

DOE-ID NEPA CX DETERMINATION

Idaho National Laboratory

SECTION A. Project Title: ATR Canal RHLLW Cleanup Project

SECTION B. Project Description and Purpose:

The Advanced Test Reactor (ATR) at Idaho National Laboratory (INL) is a light-water moderated and cooled reactor designed for testing advanced nuclear fuel systems and materials. ATR supplies adjustable high neutron flux environments for irradiating experiments. A water-filled canal is located adjacent to the ATR, and INL uses the canal to handle casks, prepare test objects, perform gamma experiments, and store waste generated from reactor operations. The ATR mission requires canal storage space for spent fuel and CIC components. Waste items stored in the ATR canal include reactor core components, waste components from irradiation test experiments, and general canal debris (e.g., filters, hoses, tools, equipment, etc.). Some remote-handled (RH) waste items have been in canal storage since the first ATR core internal changeout (CIC) conducted in the 1970's. Highly irradiated metals generated during experiments or CIC operations makes up a large portion of waste stored in the canal. INL needs to develop a process for sizing, characterizing, packaging, and removing current and future irradiated hardware from the ATR canal to optimize use of space.

The proposed action develops and implements a method for addressing the accumulation of RH waste in the canal. The project develops the tools, equipment, and processes to package and remove RH low-level waste (RHLLW) from the canal and transport loaded waste containers to the INL RHLLW Disposal Facility for disposition. The proposed action targets RHLLW currently staged in the canal.

To accomplish this, INL must design, fabricate, test, and deploy major system components, including underwater waste sizing equipment, canal waste baskets (CWB) for preloading waste, canal waste canisters (CWC) for packaging waste, and a shielded transport container (STC) for safe transport of loaded CWCs. The waste packaging and shipping equipment needs to be compatible with both ATR and the RHLLW Disposal Facility. Other deliverables from this project include tools, processes, and equipment for operations to safely package RHLLW and prepare waste canisters for shipment to the RHLLW Facility for disposition.

The proposed scope includes engineering design, analyses, fabrication, and operational preparations for the STC and ancillary equipment. The design phase includes conceptual design, final design, and analyses to verify INL requirements are met prior to fabrication. Analyses include modeled accident scenarios such as drop, seismic, and thermal events. Subsequent to final design, the proposed action generates a fabrication specification and solicits competitive bids through the INL procurement system.

The proposed action requires two major engineering and fabrication activities--the CWC assemblies and the STC and ancillary equipment. A CWC assembly consists of an outer stainless steel body, a shield plug/lid combo, and an optional inner CWB for preloading waste. The ATR Fab shop fabricates CWBs on-site. INL designs the CWC to be fabricated by a subcontractor. A fabrication package for future procurements of CWCs is also a deliverable of the proposed action. In-house INL engineering or task-based subcontractors design and fabricate the STC and ancillary equipment. The proposed action includes the following:

- Preliminary and final design for tools, equipment, and system components
- Procurement of material, tools, and fabrication services
- Procedure and process development for waste handling operations
- Training, testing, and proficiency exercises for operational crews
- Equipment and process implementation at both ATR and the RHLLW Disposal Facility
- Initial waste sizing campaigns and complete disposal of one loaded CWC.

Loading and packaging waste subsequent to the first container is outside the scope of the proposed action and is part of ATR operations.

No fissile material will be stored in the WCs.

The environmental impacts of disposal of RHLLW generated at the ATR Complex, including "components stored in water-filled canals to allow radioactivity to decay" (pg. 2-1), at the INL Site RHLLW Disposal Facility have been analyzed in the final *Environmental Assessment for the Replacement Capability for Disposal of Remote-Handled Low-Level Radioactive Waste Generated at the Department of Energy's Idaho Site* (DOE/EA-1793, December 2011). The Department of Energy (DOE) issued a Finding of No Significant Impact (FONSI) for DOE/EA-1793 for construction and operation of the INL RHLLW Disposal Facility to meet the INL Site's disposal needs for up to 50 years.

SECTION C. Environmental Aspects or Potential Sources of Impact:

Generating and Managing Waste

Proposed activities transfer one loaded CWC of RHLLW from the ATR Canal to the RHLLW Disposal Facility and have the potential to generate industrial and LLW waste from the fabrication of tools and other equipment necessary to facilitate waste removal.

Releasing Contaminants

Activities addressed by this EC have the potential to release contaminants through the following:

DOE-ID NEPA CX DETERMINATION

Idaho National Laboratory

- Acquiring, using, storing and dispositioning chemicals
- Managing and dispositioning excess property and materials.

