

# *Remote Handled Transuranic Waste (RH-TRU) Status for the INL Citizen's Advisory Board*



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**EM** *Environmental Management*

## *RH-TRU Waste Background*

- What is RH-TRU?
  - Remote Handled Transuranic Waste – Waste that requires special handling and is contaminated with elements having atomic numbers greater than uranium (i.e. plutonium, americium, etc.).
- Why is it different than CH-TRU?
  - High radiation fields (>200mR/hr on contact).
  - Requires shielding and remote handling to limit personnel exposure.
  - Increased time and cost compared to CH-TRU.
- How is it handled?
  - Hot cells.
  - Manipulators, cranes, robotic arms.
  - Shielded Containers.



Open Container Showing Waste  
(Hot Cell Windows Cause Orange Tint and Distortion)



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## *INL RH-TRU Characteristics*

- Materials in INL RH-TRU Waste
  - Reactor components/activated metals (i.e. structural members from reactor core)
  - Fuel examination debris (i.e. mill shavings from cutting fuel)
  - Hot cell debris (i.e. materials/equipment used in hot cells)
- Characteristics of INL RH-TRU Waste
  - Waste from various generators (MFC, Argonne National Lab, TRA, etc.)
  - Waste in various storage configurations.
  - Very high radiation fields up to 6,000 R/hr.
  - Some contaminated with sodium.
  - May contain pyrophoric metal fines.

Pyrophoric Metal Fines Fire



Waste Removal/Sorting



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## *Current Contract RH-TRU Scope*

- ARRA Funded RH-TRU
  - Approximately \$85M
  - Repackage 160 Containers (25.6 m<sup>3</sup>)
    - 136 Hot Fuel Exam Facility Canisters
    - 8 Sodium Loop Storage Facility Canisters
    - 13 24" (Large) Liners
    - 3 Miscellaneous Containers
- Other RH-TRU Work
  - Approximately \$30M
  - Repackage 68 Containers
  - Repackage 5 Vaults



**Manipulator Repair Activities**

**In-Cell Waste Movement**



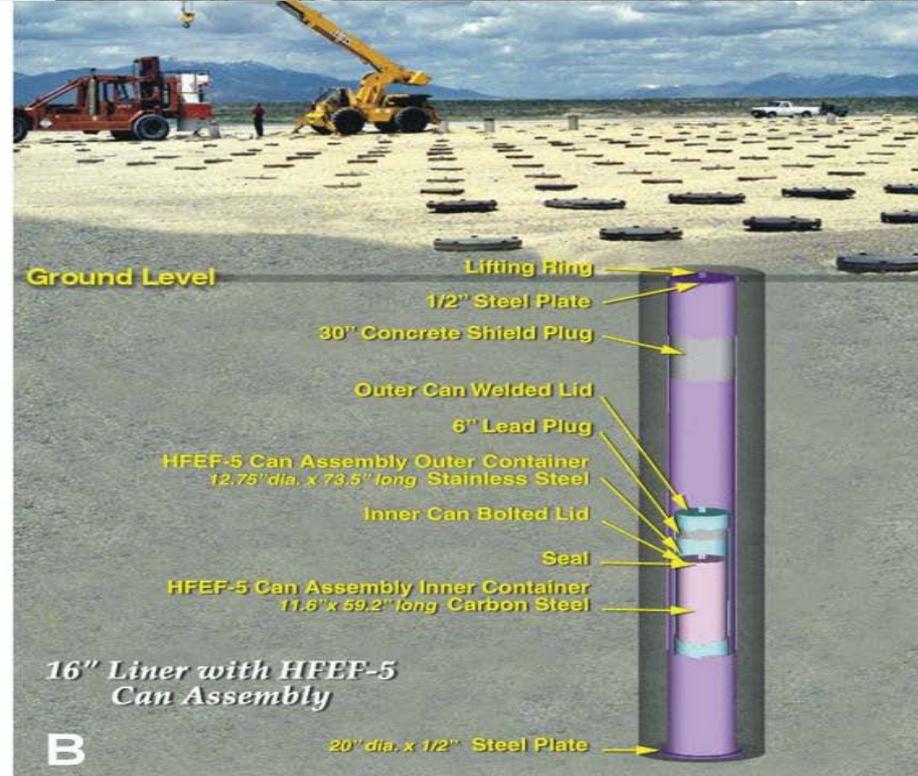
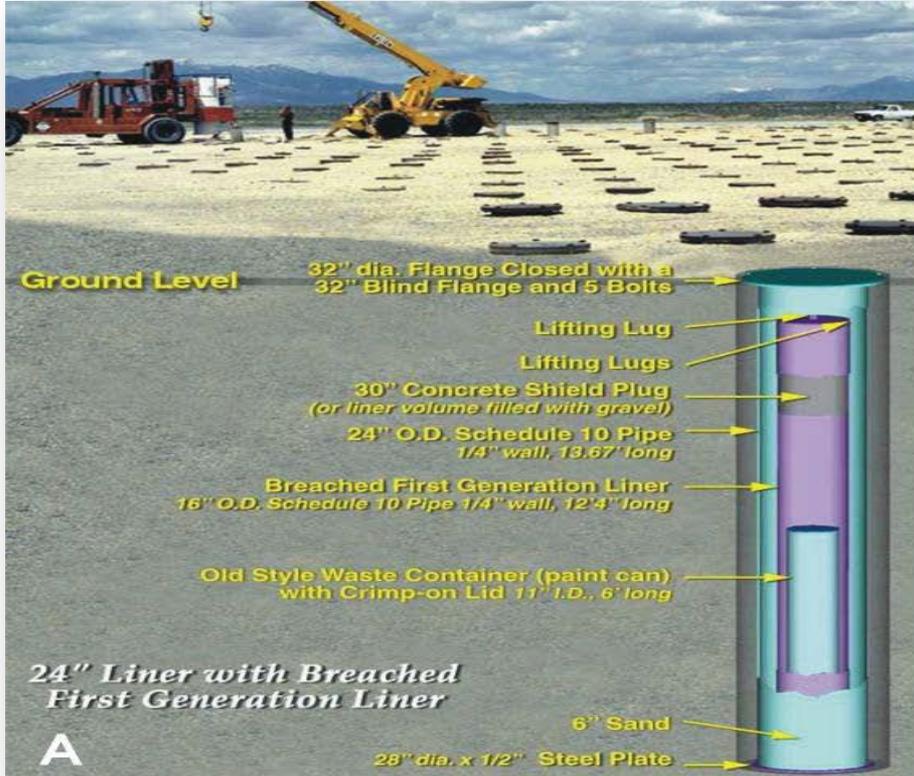
**Waste Load-Out Activities**

