

Excess Legacy Materials Inventory Report for the Idaho National Laboratory

April 2010



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Excess Legacy Materials Inventory Report for the Idaho National Laboratory

April 2010

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Idaho Falls, Idaho 83415**

<http://www.inl.gov>

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ABSTRACT

This excess legacy materials inventory report has been developed to support the transfer of legacy materials from the Office of Nuclear Energy to the Office of Environmental Management. The Office of Environmental Management has agreed to accept legacy radioactive and hazardous material from various Idaho National Laboratory locations that meet the criteria for transfer of excess materials as defined in the *Assessments of Facilities, Materials, and Waste Proposed for Transfer to DOE-EM* (DOE 2008). This report summarizes the results of an Idaho National Laboratory effort to identify and inventory excess materials generated from operations, past programs, or material that have accumulated at the Idaho National Laboratory. This report identifies and provides additional information on legacy materials that are proposed for transfer to the Office of Environmental Management.

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ACRONYMS

ATR	Advanced Test Reactor
D&D	decommissioning and demolition
DOE	U.S. Department of Energy
EM	Office of Environmental Management
FCF	Fuel Cycle Facility
HFEF	Hot Fuel Examination Facility
INL	Idaho National Laboratory
IWTS	Integrated Waste Tracking System
MFC	Materials and Fuels Complex
NaK	sodium-potassium alloy
NE	Office of Nuclear Energy
PHP	Plasma Hearth Project
PSO	Program Secretarial Office
QA	quality assurance
SPF	Sodium Process Facility
TRA	Test Reactor Area
TREAT	Transient Reactor Experiment and Test Facility
TRU	transuranic

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1. INTRODUCTION

In December 2007, the Assistant Secretary for Environmental Management (EM) requested the U.S. Department of Energy (DOE) Program Secretarial Offices (PSO) of Nuclear Energy (NE), Science, and the National Nuclear Security Administration nominate facilities and legacy materials for possible transfer to EM. The impetus for this request was the Deputy Secretary of Energy's Fiscal Year 2008 Program Decision Memorandum EM-08-12, which mandated that EM begin accepting surplus assets from other PSOs (DOE 2006). In accordance with the program decision memorandum, a memorandum to other DOE Program Offices was issued on December 21, 2007, outlining the process for nominating assets for transfer to EM.^a

In several formal responses to EM's request, NE identified legacy unfunded liabilities at the Idaho National Laboratory (INL) for possible transfer. A February 2009 memorandum documented EM's final decisions on excess facilities and materials that EM will accept from NE.^b As part of accepted liabilities, EM agreed to accept legacy radioactive and hazardous materials that are not part of DOE and NE's Fiscal Year 2006 "Unneeded Materials and Chemicals" strategy, which required PSOs to disposition their own materials and chemicals.

The mandatory generic and specific pretransfer requirements criteria for transfer of legacy INL materials to EM are defined in *Assessments of Facilities, Materials, and Waste Proposed for Transfer to DOE-EM* (DOE 2008), which states:

For materials declared excess and identified for potential transfer to EM, there are no DOE orders, directives or guidance documents... for which an analysis can be performed against specific criteria. Moreover, unlike certain commonalities often present in the [decontamination and decommissioning] D&D of excess facilities, the level of difficulty in managing and dispositioning radioactive materials varies greatly, due to chemical/radiological properties, pretreatment and stabilization requirements, regulatory schemes, risks to worker and public safety, and paths to ultimate disposition.

To support transfer decisions, EM defined the following basic criteria for evaluating each material or waste group proposed for transfer:

- Material must be excess to departmental needs, and processing above and beyond stabilization is necessary to meet disposition requirements
- Nominations of contaminated environmental media (e.g., soils or groundwater) will be considered and based on the need for EM's expertise and capability in acquiring and managing critical remediation activities
- If materials are not suitable for disposition within EM's currently planned waste management program, they may be referred to the Nuclear Materials Disposition and Consolidation Coordination Committee or other departmental decision-makers for corporate level consideration of disposition options.

^a "Protocol for Excess Facility Transfers," James Rispoli Memorandum for Distribution, December 21, 2007.

^b Triay, I. R., to R. S. Johnson, Interoffice Memorandum: "Environmental Management Transfer Decisions for Nuclear Energy Excess Facilities and Materials," Department of Energy, February 20, 2009.

To support transfer of legacy material from NE to EM and in accordance with INL Fiscal Year 2010 Performance Evaluation and Measurement Plan Measure 5.1.2, an inventory has been compiled of unneeded INL materials generated from operations, past programs, or material that has accumulated because a disposition path was not identified, available, or affordable. Specific materials identified in NE's original identification of material for transfer (e.g., plutonium special nuclear material) are not included within the scope of this report.

To generate the inventory of unneeded materials, an inventory request was distributed to appropriate INL facility personnel in October 2009.^c Approximately 600 individual items or groups of items were identified as a result of this sitewide inventory request. An initial review of the material was conducted to determine materials that are candidates for transfer to EM and materials that can be handled under a current INL unneeded material process. Items proposed by facility personnel that are identified/being managed through one of the following programs (or are within the scope of one of these programs) were removed from consideration and are not included in this report:

- Chemical Management Program and database (Dolphin)
- INL Lead Management database
- INL Property Management System.

This report identifies INL legacy materials proposed for transfer to EM and provides additional details and photos of the items, where available. Legacy materials at the Advanced Test Reactor (ATR) Complex and Materials and Fuels Complex (MFC) have been identified for transfer from NE to EM. Facility personnel at the Central Facilities Area identified legacy materials; however, those items are not expected to meet EM transfer criteria. Facility personnel at the Research and Education Campus and the Specific Manufacturing Capability did not identify any items that are clear candidates for transfer to EM. The candidate materials for transfer identified in this report are listed in Table 1 and categorized by facility and, in the case of MFC, by building. A second table (Table 2) has been prepared to identify legacy items that are not anticipated to be accepted by EM due to the nature of the item or insufficient information to determine whether the item meets the EM acceptance criteria. Items are listed by their Integrated Waste Tracking System (IWTS) tracking number or other identifier as applicable. Where no IWTS number or other identifier is currently assigned, a unique identifier was assigned to the item or group of items. The IWTS system is not only used for waste items but also as a material tracking system by some facilities. All materials identified in this report are excess to the NE mission.

2. ITEMS PROPOSED FOR OFFICE OF ENVIRONMENTAL MANAGEMENT TRANSFER

The ATR and MFC facilities at INL have identified legacy materials that are clear candidates for transfer to EM. The legacy materials proposed for transfer to EM either meet the special processing criteria identified in *Assessments of Facilities, Materials, and Wastes Proposed for Transfer to DOE-EM* (DOE 2008) or are from historic EM-funded activities. Table 1 provides a list of the items proposed for transfer to EM with a description of each item. The description is intended to provide additional information to help identify specific needs, characterization information, the reason for the proposed transfer to EM, and the PSO who generated each item. Photographs are included in Section 2.1 for those items listed in Table 1 (Figures 1 through 9). Available supporting documentation for items CS-2003-7 and CS-2003-8 are located inside of MFC-794 (Appendix A).

^c. Interoffice Memorandum, Harvego, L., to Distribution, "Legacy Material Inventory Request for Potential Transfer to EM," Idaho National Laboratory, October 28, 2009.

Table 1. Legacy materials proposed for Office of Environmental Management transfer.

Item Number	Description	Facility/ Building	Characterization Info	Size/ Volume	Reason for Proposed Transfer	PSO
ATR Complex						
RTC070311	Idaho Nuclear Technology and Engineering Center Comprehensive Environmental Response, Compensation, and Liability Act tank farm soil core samples. Moved to the ATR Complex for sampling and left at the ATR Complex due to lack of program funding.	ATR	Characterization has been completed. See IWTS container profile Number RTC070311.	45-ft ³ box, 15,000 lb	Generated by an EM program.	EM
ATR-001	The vent scrubber was used to neutralize acidic radioactive exhaust gases from the hot cell (Test Reactor Area [TRA]-632) and the laboratory hoods in TRA-604. The gas flowed upward through a trickle down caustic solution and vented out the top. The system was taken out of service in 1967 and was drained in 1971 when the Materials Test Reactor was taken out of service. System components have been verified as empty.	TRA-604	EDF-4048, "TRA/MTR Voluntary Consent Order Tank System TRA-008, TRA/MTR Laboratory Vent Scrubber System Characterization," CR #446.	The system consists of approximately 10 m ³ of filter housings and associated components, approximately 15 m ³ of piping, valves, and related hardware	The system was an EM-funded Voluntary Consent Order tank system and EM currently has the deactivation, decontamination, and decommissioning capabilities to handle this system.	EM
MFC Transient Reactor Experiment and Test Facility (TREAT) Reactor Building (MFC-720)						
MFC-720-001	High-efficiency particulate air filter banks used for the Plasma Hearth Project (PHP). PHP was a historical EM project for studying alternative waste treatment methods. PHP was a bench-scale test of a system to vitrify the contents of 55-gal drums.	MFC-720	Nonradioactive	Not applicable or not available	Generated by an EM program.	EM

Table 1. (continued).

