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Date: JUN 2 4 2021
Symbol: EPC-DO-21-153
LA-UR: 21-24622
Locates Action No.:

Ms. Stephanie Stringer, Deputy Secretary
New Mexico Environment Department
Harold Runnels Building
1190 St. Francis Dr., Suite N4050
Santa Fe, NM 87505

Subject: **Public Outreach and Updates on the Flanged Tritium Waste Containers Project, Los Alamos National Laboratory, EPA ID# NM0890010515**

Dear Ms. Stringer:

This letter is in response to your recent request for a summary of public outreach activities undertaken by the U.S. Department of Energy (DOE) National Nuclear Security Administration (NNSA) and our contractor, Triad National Security LLC (Triad) regarding the above-referenced project. This information supplements our Temporary Authorization Request for waste treatment, storage and repackaging under the Los Alamos National Laboratory (LANL) Hazardous Waste Facility Permit (EPA ID# NM0890010515). The request was submitted to the New Mexico Environment Department-Hazardous Waste Bureau (NMED-HWB) on March 9, 2020 (EPC-DO-20-074/LA-UR-20-22103). The Temporary Authorization Request is a one-time operation to vent and repackage four Flanged Tritium Waste Containers (FTWCs) to prepare them for out-of-state transport and final disposition.

This letter and the attachment provide a summary update to the NMED-HWB of the public outreach conducted regarding the proposed FTWCs Project at LANL.

DOE/NNSA and Triad hosted two public information meetings regarding this proposed project:

- Public Information, 10/20/2020 5:00 p.m. to 6:30 p.m.
- Public Information, 11/5/2020 5:00 p.m. to 7:00 p.m.

In addition to the public information sessions, several other meetings have been conducted with Los Alamos County, the U.S. Environmental Protection Agency, the State of New Mexico, and neighboring Pueblos.

DOE/NNSA and Triad would also like to offer the NMED-HWB additional technical discussions about the proposed project and the Temporary Authorization Request. If this is something the NMED-HWB would be interested in, Triad can move forward to schedule these meetings.

DOE/NNSA and Triad also established a FTWCs webpage to provide information on the proposed project (https://www.lanl.gov/environment/flanged-tritium-waste-containers.shtml). Answers to questions asked at the public information meetings and received from the public via email are provided on this website. Also available on the website, are links to a fact sheet and presentations associated with the FTWCs. Enclosure 1 of this letter includes a printing of the questions received and the DOE/NNSA and Triad responses, fact sheet and presentations. DOE/NNSA and Triad will continue to provide current information on the webpage and update as new information, questions, and responses are available.

General questions and inquiries from regional stakeholders and the public have primarily focused on two areas: 1) what are the health impacts to the public from this operation, and 2) why is this operation necessary to do sooner than later and can it wait? Enclosure 1 includes the detailed responses and analyses that have been performed for this operation, including offsite dose calculations and the formal review and approval process conducted by the DOE/NNSA and Triad for an operation of this nature.

Robust analyses provide data to show that offsite impacts are well below regulatory limits and that significant controls are in place to ensure that this operation is performed safely for both LANL workers and the public. The operation can be paused and placed in a safe configuration at any time if unanticipated conditions occur. With regard to the timing of the operation, the four containers are currently in a safe configuration. However, leaving them in that state indefinitely does not support the broader goals and commitments for Area G deinventory and closure. Approval of this request will support efforts to reduce the Site Treatment Plan (STP) waste inventory, and enable shipment of these wastes. The specifically-designed proposed operation to process these containers is safe and compliant and will not change over time. Therefore, postponing the operation to allow the tritium to decay only delays the need to mitigate the pressure concerns and delays disposition of this difficult waste stream.

DOE/NNSA and Triad will not perform activities addressed in the Temporary Authorization Request until after the Readiness and Authorization activities are complete and the NMED-HWB approval is received. The formality of the readiness program is an important part of the rigorous process to ensure safe operations. Once all required reviews are completed and approved, DOE/NNSA and Triad will formally communicate the intent to begin the operation to the NMED-HWB. Seasonal climate conditions do impact the safe conduct of the outdoor aspects of this project and the current goal is to perform the outdoor activities before the end of 2021.

If you have any questions or comments concerning this update, please contact Karen Armijo, DOE/NNSA, at (505) 221-3664, karen.armijo@nnsa.doe.gov or Patrick Padilla, Triad, at (505) 412-0462, plpadilla@lanl.gov.

Sincerely,

JENNIFER PAYNE (Affiliate)
Digitally signed by JENNIFER PAYNE (Affiliate)
Date: 2021.06.22 17:36:29 -06'00'

Jennifer E. Payne
Division Leader
Environmental Protection and Compliance Division
Triad National Security, LLC
Los Alamos National Laboratory

Sincerely,

Karen E. Armijo
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Date: 2021.06.24 05:57:40 -06'00'

Karen E. Armijo
Permitting and Compliance Program Manager
National Nuclear Security Administration
Los Alamos Field Office
U.S. Department of Energy

JEP/KEA/PLP

Enclosure: 1) Flanged Tritium Waste Containers Webpage Content

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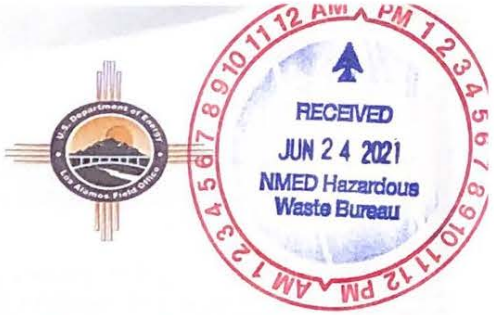

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ENCLOSURE 1

Flanged Tritium Waste Containers
Webpage Content

EPC-DO -21-153

LA-UR-21-24622

Date: JUN 2 4 2021

Flanged Tritium Waste Container (FTWC) Questions and Answers

Flanged Tritium Waste Containers

The main objective of radioactive waste management is to protect workers, public and the environment from the potential harmful effects of radioactive waste and to minimize the burden for future generations.

Pete Maggiore

I would like to thank all of those who joined the FTWCs virtual public information meetings on October 20 and November 5, 2020. We had **128** people on the October meeting and **84** on the November meeting. Thank you for your interest and your input. The Qs and As portion of this page have been updated to include questions and answers we received about the FTWCs operation.

DOWNLOADS

Flanged Tritium Waste Containers Fact Sheet	Flanged Tritium Waste Containers Venting Presentation 10/20	Flanged Tritium Waste Containers Venting Presentation 11/5

A Flanged Tritium Waste Container (FTWC) is a stainless-steel certified pressure vessel designed for long-term storage of tritium-contaminated waste items. The Laboratory is planning to vent headspace gases from four of these containers.

