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DEPARTMENT OF ECOLOGY
Richland Field Office
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October 17, 2023 23-NWP-129

Delivery Receipt Requested

Brian T. Vance, Manager
Richland Operations Office
United States Department of Energy
PO Box 550, MSIN: H5-30
Richland, Washington 99352

John Eschenberg, President
and Project Manager
Central Plateau Cleanup Company LLC
PO Box 1464, MSIN: A7-01
Richland, Washington 99352

Re: Dangerous Waste Compliance Inspection on May 30, 2023, and June 5, 2023, at the Central Waste Complex, RCRA/State Site ID: WA7890008967, Nuclear Waste Program (NWP) Compliance Index No.: 23.800

Dear Brian T. Vance and John Eschenberg:

Thank you for your staff's time during the Central Waste Complex Flood / Contamination Incident inspection on May 30, 2023, and June 5, 2023. The Department of Ecology's (Ecology) compliance report of this inspection is enclosed. The report cites two areas of non-compliance and one concern.

Specific deficiencies or violations not listed in the enclosed compliance report do not relieve your facility from having to comply with all applicable regulations.

If you have questions or need further information, please contact me at (360) 481-9830 or jared.mathey@ecy.wa.gov.

Sincerely,

Digitally signed by Mathey, Jared W. (ECY)
Date: 2023.10.17 07:32:41 -07'00'

Jared Mathey
Dangerous Waste Compliance Inspector
Nuclear Waste Program

tla
Enclosure

cc: See page 2

cc electronic w/enc:

Dave Einan, EPA
Michelle Mullin, EPA
Matt Quarterman, EPA
Duane Carter, USDOE
Ingrid Colton, USDOE
Tony McKarns, USDOE
Bryan Trimberger, USDOE
Erika Garcia, CPCCo
Mitch Marrott, CPCCo
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Jennifer Williams, CPCCo
Jon Perry, HMIS
Steve Szendre, HMIS
Mason Murphy, CTUIR
Jack Bell, NPT
Laurene Contreras, YN
ERWM Staff, YN
Susan Coleman, HAB
David Reeploeg, Hanford Communities
Max Woods, ODOE
Shawna Berven, WDOH
John Martell, WDOH
Deb Alexander, Ecology
Morgan Baker, Ecology
Peter Barnes, Ecology
David Bowen, Ecology
Kathy Conaway, Ecology
Edward Holbrook, Ecology
Theresa Howell, Ecology
Jeffrey Loa, Ecology
Jared Mathey, Ecology
Laura Morgan, Ecology
Joy Morris, Ecology, NWP Compliance Index File 23.800
Stephanie Schleif, Ecology
Stacie Sexton, Ecology
Ed Soto, Ecology
Environmental Portal
Hanford Administrative Record
Hanford Facility Operating Record
CPCCo Correspondence Control
HAB Correspondence Control
HMIS Correspondence Control
USDOE Correspondence Control

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Washington Department of Ecology
Nuclear Waste Program
Compliance Report

Site:	**Central Waste Complex (CWC)**
RCRA/State Site ID:	**WA7890008967**
Inspection Date:	May 30, 2023, and June 5, 2023
Site Contacts:	Mitch Marrott – Central Plateau Cleanup Company (CPCCo)
Site Location:	U.S. Department of Energy (USDOE) Hanford Site, Benton County
Current Site Status:	Treatment, Storage, and Disposal Facility/Large Quantity Generator

Ecology

Lead Contact: Jared Mathey Phone: (360) 481-9830

Ecology Support: Peter Barnes, Joy Morris, and Jeff Loa

Report Date: October 17, 2023

Index #: 23.800

Report By: Jared Mathey

Digitally signed by Mathey, Jared W. (ECY)
Date: 2023.10.17 07:45:38 -07'00'

(Signed) (Date)

Site Location

The Hanford Site was assigned a single United States Environmental Protection Agency (EPA) identification number and is considered a single *Resource Conservation and Recovery Act of 1976* (RCRA), as amended, facility even though the Hanford Site contains numerous processing areas spread over a large geographic area. The Hanford Site is a tract of land approximately 580 square miles located in Benton County, Washington. This site is divided into distinct Dangerous Waste Management Units (DWMUs) administratively organized into "unit groups." A unit group may contain only one DWMU or many; currently, there are 30-unit groups at the Hanford Site. Individual DWMUs make up a small portion of the Hanford Site. Additional descriptive information on the individual DWMUs is contained in unit group permit applications and in Parts III, V, and VI of the Hanford Facility RCRA Permit, Dangerous Waste Portion, WA7890008967, Revision 8C (hereafter referred to as the Permit).

Owner and Operator Information

USDOE is the owner and operator of the CWC. CPCCo has a contract with USDOE to co-operate this unit.

Facility Background

The USDOE Hanford Site reported as a Large Quantity Generator of hazardous waste on their 2022 Dangerous Waste Annual Report.

Compliance Background

On April 28, 2022, Department of Ecology (Ecology) conducted a dangerous waste compliance inspection of the CWC and Waste Receiving and Packaging (WRAP) facilities (Index No. 22.768 and 22.769). During this inspection, Ecology found the following areas of non-compliance:

1. USDOE and CPCCo failed to demonstrate that none of the hazards posed by waste handled at CWC, and WRAP facilities would require the decontamination equipment of emergency showers available on-site in accordance with Washington Administrative Code (WAC) 173-303-340(1).
2. USDOE and CPCCo failed to list the location of various emergency equipment in CWC and WRAP's contingency plan in accordance with WAC 173-303-350(3).

On February 27, 2023, Ecology conducted a dangerous waste compliance inspection of the CWC and WRAP (Index No. 23.784 and 23.785). During this inspection, Ecology found the following areas of non-compliance:

1. USDOE and CPCCo failed to complete required 5-year dry pipe fire system inspections at the CWC.
2. USDOE and CPCCo failed to conduct daily inspections of a loading and unloading area at the CWC.
3. USDOE and CPCCo failed to include the time of the inspection on the Abnormal Container Management Program Surveillance inspection logs at the CWC and WRAP.
4. USDOE and CPCCo failed to list the frequency of inspection for the Transuranic package transporter (TRUPACT) Bay Surveillance Checklist and the Waste Staging Surveillance Checklist on their inspection plan.
5. USDOE and CPCCo failed to provide requested records.