Item Number	Description	Facility/ Building	Characterization Info	Size/ Volume	Reason for Proposed Transfer	PSO
MFC-720-002	Approximately 20 items were used for the PHP. PHP was a historical EM project to study alternative waste treatment methods. PHP was a bench-scale test of a system to vitrify the contents of 55-gal drums. Items include glovebox and associated ancillary ventilation, legacy electronics, and furnace.	MFC-720	Nonradioactive	20 items various sizes	Generated by an EM program.	EM
MFC-720-003	PHP vitrification box. PHP was a historical EM project for studying alternative waste treatment methods. PHP was a bench-scale test of a system to vitrify the contents of 55-gal drums.	MFC-720	Nonradioactive	Approximately 6 × 8 × 8 ft	Generated by an EM program.	EM
MFC-720-004	Two 4 × 4 × 8-ft deteriorated wooden boxes containing components used by PHP. PHP was a historical EM project for studying alternative waste treatment methods. PHP was a bench-scale test of a system to vitrify the contents of 55-gal drums. Detailed physical inventory of boxes has not been conducted.	MFC-720	Nonradioactive	Two 4 × 4 × 8 ft boxes	Generated by an EM program.	EM
MFC-720-005	Multi-Detector Array System components. The Multi-Detector Array System was an EM system used to perform neutron interrogation of 55-gal drums with waste. Approximately six Multi-Detector Array System items are located inside and outside. The system could not provide results necessary to adequately characterize drums within required Resource Conservation and Recovery Act specifications.	MFC-720	The system was operated for approximately 6 months. The level of use ensured that the materials were not activated as part of the experiments. Work was suspended on the project in 2000.	Six items, various size and configurations	Generated by an EM program.	EM

Table 1. (continued).

Item Number	Description	Facility/ Building	Characterization Info	Size/ Volume	Reason for Proposed Transfer	PSO
MFC-720-006	Depleted uranium pucks generated by Experimental Breeder Reactor II spent nuclear fuel blanket fuel processing.	MFC-720	<p>Typical depleted uranium material contains: 2.98E-08 Ci/g Zr^{93}, 6.66E-07 Ci/g Cs^{137}, 5.32E-09 Ci/g U^{235}, 3.34E-10 Ci/g Np^{237}, 6.84E-08 Ci/g Pu^{238}, 1.35E-15 Ci/g U^{238}, 3.22 E-06 Ci/g Pu^{239}, 2.09 E-07 Ci/g Pu^{240}, 2.15E-06 Ci/g Pu^{241}, 1.01E-12 Ci/g Pu^{242}, 1.37E-22 Ci/g Pu^{244}.</p> <p>Containing between 69.4 and 962.1 g fissile material.</p> <p>Containing between 0.1 and 559.4 g Pu equivalents.</p> <p>Containing between 0 and 10.5 g moderator.</p>	88 depleted uranium pucks generated for blanket fuel processing Ranging from 11,513 to 55,937 g/puck in weight	Because of the amount of plutonium in the depleted uranium byproduct from the blanket fuel processing, the depleted uranium byproduct is anticipated to be dispositioned as transuranic (TRU) waste (DOE 2001). EM has established the capability, which NE currently does not have, to disposition waste to the Waste Isolation Pilot Plant. Close coordination within the EM program is required to establish necessary priority within the DOE Complex and with the Waste Isolation Pilot Plant to successfully disposition this material.	NE
MFC Radioactive Scrap and Waste Facility (MFC-771)						
MFC-771-001	Approximately 1,400 empty Fermi drums stored in 17 relocatable storage units: 36, 40, 42, 43, 44, 46, 50, 51, 98, 100, 101, 102, 103, 104, 105, 1767, and 1768.	MFC-771	Residual unreacted sodium. Drums are considered Resource Conservation and Recovery Act empty; however, sodium residue must be reacted to meet disposal facility waste acceptance criteria.	Approximately 1,400 55-gal drums stored in 17 relocatable storage units	EM is developing a process to treat unreacted sodium.	NE

Table 1. (continued).

Item Number	Description	Facility/ Building	Characterization Info	Size/ Volume	Reason for Proposed Transfer	PSO
MFC Contaminated Equipment Storage Building (MFC-794)						
CS-2003-7	ROSS Orbital mixer contaminated on mixer head area only (mixer was used as part of the Gas Generation Experiment, which was an EM project completed in 2004) contains oils in hydraulic system. The mixer head has a poly drum taped to it to contain surface contamination on the head area, equipment number P060928, and is packaged in a wood box that is not suitable for disposal.	MFC-794	Oil is polychlorinated biphenyl (PCB) free, 0.15 mR/hour at 1 in.	4,100 lb 5.5 × 8 × 8 ft	Generated by an EM project.	EM
CS-2003-8	Equipment used as part of the Gas Generation Experiment, which was an EM project completed in 2004; pressure transducers and related canister equipment; pressure venting rig, scale, thermo couples, roto flex pump, and electric hoist; 10 individual radiological bags; and inside 4 × 4 × 4-ft box liner packaged in a wooden box.	MFC-794	Less than 0.1 mR/hour at 1 in.	163 lb waste 200 lb with box 2 × 2 × 4 ft	Generated by an EM project.	EM
Waste Requiring Specialized EM Capabilities.						
TRA040025	Advanced Reactivity Measurement Facility Am-241 capsules. Fuel-related capsules (primarily Am-241) from Advanced Reactivity Measurement Facility /Coupled Fast Reactivity Measurement Facility reactor experiments conducted from the 1960s to 1980s and containerized during facility cleanout in the 1990s.	ATR	Initial characterization indicates the waste is remote-handled TRU (450 mR/hour container dose rate). See IWTS container profile TRA040025 for details.	Drum: 55 gal, 6 M Waste: 0.1 gal, 2 lb	EM's remote-handled TRU waste disposal capabilities (not specifically identified in a previous inventory of TRU waste accepted by EM). ^a	EM

Table 1. (continued).

Item Number	Description	Facility/ Building	Characterization Info	Size/ Volume	Reason for Proposed Transfer	PSO
RTC080324	Hot cell met mount waste (PSA-029). Debris and fuel-related hardware from Hot cell research and experiments. Removed from the hot cells and containerized in late 1990s during cell cleanout project.	ATR	Characterization completed as a remote-handled TRU waste. Dose rate on outside of overpack box: 170 mR/hour.	55-gal lead-lined drum contained in a non-Department of Transportation lead-lined drum	EM's remote-handled TRU waste disposal capabilities (not specifically identified in a previous inventory of TRU waste accepted by EM). ^a	NE
<p>a. Triay, I. R., to R. S. Johnson, Interoffice Memorandum: "Environmental Management Transfer Decisions for Nuclear Energy Excess Facilities and Materials," Department of Energy, February 20, 2009.</p>						

2.1 Photographs and Additional Information for Items Proposed for Office of Environmental Management Transfer

When available, photographs have been included (Figures 1 through 9) for those items proposed for transfer to EM.

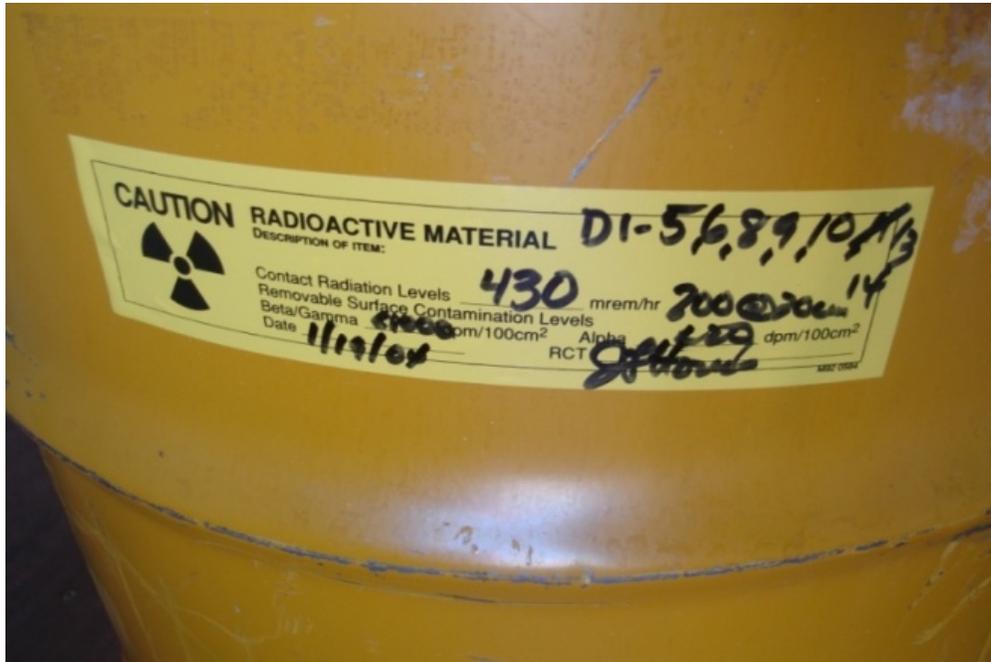


Figure 1. Advanced Reactivity Measurement Facility Am-241 capsules drum (TRA040025) at the Advanced Test Reactor Complex.