Flanged Tritium Waste Container (FTWC) Questions

November Meeting hosted by Los Alamos National Laboratory (LANL)

This question and answer list is in response to the inquiries NNSA received by email and during the second public information session held November 5. Many new questions are addressed here, with similar questions condensed, consolidated, or paraphrased. Duplicate questions have not been repeated in this document, but are still available in the first Q&A document on the website. Our answers are intended to be fully responsive to the broader intent of every question we received.

1. **Can you vent without the NMED Temporary Authorization?**

No.

2. **Where is this activity addressed in the Consent Order?**

The FTWCs are not addressed in the Consent Order, as they are not categorized as legacy waste. Their only connection to the Consent Order is that they are located at TA-54, and their removal is necessary to support larger waste reduction goals.

3. **Will you vent four days in a row?**

The operation to mitigate the pressure in the four FTWCs is planned for two days per container, for a total of eight days. Those days may not be consecutive to allow for contingencies like other operations, inclement weather, etc.

4. **How is the higher risk tritium in oxide or vapor form (HTO) being mitigated?**

The molecular sieve material in the capture system of the FTWCs is specifically engineered to capture HTO.

5. **What are the cumulative impacts from this release?**

There are no cumulative impacts from this operation. All limits are conservative, and well within regulatory limits that are protective of the public.

6. **What alternatives have been considered for this operation?**

Numerous alternatives were considered in the design of this project, with an overview of those alternatives discussed in the public information sessions and the first question and answer document posted on the LANL External Website and the Electronic Public Reading Room. Permanent disposition of this waste is both in the best interest of all stakeholders, and supports waste and risk reduction priorities for the DOE and regional stakeholders. Disposition alternatives and strategies considered included leave in place, transportation without pressure mitigation, and pressure mitigation before transportation.

Additional strategies considered included placing the containers in a secondary and tertiary containment, and numerous pressure mitigation and capture strategies. The selected option, while more complex and expensive than many alternatives, was deemed to be the safest option for both the workers and the public. All aspects of the design are engineered to maximize safety, capture efficiency, and minimize additional waste generation.

7. **Have you analyzed the specific impacts to communities in the area?**

We have evaluated potential doses for this operation, and all LANL operations, at a variety of locations in and around LANL, including Santa Clara Pueblo and San Ildefonso Pueblo. Radiological dose consequence at these areas is less than one-tenth of the dose that would be received by the hypothetical maximally exposed individual (MEI) in White Rock. So limits calculated for the White Rock MEI will be protective of all population centers.

8. **How can you say that site limits cannot be exceeded?**

This operation is designed so that only one container at a time is vented, and the inventory of a single container, even with 100% of the headspace gas released, would not exceed the permit limits. Additionally, real time monitoring is in place to monitor the operation, and the process can be paused and placed in a safe configuration at any time as needed.

9. **What is the EPA's role in this project? The NMED?**

EPA Region 6 approves the air emissions permit request for this project, and the NMED approves the treatment process as these containers are Resource Conservation and Recovery Act (RCRA)-regulated waste. LANL also uses the EPA's Clean Air Act Assessment Package - 1988 (CAP-88) emissions models. This operation would require the same permits and approvals, regardless of the specific design of the process, anticipated release quantities, and timing of the operation.

10. **What is the effectiveness of the capture system?**

Effectiveness of the capture system can vary by container contents, pressure release rates, and temperatures. The project's goal is to perform the operation in a manner that maximizes capture effectiveness and keeps any potential release as low as reasonably achievable. The real time monitoring system ensures these goals are met.

11. **We've heard three numbers for potential dose – 20 mrem, and 10 mrem, and 8 mrem. Can you explain?**

The permitting process requires analysis of the worst-case scenario. For this project, that would be a 100% release of the contents of all four containers (approximately 114,000 curies) with no mitigation or capture. That is not a realistic or possible scenario, since the operation is designed to only vent the hydrogen, oxygen, and small quantities of tritium in the headspace of each container, a very small fraction of the total contents, and only one container at a time. In this worst-case, bounding scenario, the Maximally Exposed Individual (MEI), under the least favorable meteorological conditions, could receive 20 mrem. As previously stated, this is not a likely scenario, and only used for a worst-case bounding criteria.

The site release limit for all airborne radionuclides, combined from all LANL operations, is 10 mrem per year to any Maximally Exposed Individual member of the public.

This specific project has set a limit of 8 mrem for the entire operation at the site boundary for the MEI. However, the project's goal is to limit any release to the lowest possible quantity to achieve a safe configuration for transport. The desired and likely offsite dose for this project will be extremely low –below the 8 mrem, possibly even 0 mrem, at the site boundary.

12. **What will the Laboratory do if the site limit is exceeded?**

In the very unlikely event that the site limit is exceeded, LANL would make the required formal notifications to all regulators, and follow the established processes defined in state and federal regulations.

13. **What is the difference between Triad and N3B?**

Triad is the Management and Operations (M&O) Contractor for the NNSA and operates the majority of LANL operations. N3B is the M&O Contractor for DOE Environmental Management and manages the operations at TA-54 Area G. This project is a joint operation, with collaboration between the two DOE entities (NNSA and DOE EM) and the two M&O contractors, Triad and N3B.

Triad is responsible for the operation, and N3B manages the space and the site.

14. **Have you performed "puff" modeling?**

An evaluation of the CALPUFF code in comparison with our standard CAP-88 code completed in 2002 showed that CAP-88 is conservative for distances over 300 meters from the source. At the distances applicable for this project – 2100 meters or more – the use of CAP-88 will be a conservative estimate of radiological dose.

15. **Is LANL considering plant, animal, and soil impacts?**

LANL's annual Biota Dose Assessment includes this evaluation, and is published in the Annual Site Environmental Report (ASER).

16. **What is the urgency for this project? Is there a financial incentive or bonus for completing the project by a certain time?**

There is no urgency for this project beyond the broader mission goals to reduce onsite waste liabilities. This project has been in development for approximately four years, and will not proceed until all approvals and permits have been obtained. There is no financial incentive tied to the disposition of these containers.

17. **How are these FTWCs different from WIPP drums?**

These four containers hold different constituents, are not legacy waste nor transuranic waste, and the processes inside developing the pressures are well understood.

18. **How will you make data and results available to the public in real time, that is, as soon as you have final results?**

Emissions results from the operation will be posted in the Electronic Public Reading Room (ePRR) and the Annual Site Environmental Report (ASER). Additionally, an EPA representative will be attending the operation. Results will be published in a timely manner in accordance with federal reporting processes.