Inspection Summary

May 30, 2023, Inspection

On May 28, 2023, at 11:25 p.m., Ecology received an initial occurrence report stating the following with anonyms defined:

- Date/Time of Discovery: 5/28/23 – 2005 (8:05 p.m.).
- OCCURRENCE REPORT DESCRIPTION: A failure was identified of the 2402-WJ safety significant riser assembly resulting in an accumulation of 6" of standing water on the floor of the building. The Post Indicator Valve (PIV) to 2402-WJ was isolated. The SWOC Technical Safety Requirements (TSR) (HNF-15280 Rev. 12C) identifies the fire suppression system as a Safety Significant Structure, System, or Component (SSC) that is required to be operable in ALL MODES when RADIOACTIVE WASTE, with exception of Operation and Maintenance (O&M) waste, or non-sealed sources are present in the FACILITY FIRE AREA As such, CWC have categorized per CPCC-PRO-EM-060, Appendix D, Group 4, Subgroup A (1) L occurrence report for "Performance degradation of any Safety Class (SC) or Safety Significant (SS) SSC, or any support system that is required for

safe operation of the SC or SS SSCs, which prevents satisfactory performance of its design function when it is required to be operable."

- IMMEDIATE ACTIONS TAKEN: The PIV to 2402-WJ was isolated. Boundary/personnel surveys confirmed no contamination. Power was isolated to the building. The water is being removed via pump from the 2402-WJ secondary containment system.

On May 30, 2023, at 12:54 p.m., Jared Mathey, Peter Barnes (P. Barnes) and Joy Morris (J. Morris), of Ecology, attended an inspection in-brief at 278-WA. The following people from USDOE and CPCCo personnel were in attendance:

- Thomas Bladow – CPCCo, Radiological Control Manager.
- Ingrid Colton – USDOE, Waste and Projects.
- Tarik Dillsi – CPCCo, Facility Manager.
- Edwin Kostic – CPCCo, Environmental.
- Danya Laurendeau – CPCCo, Radiological Control Technician (RCT).
- Charles Lisle – CPCCo, Engineering Manager.
- Mitch Marrott – CPCCo, Inspection Coordinator.
- Stu Mortensen – CPCCo, Waste Facilities Manager.
- Morgan Matson – CPCCo, Environmental Compliance Officer (ECO).
- Bethany Morter – CPCCo, ECO.
- Linda Petersen – CPCCo, Environmental Scientist.
- Bryan Trimberger – USDOE, Environmental.
- Miranda Vesely – CPCCo, Environmental Project Manager.
- Jennifer Williams – CPCCo, Inspection Coordinator.

Tarik Dillsi (T. Dillsi) gave a safety briefing for the inspection explaining take cover and staging area locations with instructions to escort personnel. T. Dillsi said personal protective equipment for the inspection was a safety vest, eye protection, and substantial footwear. T. Dillsi explained there was work currently being done in Building 2402-WF.

T. Dillsi said that Sunday night (May 28, 2023) CPCCo was notified from Hanford Patrol of a water discharge observed from Building 2402-WF. T. Dillsi stated the discharge was 56,000 gallons of water and the nature of the discharge was unknown. Stu Mortensen (S. Mortensen) said the 56,000 gallon volume was estimated by the water utility. Charles Lisle (C. Lisle) said that the situation is still under investigation, and CPCCo does not yet know all the details of what happened, but explained the discharge may have come from underground. C. Lisle explained they are planning to open the fire system valve and conduct a borescope camera inspection to determine where the water is coming from; this inspection was happening now.

P. Barnes said, normally water flow through the fire system triggers a notification that the fire system has been activated. C. Lisle explained the pressure leak occurred before the main valve, so this sensor was not tripped, and there was no way to monitor this scenario. C. Lisle said the

discharge likely happened underneath the building. I asked if this has happened before. S. Mortensen said no, not in my time here. I asked who got notified. S. Mortensen said I got notified at 5:50 p.m., Sunday (May 28, 2023). S. Mortensen said they established a rally point at T Plant and set up hot and cold zones. The fire department shut down the water source. I asked if they implemented their contingency plan. S. Mortensen said, no, because they did not call 911. S. Mortensen said they called Nuclear Chemical Operators (NOCs) in and provided communications and notifications on the incident.

I asked for a current status and if water is still inside the building. C. Lisle said there is water still in Building 2402-WJ and they need to get the water out of the building to their water collection system. C. Lisle and S. Mortensen said the floor of Building 2402-WJ was full to six inches, but they pumped the water to a collection system which goes to a drain field. I asked if there were any discrepant containers in 2402-WJ. C. Lisle said no, they performed a weekly inspection last week and all the containers were in good condition. I asked if there has ever been a spill inside of 2402-WJ. Morgan Matson (M. Matson) said no spills have ever been found in 2402-WJ. M. Matson said they had the operating logbook for May 28, 2023, and response checklist 230528-1. I looked at both records briefly and said I would add them to my records request.

P. Barnes asked if there were any changes to procedures with the fire suppression system down in Building 2402-WJ. S. Mortensen said no changes to procedures. P. Barnes asked if any containers moved with the water in the building. S. Mortensen said all the containers were overpacks on pallets and there was no movement of containers within the building. I said I would like to go see Building 2402-WJ.

Danya Laurendeau (D. Laurendeau) said we would be signing into Radiological Work Permit (RWP) SW0007, Rev. 6 and explained the conditions and dose limits of the RWP. D. Laurendeau said they did multiple smears on the floor and found no radiological contamination.

We walked to MO-438 to log into the Radiological Access Control System under the RWP for access to the CWC. At 1:41 p.m., we arrived to the east side of Building 2402-WJ. I observed both the east and the west roll up doors to Building 2402-WJ were open and about one to two inches of water was in the secondary containment.

IMG_0001 – East entrance looking west inside of Building 2402-WJ.

IMG_0002 – West entrance looking east inside of Building 2402-WJ.

T. Dillsi said we are waiting on Radiological Control (Radcon) to allow entry to the riser room. I asked T. Dillsi what exactly happened here. T. Dillsi explained water filled up secondary containment in Building 2402-WJ and discharged outside the walls of the building. T. Dillsi said the water pressure was so great that it pushed out the wall outside the riser room. T. Dillsi explained that they used pumps to remove the water from the secondary containment. I was introduced to Tony Ball (T. Ball) – CPCCo, Shift Operations Manager, who said we have permission from Radcon to enter the riser room one at a time.

IMG_0003 – Building 2402-WJ fire system riser room with scope camera down water supply pipe.

IMG_0004 – Building 2402-WJ fire system riser room with scope camera down water supply pipe.