Figure 2. TRA-604 vent scrubber (ATR-002).



Figure 3. Photograph showing Plasma Hearth Project high-efficiency particulate air filter banks (MFC-720-001) at the Materials and Fuels Complex/Transient Reactor Experiment and Test Facility (MFC-720) laydown area.



Figure 4. Photograph showing an example of Plasma Hearth Project equipment (MFC-720-002) at the Materials and Fuels Complex/Transient Reactor Experiment and Test Facility (MFC-720) reactor building.



Figure 5. Photograph showing the Plasma Hearth Project vitrification box (MFC-720-003) at the Materials and Fuels Complex/Transient Reactor Experiment and Test Facility (MFC-720) laydown area.



Figure 6. Photograph showing example wood box (MFC-720-004) at the Materials and Fuels Complex/Transient Reactor Experiment and Test Facility (MFC-720) laydown area.



Figure 7. Photograph showing an example of Multi-Detector Array System equipment (MFC-720-005) at the Materials and Fuels Complex/Transient Reactor Experiment and Test Facility (MFC-720) laydown area.



Figure 8. Photo of Fermi drums (MFC-771-001) located inside of a relocatable storage unit at MFC-771, north fenced area.



Figure 9. Photo of example items stored in the Contaminated Equipment Storage Building (MFC-794).

3. LEGACY ITEMS THAT MAY NOT MEET OFFICE OF ENVIRONMENTAL MANAGEMENT TRANSFER CRITERIA

As stated in *Assessments of Facilities, Materials, and Waste Proposed for Transfer to DOE-EM* (DOE 2008), there are no DOE orders, directives, or guidance documents that provide specific criteria against which excess materials can be compared to determine transfer potential. The ATR Complex, MFC, and Central Facilities Area facilities at INL have identified legacy materials that are listed in Table 2, for which acceptance by EM is not clear due to the nature of the item or insufficient characterization information is available to determine if the item meets the generic EM acceptance criteria. Generally, these items will require additional inventory or characterization activities to provide sufficient information to support disposition decisions. However, items identified in Table 2 should not be summarily dismissed for transfer and it is anticipated that EM will review these items to determine if there are any that fit within the transfer criteria or for which specific EM capabilities are in place that would facilitate disposition of these items.

Table 2. Items that may not meet Office of Environmental Management transfer criteria.

Item Number	Description	Facility/ Building	Characterization Info ^{a,b}	Size/Volume
ATR Complex				
ATR-002	ATR radioactive water transfer tanker. Empty tanker with internal contamination formerly used for radioactive waste water transfer to ATR pumping stations. Tanker is radiologically contaminated.	ATR	Internally contaminated	16,000-gal capacity, 20,000 lb
ATR-003	Waste Calcining Facility cask. Lead-filled steel cask and shielding plate formerly used for shipping of ATR resin and activated metals to the Radioactive Waste Management Complex vaults.	ATR	Encased lead, cask may be internally contaminated	Cask: 4 m ³ , 25,000 lb Shield plate: 3 m ³ , 15,000 lb
ATR-004	Legacy laboratory equipment, including mass-balance separator in several wood crates, a glovebox in a wood crate, and electronic equipment used for radioactive sampling and analysis. Detailed physical inventory has not been conducted. Equipment may require disassembly or segregation into several different waste streams.	ATR	Internally contaminated	5 m ³ , 15,000 lb
ATR-005	Glovebox	TRA-604 basement	Research needed to complete characterization	Not applicable or not available
ATR-006	TRA-731 Caustic and Acid tanks. Four tanks previously used for acid and caustic liquid storage. Tanks have been Resource Conservation and Recovery Act emptied and disabled. Proposed as part of original transfer. Not accepted by EM.	ATR-731	Tanks have been closed and declared non-Resource Conservation and Recovery Act; asbestos insulation is present.; and paint determination needed for potential PCBs	20 m ³ , 20,000 lb
ATR-007	708B, C water tanks, piping. Demineralized and soft water storage tanks closed. North of TRA-608. Noncontaminated decommissioning and demolition (D&D).	ATR-708	Research needed to complete characterization	Not applicable or not available
ATR-008	731A brine vault. Concrete brine vault located north of TRA-608 Proposed as part of original transfer. Not accepted by EM.	ATR-731	Research needed to complete characterization	Not applicable or not available

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info^{a,b}	Size/Volume
ATR-009	727A, B fuel oil storage tanks, piping. Tank out of service and contains sludge. Proposed as part of original transfer. Not accepted by EM.	ATR-727	Research needed to complete characterization	Not applicable or not available
ATR-010	727D diesel oil storage tank. Cleaned for reuse in 2004 but may not be returned to service due to continued leaks. Noncontaminated D&D.	ATR-727	Research needed to complete characterization	Not applicable or not available
ATR-011	TRA-615 meteorological tower. Out of service met station tower southwest of TRA-680. Noncontaminated D&D.	ATR-615	Research needed to complete characterization	Not applicable or not available
ATR-012	TRA-617 pad steel waste shipping/storage boxes. Fabricated for hot cell cleanout waste storage and movement but never used. Noncontaminated D&D.	ATR-617	Needs empty verification, surveys for radiological release and determination if recyclable or industrial waste	4 m ³ , 5,000 lb
MFC Sodium Storage Building (MFC-703)				
21017P	Transfer vessel/overpack. 6 × 4-ft-diameter lead-filled transfer vessels used on the ARVIS Sodium-Potassium Alloy (NaK) Project.	MFC-703	Internal dose readings up to 75 mR/hour	6 × 4-ft diameter
23331P	Clam shell shield, lead-filled.	MFC-703	Encased lead	32 × 32 × 16 in.
23332P	Clam shell shield, lead-filled.	MFC-703	Encased lead	32 × 32 × 16 in.
ANL000247	Noncontaminated NaK and sodium product. 85-gal drum/overpack	MFC-703	Nonradioactive NaK and sodium	85-gal drum/overpack
ANL000248	Noncontaminated NaK and sodium product. 85-gal drum/overpack	MFC-703	Nonradioactive NaK and sodium	85-gal drum/overpack
ANL000249	Noncontaminated NaK and sodium product. 85-gal drum/overpack	MFC-703	Nonradioactive NaK and sodium	85-gal drum/overpack
ANL000250	Noncontaminated NaK and sodium product. 85-gal drum/overpack	MFC-703	Nonradioactive NaK and sodium	85-gal drum/overpack
ANL000251	Noncontaminated NaK and sodium product. 85-gal drum/overpack	MFC-703	Nonradioactive NaK and sodium	85-gal drum/overpack

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info ^{a,b}	Size/Volume
ANL000252	Noncontaminated NaK and sodium product. 85-gal drum/overpack	MFC-703	Nonradioactive NaK and sodium	85-gal drum/overpack
ANL000276	Noncontaminated NaK and sodium product. 85-gal drum/overpack	MFC-703	Nonradioactive NaK and sodium	85 gal drum/overpack
ANL000277	Noncontaminated NaK and sodium product. 85-gal drum/overpack	MFC-703	Nonradioactive NaK and sodium	85 gal drum/overpack
MFC070231	Noncontaminated NaK product. One 1 L of NaK in a 4-L stainless steel pot; one 10-gal tank (QA #139979/5633.3 g tare) with 5 gal of NaK (35 lb of product); 75.5-lb gross weight for tank and product. Generated from NaK removal from the Cold Crucible Test cooling system at MFC-789. Above items overpacked in 55-gal metal drum.	MFC-703	Nonradioactive NaK	55-gal drum/overpack
MFC TREAT Reactor Building (MFC-720)				
MFC-720-007	Depleted uranium cask and trailer. Sodium Loop Safety Facility loop equipment.	MFC-720	Depleted uranium, potential internal contamination	Cask: approximately 4 ft diameter by 30 ft tall; trailer: numerous pieces
MFC-720-008	Cask, plastic wrapped. Cask was used as part of the Shield Measurement System Project. No visible identifier.	MFC-720	Suspect encased lead, potential internal contamination	Not applicable or not available
MFC-720-009	Large white enclosure. Physical inventory of contents needed.	MFC-720	Possible internal contamination	One enclosure approximately 10 × 10 × 12 ft
MFC-720-010	Brown, four-sided, carbon steel shell. Empty shell with removable floor.	MFC-720	Not applicable or not available	Shell, multiple pieces
MFC-720-011	Allis Chalmers three-phase, 60-cycle transformer, Serial Number 2926318. Transformer was drained in 2009. There are no capacitors in the tap changer. Construction of bushing on the top of the transformer needs to be verified.	MFC-720	No PCBs; the transfer was not a PCB transformer and was never retrofilled	12,400 lb
MFC-720-012	Yellow Sodium Loop Safety Facility enclosure, sodium fill rig Shipping ID 5867.	MFC-720	Records indicate this item has never been used	Approximately 4 × 8 × 8 ft
MFC-720-013	Approximately six miscellaneous pit shield plugs. Inventory ID 5869 loop handling machine support structures.	MFC-720	Possible encased lead, reference Drawing Numbers: S3214-0045-ME-00.	Six shielding items, various sizes

