



U.S. DEPARTMENT OF  
**ENERGY**

OFFICE OF  
**ENVIRONMENTAL  
MANAGEMENT**

# WMF-1617 (Accelerated Retrieval Project V) Event Update

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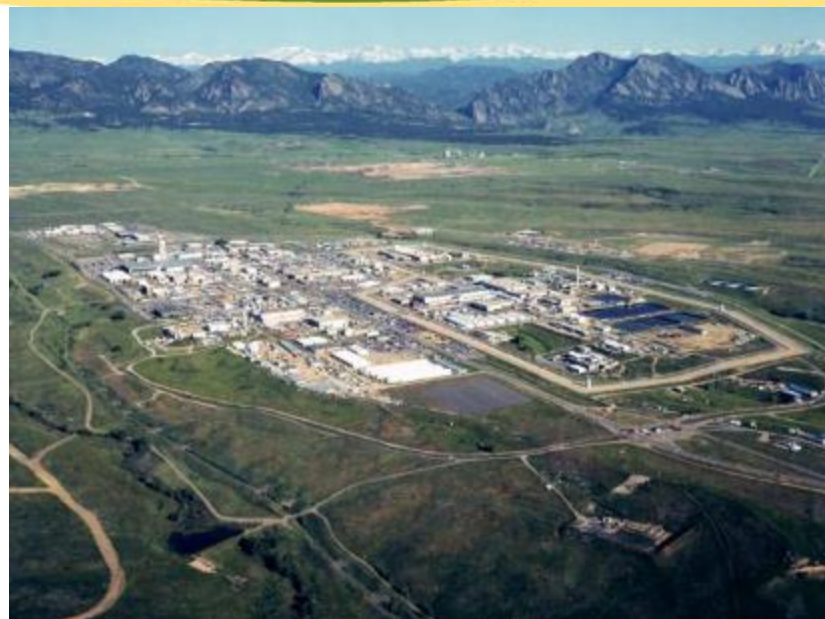
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June 21, 2018

# Sludge Waste History

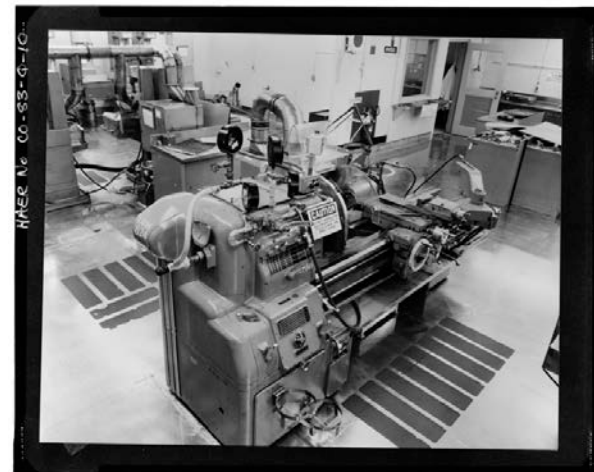
- Produced by various production activities at the Rocky Flats Plant:
  - Cutting oils from lathe processes.
  - Solvents and degreasers containing trichloroethylene and other hazardous constituents.
  - Also contained transuranics.
- A clay-type absorbent or Portland cement was used to absorb the oils and solvents.



(Above) Overhead view of the Rocky Flats Facilities



(Left) Graphite mold for plutonium pit production (right) machining lathe



# Sludge Waste Disposal

- The waste was sent to Idaho for disposal (burial) in the Subsurface Disposal Area (SDA) starting in the 1950s through the end of the 1960s.



Waste drums stacked in SDA Pit 1 circa 1958



Waste drums stacked in SDA Pit 10 circa 1970



# Sludge Drum Retrieval

- The drums involved in the April 11 event were retrieved from the Subsurface Disposal Area (SDA) between 1974 and 1978 during the Initial Drum Retrieval (IDR) Project.
  - A total of 20,262 drums were removed from Pits 11 and 12.
- Following exhumation, the wastes were repackaged, placed in cargo containers, and re-located to the Transuranic Storage Area Retrieval Enclosure.
  - They were placed on an asphalt pad, covered with tarps, and were buried under an earthen berm.