Additional Questions and Answers

Q. What is a Flanged Tritium Waste Container and why do you need them?

The main objective of radioactive waste management is to protect workers, public and the environment from the potential harmful effects of radioactive waste and to minimize the burden for future generations. An important task for waste management is to translate general waste acceptance requirements into detailed waste package specifications. Flanged Tritium Waste Containers (FTWCs) are specifically designed to provide radiation shielding and/or physical containment to restrict or prevent the spread of contamination as an engineered component for

ensuring the safe management of radioactive waste.

Q. What is tritium and what is it used for?

Tritium is a radioactive form of hydrogen gas and an important component in nuclear weapons.

Q. Why are these drums at Area G?

These FTWCs were packaged at LANL's Weapons Engineering Tritium Facility (WETF) in 2007 and sent to Area G for permanent disposal.

During an audit of containers, NA-LA identified a small amount of lead in the materials inside the FTWCs, resulting in the containers being designated as hazardous waste under the Resource Conservation and Recovery Act (RCRA) and requiring offsite disposal. Further analysis identified the potential for a flammable, pressurized mixture of hydrogen and oxygen in the FTWC headspace, requiring venting of headspace gases to enable personnel to safely move the containers.

Laboratory engineers have done a careful analysis of the venting process to ensure that any releases are carefully controlled. The system pictured here, has been specifically engineered to capture the form of tritium expected in the FTWC headspace.

Q. Why is venting necessary?

The Laboratory has a goal of reducing the volume of waste on site. As part of this effort, the four FTWCs were identified for treatment on site and eventual shipment to a licensed off-site facility. Before the containers are moved to the Weapons Engineering Treatment Facility (WETF), pressure built up inside must be relieved. Once the pressure is relieved, the containers will be transported to WETF for further treatment prior to shipment to a licensed off-site facility.

Q. Why are you doing this now?

NNSA is conducting these activities to support safe operations at LANL, including mitigating risks to the public and the environment, and to enable the disposition of radiological and

hazardous waste as required by our permits and DOE Orders. These operations are being conducted in compliance with all applicable regulatory requirements.

Q. When do you plan to vent the containers?

Venting of the drums was been postponed indefinitely due to impacts of the COVID-19 pandemic. NA-LA and Triad are working with regulatory agencies to determine a revised schedule.

The operation will be conducted with the utmost considerations for safety to Laboratory employees, the public and the environment.

Q. Is there any danger to public health and safety?

No. Our engineers have a proven safe and effective method to vent the FTWCs under carefully controlled conditions. Additionally, only one container at a time will be vented, and the venting process will undergo real-time monitoring to ensure DOE and EPA requirements on radioactive dose limit are not exceeded. The operation will be conducted with the utmost considerations for safety to Laboratory employees, the public and the environment.

The ventilation system used is carefully monitored for contamination during assembly/ disassembly. These and other precautions are designed to prevent any on-site and off-site health impacts.

Q. How do you know venting is safe?

Laboratory engineers have done a careful analysis of the venting process to ensure that the release is controlled. The process has been tested at WETF and proven effective. This methodology has been evaluated and observed by representatives from the Environmental Protection Agency (EPA) who will be monitoring the effort. Additionally, strict limits have been placed on the amount of tritium that can be released and we will be monitoring closely to

ensure those limits are not exceeded.

Throughout the process, Laboratory engineers will be carefully monitoring the amounts of tritium released. We have also developed a system to capture much of the gas while it is being released. Strict regulatory limits prevent releasing more than the amount allowed for each individual container. These precautions are designed to prevent any off-site health impacts.

Q. How many FTWCs will be vented?

There are four containers.

Q. What is the process?

Each of the four containers will be vented separately, one at a time, at TA-54, Area G. The venting process will allow the vast majority of the tritium to be captured through a dedicated filtering system designed for tritium capture. We also have a real time monitoring system integrated into the exhaust and emission system.

Q. Are there other ways to treat this waste that does not involve releases to the atmosphere?

No. NA-LA has been working with the regulators to determine the safest method to enable movement of these containers from TA-54 to WETF for further treatment and shipment to a licensed off-site disposal facility. WETF has all the appropriate infrastructure to safely manage tritium.

Q. Why not do the venting at WETF instead of Area G?

The purpose for the venting is to enable us to safely move the drums from Area G to WETF, where we have the appropriate infrastructure to further treat and safely manage tritium.

Q. What is the distance between Bldg. 1028 at TA-54, where the containers are stored, and the nearest neighbor in White Rock?

It is 2200 meters from Bldg. 1028 to the closest business or residence location in White Rock; about 1.3 miles.

In addition to the monitoring equipment we are using to measure the release, the Laboratory has four air monitors in White Rock to ensure that we track any radioactive particles that may reach the area. The data will be available in our annual emissions report to the Environmental Protection Agency and our Annual Site Environmental Review (ASER).

Q. How are emissions monitored and evaluated?

To predict the off-site dose consequences from these releases, we are using worst-case computer models to establish daily emissions limits. At the end of each day of operation, we recalculate this dose consequence using actual wind from that day. The process then repeats, using worst case modeling to ensure no limits are ever exceeded. This assures the protection of our personnel, the public, and the environment.

Q. Where are the relevant White Rock air monitors?

We have four monitors in White Rock; one at the bottom of Pajarito Road; they are also located at the old White Rock Fire Station (Rover & NM-4); at “Rocket Park”, and near Pajarito Acres (Monte Rey South & NM-4). These all measure airborne radioactive particulates and tritium oxide. The data will be available in our annual emissions report to the EPA and in our Annual Site Environmental Report.

We have real-time monitoring to prevent a release from exceeding established limits.

Q. Can you confirm that the highest dose possible off-site is estimated at 20 millirem?

Yes. For EPA planning purposes, we modeled the entire contents of the four FTWC drums released to the air, using average wind conditions and no filtering system – this resulted in the 20 millirem off-site dose. In reality, we will not be venting the entire contents – just that fraction which is in the headspace of the four drums. The operations will take place in a slow, controlled manner, using filtration to remove as much tritium as possible.

NA-LA will monitor the releases to ensure we stay well below the EPA limit of 10 mrem per year. We will not conduct operations in adverse wind conditions.

NA-LA has developed plans to ensure that the 10 mrem level will not be reached by using emissions controls (filters) on the exhaust system and actively monitoring the emissions in real-time. Operations will not occur if the wind speed and direction are unfavorable.

Venting will be conducted in a controlled manner to enable monitoring and control of the pressure in a manner that maintains the safety of our personnel, the public and the environment.

