



# Waste Encapsulation and Storage Facility (WESF) Capsules



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# Agenda

- Introductions
- Cesium and Strontium Capsule History
- Current Activities
- New Activities
- International Casks
- Re-using Equipment
- Questions



# Capsule History

- In the 1970s, radioactive cesium and strontium were removed from underground waste storage tanks, which:
  - Reduced the amount of heat generated in waste tanks
  - Provided cesium and strontium for commercial applications.
- Between 1974 and 1985, the cesium and strontium were placed in double-walled, stainless steel capsules in WESF. Capsules were welded and leak tested.





# Capsule History (cont'd)

- During WESF operations, hot cells allowed workers to safely handle the cesium and strontium by providing shielding, manipulators, and processing equipment
- WESF was placed into surveillance mode in 1985.





# Capsule History (cont'd)

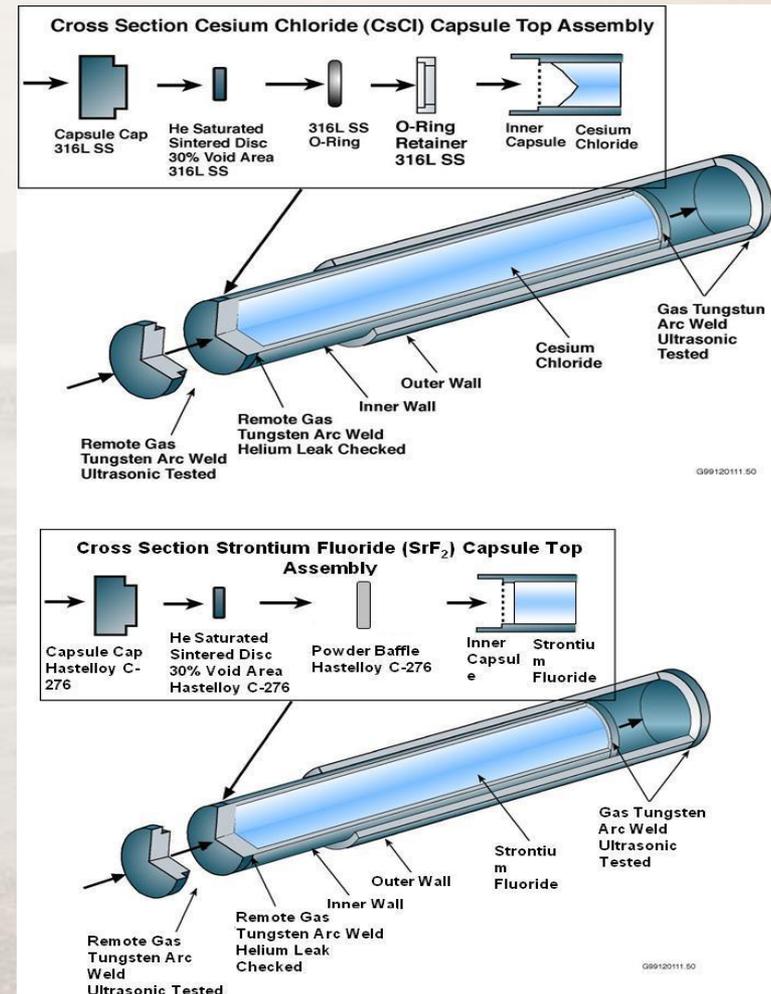
- 1,936 capsules are currently at WESF
- Capsules are located in pool cells
- 1,335 cesium capsules
- 601 strontium capsules
- Capsules contain approximately 100 million curies
- Capsules contain about one-third of the total cesium and strontium activity at Hanford





# Capsule History (cont'd)

- Capsules are double-contained
- Length 20 to 22 inches
- Outside diameter 2.6 to 3.3 inches
- Capsules typically weigh ~25 pounds
- Amount of heat released in a cesium capsule is ~13 to 159 watts
- Amount of heat released in a strontium capsule is ~18 to 405 watts





# Current Activities

## *WESF Stabilization and Ventilation Project*

- Replaced existing exhaust ventilation system (K3)
- Stabilizing legacy contamination to prevent a release to the environment
- Project is essential for the continued safe and compliant operation of WESF
- Project is compatible with future activities