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info^{a,b}	Size/Volume
MFC-720-014	Approximately 30 items (e.g., Artisan furnace, controller, continuous air monitor, and Inconel sheets). Detailed physical inventory has not been conducted.	MFC-720	Electronics: lead and silver	Multiple
MFC-720-015	Six boxes of miscellaneous metal/equipment. Detailed physical inventory has not been conducted.	MFC-720	Not applicable or not available	Six boxes
MFC-720-016	Pallet of stainless steel. Centarus equipment.	MFC-720	Scrap metal	One pallet
MFC-720-017	Three boxes of miscellaneous stainless steel.	MFC-720	Scrap metal	Three boxes
MFC-720-018	Pallets of Sodium Loop Safety Facility Loop Borated Poly 5428.	MFC-720	Not applicable or not available	Multiple pallets
MFC-720-019	Poly shielding.	MFC-720	Not applicable or not available	Not applicable or not available
MFC-720-020	12 miscellaneous U product racks and TREAT fuel racks.	MFC-720	Scrap metal	Multiple
MFC-720-021	Approximately 20 electronic items. Laboratory equipment on mezzanine.	MFC-720	Not applicable or not available	Approximately 20 items
MFC-720-022	Cask in warehouse with stanchion and loading tube.	MFC-720	Possible encased lead	One cask
MFC TREAT Warehouse Building (MFC-723)				
MFC-723-001	Maintenance shop material, equipment, tools, supplies, and spare parts.	MFC-723	Not applicable or not available	Various
MFC Radioactive Scrap and Waste Facility (MFC-771)				
MFC-771-002	Two clam-shell casks, Model No. SF-100, Serial No. 2.	MFC-771	Possible encased lead or depleted uranium, potential internal contamination	Two casks at 16,700-lb each
MFC-771-003	Contaminated scrap metal, boxes, cask adaptor, and equipment. Detailed physical inventory of boxes has not been conducted.	MFC-771	Encased lead associated with cask adaptor	Various sizes and configurations
MFC-771-004	Hoist, scrap metal.	MFC-771	Scrap metal	One hoist
MFC-771-005	A lot of miscellaneous metal.	MFC-771	Scrap metal	At least two large flatbed loads
MFC Zero Power Physics Reactor Support Wing Building (MFC-774)				
MFC-774-001	Auger spectrometer, Varian control console, and heater components.	MFC-774	Internally contaminated, located within a radiological buffer area	250 lb, various components

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info ^{a,b}	Size/Volume
MFC-774-002	Proteam Instrument Corporation equipment P060725 used for radiation surveys.	MFC-774	Internally contaminated	50 lb
MFC-774-003	Spot camera and controller.	MFC-774	Not applicable or not available	1/10 lb
MFC-774-004	Stereo dynascope.	MFC-774	Not applicable or not available	1/60 lb
MFC Zero Power Physics Reactor Materials Control Building (MFC-784)				
MFC-784-001	Pins/rods, samples, Experimental Breeder Reactor-II subassemblies and casting scrap, which comprise over 1 metric ton of depleted uranium; material could be dispositioned concurrent with EM Experimental Breeder Reactor-II D&D.	MFC-784	Radioactive, depleted uranium	184,109 kg 316,639 pieces Ranging from 0.0625 × 1 × 1 in. to 2 × 2 × 5 in.
MFC-784-002	Beryllium oxide, 99.98%	MFC-784	Stored in a contaminated area and surface contamination is suspected	4,435 lb 17,076 pieces Ranging from 0.125 × 2 × 1 in. to 2 × 2 × 4 in.
MFC-784-003	Beryllium solid	MFC-784	Stored in a contaminated area and surface contamination is suspected.	626 lb 619 pieces Ranging from 2 × 2 × 1 in. to 2 × 2 × 4 in.
MFC-784-004	Lithium hydride #14048	MFC-784	Stored in a contaminated area and surface contamination is suspected	300 lb 425 pieces Ranging from 0.5 × 2 × 4 in. to 2 × 2 × 24 in.
MFC-784-005	Lithium Li-6	MFC-784	Stored in a contaminated area and surface contamination is suspected	60 g
MFC-784-006	Lithium metal, bulk straps	MFC-784	Stored in a contaminated area and surface contamination is suspected	10 lb 163 pieces Ranging from 0.25 × 2 × 2 in. to 0.25 × 2 × 8 in.

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info ^{a,b}	Size/Volume
MFC-784-007	Molybdenum	MFC-784	Stored in a contaminated area and surface contamination is suspected	1,200 lb 13,080 pieces Ranging from 0.125 × 2 × 2 in. to 0.25 × 2 × 7 in. for plates and 2 × 0.0013 × 18 in. to 2 × 0.0134 × 12 in. for shims
MFC-784-008	Natural uranium	MFC-784	Stored in a contaminated area and surface contamination is suspected	1,268 kg 18,438 pieces Ranging from 0.03125 × 2 × 1 in. to 0.125 × 2 × 2 in.
MFC-784-009	Sodium metal	MFC-784	Stored in a contaminated area and surface contamination is suspected	18,000 lb 122,930 pieces Ranging from 0.25 × 2 × 2 in. to 0.5 × 2 × 8 in. for sodium cans and 0.25 × 2 × 4 in. to 0.5 × 2 × 8 in. for sodium (yellow end)
MFC-784-010	500 kg of thorium oxide pins and thorium	MFC-784	Stored in a contaminated area and surface contamination is suspected	1,877 kg 8,477 pieces Ranging from 0.125 × 2 × 2 in. to 0.76 × 2 × 2.75 in.
MFC-784-011	Uranium powder	MFC-784	Stored in a contaminated area and surface contamination is suspected	2 kg
MFC-784-012	Zirconium metal	MFC-784	Stored in a contaminated area and surface contamination is suspected	15,000 kg 15,617 pieces Ranging from 0.0625 × 2 × 1 in. to 0.125 × 2 × 3 in.
MFC-784-013	Stainless steel, all shapes and sizes	MFC-784	Stored in a contaminated area and surface contamination is suspected	Tons 158,286 pieces Ranging from 0.375 × 0.029 × 9.5 in. to 2 × 2 × 11 in.

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info^{a,b}	Size/Volume
MFC-784-014	Carbon steel, all shapes and sizes.	MFC-784	Stored in a contaminated area and surface contamination is suspected	Tons Numerous pieces in similar configuration as the stainless steel
MFC-784-015	Low enriched uranium	MFC-784	Not applicable or not available	23 g
MFC-784-016	Ballistol Lube/gun room	MFC-784	Not applicable or not available	1 pt
MFC-784-017	Chem Crest 235/Gun room	MFC-784	Not applicable or not available	2 gal
MFC-784-018	Chem Crest 400-L/gun room	MFC-784	Not applicable or not available	1 gal
MFC-784-019	Met-L-X	MFC-784	Not applicable or not available	3 gal
MFC-784-020	Radiac Wash	MFC-784	Not applicable or not available	1 gal
MFC Applied Science Building (MFC-787)				
MFC-787-001	Kearney and Trecker, made by Milwaukee, used for friction bonding. Exhaust indicates internal contamination.	MFC-787	Exhaust indicates internal contamination	15,000 lb
MFC Sodium Component Maintenance Shop (MFC-793)				
ANL000058	Noncontaminated sodium product, 1-gal can.	MFC-793 793-C	Noncontaminated	1-gal can
ANL000059	Noncontaminated sodium product, 5-gal can.	MFC-793 793-C	Noncontaminated	5-gal can
ANL000060	Noncontaminated sodium product, 5-gal can.	MFC-793 793-C	Noncontaminated	5-gal can
ANL000069	Noncontaminated sodium product, 2-gal can.	MFC-793 793-C	Noncontaminated	2-gal can
ANL000278	Noncontaminated sodium product, 5-gal can.	MFC-793 793-C	Noncontaminated	5-gal can
ANL000279	Noncontaminated sodium product, 5-gal can.	MFC-793 793-C	Noncontaminated	5-gal can
ANL000280	Noncontaminated sodium product, 5-gal can.	MFC-793 793-C	Noncontaminated	5-gal can
MFC-793-001	Triton Model 955B 192179 tritium monitor.	MFC-793 793-C	Not applicable or not available	Not applicable or not available

