



U.S. DEPARTMENT OF
ENERGY



K-Area Pu Down Blending Overview and Update

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Brief to Citizens Advisory Board

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Acronyms

- **AROD** **Amended Record of Decision**
- **CCO** **Criticality Control Overpack**
- **DOE** **Department of Energy**
- **EM** **Department of Energy Office of Environmental Management**
- **EPA** **Environmental Protection Agency**
- **KIS** **K-Area Interim Storage**
- **MT** **Metric Ton**
- **NNSA** **National Nuclear Security Administration**
- **Pu** **Plutonium**
- **SRS** **Savannah River Site**
- **WIPP** **Waste Isolation Pilot Plant**

Purpose

- Update SRS Citizens Advisory Board on EM progress with disposition of surplus non-pit plutonium in K-area



Guiding Requirements

- **Record of Decision (81 FR 19588, April 2016) to implement the dilute and dispose strategy to prepare up to 6 metric tons of non-pit surplus plutonium for disposal at the Waste Isolation Pilot Plant (WIPP) facility**
 - Amended Record of Decision (85 FR 53350) to implement the dilute and dispose strategy to prepare additional 7.1 metric tons of non-pit surplus plutonium for disposal at the WIPP facility
- **Record of Decision (89 FR 28763, April 2024) NNSA announces its decision to use the dilute and dispose strategy, rather than the Mixed Oxide Fuel (MOX) Program, to permanently dispose of 34 metric tons (MT) of plutonium surplus to the defense needs of the Nation (surplus defense-related plutonium).**
- **All packaged waste required to meet the WIPP Waste Acceptance Criteria**
 - Packaged in Nuclear Regulatory Commission certified Criticality Control Overpacks (CCOs)
 - Must go through rigorous WIPP managed characterization/certification program (includes US EPA and State of New Mexico Environment Department requirements)
 - Meet WIPP mine/facility safety requirements
 - Must be shipped in NRC-certified TRUPACT-IIs

K-Area Overview

- **Joint EM and NNSA mission**
- **Provides for the safe and secure storage of excess plutonium and other special nuclear materials and fulfills the U.S. commitment to international nonproliferation efforts**
- **Maintains testing outlined in DOE-Standard 3013 for safe storage of 3013 containers**
 - Surveillance and Monitoring Program approved in 2003
 - Technical experts from across the DOE complex select containers for Destructive Examination
 - Corrosion and Shelf-Life Testing
- **Provides for dilute and dispose of surplus Pu**
- **Provides characterize and ship surplus Pu to WIPP**



K-Area Timeline

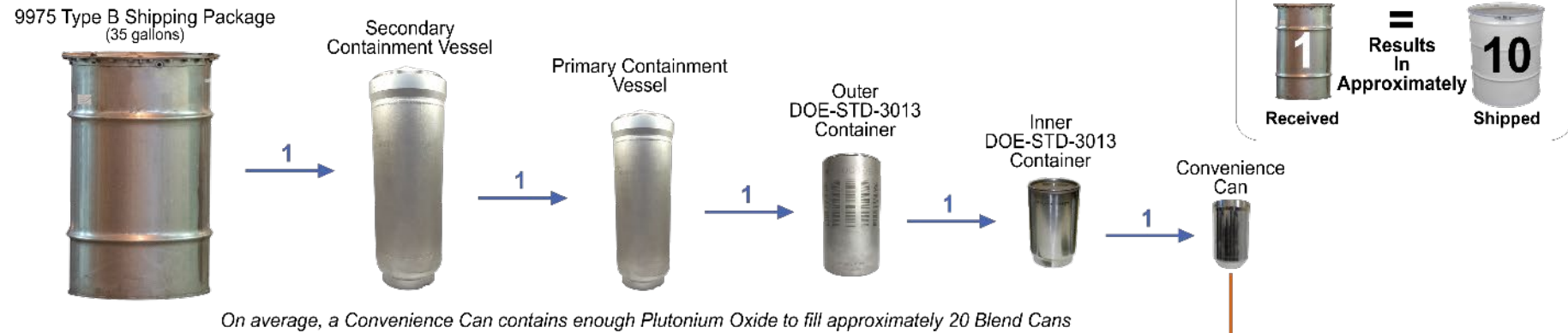
- Plutonium Production Reactor (1954-1992)
- Converted into a surplus Plutonium repository (1997)
- Initiate small glovebox line (K-Area Interim Surveillance, aka KIS) to perform destructive evaluations of stored material (2007)
- Initiate limited Plutonium Downblend process in KIS (2016)
- **Complete process optimization initiatives for the KIS glovebox (2020)**
- Construct CCO Storage Pad and deploy WIPP characterization equipment (2021)
- CCO Pad begins operation & KIS glovebox transitions to 4-shift downblend processing (2021)
- **Complete first shipment to WIPP (December 2022)**
- Gain efficiencies in all areas of Pu disposition in K-Area (Post 2023)
 - NNSA Project to add an additional three glovebox lines

