



# Flanged Tritium Waste Container (FTWC) Project Overview

October 20, 2020

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# Area G FTWCs Briefing

- Project Summary
- Mitigation Strategy
- Emissions Monitoring
- Alternatives Discussion

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# What is a FTWC?

- Flanged Tritium Waste Container (FTWC)
  - ~51 gallon certified, stainless steel pressure vessel (300 psi)
  - Flanged opening secured with a gasket and 16 bolts
  - Designed for long term storage of tritium contaminated waste items
    - Bolted, leak tested and placed in compliant, stainless steel, 85-gallon shipping/handling drum for permanent disposition
    - Four to five AL-M1s holding tritium are placed inside the FTWC (smaller containers inside a larger container)



FTWC



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AL-M1

# Why This Project is Important

- There are four FTWCs at TA-54 Area G pending permanent offsite disposal. Preparing these containers for shipment is part of the larger effort to reduce waste and risk at Area G.
  - Supports Site Treatment Plan, Consent Order, and Area G Closure commitments
- For offsite disposal, containers must meet Department of Transportation (DOT) regulations for shipment, and must be in a safe, compliant configuration for transportation.
  - Gas pressure in the larger container must be vented prior to movement
- Only the gas in the larger container (headspace) will be vented, a very small fraction of the overall container contents – this is **not a bulk material release**.
- Container contents must be properly packaged for compliant transport and disposal.
  - Will comply with all Department of Transportation (DOT), DOE Radiological Safety, Resource Conservation and Recovery Act (RCRA), New Mexico Environment Department (NMED), Environmental Protection Agency (EPA), and offsite disposal location requirements prior to shipment
- **This project will meet all regulatory requirements for waste management, air quality, transportation, environmental compliance, and worker and public safety.**

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# Why This Approach?

- Numerous options were considered, in consultation with regulators, and the selected path forward was deemed to be the safest for the workers, the public, and the environment.
  - Movement (or other nearby activities that might damage the container) without venting poses the risk of an unplanned, unmeasured release.
  - Leave-in-place does not make progress toward site risk reduction priorities.
  - The venting and capture systems are proven and specifically engineered for this application to minimize release and protect workers, the public, and the environment.
  - Only the activities necessary for safe handling are being performed at Area G, and all activities related to repackaging and offsite shipment will be performed in LANL's tritium facility.

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# Area G FTWCs - Map



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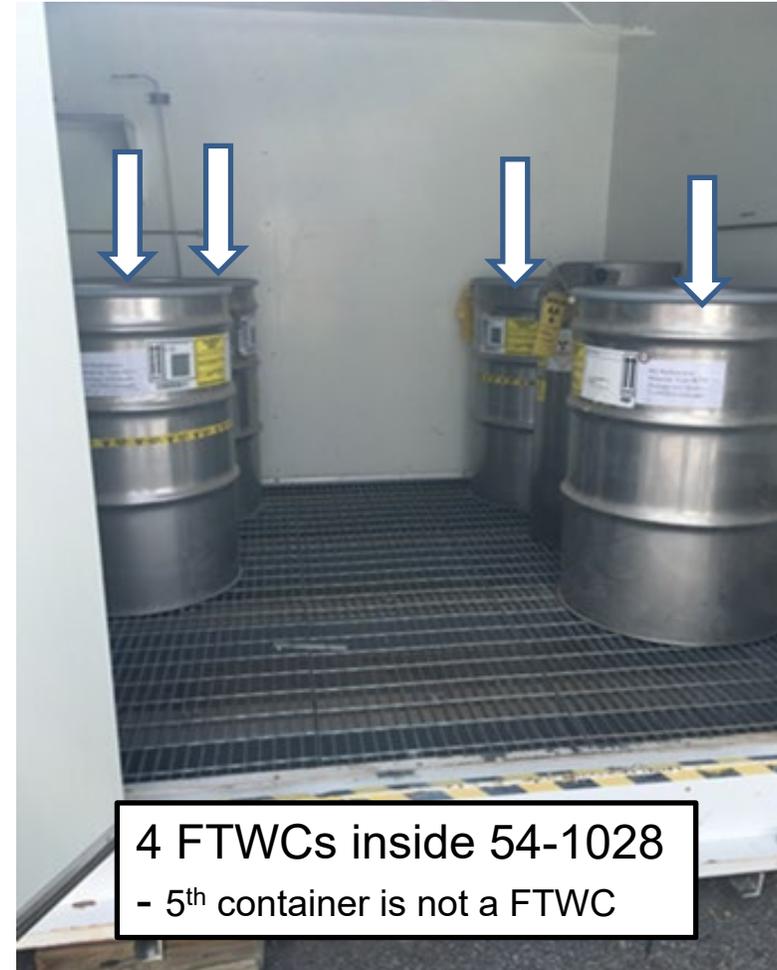
# Area G FTWCs - Map