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info ^{a,b}	Size/Volume
MFC-793-002	Contaminated hand and power tools, approximately 25 items or groups of items (drills, saws, lath, sample crushers, grinder, plastic glove box, and so forth).	MFC-793 793-C	Radiological contamination	Varies
MFC-793-003	Contaminated drum stabilization and treatment equipment, approximately 10 items, including heaters, packaging equipment, mixers, scales, and so forth.	MFC-793 793-C	Radiological contamination	Varies
21290P	Secondary cold trap in 793E.	MFC-793	Not applicable or not available	Not applicable or not available
ANL1497	Secondary cold trap in 793E.	MFC-793	Not applicable or not available	Not applicable or not available
MFC Contaminated Equipment Storage Building (MFC-794)				
CS-1977-44	Spare Neutron Radiography Reactor facility control rods.	MFC-794	Stored in a lead-lined box	Not applicable or not available
CS-1980-31	Spare Electro Mechanical Carriage A. No. Tubes. Plastic wrapped and packaged in a wooden box.	MFC-794	Mixed fission products, 80 mR/hour at 1 in.	6,500 lb 4 × 6 × 7 ft
CS-1981-21	Slab fixture	MFC-794	Nuclide summary: 0.00E+00 Ci.	72 ft ³ 1,000 lb 68 ft ³ 800 lb
CS-1981-62	Standard electrical Hot Fuel Examination Facility (HFEF) feed through, wrapped in plastic and packaged in a wood box.	MFC-794	Lead-filled mixed fission products, 35 mR/hour at 1 in.	400 lb 12 × 12 × 66 in.
CS-1982-7	Inverted B slab fixture for Fuel Cycle Facility (FCF) wrapped in plastic and packaged in a wooden box.	MFC-794	Mixed fission products, 9 mR/hour at 2 in.	1,500 lb 2 × 4 × 5 ft
CS-1982-33	Eight lead clusters and one lead aperture shield block for NRAD; contaminated parts wrapped in poly and packaged in a wood box.	MFC-794	Mixed activation products, less than 0.1 mR/hour at 1 in. outside of plastic	400 lb 15 ft × 12 in. × 40 in.
CS-1983-28	Shielding window tank unit from Subcell 4 transfer door, wrapped in plastic and packaged in a plastic box.	MFC-794	Mixed fission products, 0.2 mR/hour at 1 in. suspect contamination under poly	8,000 lb 46 × 55 × 50 in.
CS-1984-12	Argon Cell A slab from Window 13 (FCF), wrapped in plastic and packaged in a wooden box.	MFC-794	Mixed fission products, 220 mR/hour at 2 in.	2,000 lb 61 × 33 × 62 in.
CS-1984-14	Argon Cell A slab from Window 14 (FCF), placed in plastic and packaged in a wooden box.	MFC-794	Mixed fission products, 100 mR/hour at 1 in.	2,000 lb 61 × 33 × 62 in.

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info^{a,b}	Size/Volume
CS-1984-17	Gripper inspection box (core), sitting inside wooden box; all contamination inside inspection box.	MFC-794	Mixed fission products/mixed activation products 0.2 mR/hour at 1 in.	100 lb 2.75 × 1.5 × 3.5 ft
CS-1989-8	Window shutter from west end of air cell with long drive rack, plastic wrapped and packaged in a wooden box.	MFC-794	Container survey: less than 0.1 mR/hour at 1 in.	4,800 lb 7.83 × 6.33 × 1.66 ft
CS-1989-21	Mill head transfer stand, packaged in wooden box with a double box liner.	MFC-794	60 mR/hour at 1 in.	400 lb 4 × 2 × 3 ft
CS-1990-09	Circular Mill 9M work station, reference Drawing W0006-0090-DE; packaged in wooden box.	MFC-794	No lead in box Mixed fission products/mixed activation products 300 mR/hour at 2 in.	200 lb 28 × 28 × 20 in.
CS-1992-5	Nibbler and drill	MFC-794	Not applicable or not available	1
CS-1994-7	Miscellaneous window cart tools and parts, contaminated items wrapped in plastic and packaged in a wooden box. Note: "This box was really OCS-94-18: High-efficiency particulate air filter housing vertical on 4-11-02 TL."	MFC-794	2,200 counts per minute fixed, suspect loose contamination	500 lb 6 × 1.5 × 1.5 ft
CS-1994-10	Overhead light fixture with new bulbs and two plastic bags packaged in a wooden box.	MFC-794	150 mR/hour at 1 in.	50 lb
CS-1995-8	Electro mechanical gear box and hoist from HFEF, Old CS-86-23, packaged in a wooden box.	MFC-794	Container survey: less than 0.1 mR/hour at 1 in.	19.5 × 21 × 19.5 in.
CS-1995-10	FCF C slab shielding window, packaged in a plywood box.	MFC-794	Container survey: less than 0.1 mR/hour at 1 in.	4 × 4 × 8 ft
CS-1995-13	B slab window removal tool packaged in a plastic liner and a wooden box.	MFC-794	Container survey: 0.5 mR/hour at 1 in.	1,600 lb 61.5 × 49.5 × 25 in.
CS-1996-11	Electro mechanical hoist gear and drum assembly, bagged and packaged in a wooden box.	MFC-794	Fission products; container survey: 1.0 mR/hour at 1 in., see Drawing 222863	250 lb
CS-1996-12	FCF electro mechanical tube rotate motor assembly, bagged and packaged in a wooden box.	MFC-794	Mixed fission products; container survey: less than 0.1 mR/hour at 1 in., see Drawing CE-2224-70	100 lb

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info ^{a,b}	Size/Volume
CS-1996-13	FCF tub and outer casting ring, bagged and packaged in a wooden box.	MFC-794	Mixed fission products, container survey: 2.5 mR/hour at 1 in.	300 lb
CS-1996-14	FCF electro mechanical hoist motor assembly, bagged and packaged in a wooden box.	MFC-794	Mixed fission products, container survey: 0.7 mR/hour at 1 in., see Drawing CE-2224-97	150 lb
CS-1996-15	Electro mechanical forearm, bagged and packaged in a wooden box.	MFC-794	Mixed fission products, container survey: 2 mR/hour at 1 in., see Drawing 229463	125 lb
CS-1996-16	Hoist gear and drum assembly, bagged and packaged in a wooden box.	MFC-794	Mixed fission products, container survey; 8 mR/hour at 1 in., see Drawing 222863	250 lb
CS-1996-17	Electro mechanical tube rotate motor assembly, bagged and packaged in a wooden box.	MFC-794	Mixed fission products, container survey 0.5 mR/hour at 1 in.	100 lb
CS-1996-19	Electro mechanical mounting ring and tube, bagged and packaged in a wooden box.	MFC-794	Mixed fission products, container survey, 1.5 mR/hour at 1 in., see Drawings 222965 and 222966	200 lb
CS-1997-08	Pump	MFC-794	Container survey, less than 0.1 mR/hour at 1 in.	20 × 27 × 19.5 in.
CS-1997-09	Slave periscope shielding, packaged in a wood box.	MFC-794	Lead, container survey, 0.2 mR/hour at 1 in.	72 × 26 × 27.5 in.
CS-1997-10	Periscope glovebox adaptor, packaged in a wood box.	MFC-794	Suspect loose contamination, container survey less than 0.1 mR/hour at 1 in.	25.5 × 27 × 13.5 in.
CS-1997-11	Model L Master (met box)	MFC-794	Dose rate at container surface 0.2 mR/hour at 1 in.	15 × 25 × 49 in.
CS-1997-13	Glovebox adaptor ring periscope, packaged in a wood box.	MFC-794	Suspect loose contamination, container survey less than 0.1 mR/hour at 1 in.	25.5 × 27 × 13.5 in.
CS-1997-22	In-cell crane repair stand, polyvinyl chloride bag-out bag inside two 4 × 4 × 4-ft waste box liners, packaged in fire retardant wooden boxes.	MFC-794	18 mR/hour at 1 in.	4 × 4 × 5.5 ft

