SECTION A. Project Title: INTEC – Transfer ATR Fuel from Wet (CPP-666) to Dry (CPP-603) Phase II

SECTION B. Project Description

Approximately 1,000 ATR fuel elements will be transferred from wet fuel storage located at the CPP-666 Fuel Storage Area (FSA) to dry fuel storage located within CPP-603, 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. Both facilities are located at the Idaho Nuclear Technology and Engineering Center (INTEC).

Phase I addressed the process of transferring, drying and storing 192 of the 1000 ATR fuel elements from CPP-666 FSA into CPP-603 IFSF. Phase I is anticipated to be completed in June 2017. Phase II includes the transfer, drying and storing of the remaining 808 elements In addition, Phase II includes a change in the loading process and an increase in storage capacity due to a new canister configuration.

ATR spent fuel transfer from wet storage to dry storage consists of loading four 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. Two ATR buckets each containing 4 elements will be loaded into a high load charging (HLC) cask and transported to CPP-603. At CPP-603, the ATR drying buckets are taken to the Fuel Conditioning Station (FCS) located in CPP-603 Fuel Handling Cave (FHC). The primary purpose of the FCS is to dry spent fuel that was previously stored underwater. 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 FCS underwent equipment upgrades and was returned to service during Phase I; however, additional modifications may need to be made to support Phase II activities.

During the drying evolution in Phase II, four buckets (16 ATR fuel elements) will be dried. The dryness of the fuel elements is determined by plotting the decrease in pressure until a steady state is achieved for a period of time that is predetermined by operating procedures. After drying the four buckets, the 16 elements will be combined with eight existing elements already stored in an ATR 8 bucket in the IFSF. In the process a new canister storage configuration in IFSF will occur. The new canister configuration will increase the storage capacity of each cave well to 24 ATR fuel elements versus the previous 16 elements. The increase capacity in the IFSF will meet safety basis requirements.

The HLC cask consists of four major components: cask body, lid, lid hold-downs 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 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.

To prevent condensation in the off-gas line, a purge air system will be used. The purge air system consists of a small condensate tank at the vacuum pump discharge to trap any condensate that may form.

SECTION C. Environmental Aspects / Potential Sources of Impact

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

It is anticipated that the only radiological emissions will be from the drying process that evaporate residual pool water from the buckets. The temperature of the ATR fuel elements will not exceed 100°C. At this temperature, no fission products (including gaseous radionuclides) are released from the fuel matrix. Fission products are typically released when the temperature exceeds 500°C. Although the residual pool water will evaporate, the dissolved solids, including Cs-137, will remain low due to the volatility of the dissolved solids at temperatures below 100°C.

Any off-gas from the FCS is discharged through a roughing sintered metal filter located in the Crane Maintenance Area (CMA) which is designed to remove most radioactive particulates released (if any) during normal ATR fuel conditioning operations. The filtered off-gas 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 pre-filter 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. 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 any potential FCS building modifications if required during Phase II. 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 offside facility.

3. Radionuclide Release/Protection of the Public and the Environment – The wet to dry operation could release radionuclides to the environment however, the potential is very low. Releases would not exceed as low as reasonably achievable goals as the releases are far below applicable regulatory standards (e.g., NESHAPS) and satisfy the exemption criteria.

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. 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.

The generation 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

10. Material or Waste Handling and Transportation - 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, and “Radioactive Waste Management".

11. Interaction with Wildlife - Project personnel will take steps (e.g., installation of bird netting) to mitigate potential bird nesting 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 or bat roosting sites.

13. PCB Contamination - A small quantity of PCB-contaminated waste may be generated if building modifications (e.g., paint chips) are required. MCP-3480, Appendix C lists potential sources on Non-Liquid PCBs that may be present.

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

17. Work Within Areas Subject to Flooding - 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 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: B2.5, Safety and environmental improvements of a facility, replacement/upgrade of facility components

Justification: The potential FCS upgrades/modifications will ensure the facility functions in a safe manner. The upgrades do not extend the life or the capacity of the FCS. The action will not result in significant effect to the human environment.

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

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on August 1, 2017.