# Current Activities (cont'd)

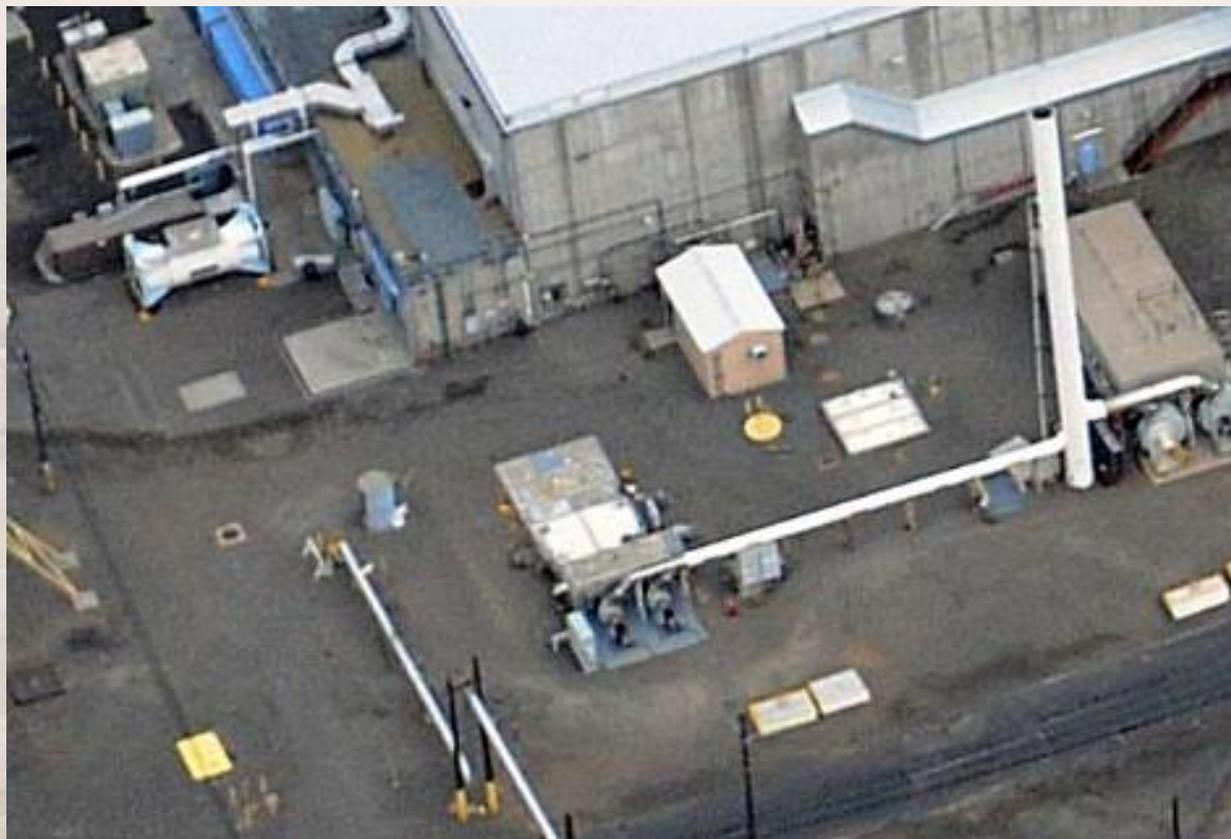
*July 19, 2010 Photo – K3 Filter Pit*





# Current Activities (cont'd)

## *Old System – K3 Filter Pit, Fans and Duct*





# Current Activities (cont'd)

## 2016 - New K3N System





# Current Activities (cont'd)

*July 2016 Installing the New Ventilation Duct*





# Current Activities (cont'd)

## *2016 Clean Cap Placed over K3 Filter Pit*





# Current Activities (cont'd)

*June 3, 2016 Preparing for Hot Cell Grouting*





# Current Activities (cont'd)

## *Grouting to Stabilize Contamination*

- Grouting Complete:
  - K3 duct
  - Duct trench
  - Hot pipe trench
  - A Cell airlock
- Grouting in process:
  - 77% of 5 hot cells



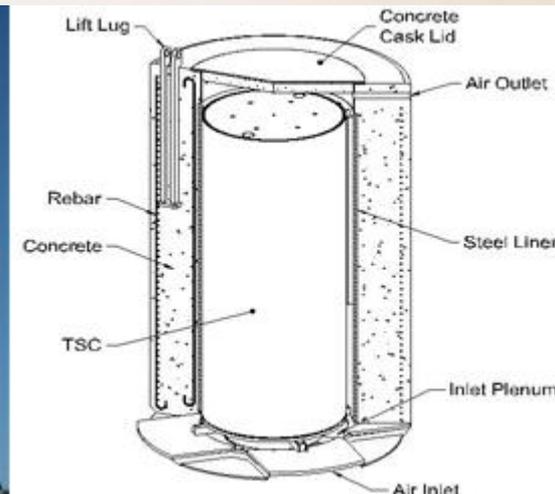
# New Activities

## *Interim Storage for the Cesium and Strontium Capsules*

- Critical Decision 0 (CD-0) *Approve Mission Need*, Obtained November 5, 2015.
- NAC International was awarded a contract by CHPRC on November 2, 2016, to design and fabricate a Cask Storage System for the cesium and strontium capsules.
- This activity is one of three components of Management of the Cesium and Strontium Capsules Project (MCSC).
- The other two activities are for WESF Modifications and for the Capsule Storage Area (Pad).



# NAC International Casks



# Re-Using West Valley Equipment



WELDING EQUIPMENT

# Re-Using West Valley Equipment (cont'd)





# Questions?