FTWC Storage Location  
- TA-54-1028

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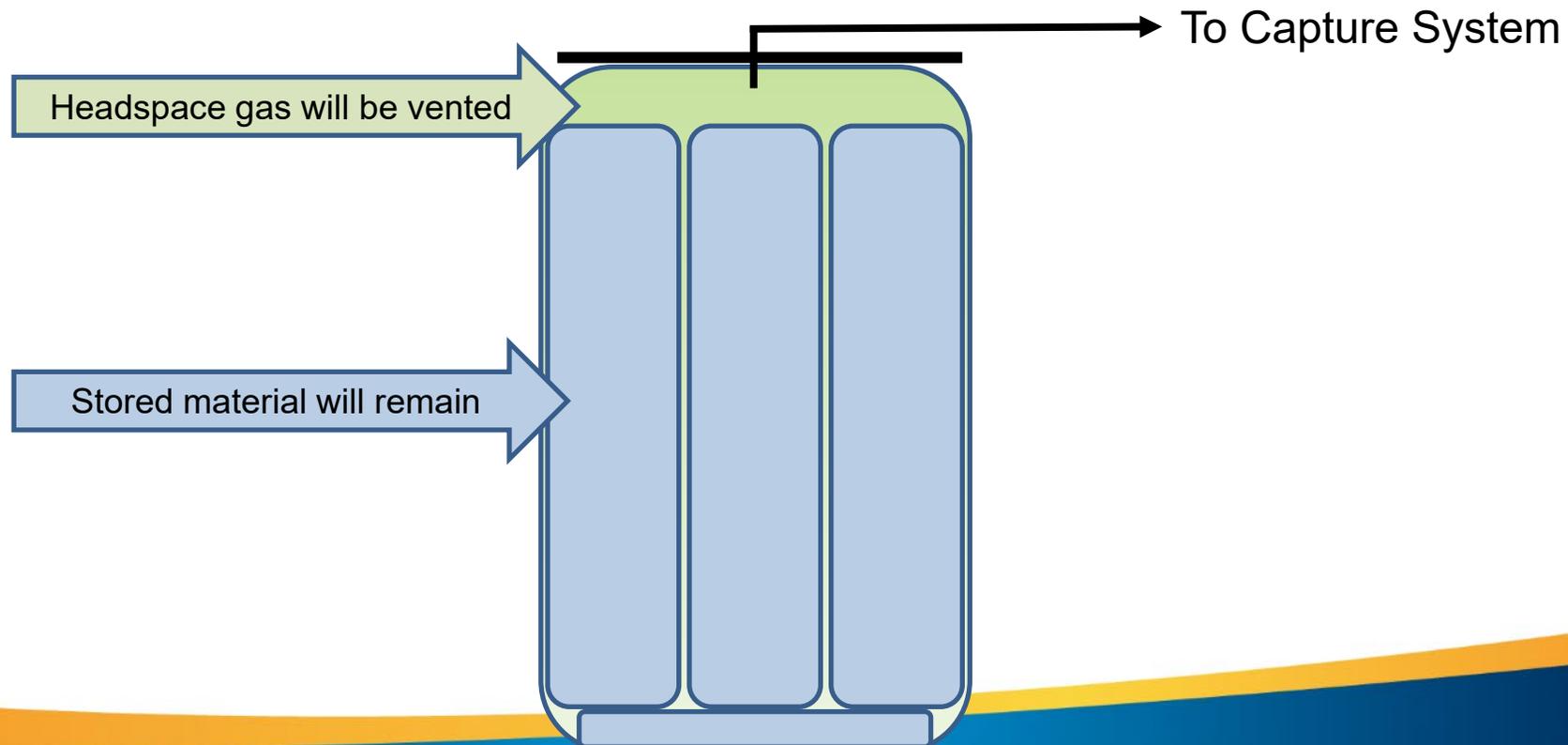
# Area G FTWCs