I observed a cover plate removed from the fire system water supply to Building 2402-WJ with a camera scope down the pipe. The riser room's drywall appeared blown out on the west wall of the riser room. P. Barnes and J. Morris also independently went and looked inside of the riser room.

I did not observe any erosion on the north outside side of Building 2402-WJ. It appeared that water did not flow out in a significant way on the north outdoor side of Building 2402-WJ. On the southwest outside corner of Building 2402-WJ, I observed a significant amount of erosion, especially on the west side of the southwest corner. The water appeared to have flowed all the way out to the roadway. I observed a few small pieces of asphalt crumbling from the edge of the roadway, due to the base material underneath being eroded. Along the south side of the building, I observed several soil erosion areas where it appeared water flowed outside from the bottom part of the south wall of Building 2402-WJ.

IMG_0005 – West entrance looking east inside of Building 2402-WJ.

IMG_0006 – North side of Building 2402-WJ.

IMG_0007 – Soil erosion on southwest outside corner of Building 2402-WJ from water exiting the fire system riser room.

IMG_0008 – Soil erosion on south outside wall of Building 2402-WJ and under asphalt near the roadway between buildings.

IMG_0009 – Soil erosion on south outside wall of Building 2402-WJ.

IMG_0010 – Path of water on southeast corner of Building 2402-WJ.

From 2402-WJ, I observed wetted soil and soil erosion showing that the water appeared to go across the street to the drainage areas in front of (west side) and in between Buildings 2402-WI and 2402-WG and then across the street on the east side of these buildings. S. Mortensen said that the water traveled along the roadways and in between these buildings. I walked to the end of the stormwater system and observed that the water broke through the berm that held the water in the stormwater containment area. The water appeared to have flooded the area outside of the containment on the west side of Dayton Avenue. I did not see any evidence that the water went past this area. On the way back, I observed erosion across the road along the banks to the stormwater system on the east side of Building 2402-WG. See Figure 1 for observed areas of the water path from Building 2402-WJ.

IMG_0011 – Soil erosion on the southwest corner of 2402-WG.

IMG_0012 – End path of water where it broke through the stormwater containment berm.

IMG_00013 – Soil erosion to stormwater system from the path of water on the east side of Building 2402-WG with standing water in ditch.

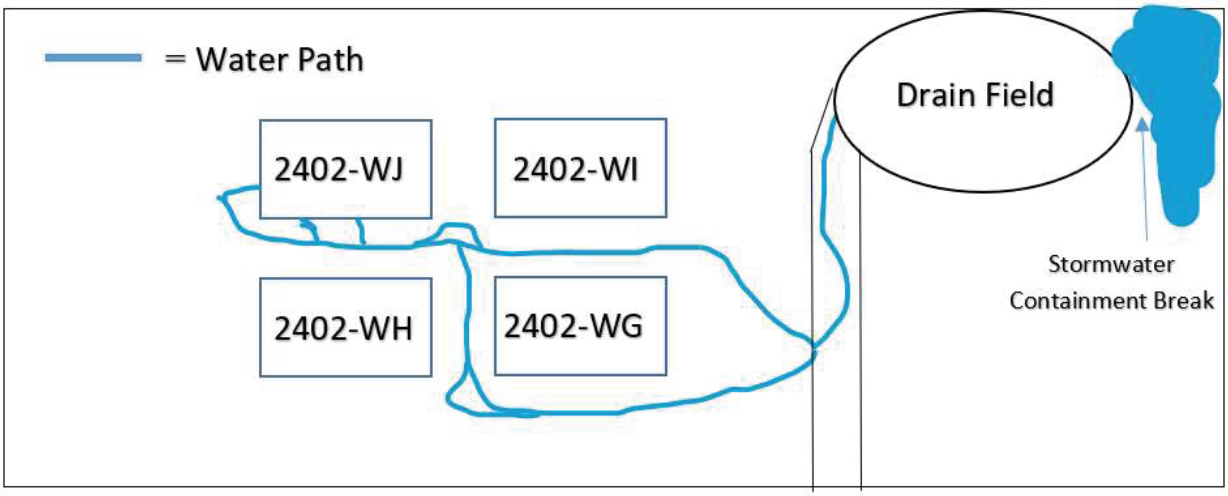

Figure 1 – Observed water path from 2402-WJ.

We walked back to MO-438, logged out of the Radiological Access Control System, and went back to the conference room in 278-WA for an inspection out-brief. P. Barnes asked if there was any water intrusion in 2402-WI and 2402-WG. S. Mortensen said there was no water intrusions into any other buildings. I asked if any water was sprayed onto or on top of the waste containers from the fire water system break. S. Mortensen said there was only water on the bottoms of the containers, and they did not observe any water on top of any of the containers. S. Mortensen explained that the riser room is a completely enclosed room with a roof inside the building, so the containers were protected from the high-pressure water release. T. Dillsi said we believe there was vertical movement of the water supply pipe, and the high-pressure water coming out from this area is what likely caused the damage to the dry wall. I processed my photos with J. Williams and we left the facility at 2:18 p.m.

On June 2, 2023, at 12:47 p.m., Ecology received an updated occurrence report stating the below:

- Date/Time of Discovery: 6/02/2023 – 0747 (7:47 a.m.)
- OCCURRENCE REPORT CRITERIA: Group 6B (3) L – Identification of onsite radioactive contamination greater than 10 times and no greater than 100 times the total contamination values in 10 Code of Federal Regulations (CFR) Part 835, Appendix D, exclusive of footnote 3 to Appendix D, and that is found outside of the following locations: areas routinely posted, controlled and monitored for contamination (Contamination Areas, High Contamination Areas, Airborne Radioactivity Areas, Radiological Buffer Areas established for contamination control), areas controlled in accordance with 10 CFR 835.1102(c), and, per 835.604(a), and any non-posted area that is under the continual observation and control of an individual knowledgeable of and empowered to implement required access and exposure control measures. For tritium, the reporting threshold is 10 times the removable contamination values in 10 CFR Part 835, Appendix D.
- OCCURRENCE REPORT DESCRIPTION: While performing container relocation from 2402-WJ to 2403-WA, RCTs identified 26,000 disintegrations per minute (dpm) /100cm^2 alpha and 3,000 dpm/100cm^2 beta/gamma on the lid of a container, 1000 dpm/100cm^2 alpha on the bottom sidewall of a second container, and 360 dpm/100cm^2 alpha on the bottom sidewall of a third container. As such, CWC has categorized per CPCC-PRO-EM-060, Appendix D, Group 6, Subgroup B (3) L occurrence report for “Identification of on-site radioactive contamination greater than 10 times and no greater than 100 times the total contamination values in 10 CFR Part 835, Appendix D, exclusive of footnote 3 to Appendix D, and that is found outside of the following locations: areas routinely posted, controlled and monitored for contamination, areas controlled in accordance with 10 CFR Section 835.1102(c), and, per Section 835.604(a), any non-posted area that is under the continual observation and control of an individual knowledgeable of and empowered to implement required access and exposure control measures. For tritium, the reporting threshold is 10 times the removable contamination values in 10 CFR Part 835, Appendix D.”
- IMMEDIATE ACTIONS TAKEN: Work was stopped and placed in a safe configuration. The pallets with the containers in question were left outside, east of 2402-WJ. 2402-WJ fans and doors were secured. Area around the event was barricaded and secured. Whole body surveys and nasal smears were completed. Operations is developing a recovery plan to characterize, decon, and overpack the containers as needed.