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info ^{a,b}	Size/Volume
CS-1997-36	MK 4&5 electro-refiner vessel lifting beam is double bagged inside of lined wooden box.	MFC-794	Cs-137, Sr-90, Y-90 70.0 mR/hour at 2 in.	600 lb 3 × 2 × 6 ft
CS-1999-1	Empty lead pig	MFC-794	Lead shielding, radiologically clean	350 lb
CS-2001-2	Empty dry active waste cask	MFC-794	Mixed fission products, less than 0.2 mR/hour at 1 in.	800 lb
CS-2001-58	Main cell circulation blower in housing, 30-in. housing openings on each end covered with poly tape, equipment number: 8-3641-001.	MFC-794	H-3, 20.1 mR/hour at 1 in.	1,250 lb 4 × 4 × 5 ft
CS-2002-01	Model E Master/Slave Manipulator SN 3273, packaged in a plastic sleeve, equipment number: PO22371.	MFC-794	Lead, mixed fission products, 0.3 mR/hour at 1 in.	1,250 lb
CS-2002-4	Shutter drive motor (was CS-1976-07), packaged in plastic bags inside of a wooden box.	MFC-794	125-lb lead, Cs, 50 mR/hour at 1 in.	350 lb 3 × 2 × 2.5 ft
CS-2002-5	Shutter drive motor (was CS-1976-07), packaged in plastic bags inside of a wooden box.	MFC-794	125-lb lead, Cs, 20 mR/hour at 1 in.	350 lb 3 × 2 × 2.5 ft
CS-2002-10	A slab windows (FCF) packaged in a wooden box, equipment number ANL000299.	MFC-794	Possible lead wool, Cs, container survey 1.5 mR/hour at 1 in.	1,000 lb 67.5 ft ³
CS-2002-23	40 cask parts packaged in a wooden box.	MFC-794	Labeled "fixed contamination," mixed fission products/mixed activation products, container survey 0.1 mR/hour at 1 in.	4 × 4 × 4 ft
CS-2002-28	High-efficiency particulate air filter bank 3 × 4 filters with prefilters from 1991 to 1993 MFC-752, Analytical Laboratory hot cells, refurbishment, may contain unused filters installed for system integrity, plywood placed on plenum ends and placed in a wooden box.	MFC-794	Mixed fission products/mixed activation products, container survey less than 0.1 mR/hour at 1 in.	2,000 lb 41.5 × 97 × 115.5 in.
CS-2002-32	Borated graphite canisters (OCS-91-02), packaged in a wooden box.	MFC-794	Mixed fission products/mixed activation products, container survey less than 0.1 mR/hour at 1 in.	1,100 lb 51 × 65 × 25 in.
CS-2002-42	Element welder compressor, packaged in a plastic bay inside a plastic-lined painted wooden box.	MFC-794	Cs, container survey 0.5 mR/hour at 1 in.	31.5 × 25.5 × 7 in.

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info ^{a,b}	Size/Volume
CS-2002-46	Ball mill, used in grinding, no rad, packaged in a plastic bag and wood box.	MFC-794	Mixed fission products, 0.1 mR/hour at 1 in.	35 lb 25 × 25 × 20 in.
CS-2002-47	Polisher, used for polishing plutonium.	MFC-794	Pu-238, less than 1 mR/hour at 1 in.	100 lb 37 × 30 × 47 in.
CS-2002-48	Hydraulic press used to make beryllium slugs, packaged in a wooden box.	MFC-794	H-3, Co-60, mixed fission products, 10 mR/hour at 1 in.	251 lb 39 × 18 × 21 in.
CS-2002-57	Carriage drive motor, oil sampled, double poly bagged and placed into a wood box.	MFC-794	No PCBs found, 10 mR/hour at 1 in.	100 lb 14 × 20 × 28 in.
CS-2002-58	Core drilling equipment, stored in a wood waste box #2719230, equipment was not bagged.	MFC-794	Suspect internal contamination, mixed fission products, container survey less than 0.1 mR/hour at 1 in.	4 × 4 × 8 in.
CS-2003-3	Furnace from Lawrence Livermore, equipment number: P060877, parts packaged in eight smaller boxes placed in a wooded box.	MFC-794	U-238, in hot zone of furnace, lead is unknown, less than 0.1 at 1 in. on exterior of smaller boxes	66 × 62 × 87 in.
CS-2003-4	LECO Carbon Analyzer packaged in plastic bag inside of a wooden box.	MFC-794	Suspect U-235, less than 0.1 mR/hour at 1 in.	200 lb 38 × 22 × 32 in.
CS-2003-5	Idaho Cleanup Project torch box packaged on metal frame in a wooden box.	MFC-794	Suspect fission and activation products, less than 0.1 mR/hour at 1 in.	270 lb 34 × 34 × 39 in.
CS-2003-9	Thermoline laboratory furnace packaged in plastic bag and wooden box.	MFC-794	Suspect fission products, container survey less than 0.1 mR/hour at 1 in.	32 × 42 × 28 in.
CS-2003-13	Grapples	MFC-794	Not applicable or not available	One
MFC070121	Mettler balance and ambeous	MFC-794	U-233, U-235, and all Pu isotopes total activity 2.92E-06 Ci	55 gal/146.10 lb 55 gal/71.80 lb
MFC070122	Profilometer	MFC-794	U-233, U-235, and all Pu isotopes total activity 2.96E-06 Ci	55 gal/220 lb 55 gal/146.40 lb
MFC070127	HFEF-9 cask	MFC-794	Contains encased lead	5 tons 34 × 43 in.

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info ^{a,b}	Size/Volume
MFC070128	HFEF-10 cask	MFC-794	Contains encased lead	5 tons 34 × 43 in.
TRA010029	TRA contact-handled TRU waste	MFC-794	Not applicable or not available	85-gal drum
13617-??	Box of radioactive material located on the Contaminated Equipment Storage Building pad. Detailed physical inventory has not been conducted (4 × 4 × 8 ft). ID number is illegible.	MFC-794 pad	Severely weathered and essentially exposed to precipitation/vulnerable for a release	One 4- × 4- × 8-ft box
13617-11	Box of radioactive material located on the Contaminated Equipment Storage Building pad. Detailed physical inventory has not been conducted (4 × 12 × 8 ft).	MFC-794 pad	Severely weathered and essentially exposed to precipitation/vulnerable for a release	One 4 × 12 × 8-ft box
13617-12	Box of radioactive material located on the Contaminated Equipment Storage Building pad. Detailed physical inventory has not been conducted (2 × 4 × 8 ft).	MFC-794 pad	Severely weathered and essentially exposed to precipitation/vulnerable for a release	One 2 × 4 × 8-ft box
13617-4	Box of radioactive material located on the Contaminated Equipment Storage Building pad. Detailed physical inventory has not been conducted (3 × 4 × 8 ft).	MFC-794 pad	Severely weathered and essentially exposed to precipitation/vulnerable for a release	One 3 × 4 × 8-ft box
13617-5	Box of radioactive material located on the Contaminated Equipment Storage Building pad. Detailed physical inventory has not been conducted (4 × 4 × 8 ft).	MFC-794 pad	Severely weathered and essentially exposed to precipitation/vulnerable for a release	One 4 × 4 × 8-ft box
13617-9	Box of radioactive material located on the Contaminated Equipment Storage Building pad. Detailed physical inventory has not been conducted (5 × 5 × 8 ft).	MFC-794 pad	Severely weathered and essentially exposed to precipitation/vulnerable for a release	One 5 × 5 × 8-ft box
13617-2	Box of radioactive material located on the Contaminated Equipment Storage Building pad. Detailed physical inventory has not been conducted (4 × 6 × 8 ft).	MFC-794 pad	Severely weathered and essentially exposed to precipitation/vulnerable for a release	One 4 × 6 × 8-ft box
MFC-794P-001	HFEF-11 Cask TREAT MK-II	MFC-794 pad	Encased lead, potential internal contamination	One cask

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info^{a,b}	Size/Volume
MFC-794P-002	HFEF-12 Cask	MFC-794 pad	Encased lead, potential internal contamination	One cask
MFC-794P-003	HFEF-3 Cask	MFC-794 pad	Encased lead, potential internal contamination	One cask
MFC-794P-004	HFEF-4 Cask.	MFC-794 pad	Encased lead, potential internal contamination	One cask
MFC-794P-005	HFEF-RM-16 Cask	MFC-794 pad	Encased lead, potential internal contamination	One cask
MFC-794P-006	Power Reactor Development Company-1 Cask	MFC-794 pad	Encased lead, potential internal contamination	One cask
MFC-794P-007	Power Reactor Development Company-2 Cask	MFC-794 pad	Encased lead, potential internal contamination	One cask
MFC-794P-008	R-1 Cask	MFC-794 pad	Encased lead, potential internal contamination	One cask
MFC-794P-009	R-2 Cask	MFC-794 pad	Encased lead, potential internal contamination	One cask
MFC-794P-010	Reactor Analysis Safety: Argonne National Laboratory-402 cask, contains approximately 5 metric tons of depleted uranium.	MFC-794 pad	Potential internal contamination, depleted uranium	One cask
MFC-794P-011	Reactor Analysis Safety: Argonne National Laboratory-403 cask contains approximately 5 metric tons of depleted uranium.	MFC-794 pad	Potential internal contamination, depleted uranium	One cask
MFC-794P-012	Box, nonradioactive cask adaptor	MFC-794 pad	Nonradioactive	2 × 4 × 4-ft box
MFC-794P-013	Unused lead pig	MFC-794 pad	Encased lead	One pig
AW-1-14	Cask; encased lead	MFC-794 pad	Potential internal contamination, encased lead	One cask
MFC Sodium Process Facility (MFC-799)				
MFC-799-001	Drum cutting table, jib crane boom in southwest corner of the Sodium Process Facility (SPF).	MFC-799	Not applicable or not available	Approximately 8 × 8 ft
MFC-799-002	SPF spare parts	MFC-799	Not applicable or not available	Not determined
MFC-799-003	Ethanol wash module	MFC-799	Not applicable or not available	Not determined