Note: Background radiation dose in this part of Northern New Mexico is about 1 mrem per day or more – about 350-400 mrem per year. The Environmental Protection Agency and the Clean Air Act allow DOE facilities to emit radioactive material that could contribute up to 10 mrem per year above this background level. LANL's emissions for the past several years have been a fraction of 1 mrem per year. For comparison, a cross country round-trip airplane flight results in about 3.7 mrem of radiation exposure.

Q. What agencies are overseeing this process?

The Environmental Protection Agency (EPA) for radiological air quality emissions, the New Mexico Environment Department for RCRA treatment, and federal regulators from the Department of Energy for radiological emissions.

Q. What happens to the four FTWCs when the venting is complete?

They will be safely transported to another location on-site at LANL where the contents will be repackaged into DOT-compliant containers and then shipped offsite to a licensed storage facility.

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Flanged Tritium Waste Containers Fact Sheet

SAFE, PROVEN AND RELIABLE VENTING PROCESS

Los Alamos National Laboratory has developed a safe, proven and reliable process for venting Flanged Tritium Waste Containers (FTWC). Emission controls, including a filtering system, are in place to capture tritium during venting. The venting process will undergo real-time monitoring to ensure that public health and safety is protected and that no regulatory limits are exceeded in accordance with Department of Energy (DOE) and Environmental Protection Agency (EPA) requirements.

The venting process will be carefully controlled and monitored and the final results will be made available to the public in the Laboratory's Annual Site Environmental Report (ASER) and the Laboratory's Electronic Public Reading Room.

FTWC BACKGROUND INFORMATION

The Laboratory uses a variety of containers for the storage and transport of waste to meet regulatory requirements and environmental cleanup goals.

For waste that requires more comprehensive storage measures, like tritium waste, LANL uses containers specifically designed to ensure the contents pose no health or safety risk to the public, employees or the environment. Flanged Tritium Waste Containers are among the more robust containers LANL uses to manage and store this waste.

Tritium is an isotope of hydrogen that has two neutrons in the nucleus and one proton. It has a decay half-life of 12.5 years, as it decays it separates into non-radioactive helium and hydrogen. Tritium is a key component of the U.S. nuclear deterrent.

In 2007, LANL packaged four FTWCs for disposal at Technical Area 54. The FTWCs were stored safely and compliantly above ground awaiting burial. As part of our efforts to reduce the amount of waste stored on site, the Laboratory decided instead to ship the containers off-site to a licensed storage facility.

However, in order to ship the containers off site, the pressurized gases inside the containers must be vented to meet regulatory requirements of the U.S. Department of Transportation (DOT).

FREQUENTLY ASKED QUESTIONS

Q. Why is venting necessary?
A. The Laboratory has a goal of reducing the volume of waste on site. As part of this effort, the four FTWCs were identified for treatment on site and eventual shipment to a licensed off-site facility. Before we move the containers to the Weapons Engineering Tritium Facility (WETF), we must relieve pressure that has built up inside. Once the pressure is relieved, the containers will be transported to WETF. To safely move the containers and prepare them for shipment to a licensed off-site facility, we need to vent them first. In their current state, the pressure exceeds DOT limits for transportation. Therefore, we cannot move them or dispose of them until we vent them.

Q. How do you know venting is safe?
A. Laboratory engineers have done a careful analysis of the venting process to ensure that the release is controlled. The process has been tested at WETF and proven effective. This methodology has been evaluated and observed by representatives from the EPA who will be monitoring the effort. Additionally, strict limits have been placed on the amount of tritium that

can be released and we will be monitoring closely to ensure those limits are not exceeded.

Throughout the process, Laboratory engineers will be carefully monitoring the amounts of tritium released. We have also developed a system to capture much of the gas while it is being released. Strict regulatory limits prevent us from releasing more than we are allowed for each individual container. These precautions are designed to prevent any off-site health or environmental impacts.

Q. What is tritium and is it dangerous?
A. Tritium is a radioactive isotope of hydrogen. Naturally occurring tritium is very rare in our atmosphere. It is not chemically toxic and the amount we plan to release poses no risk to public health and safety or the environment.

Q. If you can't release the tritium during the outbreak of COVID-19, is there any danger to the public from continued storage?
A. The FTWCs are designed specifically to contain gas under pressure. The containers are in a safe configuration at Technical Area 54. We will not attempt to vent the FTWCs until we are sure it is safe to proceed.

Q. When do you expect to vent the FTWCs?
A. Due to impacts of the COVID-19 pandemic, Los Alamos National Laboratory is delaying the venting of four FTWCs until we have the necessary staff on hand to complete the work safely and compliantly. The FTWCs are stored in a safe and secure manner at LANL and do not represent a risk to the public or the environment. Safety is our number one priority. The schedule for venting will be developed when we have necessary staff to support these operations at the Laboratory.

For more information, contact us at: envoutreach@lanl.gov.

The Flanged Tritium Waste Containers are pressure vessels specifically designed to contain waste metal that has been exposed to tritium. As the tritium ages and separates into helium and hydrogen, those gases can create pressure inside the container. This is expected and accounted for in the design.

LA-UR-20-23281

NNSA
National Nuclear Security Administration

Flanged Tritium Waste Containers Venting Presentation 10/20

Los Alamos
NATIONAL LABORATORY
EST. 1943

Flanged Tritium Waste Container (FTWC) Project Overview

October 20, 2020

Area G FTWCs Briefing

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

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


AL-M1

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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.**

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.