June 5, 2023, Inspection

On June 3, 2023, at 3:14 p.m. for Deb Alexander, 3:17 p.m. for John Temple, and 3:56 p.m. for Jared Mathey voicemails were received notifying Ecology staff of RCRA Contingency Plan activation. At 4:18 p.m., Curt Walker at the Ecology Central Regional Office, received a phone call notification for RCRA Contingency Plan activation.

On June 3, 2023, at 4:32 p.m., Ecology received emailed notification of RCRA Contingency Plan activation as of 11:50 a.m. on June 3, 2023. The following information was in the notification:

- Name and telephone of reporter: Brenton Porter, CPCCo Single Point of Contact, (cell) (907) 519-1529.
- Name and address of facility: US Dept. of Energy, Hanford Site Benton County WA, 200 Area Central Waste Complex (CWC) 2402-WJ Building, outdoor, east side.
- Time and Type of incident: 11:50 a.m., 6/3/2023 Degradation of drum causing spread of removable radioactive contamination on forklift tine and adjacent drums.
- Name and quantity of materials involved: Alpha isotopes, Pu-238, Pu-239, Pu-240, Am-241 64,000 dpm/100 cm squared 2.9 E-8 Ci (0.000000029 Ci).
- Extent of Injury: No injuries reported.
- Possible threat to human health and the environment: No current threat reported.

On June 5, 2023, at 1:32 p.m., Jared Mathey and Jeff Loa (J. Loa) of Ecology, attended an inspection in-brief at MO-281, Room 130. The following people from USDOE and CPCCo personnel were in attendance:

- Thomas Bladow – CPCCo, Radiological Control Manager.
- Bob Cathel – CPCCo, Environmental Manager.
- Ingrid Colton – USDOE, Waste and Projects.
- Tarik Dillsi – CPCCo, Facility Manager.
- Kelly Ebert – USDOE, Team Supervisor.
- Sarah Horn – CPCCo, Environmental Manager.
- Tashina Jasso – USDOE, Team Lead.
- Edwin Kostic – CPCCo, Environmental.
- Andrea Krohn – CPCCo, Scientist.
- Charles Lisle – CPCCo, Engineering Manager.
- Stu Mortensen – CPCCo, Waste Facilities Manager.
- Morgan Matson – CPCCo, ECO.
- Bethany Morter – CPCCo, ECO.
- Amy Payton – CPCCo, Radiological Control Technician (RCT).
- Adolfo Perez – USDOE, Environmental.

- Bryan Trimberger – USDOE, Environmental.
- Miranda Vesely – CPCCo, Environmental Project Manager.
- Jennifer Williams – CPCCo, Inspection Coordinator.

S. Mortensen gave a safety briefing including staging areas, take cover, and contamination area locations. S. Mortensen said Tuesday (May 30, 2023) through Thursday (June 1, 2023) CWC facility personnel dried out Building 2402-WJ, completing this task on Thursday. S. Mortensen said because Building 2402-WJ fire system was not operational, the waste containers had to be moved out of the building. S. Mortensen explained the camera scoping did not show anything conclusive, so the plan was to remove all the containers from Building 2402-WJ and open the post indicator valve to the fire sprinkler system to confirm the location of the leak.
S. Mortensen said on Friday, June 2, 2023, at 5:00 a.m., they started moving the 310 overpacked containers from Building 2402-WJ to 2402-WA. S. Mortensen said that the containers were waste 2011 retrievals from the Low-Level Burial Grounds 4B, Trench 7, Module 5. J. Loa asked if these were poly or steel containers. S. Mortensen said they were steel. S. Mortensen said the RCTs went in first to conduct tech smears on drum sides and once they confirmed there was no contamination, they moved containers in sets of eight (four containers stacked on four containers) outside of the building for a more comprehensive confirmatory radiological survey. S. Mortensen explained that this happened with no issues with the first eight pallets of 32 drums that got moved to Building 2402-WA. On pallets nine and ten, RCTs found alpha radiation on tech smears on the confirmatory sampling outside of Building 2402-WJ.

S. Mortensen explained RCTs found contamination on the lid of one container and on the side of another. Sasha Kosjerina was the Building Emergency Director (BED) that day. Everyone exited and went to a shield cave for whole body smears in Building 2402-WM. S. Mortensen said that they found contamination on the knee portion of one employee's pants, so they bagged them up and disposed as low-level waste. S. Mortensen said they found no skin contamination on anyone. They looked at wind conditions and conducted a safety briefing in MO-720. The main gate to CWC was locked and they made sure that Hanford Patrol was not in the area. S. Mortensen explained he was notified at 7:00 a.m. and that he assisted the BED and shift office all day and night. A recovery plan was developed, and they called additional staff in to manage the situation. S. Mortensen said they had some delays due to the Beryllium Work Plan, but that they went through emergency response procedures and issued an occurrence report. Access was restricted to Buildings 2402-WL to 2402-WH and contamination areas were set up.

S. Mortensen said CWC personnel got five of the eight containers from pallet nine and ten overpacked into 110-gallon containers, including the three that had contamination. When they pulled the tines from the pallet, they found contamination on the left forklift tine, which triggered issuance of a second occurrence report. They worked to decontaminate the forklift tine and then applied fixative to the tine. S. Mortensen said they also found radiological contamination on the forklift tire and on the asphalt outside of the buildings where they were

working with the containers. After these contamination issues were resolved, they also found small amounts of radiological contamination on a second forklift. These tines were also decontaminated. There was a sport utility vehicle in the contamination area that was also decontaminated.