Overhead view of the SDA looking West circa 1978



(Left) Waste stored on Pad R at the Radioactive Waste Management Complex, looking South

# Sludge Drum Characterization

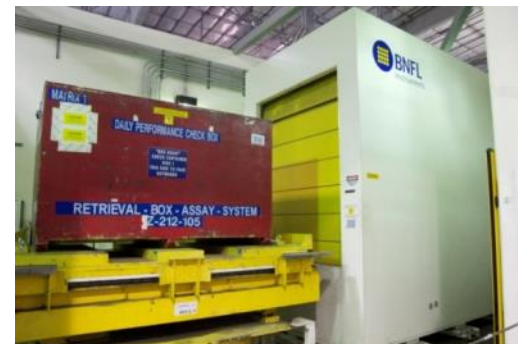


(Left) Cargo container of Pit 11 waste drums retrieved from TSA in 2009



(Above) Waste drums from Pit 11 removed from cargo in 2011

- The cargo containers containing the sludge drums were unearthed in 2009.
- The drums contained in the cargo containers were removed between 2011 and 2016.
- The drums were characterized using real-time radiography (RTR) and a non-destructive assay.
  - They contained WIPP-prohibited items (unopened plastic bottles, containerized and free liquids).



RTR process (Left) and assay unit (Above)



# ARP V Facility



- Construction of ARP V began in 2010 and was completed in January 2011.
- Targeted waste exhumation from Pit 9 was completed several months ahead of schedule during the late summer of 2011.

# Sludge-Waste Processing at ARP V

- Following the completion of its waste exhumation mission, the ARP V facility was permitted under the Resource Conservation and Recovery Act to process sludge waste drums.
- Since beginning its sludge waste processing mission in 2013, ARP V opened, treated, and repackaged over 9,500 drums without incident.

(Right) Waste is examined for prohibited items or conditions in the drum packaging station.



(Above) An excavator empties drum contents onto a sorting table as part of the treatment process.





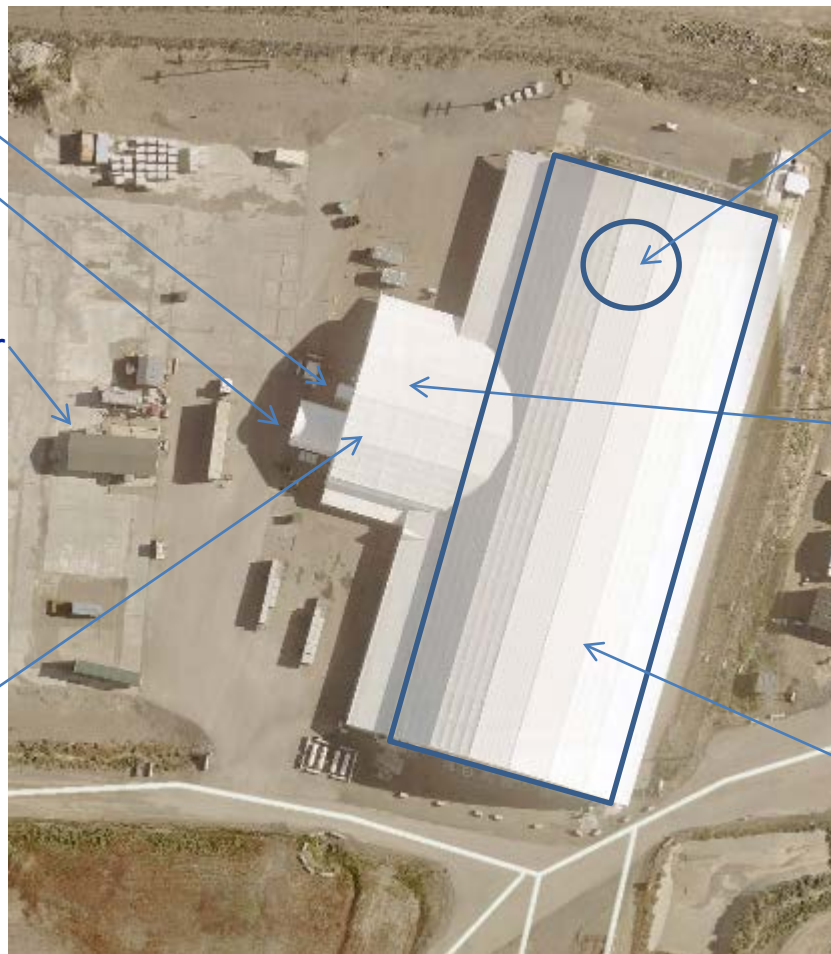
# ARP V Facility Specifics

Man door vestibule

Drum transfer vestibule

Operations support trailer

Location of waste drums  
(approx.)