Area G FTWCs - Map

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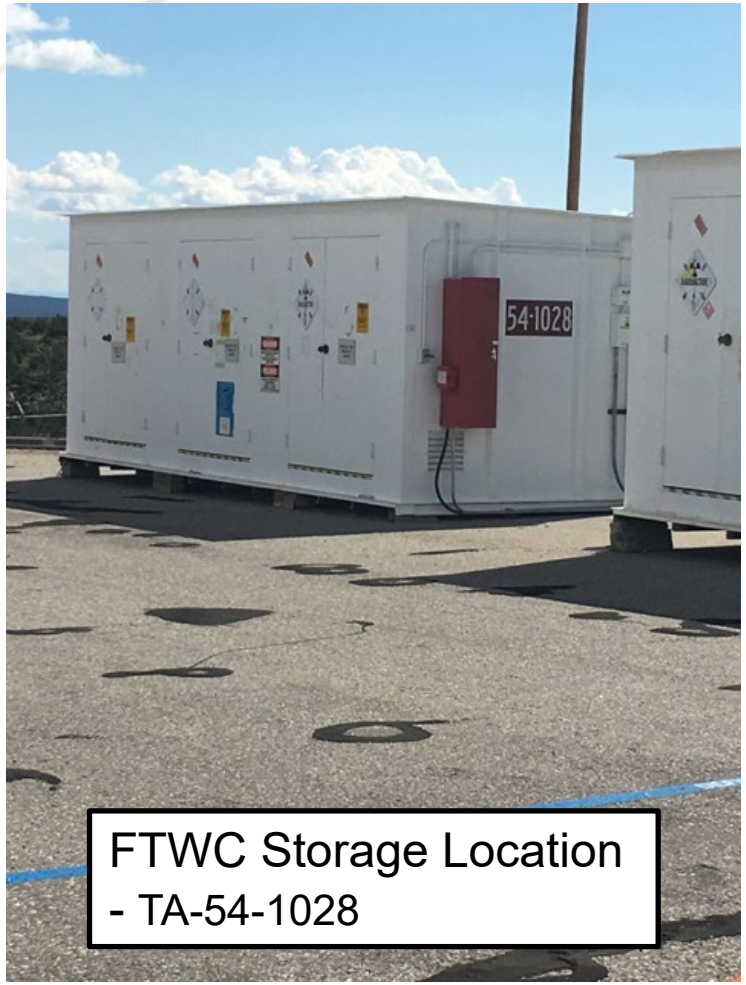
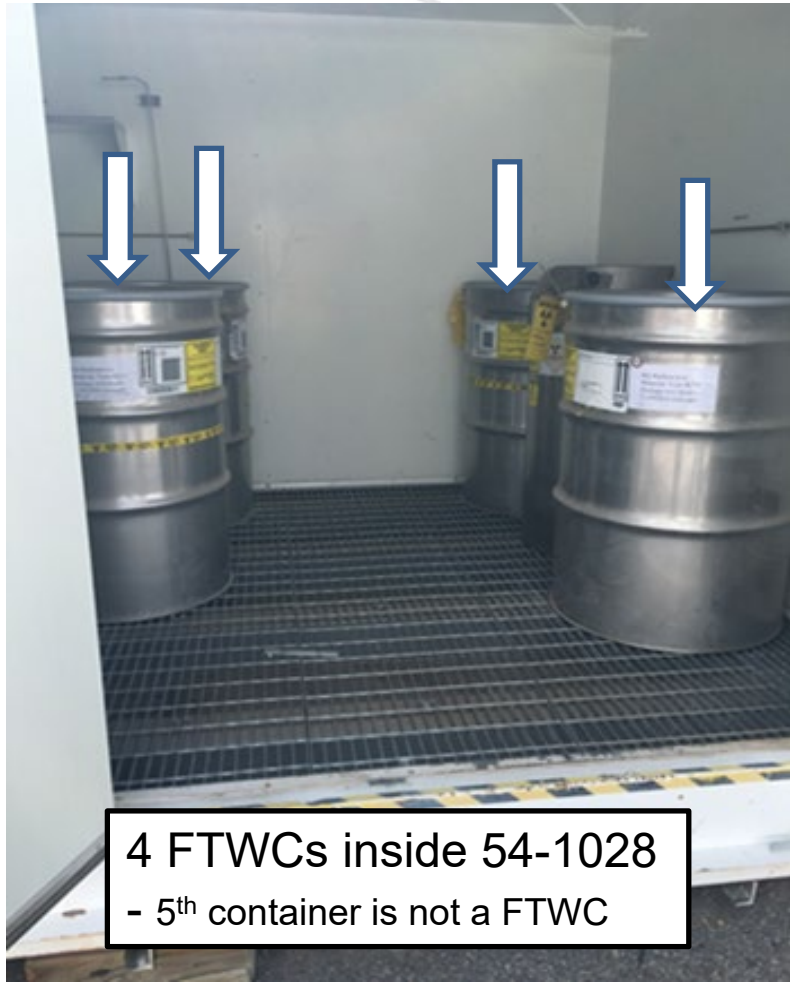
Area G FTWCs - Map