S. Mortensen said the fifth container (0061960) they worked on is the one they believed to be the source of the radiological contamination. The container was on the second tier. Three pin holes were observed on the container bottom. When they tipped Container 0061960 over, they observed corrosion on the second-tier pallet slats it was sitting on. S. Mortensen said they found contamination on the lid of the container directly underneath of Container 0061960. This was Container 0062183, which was on tier one. Radiological contamination was also found on the side wall of the container sitting next to Container 0061960 on the second tier. This was Container 0061713. S. Mortensen said it was then Friday at midnight, so they put bags over the remaining three containers, sealed them, and put covers over debris material. The pallet was put into a bag, and they put an Nuclear Chemical Operator (NCO) on staff to stay the night to oversee the scene.

S. Mortensen said, when they returned the next day and reviewed the documents and conditions, they decided to implement their contingency plan at 11:50 a.m. on June 3, 2023. I asked if they should have implemented the contingency plan on Friday, June 2, 2023. S. Mortensen said they found the pin holes in the bottom of Container 0061960 at 11:10 p.m., Friday and conducted the review first thing on Saturday morning when they returned to the scene. J. Loa asked when these waste containers were originally overpacked. S. Mortensen said the original containers were from year 1974 at the Plutonium Finishing Plant (PFP). I asked if these containers had Nondestructive Examination (NDE) performed before they were repackaged. S. Mortensen said no and explained the original containers were in such bad condition when they were retrieved, they had to overpack them right at the burial grounds. S. Mortensen said on Saturday (June 3, 2023) they successfully completed overpacking the remaining three containers and they applied fixative to the asphalt ground and pallet. I asked if any contamination was found on the bottom tier pallet. S. Mortensen said no, there was no contamination found on the bottom tier pallet. I asked if there were any listed wastes in these containers. Sara Horn (S. Horn) said they were F listed containers and were sent to Building 2402-WL after being overpacked. I asked if the contaminated pallet was managed as hazardous waste. M. Matson said she verified the pallet was managed as hazardous waste.

S. Mortensen said on Saturday (June 3, 2023) all eight overpacked containers and the two pallets were moved to Building 2402-WL for storage. S. Mortensen said that they completed air samples and were able to down-post the outside area late Saturday (June 3, 2023) night and indicated all samples of water came back with no radiological contamination. S. Mortensen said there were currently three work packages associated with this incident, one was to apply fixative to the contamination areas on the asphalt outside which was completed and the second was to remove the asphalt and repair. I did not hear about the third work package and explained that I would request all associated work packages in my records request and the Package Identification Number (PIN) file for the leaky container.

Tom Bladow (T. Bladow) and Amy Payton (A. Payton) went over RWP SW-0007, Rev. 6 requirements for access to the area. C. Lisle gave a safety briefing. We left the conference room and walked to MO-438 to log into the Radiological Access Control System under RWP SW-0007, Rev. 6, for access to the CWC. We entered CWC and arrived at Building 2402-WJ, where I observed caution tape completely around Buildings 2402-WJ and 2402-WL and around Buildings 2402-WI and 2402-WK. Inside that boundary, I observed another area posted as a contamination area outside of the east entrance to Building 2402-WJ that extended down the main roadway toward, but not in front of, Building 2402-WL. I observed gray fixative on the ground in the shape of a lower-case letter “t” sprayed on the asphalt. Inside the contamination area, I observed two forklifts and one sport utility vehicle. We entered past the caution tape but stayed outside the contamination area. Walking past the first forklift, I observed the left forklift tine wrapped in yellow plastic bagging. I asked why the sport utility vehicle was inside the contamination area. C. Lisle said that sport utility vehicle was used in the original SWIM (Stop work, Warn others, Isolate area, and Minimize exposure) response and has not been released.

IMG_0018 – Contamination area in front of Building 2402-WJ with two forklifts and a sport utility vehicle inside.

IMG_0019 – Contaminated forklift in front of Building 2402-WJ.

We entered Building 2402-WL, where I observed containers 0100530 and 0091112 with no hazardous waste labels. I asked what was inside these two containers. S. Mortensen said these containers contained step off pad low-level waste. S. Mortensen said the two pallets that held the overpacked containers from Building 2402-WJ were what had been in the package next to these containers. I observed the packaging of the pallets was labeled as hazardous waste with the hazard of toxic. Further down, I observed eight 110-gallon containers all with hazardous waste labels with a hazard of toxic. S. Mortensen said these were the overpacks of the containers involved in the contamination incident. J. Loa took the following information from the eight containers.

- Container 0061960 was overpacked into Container 0091118.
- Container 0061713 was overpacked into Container 0091123.

- Container 0062183 was overpacked into Container 0091115.
- Container 0062112 was overpacked into Container 0091119.
- Container 0061711 was overpacked into Container 0091125.
- Container 0061820 was overpacked into Container 0091142.
- Container 0061996 was overpacked into Container 0091132.
- Container 0062093 was overpacked into Container 0091129.

I asked if there was any fixative applied on the inside of Building 2402-WJ. S. Mortensen said, no, that they still need to do radiological surveys and air monitoring of 2402-WJ. I said that I would like to be informed on the progress and requested S. Mortensen's phone number.
J. Williams requested that I put my questions in email format for questions to be answered by S. Mortensen.

IMG_0020 – Containers of step off pad waste and wrapped pallets involved in contamination incident.

IMG_0021 – Eight 110-gallon overpacks of containers involved in contamination incident.

IMG_00022 – 110-gallon overpack of container 0061960 (leaky container).

We walked back to MO-438 to log out of the Radiological Access Control System and then went back to Conference Room 130 at 3:30 p.m. for an out-brief. I asked for a list of work packages including the one to remove and replace the asphalt. S. Mortensen said to just ask for all the work packages associated with this incident in my records request. I said that if this leak came from a container that held listed waste, that all the waste generated from this container should be managed as hazardous waste. J. Williams asked if I had any concerns with my inspection. I explained that I had some concerns with the timing of implementation of the contingency plan, as they implemented other emergency procedures beforehand, so the contingency plan should have been implemented around the same time. J. Loa asked if fire watches were being conducted on Building 2402-WJ while the fire system was down. S. Mortensen said they are doing fire watches on this building every two hours. We ended the field inspection and left the facility at 3:42 p.m.