HFEF-5 Container Retrieval from Storage



# RH-TRU Process (Waste Retrieval)

- Storage
  - Waste stored in various configurations.
  - Mainly Stored underground at MFC.
- Retrieval
  - MFC waste retrieval performed by BEA
  - HFEF-5 Containers removed from storage container.
  - 24" Liners removed from the ground.



## *RH-TRU Process (Transportation)*

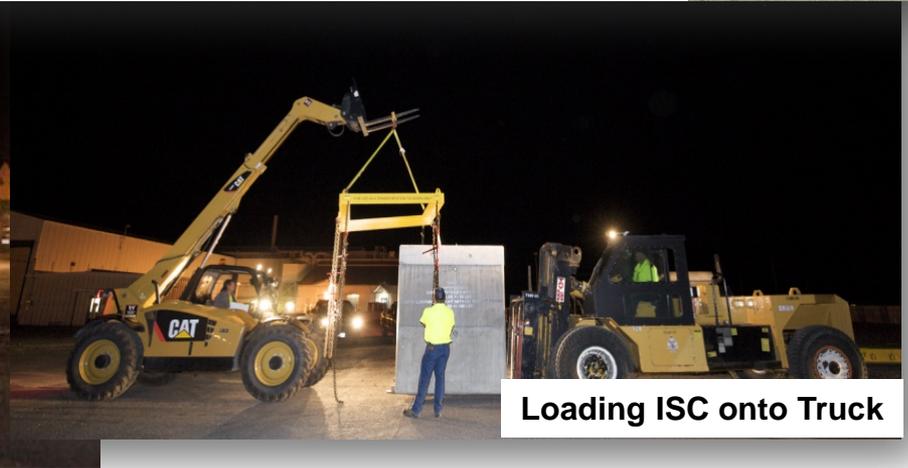
- Shipping Configurations
  - Interim Storage Containers used for smaller waste packages.
  - Facility Transfer Containers used for larger waste packages.
- Transportation
  - Non-licensed shipping containers.
  - Moved from MFC to INTEC on Highway 20.
  - Made out of commerce.