FTWC Storage Location
- TA-54-1028

Area G FTWCs



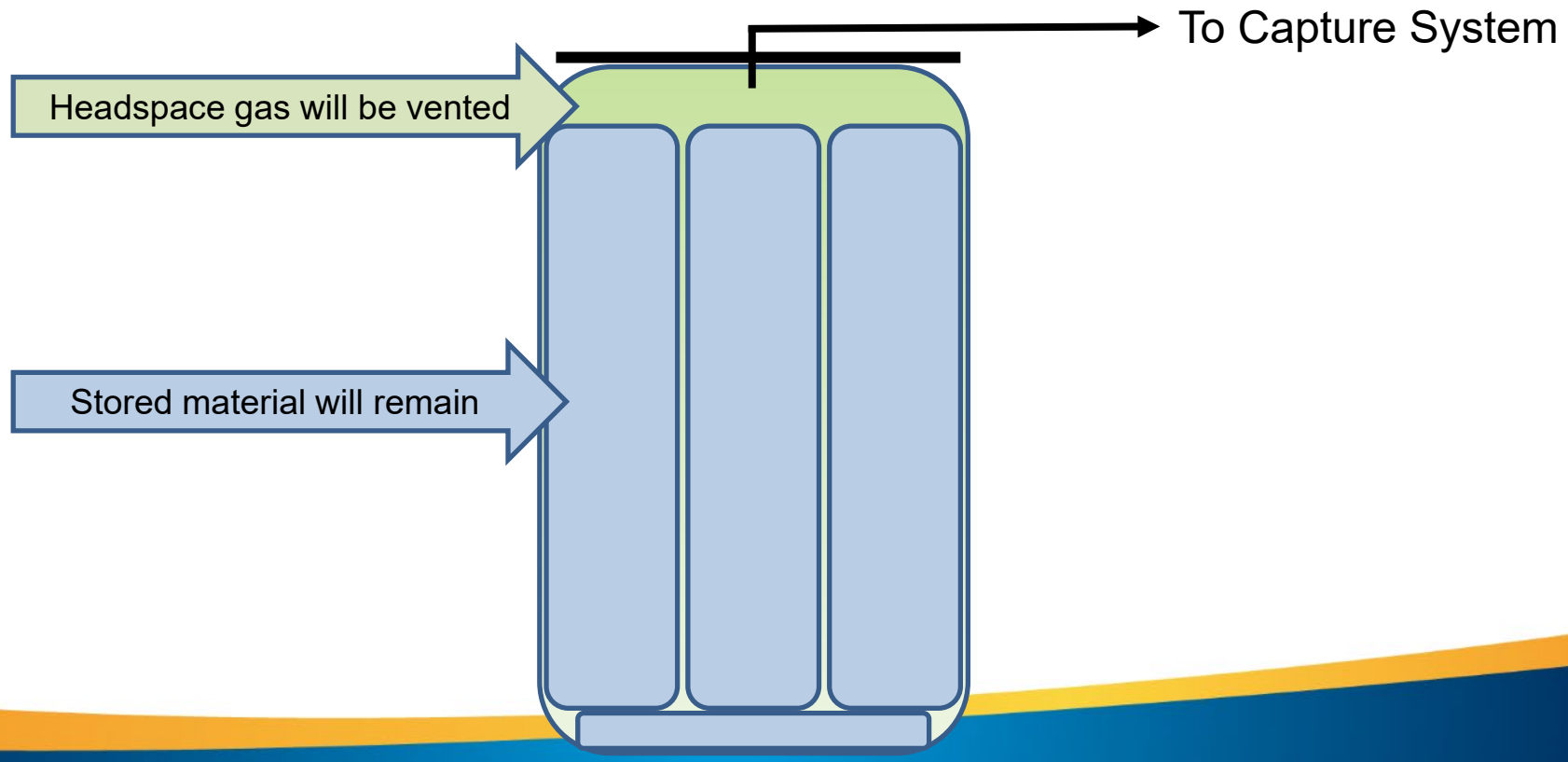
FTWC Storage Location
- TA-54-1028



4 FTWCs inside 54-1028
- 5th container is not a FTWC

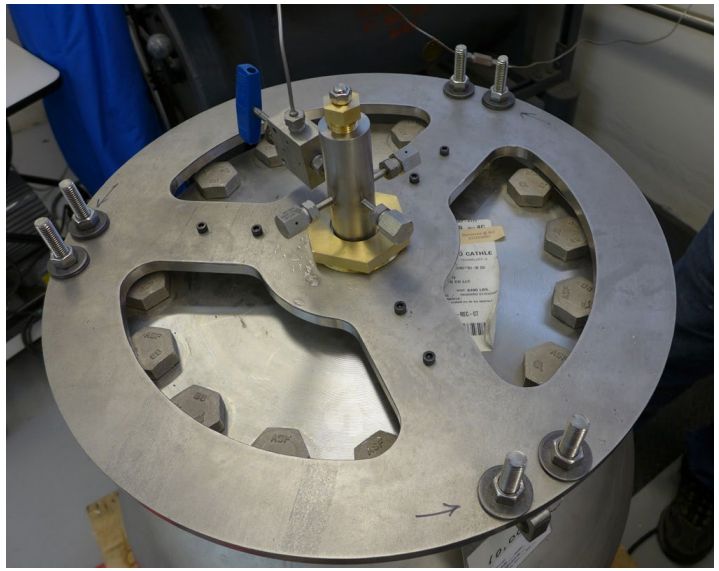
Area G FTWC Plan

- 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**.

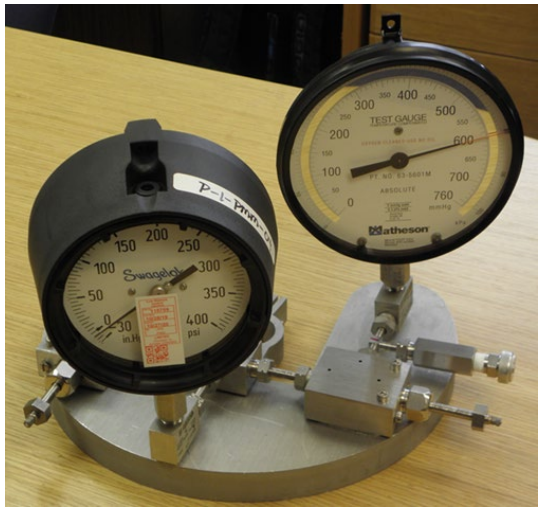


Venting Fixture

Capture System

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

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.

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).

Community Input

- You may email questions to: FTWC_publicinfo@lanl.gov
- Responses will be posted on our website at: www.lanl.gov/environment/ under “Resources.”

Flanged Tritium Waste Containers Venting Presentation 11/5

Los Alamos
NATIONAL LABORATORY
EST. 1943

Flanged Tritium Waste Container (FTWC) Project Overview

November 5, 2020

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
    - Very robust containers.
    - Four to five AL-M1s holding tritium are placed inside the FTWC (smaller containers inside a larger container). The tritium remains in AL-M1s.

FTWC

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.
  - Any gas pressure in the larger container must be relieved 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.**
- **This project will meet all regulatory requirements for waste management, air quality, transportation, environmental compliance, and worker and public safety.**
  - 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

Why This Approach?

- Numerous alternatives 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 verifying and mitigating internal pressure 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.