Records Review

Central Waste Complex Operations Log-Book Entries

I requested CWC Operations Log-Book entries from May 28, 2023, through June 15, 2023. I observed the following pertinent entries related to the CWC flood/contamination incident:

May 28, 2023

- 2030 (8:30 p.m.): Late entry for 1804 (6:04 p.m.); Hanford Fire Department (HFD) notified the Building Emergency Director of a failure/malfunction of the 2402-WJ riser assemble. Hanford Patrol identified water flowing outside of the building and approximately six to nine inches of standing water inside of the 2402-WJ secondary containment system. There was no indication of a fire inside of the building. Initiated an unplanned entry into Limiting Condition for Operation Condition A.1 for 2402-WJ due to malfunction of the riser assembly.
- 2032 (8:32 p.m.): HFD established a hot/cold zone on Dayton Ave east of gate 3. Radiological control technicians are performing surveys of the boundary and personnel that made initial entry into 2402-WJ.
- 2040 (8:40 p.m.): A failure of the riser assembly was confirmed by HFD in 2402-WJ. The Solid Waste Operations Complex (SWOC) TSR
  (HNF-15280 Rev. 12C) identifies the fire suppression system as a Safety Significant SSC that is required to be operable in all modes when radioactive waste with exception to operation and maintenance waste, or non-sealed sources are present in the facility fire area.
- 2100 (9:00 p.m.): All surveys of the hot/cold zone and personnel that made initial entry have been completed. No contamination detected. Access to Dayton has been reestablished.
- 2109 (9:09 p.m.): HFD responded to a water motor gong @2402-WF. Riser tripped due to unknown condition. HFD verified no fire present in 2402-WF. Initiated an unplanned

entry into Limiting Condition for Operation 3.2.1 Condition A.1 for 2402-WF. Isolation PIV 283S. Required Action A.1.1 complete and A.1.2 initiated.

- 2118 (9:18 p.m.): Opened disconnect E5698L-SD-18 and 20 for 2402-WJ. Power has been isolated to the building.
- 2200 (10:00 p.m.): Beginning to drain 2402-WJ secondary containment system in accordance with SW-080-003. Water is being pumped south of 2402-WG.
- 2300 (11:00 p.m.): HFD dispatch contacted: Radio Fire Alarm Reporter (RFAR) 2862 left fully enabled. Two-hour fire watch required for 2402-WF. RFAR 2864 Zone 87 disabled. Two-hour fire watch required for 2402-W(?).
  Note: Second letter cut off from building identifier in provided records.

May 29, 2023

- 0620 (6:20 a.m.): Completed transfer of water from 2402-WJ secondary containment. Approximately ¾ inch of remains in the secondary containment. Remainder of water will need to be removed manually.
- 0630 (6:30 a.m.): Restore operability will not be completed with the required completion time for 2402-WJ and 2402-WF. Initiated a planned entry into Limiting Condition for Operation 3.2.1 Condition A.2 for 2402-WJ and 2402-WF. Required action A.2.1 complete and A.2.2 initiated. Completion time for A.2.2 is 14 calendar days.

May 30, 2023

- 0530 (5:30 a.m.): 2402-WJ and 2402-WF remain in Limiting Condition for Operation 3.2.1 Condition A.2. Required Action A.2.2 is due 6/12/23. CWC and LLBG remain in stand-by mode.
- 1558 (3:58 p.m.): Completed restoration/reset of tripped riser in 2402-WF. Per FP-23-03650 PN 283S is in the open position and locked. Limiting Condition for Operation 3.2.1 surveillance requirements for 2402-WF met, operability restored and condition as required action A.2.2 completed. Exiting Limiting Condition for Operation 3.2.1 Condition A.2 for 2402-WF, RFAR 2862 fully restored.

May 31, 2023

- 0540 (5:40 a.m.): 2402-WJ remains in Limiting Condition for Operation Condition 3.2.1 Condition A.2. Required Action A.2.2 is due 6/12/23. CWC and LLBG remain in stand-by mode.

June 1, 2023

- 0545 (5:45 a.m.): 2402-WJ remains in Limiting Condition for Operation Condition 3.2.1 Condition A.2. Required Action A.2.2 is due 6/12/23. CWC and LLBG remain in stand-by mode.
- 0645 (6:45 a.m.): 2402-WJ remains in stand-by mode.
- 1035 (10:35 a.m.): Two-hour fire watch remains for 2402-WJ.

June 2, 2023

- 0510 (5:10 a.m.): 2402-WJ remains in Limiting Condition for Operation Condition 3.2.1 Condition A.2. Required Action A.2.2 is due 6/12/23. CWC and LLBG remain in stand-by mode.
- 0550 (5:50 a.m.): CWC is in operation mode to support relocation of containers from 2402-WJ to 2403-WA. This activity is required to support restoration of operability of the 2402-WJ Fire Suppression System.
- 0554 (5:54 a.m.): CAS contacted; Notified of 2402-WJ to 2403-WA container relocation activities and removal of the west jersey barrier of 2402-WA.
- 0635(6:35 a.m.): Approved the waste handling approval form for relocation of containers from 2402-WJ to 2403-WA.
- 0737 (7:37 a.m.): While performing container relocation activities from 2402-WJ to 2402-WA, Radiologic Control Technicians identified 25,000 dpm alpha/100 cm^2 and 3,000 DPM beta/gamma/100 cm^2 on the lid of container 0062183 and 2,000 DPM alpha/100 cm^2 on the bottom sidewall of container 0061960. No breaches were identified.
- 0830 (8:30 a.m.): Worked was stopped and all personnel were moved at least 100 feet upwind of 2402-WJ. Fans have been secured and all doors have been closed to 2402-WJ. Whole body surveys are being performed as of 0800 hours on the NW end of 2402-WL. 1,600 DPM alpha direct detected on the left knee of one employee. The employee's pants have been removed and bagged. Access to CWC is controlled at Gate 1. South side f 2402-WH main road and back roads and roads 75' north of 2402-WL and 2402-WK have been barricaded.
- 0834 (8:34 a.m.): CWC has categorized this event per CPCC-PRO-EM-060, Appendix D, Group 6, Subgroup B (3) L occurrence report for identification of on-site radioactive contamination greater than 10 times and no greater than 100 times the total contamination values in 10 CFR Part 835, Appendix D, exclusive of footnote 3 to Appendix D, and that is found outside of the following locations. Areas routinely posted, controlled, and monitored for contamination, areas controlled in accordance with 10 CFR Section 835.1102 and per Section 835.604(a) any non-posted area that is under the continual observation and control of an individual knowledgeable of and empowered to implement required access and exposure control measures. CPCC-00175, Table 2-2 values lists Transuranics as 500 DPM total removeable fixed.
- 0849 (8:49 a.m.): Initiated an unplanned entry into Limiting Condition for Operation 3.6.4 Condition A.1 for containers 0062183 and 0061960 due to the presence of contamination. Required Action A.1.1 complete and A.1.2/A.1.3 initiated.
- 0900 (9:00 a.m.): DOE Fac-Rep notified of CPCC-PRO-EM-060 categorization.
- 0930 (9:30 a.m.): Whole body surveys and nasal smears complete for all individuals supporting the 2402-WJ work scope. No contamination detected. There are indications

that the contamination identified on the left knee of the employee was radon. All personnel have exited the facility.