Using, Reusing, and Conserving Natural Resources

Activities addressed by this EC have the potential for use, reuse and conservation of natural resources related to the following:

- Building energy use
- Engaging in sustainable acquisition practices.

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: 10 CFR 1021, Appendix B to Subpart D, items B2.4 "Equipment qualification" and B6.1 "Cleanup actions"

Final Environmental Assessment and Finding of No Significant Impact for the Replacement Capability for Disposal of Remote-Handled Low-Level Radioactive Waste Generated at the Department of Energy's Idaho Site (DOE/EA-1793, December 2011)

Justification: Project activities in this Environmental Checklist (EC) are consistent with 10 CFR 1021, Appendix B to Subpart D, Categorical Exclusions B2.4, "Activities undertaken to (1) qualify equipment for use or improve systems reliability or (2) augment information on safety-related system components. These activities include, but are not limited to, transportation container qualification testing, crane and lift-gear certification or recertification testing, high efficiency particulate air filter testing and certification, stress tests (such as "burn-in" testing of electrical components and leak testing), and calibration of sensors or diagnostic equipment.;" and

B6.1, "Small-scale, short-term cleanup actions, under RCRA, Atomic Energy Act, or other authorities, less than approximately 10 million dollars in cost (in 2011 dollars), to reduce risk to human health or the environment from the release or threat of release of a hazardous substance other than high-level radioactive waste and spent nuclear fuel, including treatment (such as incineration, encapsulation, physical or chemical separation, and compaction), recovery, storage, or disposal of wastes at existing facilities currently handling the type of waste involved in the action. These actions include, but are not limited to:

- a) Excavation or consolidation of contaminated soils or materials from drainage channels, retention basins, ponds, and spill areas that are not receiving contaminated surface water or wastewater, if surface water or groundwater would not collect and if such actions would reduce the spread of, or direct contact with, the contamination;
- b) Removal of bulk containers (such as drums and barrels) that contain or may contain hazardous substances, pollutants, contaminants, CERCLA-excluded petroleum or natural gas products, or hazardous wastes (designated in 40 CFR part 261 or applicable state requirements), if such actions would reduce the likelihood of spillage, leakage, fire, explosion, or exposure to humans, animals, or the food chain;
- c) Removal of an underground storage tank including its associated piping and underlying containment systems in accordance with applicable requirements (such as RCRA, subtitle I; 40 CFR part 265, subpart J; and 40 CFR part 280, subparts F and G) if such action would reduce the likelihood of spillage, leakage, or the spread of, or direct contact with, contamination;
- d) Repair or replacement of leaking containers;
- e) Capping or other containment of contaminated soils or sludges if the capping or containment would not unduly limit future groundwater remediation and if needed to reduce migration of hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products into soil, groundwater, surface water, or air;
- f) Drainage or closing of man-made surface impoundments if needed to maintain the integrity of the structures;
- g) Confinement or perimeter protection using dikes, trenches, ditches, or diversions, or installing underground barriers, if needed to reduce the spread of, or direct contact with, the contamination;
- h) Stabilization, but not expansion, of berms, dikes, impoundments, or caps if needed to maintain integrity of the structures;
- i) Drainage controls (such as run-off or run-on diversion) if needed to reduce offsite migration of hazardous substances, pollutants, contaminants, or CERCLA excluded petroleum or natural gas products or to prevent precipitation or run-off from other sources from entering the release area from other areas;
- j) Segregation of wastes that may react with one another or form a mixture that could result in adverse environmental impacts;
- k) Use of chemicals and other materials to neutralize the pH of wastes;

DOE-ID NEPA CX DETERMINATION
Idaho National Laboratory

- l) Use of chemicals and other materials to retard the spread of the release or to mitigate its effects if the use of such chemicals would reduce the spread of, or direct contact with, the contamination;
- m) Installation and operation of gas ventilation systems in soil to remove methane or petroleum vapors without any toxic or radioactive co-contaminants if appropriate filtration or gas treatment is in place;
- n) Installation of fences, warning signs, or other security or site control precautions if humans or animals have access to the release; and
- o) Provision of an alternative water supply that would not create new water sources if necessary immediately to reduce exposure to contaminated household or industrial use water and continuing until such time as local authorities can satisfy the need for a permanent remedy."

On-Site disposal of RHLLW was analyzed in the Final Environmental Assessment for the Replacement Capability for Disposal of Remote-Handled Low-Level Radioactive Waste Generated at the Department of Energy's Idaho Site (DOE/EA-1793, 2011).

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: 1/16/2019