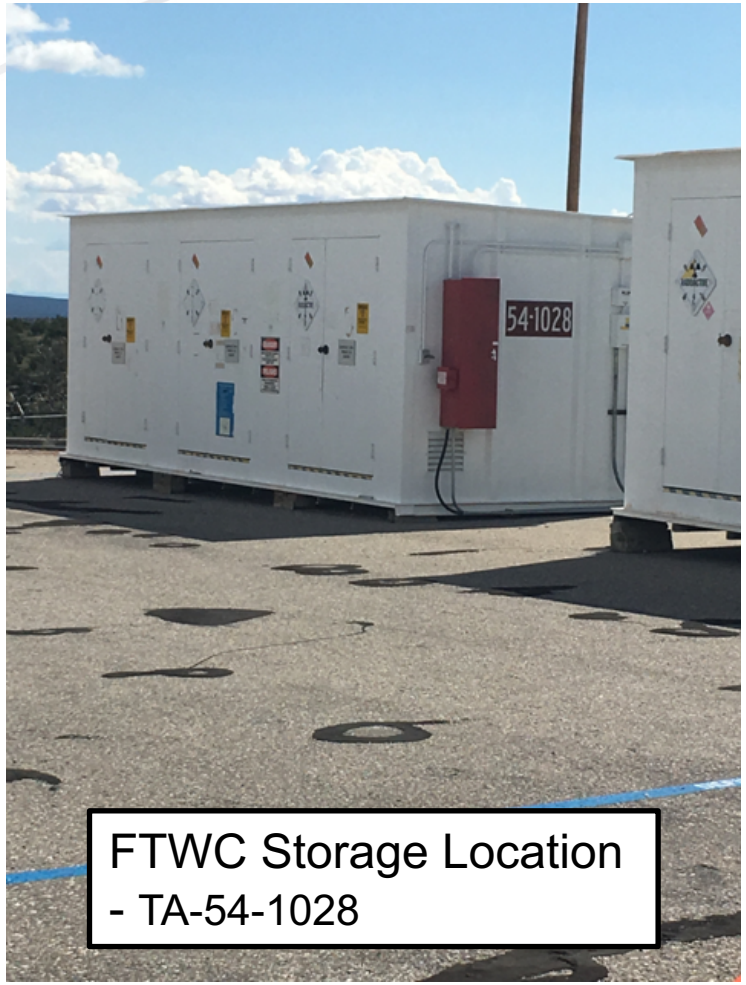
Area G FTWCs - Map

UNCLASSIFIED

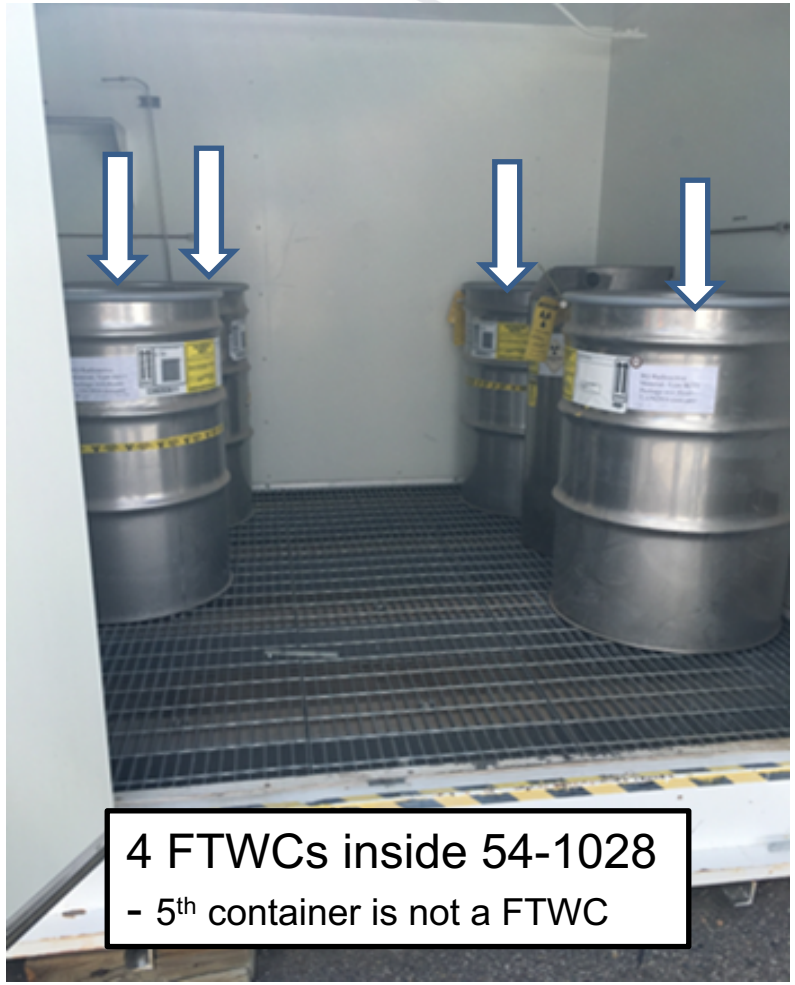
Area G FTWCs - Map

FTWC Storage Location
- TA-54-1028

Area G FTWCs



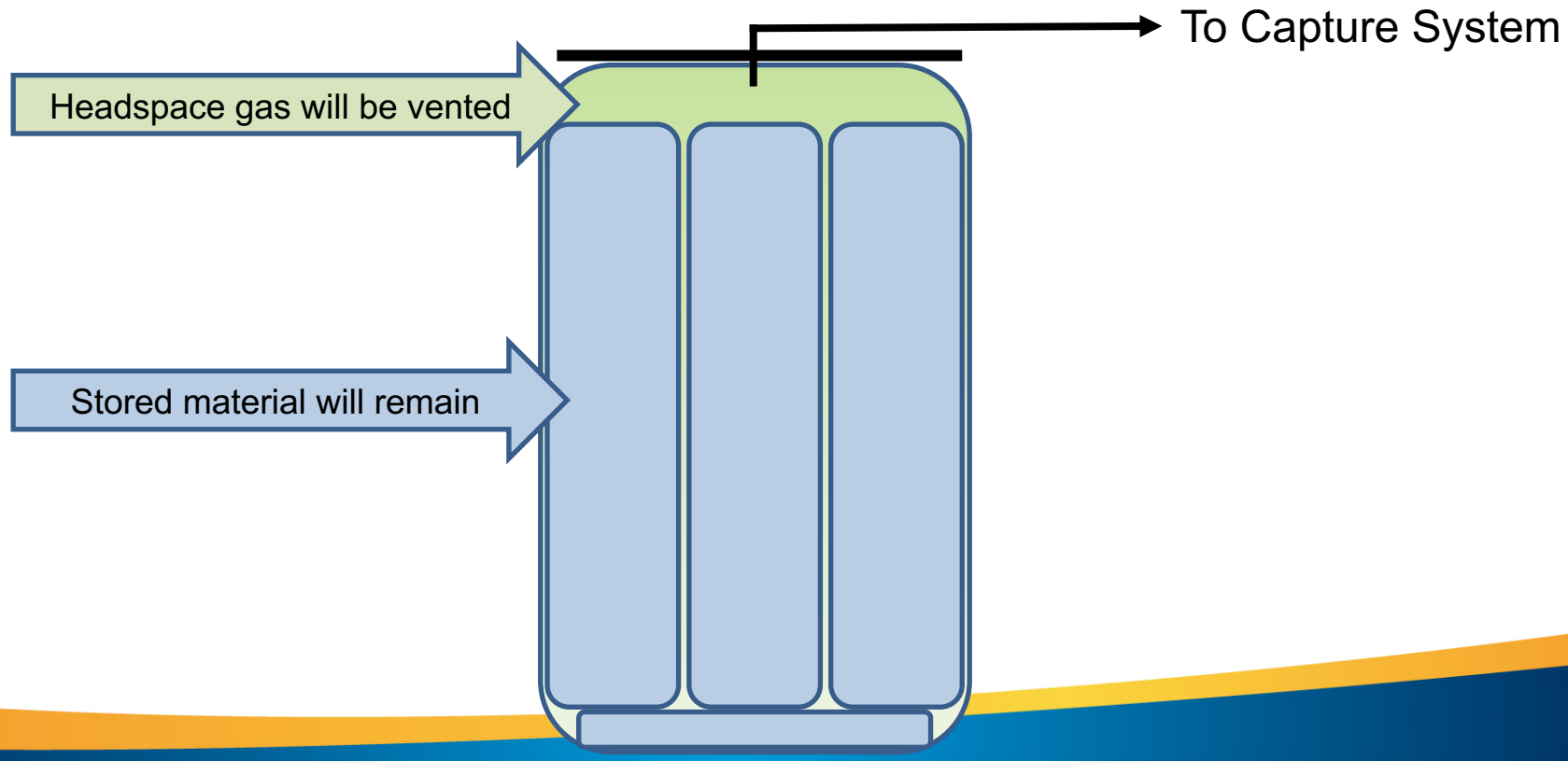
FTWC Storage Location
- TA-54-1028



4 FTWCs inside 54-1028
- 5th container is not a FTWC

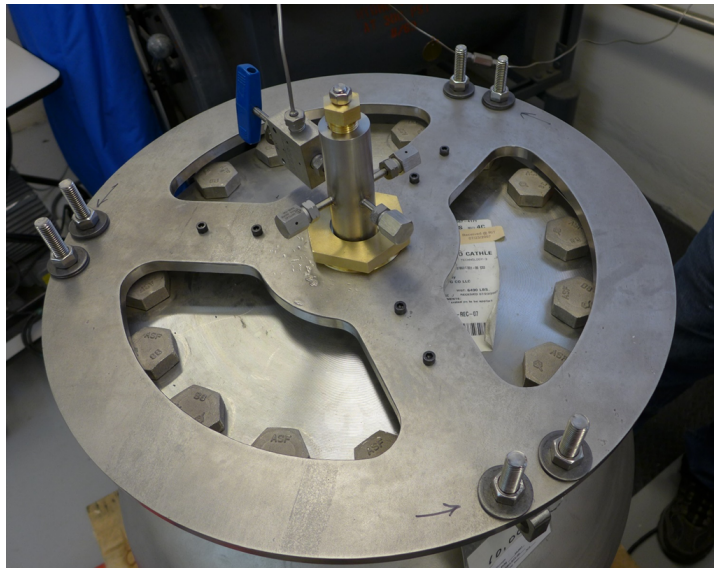
Area G FTWC Operational Plan

- To make the FTWCs safe for handling and transport, the pressure must be verified. They will be checked and vented one at a time, one per day, in a safe and compliant manner to remove any gases in the larger container (headspace). The tritium in the smaller containers will remain.
- Only the small volume of headspace gas, if present, will be vented:



Area G FTWC Operational Plan

- Any headspace gas will be routed 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

Area G FTWC Plan

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- The FTWCs will be transported to LANL's tritium facility and repackaged in compliant containers for permanent offsite disposal.
- This operation will require:
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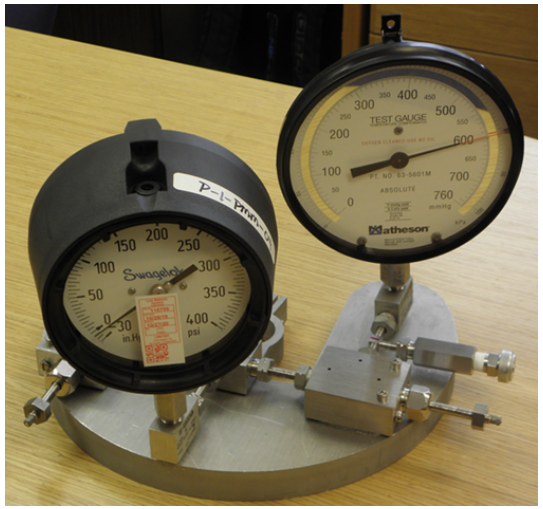

Pressure Monitoring Manifold

Area G FTWC Emissions Monitoring

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- 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.

Summary

- The containers will be placed in a compliant and safe configuration in accordance with all state, federal, and local environmental and worker safety requirements.
- This operation will not proceed until all approvals are obtained.
- This project reduces onsite waste risk and waste inventory priorities.
- 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).

Community Input

Members of the public may submit additional questions and comments to:

FTWC_publicinfo@lanl.gov

For more information, visit our website at:
www.lanl.gov/environment/ Select “Flanged Tritium Waste Containers”

Other Questions from the Public Received Via E-Mail

From: Chiri, Toni K.
Sent: Tuesday, June 15, 2021 2:11:01 PM
Subject: Update on FTWCs schedule

Kimberly,

Thank you for your interest in LANL.