- 0937 (9:37 a.m.): Emergency Operations Center (EOC) contacted of CPCC-PRO-EM-060 categorization.
- 1000 (10:00 a.m.): RadCon was able to confirm that container 0062183 (1st tier drum) had 26,000 dpm alpha/100 cm² on the lid of the drum, container 0061960 (2nd tier drum) had 1,000 dpm alpha/100 cm² on the bottom sidewall, and container 0061713 had 360 dpm alpha/100 cm² on the bottom sidewall (2nd tier drum). Initial surveys of the containers and 2 pallets they were sitting on did not indicate any contamination. Contamination was identified during confirmatory surveys on the east end outside of 2402-WJ. Both pallets (8 containers) remain outside east of 2402-WJ.
- 1004 (10:04 a.m.): Initiated an unplanned entry into Limiting Condition for Operation 3.6.4 Condition A.1 for container 0061713 due to the presence of contamination. Required action A.1.1 complete and A.1.2/A.1.3 initiated.
- 1005 (10:05 a.m.): Single Point of Contact (SPOC) has been contacted and confirmed that this event does not trigger RCRA contingency plan implementation. All personnel have been contacted to support the development of a recovery plan.
- 1840 (6:40 p.m.): Relocated 32 containers from 2402-WJ to 2403-WA prior to contamination event. Solid Waste Information and Tracking System (SWITS) has been verified.
- 1852 (6:52 p.m.): Approved the waste handling approval form for overpack/relocation of containers from east outside deviation of 2402-WJ to 2402-WL. Work to characterize, decontaminate, overpack, and relocate containers will be performed per 2X-23-03850.
- 2118 (9:18 p.m.): While performing characterization on the waste containers and equipment, 64,000 dpm/100 cm ² alpha was identified on the forklift tines from the second-tier pallet. Containers on the pallet in question are 0061820, 0061960, 0061711, and 0061713.
- 2127 (9:27 p.m.): CWC has upgraded the original categorization from 0834 hours (8:34 a.m.) to a Group 6, Subgroup B (2) H occurrence report for “identification of onsite radioactive contamination greater than 100 times the total contamination values in 10 CFR Part 835 Appendix D.
- 2129 (9:29 p.m.): 100 dpm/100 cm² alpha identified on forklift used to handle first tier drums earlier in the day. First tier pallet contains containers 0062183, 0062112, 0062093, and ~~0061967~~ (*container number struck out on notes*). Forklift tines were able to be deconned to less than 20 dpm/100 cm ² alpha.
- 2145 (9:45 p.m.): Forklift with 64,000 dpm/100 cm² alpha on tines deconned to 600-700 dpm/100 cm² alpha on tines/wheels. 400-600 dpm/100 cm² alpha detected on asphalt underneath forklift. 20,000 alphas direct identified on asphalt underneath. Environmental Compliance Officer contacted of upgrade to categorization at 2226

hours (10:26 p.m.). DOE Facility Representative contacted at 2214 hours (10:14 p.m.).

- 2302 (11:02 p.m.): Completed overpack of all containers from pallet containing containers 0062183, 0062093, 0061996, and 0062112.

June 3, 2023

- 0030 (12:30 a.m.): Completed overpack of container 0061960. Container was identified with three pin holes on the bottom. Three remaining containers from pallet have been bagged and pallet has been bagged. All eight containers (5 overpacks and three originals) remain in contamination area boundary. Facility zone established for contamination area boundary containing drums. Total inventory for zone is 6.64 DE-Ci. Contamination boundary is in a safe configuration. Patrol contacted and notified of scene. Nuclear Chemical Operator performing continuous surveillance of drums.
- 0100 (1:00 a.m.): Completed all container handling activities in CWC for the night. Contamination area facility zone is being tracked through the logbook. CWC is in stand-by mode.
- 1005 (10:05 a.m.): 2402-WJ remains in Limiting Condition for Operation 3.2.1 Condition A.2 Required Action A.2.2 is due 6/12/23. Containers 0062183, 0061960, and 0061713 remain in Limiting Condition for Operation 3.6.4 Condition A.1 Required Action A.1.2/A.1.3 is due 6/7/23.
- 1110 (11:10 a.m.): Follow-up entry made at 0030 hours (12:30 a.m.); Verified that no liquid was observed around the bottom of container 0061960. There was no indication of visible drum contents released to the environment. Corrosion product was visible on the top of the pallet. Operability evaluation to determine inoperability/operability of container is being performed per CPCC-PRO-EN-52742. However, operations management has determined that this container will be considered inoperable based on the contamination observed and presence of pinholes on the bottom of the drum. As such, CWC has categorized per CPCC-PRO-EM-060 Appendix D, Group 4, Subgroup A(1) L occurrence report for Performance degradation of any safety class or safety significant structure system or component, or any support system that is required for safe operation of the safety class or safety significant structure system or component, or any support system which prevents satisfactory performance of its design function when it required to be operable. Time of discovery was 6/3/23 at 0300 hours (3:00 a.m.). Time of categorization was 6/3/23 at 0851 hours (8:51 a.m.). Time of Environmental Compliance officer notification was 6/3/23 at 0934 hours (9:34 a.m.).
- 1150 (11:50 a.m.): The RCRA Contingency Plan is conservatively being implemented for this event in accordance with CPCC-EM-67860, Building Emergency Plan for Central Waste Complex and DOE-0223 RLEP 1.1 Hanford Incident Command System and Event Recognition and Classification. This event does not meet the criteria for an HMOE and does not require time urgent response by the Hanford Fire Department and/or Hanford Patrol. In accordance with the RCRA Contingency Plan criteria (1) the event involved an

unplanned spill, (1a) the unplanned spill or release involved a dangerous waste, and (3) the emergency circumstance poses a threat to human health or the environment. Note that this event does not meet the referenced criteria in RLEP 1.1 when determining if a threat to human health or environment exists, including (1) potential for material to spread to the public (off-site), (2) potential for the material to enter water including , surface water, groundwater, storm drains, and ditches, (3) illness, injury, stress, or death of fish or wildlife occurs, (4) a release to the air in sufficient quantity or concentration to harm the public, animals, or plants, and (5) cannot quickly control, contain, and cleanup a spill to the soil. The event remains localized to the established contamination area boundary inside of the CWC boundary (east of 2402-WJ and east of 2402-WI). Highest radioactive contamination identified was 64,000 dpm/100 cm^2 alpha on the forklift tines, 26,000 dpm/100 cm^2 alpha on the asphalt directly underneath the forklift tines. Corrosion material was identified on the affected pallet, which has been wrapped in plastic and stabilized. Degraded container with the identified pinholes has already been overpacked into a 110-gallon drum. Spray paint was used to fix contamination on asphalt.