What is the Dilute and Dispose Process?

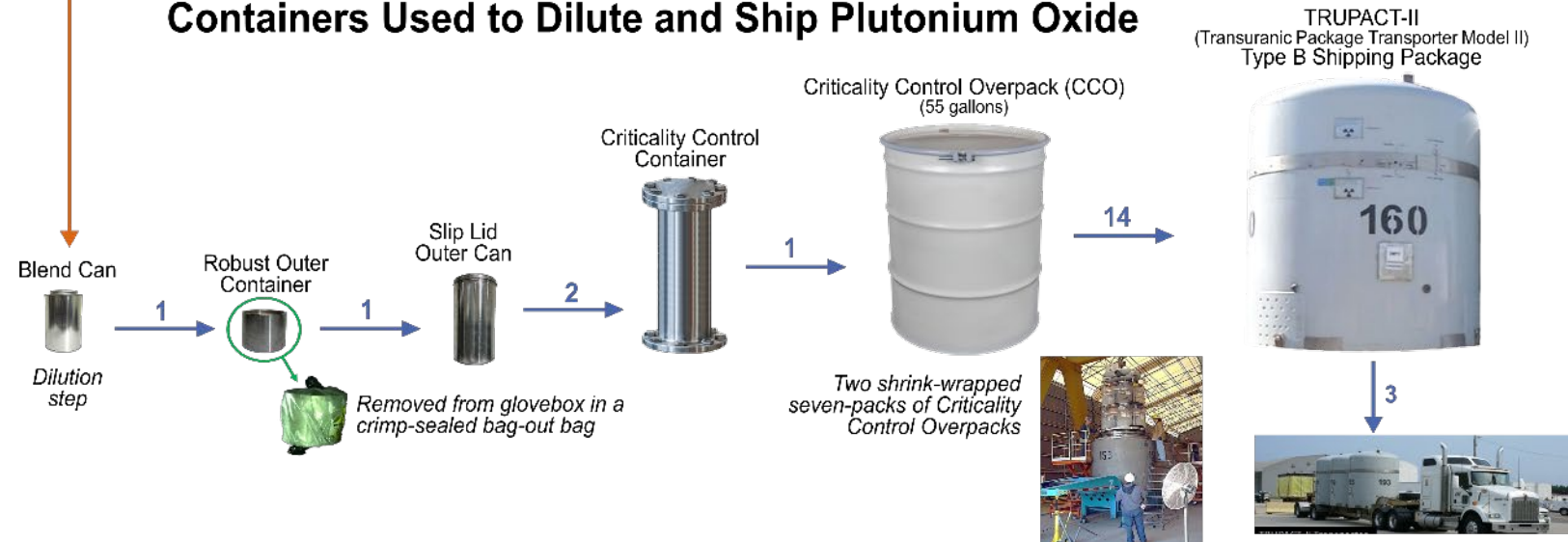
- [K-Area Complex Dilute and Dispose - YouTube](#)