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# Area G FTWC Plan

- To make the FTWCs safe for handling and transport they will be vented one at a time, one per day, in a safe and compliant manner to remove any gases in the larger container (headspace). The venting process will be managed with real-time tritium monitoring to ensure site limits are not exceeded.
- Only the headspace gas, if present, will be vented:



# Area G FTWC Plan

- Any headspace gas will pass through a capture system. Any gas not captured will be measured at the source. Existing plus supplemental site-wide air monitoring systems will also be used.
- The operation is designed so site and permit **limits cannot be exceeded.**



Venting Fixture



Capture System

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# Area G FTWC Plan

- Once verified safe for handling, a pressure monitoring manifold will be installed to ensure continuous safe configuration.
- The FTWCs will be transported to LANL's tritium facility and repackaged in compliant containers for permanent offsite disposal.
  - Disposal will resolve a Site Treatment Plan waste stream and further reduce NALA/Triad's on-site storage of complex waste
- This operation will require:
  - New Mexico Environment Department (NMED) Temporary Authorization
  - Environmental Protection Agency (EPA) Air Permit
  - Department of Energy (DOE) Readiness Reviews
  - Department of Transportation (DOT) Compliant Shipping



Pressure Monitoring Manifold

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# Area G FTWC Emissions Monitoring

- The administrative limit for this operation is 8 mrem.
  - The annual site emissions limit is 10 mrem to the maximally exposed individual (MEI).
    - Calculated at the nearest populated edge of LANL property closest to TA-54
    - Conservatively assumes 100% occupancy and exposure
    - Protecting the MEI will ensure all other residents in New Mexico are also protected
    - For context, we all receive ~400 mrem/yr living in NM from natural sources
- Worst-case, conservative wind modeling used for tritium emissions limits.
- Monitoring systems include:
  - Two real-time tritium monitors and a stack bubbler (EPA system of record) at the operation
  - Four bubblers installed in Airnet stations around Area G
  - All Airnet stations have tritium vapor collectors
- Sequence of operations is designed to ensure the site emissions limit cannot be exceeded.
- Stack emissions and dose calculations will be subtracted from the overall limit each day to determine the new limit for the next day's operations.

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# Summary

- The containers will be compliantly vented in accordance with all state, federal, and local environmental and worker safety requirements. Operation will not proceed until all approvals are obtained.
- Numerous options were considered and the selected path forward was deemed to be the safest for the workers, the public, the environment, and our regional communities.
- This project reduces onsite waste risk and waste inventory.
- All Department of Transportation (DOT) requirements will be met for compliant transport from LANL to the disposal facility location.
- Multiple layers of controls will ensure that site air quality limits cannot be exceeded, and any emissions will be recorded and posted to the Electronic Public Reading Room (ePRR) and the Annual Site Environmental Report (ASER).

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# Community Input

- You may email questions to: FTWC\_publicinfo@lanl.gov
- Responses will be posted on our website at:  
[www.lanl.gov/environment/](http://www.lanl.gov/environment/) under “Resources.”

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