NNSA and Triad are continuing the readiness review process for the proposed headspace gas venting of four Flanged Tritium Waste Containers (FTWCs). A Federal Readiness Assessment has been completed and NNSA is awaiting approval of follow-on administrative actions prior to venting. NNSA is also awaiting final approvals from the Department of Energy's Office of Environmental Management and the New Mexico Environment Department. Venting will not take place until all formal readiness processes are complete.

For more information on the Flanged Tritium Waste Container venting project, please go to the following website: [Flanged Tritium Waste Containers (lanl.gov)]

Toni Chiri
Public Affairs Specialist NNSA
Los Alamos Field Office

From: K Eves
Sent: Tuesday, May 11, 2021 6:33 PM
To: Armijo, Karen
Subject: [EXTERNAL] release date

Hi Karen,

I am a resident of Los Alamos and I am wondering if LANL has decided on a release date for the flanged tritium waste containers?
I was told a few months ago it will be sometime in the Spring to early Summer.

Kind regards,
Kimberly

From: Chiri, Toni K.
Sent: Wednesday, June 23, 2021 2:58 PM
To: Arends, Joni
Subject: RE: [EXTERNAL] status check on the FTWC

Joni,
In response to your question to Pete Maggiore about the status of FTWCs:

NNSA and Triad are continuing the readiness review process for the proposed headspace gas venting of four Flanged Tritium Waste Containers (FTWCs). A Federal Readiness Assessment has been completed and NNSA is awaiting approval of follow-on administrative actions prior to venting. NNSA is also awaiting final approvals from the Department of Energy's Office of Environmental Management and the New Mexico Environment Department. Venting will not take place until all formal readiness processes are complete.

Thanks for your interest.

Toni Chiri
Public Affairs Specialist
NNSA Los Alamos Field Office

From: Joni Arends
Sent: Thursday, June 17, 2021 8:06 PM
To: Maggiore, Peter
Subject: [EXTERNAL] status check on the FTWC

Hi Pete,

I hope you are staying cool. What is the current status of the FTWCs? Folks are asking.

Thanks in advance for your response.

Best,

Joni

--
Joni Arends, Executive Director
Concerned Citizens for Nuclear Safety