

DOE-ID NEPA CX DETERMINATION

Idaho National Laboratory

SECTION A. Project Title: Radiological Source Disposition Program – Mobile Hot Cell (INL-19-056 R3)

SECTION B. Project Description and Purpose:

Revision 3

Updated Project Title to include Mobile Hot Cell (MHC).

This revision deals with the addition of project scope to fabricate, test, and deploy a full-scale prototype of the Mobile Hot Cell. The current Mockup of the Mobile Hot Cell has provided valuable information concerning all aspects of the design of the prototype which has been integrated into the design of the MHC Prototype.

This prototype will likely be located at a desert location to be determined later. The Mockup will be located at the Lindsay Blvd. Facility and will be operated with surrogate materials to better develop the processes and equipment needed for the Prototype. The MHC Mockup will not have any active radiological sources at Lindsay Blvd. Only surrogate sources will be used for mockup and demonstration.

The MHC will be used to safely manipulate, inspect, and condition large sources of radioactive material for safe shipment to an approved storage or disposal site. The process of conditioning a source includes mechanical disassembly of the original radioactive device and removal of the sealed source from the device source holder. The conditioning process may include cutting, grinding, drilling, and use of specialized tooling. After disassembly, the sealed source is encapsulated in a stainless-steel Standard Forms Capsule, the endcap of which is secured via welding. The welding process is autogenous GTAW or performed without the addition of filler materials.

Testing and validation using radioactive sources will only be conducted after the MHC is deployed to a desert location, the DOE Standard 1189 process (Integration of Safety in the Design Process) is complete, an NRC Service Provider License is acquired, and work control and test plans are approved.

The Prototype testing and operation will require the use of a portable diesel generator (Multi Quip DCA20SPXU4F) and possibly the use of generator powered lights, which will not be purchased for a few years, but the specs will be used as design basis. The generator is 40 hp and will fall under the APAD 01-83 R1 for mobile sources less than 294 hp.

Revision 2

This revision deals with the addition of project scope to construct and test a mobile hot cell (MHC) to be used in the end-of-life management of radioactive sources.

The MHC will be used to safely manipulate, inspect, and condition large sources of radioactive material for safe shipment to an approved storage or disposal site. The process of conditioning a source includes mechanical disassembly of the original radioactive device and removal of the sealed source from the device source drawer. The conditioning process may include cutting, grinding, drilling, use of specialized tooling. After disassembly, the sealed source is encapsulated in a stainless-steel Standard Forms Capsule, the end cap of which is secure via welding. The welding process is autogenous or performed without the addition of filler materials.

Testing and validation of the MHC conditioning and encapsulation processes will be conducted in the INL Research Center (IRC) Labs C-9 and C-17 and also in the high bay of the System Integration Research & Engineering (SIRE) building. Testing and validation using radioactive sources will only be conducted after completing the DOE Standard 1189 process (Integration of Safety in the Design Process) and under approved work control.

Revision 1

The purpose of this revision is to add international scope for the Idaho National Laboratory (INL) Radiological Source Disposition Project funded by the National Nuclear Security Administration's (NNSA) Office of Radiological Security (ORS). ORS focuses its resources on the security of sources including cesium-137, cobalt-60, americium-241, and iridium-192.

INL works with countries and international organizations to identify, secure, remove and facilitate the disposition of high-risk radiological materials that pose a threat to national and international security, public health, and safety. This project recovers disused and unwanted radiological sources from sites throughout more than 80 countries. The scope, work activities, and environmental aspect from the original EC remain the same.

Original EC

The Idaho National Laboratory (INL) Radiological Source Disposition Project is funded by the National Nuclear Security Administration's (NNSA) Office of Radiological Security (ORS). This project recovers disused and unwanted radiological sources from sites throughout the United States. This operation is part of NNSA's broad strategy to keep dangerous nuclear and radiological material safe and secure.

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The INL works in partnership with Los Alamos National Laboratory's (LANL's) Off-site Source Recovery Project to identify, recover, and dispose disused and unwanted radiological sources throughout the United States. These radiological source materials are limited to cesium-137 (Cs-137), Cobalt-60 (Co-60), Nickel-63 (Ni-63), and Strontium-90 (Sr-90). Working in partnership with radiological source owners and state and local regulators, the INL team removes and transports the material to a secure location then prepares it for disposal at a federal low-level waste (LLW) disposal facility, or INL transports the material directly to a LLW disposal facility. Commercial origin sources to which DOE takes title predominate the recovered sources.

Source recoveries occur at various off-site facilities, including hospitals, universities, blood centers, and other commercial and government facilities. An INL or LANL contractor prepares source-containing devices and removes the device from the owner's or custodian's facility. INL personnel then package the device for transport in a Department of Transportation approved type-B package (either an EnergySolutions model 10-160B or Areva model 435-B shipping cask). After INL personnel complete a pre-shipment leak test, the owner or custodian relinquishes ownership and custody of the sealed source(s) to DOE/NNSA. An INL subcontractor transports packages to an interim storage facility at Southwest Research Institute or to a DOE disposal site. The project recovers about 40 sources per year from various locations in the U.S.

Source disposals occur less frequently than recoveries and involve packaging consolidated sources at the interim storage and consolidation facility (Southwest Research Institute) and shipment to the Nevada National Security Site for disposal. INL personnel load and ship consolidated sources in either a 10-160B or 435-B packages. The procedures for loading and shipping consolidated sources are the same for loading and shipping recovered sources.

In addition to source recoveries, the program performs research and development for source recovery technologies, such as robotics development and testing.

The environmental impacts of transferring LLW, including from the Source Recovery Project, to the Nevada National Security Site were analyzed in the Final Site-Wide Environmental Impact Statement for the Continued Operation of the Nevada National Security Site and Off-Site Locations in the State of Nevada (DOE/EIS-0426, 2013).

SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions

NA

Discharging to Surface-, Storm-, or Ground Water

NA

Disturbing Cultural or Biological Resources

Cultural: Pursuant to the 2023 Programmatic Agreement, this federal undertaking is excluded from Section 106 review as the proposed activity has little to no potential to cause effects to historic properties.

Generating and Managing Waste

NA

Releasing Contaminants

When chemicals are used during the project there is the potential for spills that could impact the environment (air, water, soil).

Using, Reusing, and Conserving Natural Resources

Project description indicates materials that will need to be purchased or used that require sourcing materials from the environment. Being conscientious about the types of materials used could reduce the impact to our natural resources.

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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:

B2.6 "Recovery of radioactive sealed sources"

Justification:

B2.6 Recovery of radioactive sealed sources. Recovery of radioactive sealed sources and sealed source-containing devices from domestic or foreign locations provided that (1) the recovered items are transported and stored in compliant containers, and (2) the receiving site has sufficient existing storage capacity and all required licenses, permits, and approvals.

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

Approved by Jason L. Anderson or Robert Herzog, DOE-ID NEPA Compliance Officer on: 12/8/2023