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info ^{a,b}	Size/Volume
MFC-799-004	Four miscellaneous-sized totes	MFC-799	Potentially contaminated	Various sizes and configurations
MFC-799-005	Day Tank A. 0.25 gal in 799 D&D of 799	MFC-799	Not applicable or not available	Not applicable or not available
MFC-799-006	Day Tank B. 0.25 gal in 799 D& D of 799	MFC-799	Not applicable or not available	Not applicable or not available
MFC-799-007	New 71- gal drums Square drums for SPF 70% sodium hydroxide. No quality assurance (QA).	MFC-799	70% sodium hydroxide; no QA	71-gal drum
MFC-799-008	New 71-gal drums Square drums for SPF 70% sodium hydroxide. No QA.	MFC-799	70% sodium hydroxide; no QA	71-gal drum
MFC-799-009	New 71-gal drums Square drums for SPF 70% sodium hydroxide. No QA.	MFC-799	70% sodium hydroxide; no QA	71-gal drum
MFC-799-010	New 71-gal drums Square drums for SPF 70% sodium hydroxide. No QA.	MFC-799	70% sodium hydroxide; no QA	71-gal drum
MFC-799-011	New 71-gal drums Square drums for SPF 70% sodium hydroxide. No QA.	MFC-799	70% sodium hydroxide; no QA	71-gal drum
MFC-799-012	Three pallets of metal scrap/WERF parts	MFC-799	Not applicable or not available	Not applicable or not available
MFC-799-013	A lot of miscellaneous metal	MFC-799	Not applicable or not available	Not applicable or not available
MFC-799-014	Insert for solidification station	MFC-799	Not applicable or not available	Not applicable or not available
MFC				
MFC-001	Assortment of empty drums	MFC	No QA.	Not applicable or not available
Central Facilities Area				
CFA-637-001	NUCLTEC hot cell window purchased in 1990 for a mock-up activity, believed to be leaded glass. Window has been boxed and placed into storage.	Central Facilities Area	Gamma scan was completed. Highest activity measured: 3.01×10^{-2} μ Ci Cs-137. 2,200 cpm around edges of the metal window frame, Property ID 282248.	2,320 lb 31 \times 31 \times 12 in.

Table 2. (continued).

Item Number	Description	Facility/ Building	Characterization Info ^{a,b}	Size/Volume
a.	Mixed activation products are C-14, Co-57, Co-58, Co-60, Cr-51, Eu-152, Fe-55, Fe-59, H-3, I-123, Mn-54, Mo-93, Nb-94, Ni-59, and Ni-63.			
b.	Mixed fission products are Ag-111, Ba-137m, Ba-140, Cd-115, Ce-141, Ce-144, Cs-134, Cs-135, Cs-137, Eu-154, Eu-155, I-129, I-131, In-115, Kr-85, La-140, Nb-93m, Nb-95, Nd-147, Pd-107, Pm-147, Pr-143, Rb-87, Rh-106, Ru-103, Ru-106, Ru/Rh-106, Sb-124, Sb-125, Se-79, Sm-151, Sn-117m, Sn-119m, Sn-123, Sn-125, Sr-89, Sr-90, Tc-99, Te-125m, Te-127m, Te-129m, Te-132, Xe-133, Y-90, Y-91, Zr-93, and Zr-95.			

4. CONCLUSIONS

To support potential transfer of legacy material from NE to EM, subject matter experts from the ATR Complex, MFC, Central Facilities Area, Research and Education Campus, and Specific Manufacturing Capability have evaluated excess items at each campus for potential transfer to EM. The inventory compiled in this report consists of unneeded legacy materials generated from operations, past programs, or material that has accumulated because a disposition path was not identified, available, or affordable. The identified legacy materials were further examined and photographed to the extent possible to determine if the materials are potential candidates for transfer to EM. Thirteen items or groups of items have been identified in this report for transfer from NE to EM. Unless specifically identified by EM for transfer, materials included in Table 2 will be added to the INL unneeded materials and chemical inventory.

5. REFERENCES

- DOE, 2001, *A Report to Congress on Electrometallurgical Treatment Waste Forms*, March 2001
- DOE, 2006, *Deputy Secretary of Energy's Fiscal Year 2008 Program Decision Memorandum*, EM-08-12, Rev. 1, dated August 10, 2006.
- DOE, 2008, *Assessments of Facilities, Materials, and Waste Proposed for Transfer to DOE-EM*, U.S. Department of Energy, Office of Environmental Management, Office of Engineering and Technology, EM-20, September 23, 2008.
- EDF-4048, "TRA/MTR Voluntary Consent Order Tank System TRA-008, TRA/MTR Laboratory Vent Scrubber System Characterization."
- Triay, I. R., to R. S. Johnson, Interoffice Memorandum: "Environmental Management Transfer Decisions for Nuclear Energy Excess Facilities and Materials," Department of Energy, February 20, 2009.

6. DRAWINGS

- INL Reference Drawing 222863, *MFC 222863-E Hoist Gear and Drum Assembly Carriage Assembly*, Rev. 000K, February 14, 1995.
- INL Reference Drawing 222863, *MFC 222863-PL Hoist Gear and Drum Assembly Carriage Assembly*, Rev. 000F, October 1, 1995.
- INL Reference Drawing 222965, *Mounting Ring*, Rev. G, January 27, 1995.
- INL Reference Drawing 222966, *Outer Casting Tube Rotate*, Rev. G, January 27, 1995.
- INL Reference Drawing 720251, *MFC W0006-0090-DE FEFPL-Circular Mill Assembly*, February 8, 1974.
- INL Reference Drawing 755618, *MFC 229463-D Forearm Assembly*, Rev. 000C, August 1, 1998.
- INL Reference Drawing 756629, *MFC CE-2224-97-E Carriage Motor Mount Assembly*, Rev. 000K, August 1, 1998.
- INL Reference Drawing 757386, *MFC CE-2224-70-PL Tube Rotation Motor Mount Assembly*, Rev. 000H, July 1, 1998.

INL Reference Drawing 757389, *MFC CE-2224-97-PL Carriage Motor Mount Assembly*, Rev. 000K, January 8, 1997.

INL Reference Drawing 757528, *MFC 229463-PL Forearm Assembly*, Rev. 000B, February 1, 1995.

INL Reference Drawing S3214-0045-ME, *MFC S3214-0045-ME Treat Shield Lower Cylindrical Shielded Locating Support Stand Assembly*, Rev. 0, March 16, 1982.