Sludge waste  
treatment area  
(sorting table/trough)

Airlock

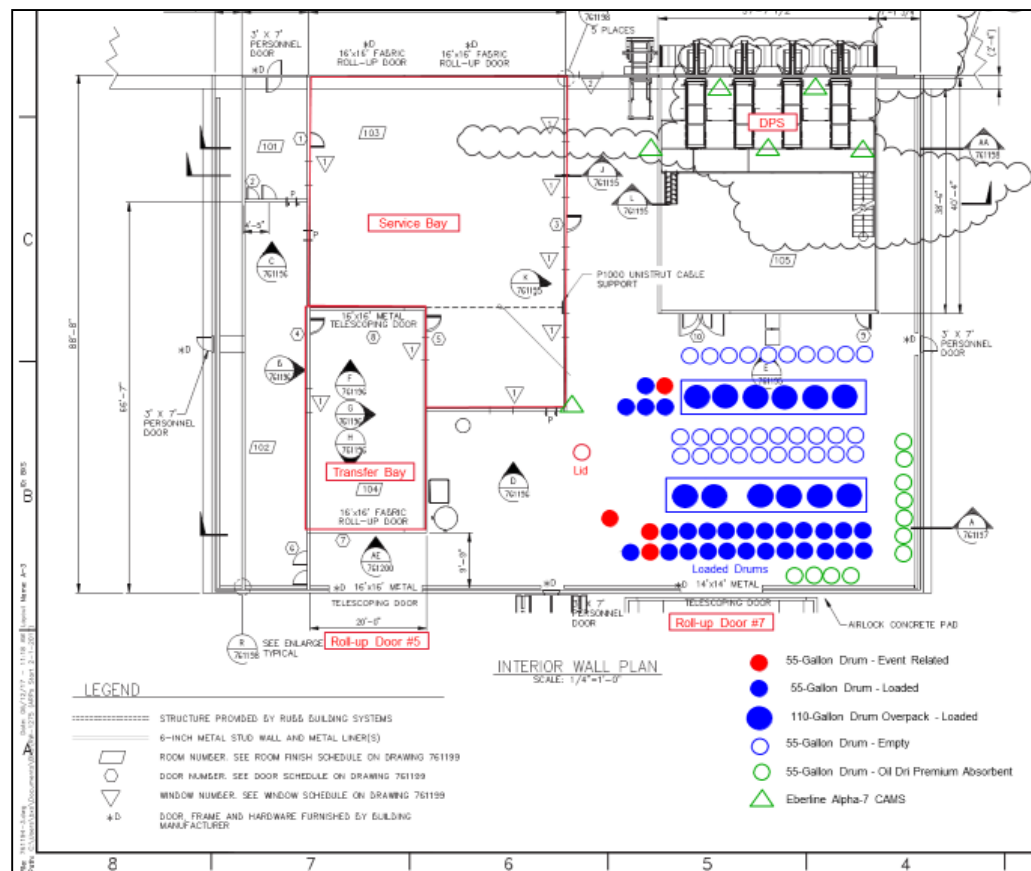
Retrieval enclosure

(Above) An aerial view of the ARP V facility



# April 11 Drum Breach

- Occurred at 11:30 p.m.
- No injuries and no contamination was detected outside the ARP V facility.
- The affected waste drums (4) had been processed earlier in the day and were in the staging area of the facility.
- During follow-up interviews with operations personnel, nothing unusual was noted during the processing of the waste material.



(Above) Schematic of ARP V airlock

# Recovery Actions

- During an early entry, the facility's filters were replaced and alarms reset.
- A sampling program was initiated, resulting in the collection of waste samples from the filters, floor, drums, trays, and other horizontal surfaces.
  - Samples were sent to two independent labs to perform extensive analyses to determine the contaminants present and their potential for reactivity.



Filters that were replaced



(Above) Samples being collected by workers in Anti-contamination clothing



## Recovery Actions (cont'd)

- Bulk cleanup of the floor and horizontal surfaces has now been completed in the ARP V airlock.
  - All loose materials were safely cleaned up, placed in 55 gallon drums, and are stored in the ARP V airlock until it is determined no additional samples are needed.
- The affected drums are still in the airlock and will be overpacked in preparation for future processing.



(Above) workers in Anti-contamination clothing clean up loose material from the ARP V airlock floor

## Next Steps

- Determine the direct cause:
  - Evaluate chemical and radiological analyses.
- Determine the root and contributing causes:
  - Finalize interviews and reports.
- Decontaminate the facility and determine what actions are required to return ARP V and the airlock to service.
- Once the root cause has been determined, the current sludge process and the ARP V facility and airlock will be evaluated to determine what needs to be done to safely resume operations and prevent recurrence.