Truck Loaded with Facility Transfer Container



Truck Loaded with Interim Storage Container



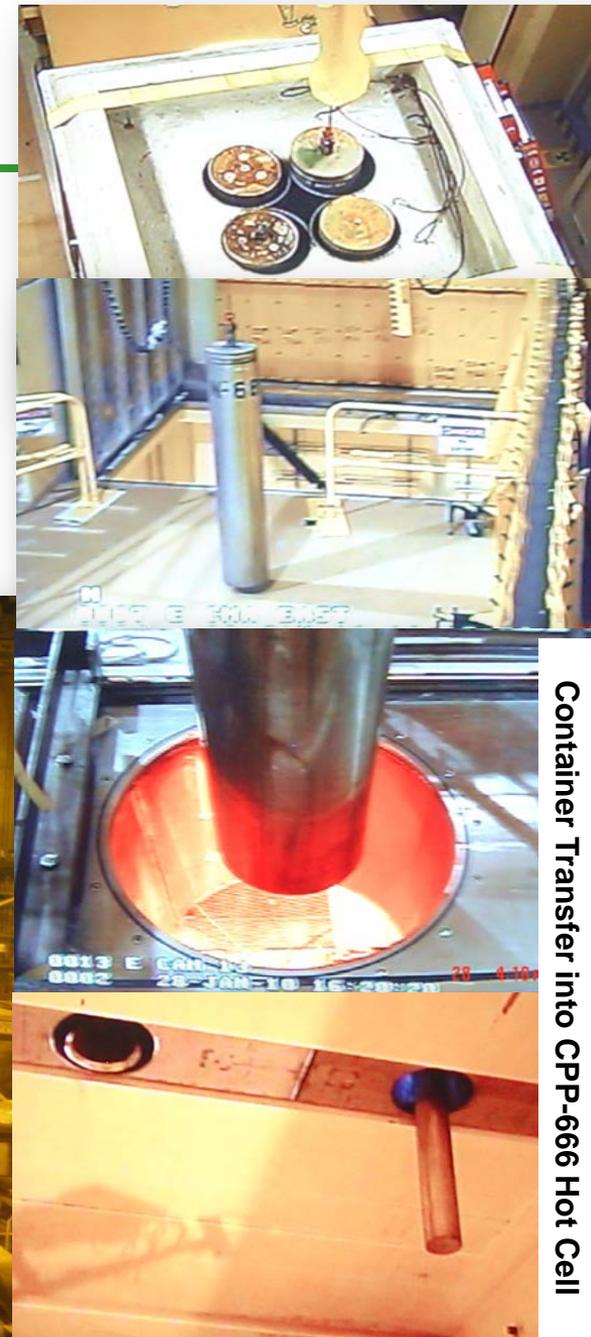
Loading ISC onto Truck

# *RH-TRU Process (Waste Repackaging)*

- CPP-659 Decontamination Hot Cell
  - Initially used to decontaminate equipment associated with the calciner.
  - Hot cell now used for waste repackaging.
- CPP-666 Florinel Dissolution Process Hot Cell
  - Cell initially designed for fuel reprocessing.
  - Modified for RH-TRU repackaging using ARRA funding.
  - Modifications support on-going RH waste mission 2018 and beyond.



CPP-666 Hot Cell Operations



Container Transfer into CPP-666 Hot Cell

# Waste Repackaging in Hot Cell

Container Cutting



Product Drum Removal



Prohibited Item Removal from Waste



Waste Removal from Container



## *RH-TRU Process (Characterization and Shipping)*

- Characterization
  - Examines repackaged waste for shipment to WIPP.
  - Creates a record that demonstrates waste meets WIPP waste acceptance criteria.
  - Performed in CPP-659.
- Shipping
  - Once approved by WIPP.
  - Waste loaded into RH-72B casks.
  - Transported to WIPP for final disposal.
  - Casks loaded in CPP-659.



Loading Crew with Loaded RH-72B



Impact Limiter Installation

## *Current Status of RH-TRU Work*

- Shipping to WIPP
  - 260 Shipments to Date of 526 Total
- ARRA Funded RH-TRU
  - Repackaged 118 Containers for 21.6 m<sup>3</sup>.
  - \$9M of cost savings to extend ARRA work in FY2012.
  - Finish repackaging by 2013 using Base funding.
- Other RH-TRU
  - Repackaged 61 containers.
  - Finish repackaging by 2013.
  - Ship waste to WIPP by 2014.



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## ***RH-TRU Scope Looking Forward***

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- Completion of ARRA Funded Waste
- Completion of Other Waste
- Idaho Settlement Agreement Compliance
  - Approximately 100 containers of Settlement Agreement RH-TRU remaining at MFC.
  - All remaining RH-TRU sodium contaminated.
  - Develop/Install sodium treatment system.
  - Finish repackaging by 2017 to allow treatment and shipping by 2018.
- Waste Beyond Idaho Settlement Agreement
  - Newly generated RH-TRU.
  - RH mixed low level waste.
  - Continued use of CPP-666 hot cell beyond 2018.



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