Appendix A

Supporting Documentation for MFC-794 Items

Appendix A

Supporting Documentation for MFC-794 Items

TSD FACILITY WASTE-ACCEPTANCE CHECKSHEET					
SECTION 1 — WASTE-GENERATOR-SUPPLIED INFORMATION					
Facility Waste Specialist:	R. Batten			Date:	3/27/03
Process knowledge contact:	R. Batten		Expected transfer date:	3/28/03	
Waste					
Source:	WERF ROSS Orbital Mixer				
Type: (S) (M) (L) (W) <input checked="" type="checkbox"/> LLW	Net volume:	320 ft ³	Gross volume:	350 381 ft ³	
Radionuclide (curies) inventory printout attached:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
Container					
Physical description:	ROSS Orbital Mixer				
Content description:	mixer on steel skids: head + blades covered w/ poly drum				
Radiation levels:	0.2 @ 1 in.	<0.1 @ 1 meter	Fissile-material quantity (g):	0	
Barcode No(s):	CS-03-07				
Net weight: 4100# 1500#	Gross weight:	2000#	Properly labeled:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
SECTION 2 — TSD FACILITY WASTE SPECIALIST REVIEW					
Off-site waste-generator SAP and QAPjP have been reviewed and are acceptable:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A				
Facility/area permitted to store/treat waste:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Storage duration:	CESB Storage		
Waste receipt:	<input checked="" type="checkbox"/> Container <input type="checkbox"/> Shipment	If shipment, number of containers:	N/A		
IWTS shipment task No.:	/		Material profile No.:	/	
Storage area: CESB <input checked="" type="checkbox"/>	Area 797		SCMS		SSB
	<input type="checkbox"/> RSSF cargo container No. _____ <input type="checkbox"/> ORSA		<input type="checkbox"/> High bay <input type="checkbox"/> 793-C <input type="checkbox"/> 793-E <input type="checkbox"/> 793-F <input type="checkbox"/> 793-G		<input type="checkbox"/>
Storage requirements:	CESB RAO Storage area.				
Surveillance requirements:	NONE				
Hazard-Category Threshold Quantities ¹			Fissile-Material Inventory (g)		
SCMS/SSB	Category-3 Threshold Quantities Exceeded	<input type="checkbox"/> No	Current Inv.	Projected Total	Exceeds 100 g ²
Area 797/CESB	Category-2 Threshold Quantities Exceeded	<input checked="" type="checkbox"/> No	0	0	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Waste characterization data has been reviewed; waste acceptable for facility/area storage and/or treatment.					
Waste Specialist	R. Batten			Date:	3/27/03
SECTION 3 — TSD FACILITIES MANAGER REVIEW AND APPROVAL					
Off-site waste-generator SAP and QAPjP have been reviewed and are acceptable:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A				
The waste is approved for acceptance.					
TSD Facilities Manager	V. Jandels			Date:	3/28/03
SECTION 4 — WASTE RECEIPT					
Container-Transfer-Operations Inspection Form has been completed.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A				
Storage No.:	CESB CS-03-07				
Facility Area Supervisor	R. Batten			Date:	3/28/03

¹ The waste cannot be accepted if the proposed shipment will cause the applicable facility/area hazard-category threshold quantities to be exceeded.

² If the total facility fissile-material inventory exceeds 100 g, the Small Quantity Use Exemption (ref. AWP 2.11) must be referenced and the special-exemption conditions met.

RADIOACTIVE MATERIAL STORAGE REQUEST & RECORD			
Storage Authorization: <u><i>[Signature]</i></u> <u>3/28/03</u> <small>Signature & Date</small> Storage is authorized if signed by the cognizant Facility management.			
Storage Number: <u>CS-03-007</u>	Storage Location: <u>CESB West</u>	Date RECEIVED: <u>03/28/03</u>	Date REMOVED: _____
Part I <small>(To be completed by the requestor.)</small>			
Requestor: <u>R. Batten</u>		Date: <u>3/27/03</u>	
Responsible Individual: <u>F. Felicione</u>		Originating Facility: <u>WERF</u>	
Type of Container: <u>Wood Box</u>		Dimensions: <u>5'1/2" x 8' x 8'</u>	
Contents of Storage Container: <u>ROSS Orbital Mixer, Contaminated on mixer head area only. Contains ORL in hydraulic system Oct is PCB free. (Box is NOT suitable for disposal)</u>		Total Weight: <u>est. 1500# 4/100#</u>	
Describe how internally packaged: <u>Mixer head has a poly drum taped to it to contain surface contamination on the head area.</u>			
ANL Equipment Numbers: <u>P060928</u> <small>(If available)</small>			
Probable Isotopes Present: _____ <small>(Attach analysis data if available)</small>			
Does this container or equipment contain lead (Pb)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Amount: _____ lbs.			
Does this container or equipment contain fissile material? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <small>(If yes attach assay data - Required for storage)</small>			
Part II <small>(To be completed by the originating HP Field Office.)</small>			
Internal Contents Survey Results:			
Dose Rate at Surface: <u>0.15</u> mR/hr βγ @ <u>1</u> " & <u>0.15</u> mR/hr γ @ <u>1</u> "			
Loose Surface Contamination: <u><200</u> dpm/100cm ² βγ & <u><20</u> dpm/100cm ² α			
External Packaging Survey Results:			
Dose Rate at Surface: <u>0.15</u> mR/hr βγ @ <u>1</u> " & <u>0.15</u> mR/hr γ @ <u>1</u> "			
Dose Rate at 1 meter: <u><0.1</u> mR/hr βγ @ 1 meter & <u><0.1</u> mR/hr γ @ 1 meter			
Loose Surface Contamination: <u><200</u> dpm/100cm ² βγ & <u><20</u> dpm/100cm ² α			
Remarks: _____			
Survey Completed By: <u><i>[Signature]</i></u> Date: <u>3/28/03</u>			

For storage and packaging requirements see RFS-PM 6.5,
 "Bldg. 794 - Contaminated Equipment Storage Building Administration and Operation"

White copy - Storage Record Files
 Green copy - Originating RFS Health Physics Field Office
 Yellow copy - Requestor
 Pink copy - Materials Services Foreman

RADIOACTIVE MATERIAL STORAGE REQUEST & RECORD

Storage is authorized if signed by the Radiation Safety Storage Supervisor. R. J. Smith 6/4/03 Storage Number: CS-03-08

REQUESTER: JOB Blankenship DATE: 6-9-03 TIME: 1430

ORIGINATING FACILITY: ZPPR / CELL RESPONSIBLE INDIVIDUAL: F. FELICIONE

CONTENTS OF STORAGE CONTAINER: BOE PRESSURE TRANSDUCERS AND RELATED CANNISTER EQUIPMENT; PRESSURE VENTING RIG; SCALE; TC's; ROTO FLEX PUMP; ELECTRIC HOIST.

PROBABLE ISOTOPES PRESENT: _____

TYPE CONTAINER: 2'x2'x4' WOODEN BOX DIMENSIONS: 2'x2'x4'

APPROXIMATE TOTAL WEIGHT: 200 ANL EQUIPMENT NUMBERS (if any): 163 # NET WT. OF EQUIPMENT

HOW INTERNALLY PACKAGED: 10 INDIVIDUAL SINGLE RIG BAGS, INSIDE 4'x4'x4' APPROVED BOX LINER; INSIDE 2'x2'x4' PLYWOOD BOX

DOES BOX CONTAIN LEAD? YES: _____ NO: X AMOUNT: N/A Lbs.

RADIATION SAFETY DATA DATE SURVEYED: 6-9-03

CONTENTS SURVEY RESULTS: DOSE RATE AT SURFACE 20.1 mR/hr $\beta\gamma$ @ 1 ",
20.1 mR/hry @ 1 ".

LOOSE SURFACE CONTAMINATION 2200 DPM/100cm² $\beta\gamma$, 220 DPM/100cm² α .

CONTAINER SURVEY RESULTS: DOSE RATE AT SURFACE 20.1 mR/hr $\beta\gamma$
@ 1 ". LOOSE SURFACE CONTAMINATION 2200 DPM/100cm² $\beta\gamma$,
220 DPM/100cm² α . REMARKS: _____

SURVEYOR: [Signature]

STORAGE LOCATION: CEB-W STORAGE SUPERVISOR: [Signature]

DATE ITEM RECEIVED IN STORAGE: 6/11/03

DISPOSITION: _____

FOR STORAGE REQUIREMENTS SEE SECTION VII CHAPTER 6 OF THE ANL-W HEALTH & SAFETY MANUAL

GGE Glovebox

GGE Pressure Transmitters/electronics	30#
Tc Heater	15#
Tc's	10#
TC TC valve Assemblies	9#
Reflex Pump	11#
Heat ex (chain manual) Pall	20#
Special Vent Rig	30#
Drill Rig	12#
Pressure Transducers	10#
Scale	17#
	<hr/>
	163#

Appendix B

**Specific Manufacturing Capability Supporting
Documentation**

Appendix B

Specific Manufacturing Capability Supporting Documentation

From: Reese W Gannon [Reese.Gannon@inl.gov]
Sent: Monday, January 18, 2010 8:32 AM
To: Stacy Nottestad
Subject: Legacy Material Inventory Request SMC

Reese Gannon
Office 526-7056
Cell 569-8112

----- Forwarded by Reese W Gannon/GANNRW/CC01/INEEL/US on 01/18/2010 08:32 AM -----

Martin J Edwards/MJE/CC01/INEEL/US

11/19/2009 10:34 AM

To Reese W Gannon/GANNRW/CC01/INEEL/US@INEL
cc Marshall L Marlor/MARLMR/NON/INEEL/US@INEL, Kent
Dyett/DYETNK/CC01/INEEL/US@INEL, Chip
Barnhart/BARNCE/CC01/INEEL/US@INEL, Landry J
Austin/AUSTLJ/CC01/INEEL/US@INEL, Timothy L
Carlson/TCL/CC01/INEEL/US@INEL
Subject Legacy Material Inventory Request

Regarding the above subject: The SMC project has no unneeded materials for potential transfer to the DOE Office of Environmental Management. Please call me if you have questions or need additional information.

M.J. Edwards, SMC Project Environmental Lead. 6-6314