by plotting the decrease in pressure until a steady state is achieved for a predetermined period of time. This process is based on past experiences utilizing the FCS from 1996 through 2010.

The HLC cask consists of four major components: cask body, lid, lid hold-down bolts, drawer, and base. The body of the cask is a rectangular upright container with lead shielding. Physical transfer/transport of the fuel will include a transport trailer, mobile crane, straddle carrier, hoisting and rigging, and hand tools necessary to perform the activity. The HLC cask will be loaded at CPP-666 using an approved loading procedure.

Upgrades to the existing FCS may include the installation of a small commercial air compressor to supply purge air, upgrades to the software system, upgrades to system hardware controls, electrical reroutes, installation of new vacuum pumps, replacement of thermocouples, replacement of vacuum seals, etc., as deemed necessary. A new bucket design may be fabricated. The purpose of the new bucket design is to maximize the storage capacity for the IFSF Fuel Storage Canisters. All equipment and system replacements/upgrades are deemed equivalent for form, fit, and function of existing FCS components.

SECTION C. Environmental Aspects / Potential Sources of Impact

1. Air Pollutants – Project activities that may generate emissions include operations of the diesel fueled straddle carrier for transporting the High Load Cask from CPP-666 to CPP-603. Straddle carriers are exempted as mobile internal combustion engines per IDAPA 58.01.01.222.02.e.

Any offgas from the FCS is discharged through a roughing sintered metal filter located in the Crane Maintenance Area (CMA) which was designed to remove most radioactive particulates released (if any) during normal ATR fuel conditioning operations. The filtered offgas is then discharged to the CMA HVAC System. The CMA air flows into the FHC where exhaust ducts route the air for release through the CPP-2710 ventilation system which consists of a prefilter and two HEPA filters in series prior to discharging out the CPP-603 stack.

Radionuclide Emissions – Radiological emissions to the environment, including modification to and operation of the FCS will be exhausted out the existing point source CPP-603-001. Emissions will be determined for demonstrating compliance with the NESHAP Standard [see 40 CFR 61.93(a)] and submitted for reporting in the INL NESHAP Annual Report per 40 CFR 61.94.

2. Asbestos Emissions – Limited quantities of non-friable and friable asbestos-containing material (ACM) may be generated during the FCS building modifications. Submittal of internal notification is required prior to removal of ACM. Non–friable/non-radioactive ACM waste will be disposed of at the INL Landfill Complex and the radioactive friable or non-friable ACM waste will be disposed of at an approved offsite facility.

4. Chemical Use and Storage – Chemicals may include those to be used for various tasks, including decontamination, modifications and upgrades to the existing FCS system, and petroleum fuels used for transporting casks between CPP-666 and CPP-603. When feasible, project personnel will use non-hazardous chemical substitutes in the place of hazardous chemicals as long as the non-

hazardous substitutes meet the requirements/specifications of the requester. Spill prevention/minimization measures will be used during storage and use of chemicals.

9. Hazardous/Mixed Waste Generation and Management – Hazardous, mixed, and/or universal waste may be generated from project activities. Hazardous, mixed, and/or universal waste disposal will be conducted at an appropriate licensed disposal facility and in accordance with the disposal facility's waste acceptance criteria (WAC) through Waste Generator Services.

10. Hazardous/Rad. Material or Waste Handling and Trans. – As applicable, hazardous waste determinations will be performed on all generated waste to determine the appropriate management practices. Waste streams will be evaluated to determine if any of these materials can be recycled or reused and will be further evaluated to implement actions for minimizing waste generation. All radioactive waste handling and transportation will be managed in accordance with DOE Order O 435.1, Change 1, "Radioactive Waste Management".

11. Industrial Waste Generation and Management – Wastes generated from these activities will consist primarily of excess materials and wastes, including scrap materials such as scrap metal, wiring, and packaging. As applicable, materials that are not recycled will be managed as industrial waste and disposed of through Waste Generator Services at the INL Landfill Complex.

12. Interaction with Wildlife – Project personnel will take steps (e.g., installation of bird netting) to mitigate potential bird nesting in areas where nesting could be disturbed by project activities (e.g., covered door railings and porticos above doorways). Project personnel are not to disturb active bird nesting sites.

14. PCB Contamination – A small quantity of PCB-contaminated waste may be generated during building modifications (e.g., paint chips).

15. Radioactive Material Use and Storage – Fissile material is strictly controlled. Spent nuclear fuel movements will follow applicable DOE Orders, company procedures, and applicable Safety Analysis documents.

16. Radioactive Waste Generation and Management – Project activities will generate various types of low-level radioactive waste. LLW may include contaminated equipment, components (vacuum seals and oil), condensate, and building materials. Incidental LLW may include personal protective equipment. LLW will be managed through Waste Generator Services and will be disposed of and/or treated at a licensed off-site facility.

19. Work Within Areas Subject to Flooding - Buildings CPP-666 and CPP-603 are not within the mapped 100-year floodplain. However, the roadways that connect CPP-666 and CPP-603, including Ash Ave., Hickory Ave., Ponderosa Ave., Redwood St., Birch St., Maple St., and an unnamed road immediately east of CPP-666 are within the Big Lost River 100-year floodplain.

Fuel transfer activities that occur on these roadways may experience some 100-year flood related impacts. If the hypothetical 100-year flood were to occur during the work described in this EC, the potential exists for 100-year flood waters to come into contact with the fuel being transferred or the fuel transfer equipment on these roadways.

The work described in this EC is not expected to have a significant impact on the 100-year floodplain discussed above and the work is not expected to disrupt floodplain dimensions, elevations, flow volumes, or velocities of the Big Lost River or the INTEC watersheds. If the hypothetical flood occurs, access to the work areas may be temporarily interrupted. Work can resume after floodwaters subside as access allows.

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: Categorical Exclusion B2.5, Safety and environmental improvements of a facility, replacement/upgrade of facility components
Justification: The FCF upgrades will ensure the facility functions in a safe manner. The upgrades do not extend the life or the capacity of the FCF.

Transferring approximately 1,000 ATR fuel elements from wet fuel storage to the dry fuel storage is addressed and bounded in the DOE Programmatic Spent Nuclear Fuel Management and INEL Environmental Restoration and Waste Management Programs Environmental Impact Statement and Record of Decision approved June 1, 1995. In the Record of Decision, Appendix (page 43) it states "Idaho National Engineering Laboratory management efforts will be concentrated on placing spent fuel from aging facilities and

future spent fuel receipts into new dry fuel storage systems with parallel emphasis on qualifying the spent fuel forms to emerging repository acceptance criteria."

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 August 2, 2016.