Dilute and Dispose Process

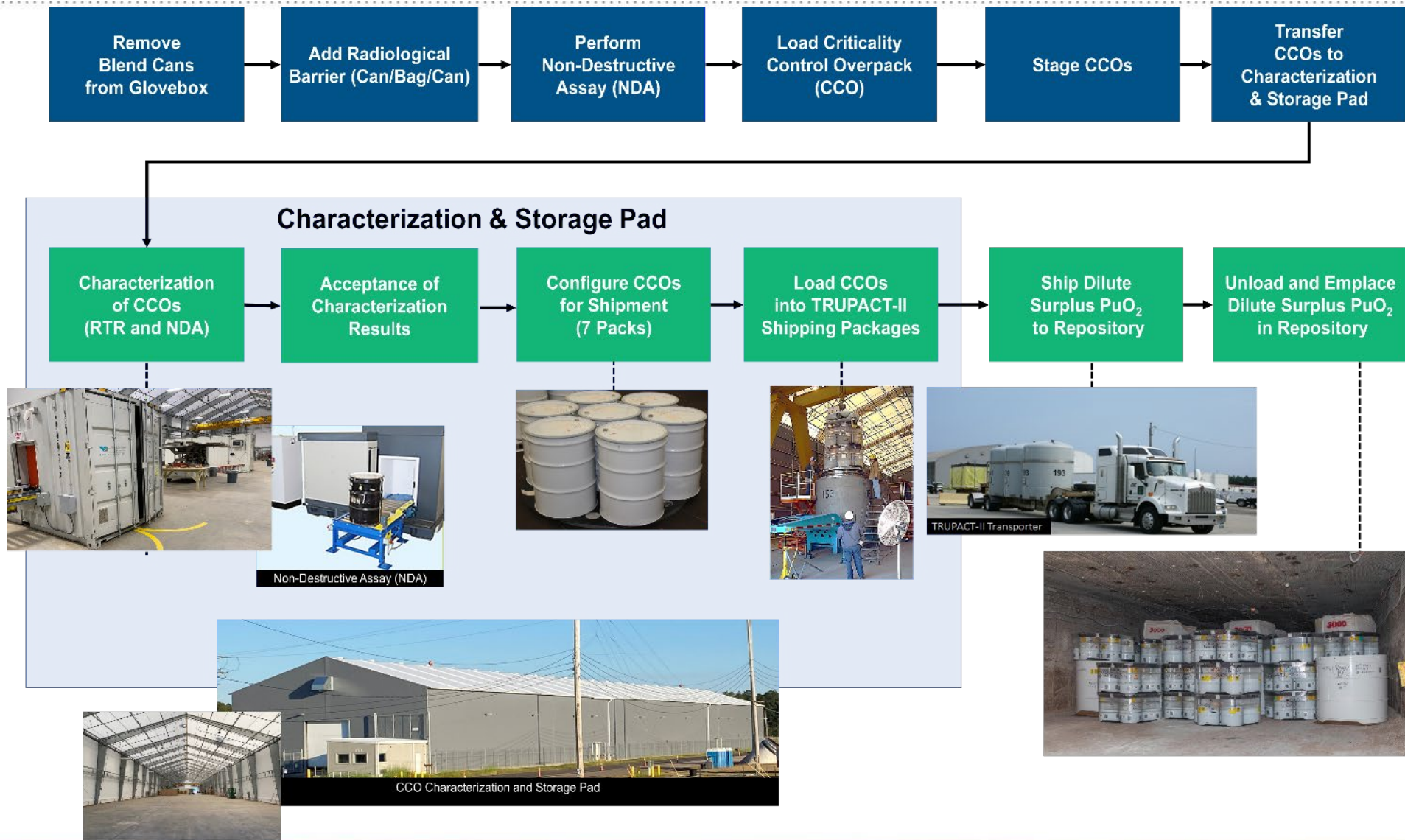
Containers Used to Deliver Plutonium Oxide for Dilution



Containers Used to Dilute and Ship Plutonium Oxide



Characterization Process



Current Status

- **In FY 2023:**
 - First shipment to WIPP
 - *Made 13 shipments (planned for 12 shipments)*
 - Downblended 115 3013 containers (forecasted 110 3013 containers)
- **In FY 2024:**
 - Complete over 30 shipments to WIPP
 - Forecasted to downblend ~ 130 3013 containers
- **Future:**
 - Add additional glove boxes
 - *NNSA project*
 - Increased downblend efficiency

Summary/Take Aways

- **Joint program between EM and NNSA**
- **Site's plutonium is safely stored and processed in K-area**
- **Department has made significant progress in recent years on surplus Pu disposition**
- **Long term success will be measured by program's ability to gain efficiencies in process**