- 1531 (3:31 p.m.): Approved the waste handling approval form for overpack/relocation of containers for contamination area facility sone 1 to 2402-WL per 2X-23-03850.
- 1605 (4:05 p.m.): Remaining three drums have been overpacked. Drum #1 had 400 dpm/100 cm^2 and 900 dpm direct alpha prior to overpack. Drum #2 has 1,750 dpm/100 cm^2 alpha prior to overpack. Drum #3 was less than detectable prior to overpack.
- 1608 (4:08 p.m.): Applied fixative inside bag and onto pallet that contained the degraded container.
- 1623 (4:23 p.m.): Both pallets have been wrapped and stacked outside of high contamination area boundary. Forklift H0-75-4861 moved to the north end of high contamination area. Tines and mast have been sprayed with fixative. Spraying north end of high contamination area with fixative.
- 1647 (4:47 p.m.): Exiting contamination area boundary. Fixative has been applied to locations with contamination. Additional application of fixative will be performed.
- 1727 (5:27 p.m.): High contamination area/beryllium-controlled area down-posted. Area controlled as contamination area/airborne radioactive area.
- 2103 (9:03 p.m.): Staplex air sample at 0.103 derived air concentration. Down-posting airborne radioactive area boundary.
- 2312 (11:12 p.m.): Completed down-posting of contamination area for the night. Contamination area has been down-posted to boundary east of 2402-WJ and roadway north of 2402-WJ. Caution tape placed north of 2402-WL and south of 2402-WL. All containers have been relocated from contamination area facility zone 1 to 2402-WL. SWITS inventory was not updated due to a SWITS error. SWITS will need to be updated on Monday. CWC is in standby mode. HFD and Patrol notified of rad condition.

June 5, 2023

- 0525 (5:25 a.m.): 2402-WJ remains in Limiting Condition for Operation 3.2.1 Condition A.2. Required action A.2.2 is due 6/12/23. Containers 0062183, 0061960, and 0061713 remain in Limiting Condition for Operation 3.6.4 Condition A.1. Required Actions A.1.2/A.1.3 are due 6/7/23. Containers were overpacked on 6/3/23.
- 1608 (4:08 p.m.): Eight overpacked containers from 2402-WJ have been scanned into 2402-WL. SWITS has been verified.

June 6, 2023

- 0542 (5:42 a.m.): 2402-WJ remains in Limiting Condition for Operation 3.2.1 Condition A.2. Required action A.2.2 is due 6/12/23. Containers 0062183, 0061960, and 0061713 remain in Limiting Condition for Operation 3.6.4 Condition A.1. Required Actions A.1.2/A.1.3 are due 6/7/23. Containers were overpacked on 6/3/23.
- 1515 (3:15 p.m.): Limiting Condition for Operation 3.6.4 Condition A.1 Required Action A.1.3 has now been completed by overpacking containers (drums) 0061713, 0061969, and 0062183 and by successfully performing Technical Safety Requirement Safety Review 4.6.4.1. Completion of Required Action A.1.2 is not required due to completion of operability restoration prior to end of specified completion time per Limiting Condition of Operation 3.0.2. Exiting Limiting Condition of Operation 3.6.4 Condition A.1 for containers 0061713, 0061960, and 0062183.

June 7, 2023

- 0535 (5:35 a.m.): 2402-WJ remains in Limiting Condition for Operation 3.2.1 Condition A.2. Required Action A.2.2 is due 6/12/23. Containers 0062183, 0061960, and 0061713 remain in Limiting Condition for Operation 3.6.4 Condition A.1. Required Actions A.1.2/A.1.3 are due 6/7/23.
- 0853 (8:53 a.m.): Accessing 2402-WJ to perform characterization and decontamination activities per 2X-23-03889.
- 0927 (9:27 a.m.): 30 dpm/100 cm^2 identified on first smear and 40 dpm/100 cm^2 alpha identified on second smear in 2402-WJ.
- 0944 (9:44 a.m.): 100 dpm/100 cm^2 identified in 2402-WJ. Second smear of area verified no contamination.
- 1039 (10:39 a.m.): All identified contamination in 2402-WJ was able to be successfully wiped down/decontaminated to less than 20 dpm/100 cm^2 alpha. 2402-WJ will be down-posted from contamination area/airborne radioactivity area to radiation area/radioactive materials area pending air sample results. Chevy Tahoe located at the north section of the outdoor contamination area was surveyed out clean.
- 1400 (2:00 p.m.): 2402-WJ air samples less than 0.2 derived air concentration. Area may be down-posted to radiation area/radioactive materials area.
- 1440 (2:40 p.m.): 2402-WJ down-posted to radiation area/radioactive materials area.

June 8, 2023

- 0550 (5:50 a.m.): 2402-WJ remains in Limiting Condition for Operation 3.2.1 Condition A.2. Required Action A.2.2 is due 6/12/23.
- 1430 (2:30 a.m.): North forklift in contamination area outside of 2402-WJ has been surveyed with no contamination detected. Forklift has been removed from the contamination area boundary.

June 12, 2023

- 0540 (5:40 a.m.): 2402-WJ remains in Limiting Condition for Operation 3.2.1 Condition A.2. Required Action A.2.2 is due 6/12/23.
- 0942 (9:42 a.m.): Limiting Condition for Operation 3.2.1 Condition A.2. Required Action A.2.2 will not be completed within the required completion time of 14 days for 2402-WJ. Initiated a planned entry into Limiting Condition for Operation 3.2.1 Condition A.3 for 2402-WJ. Required Action A.3.1 (Submit recovery plan to RL) initiated. Completion time for A.3.1 is 14 calendar days (6/26/23).

June 13, 2023

- 0952 (9:52 a.m.): Initiated a planned entry into Limiting Condition for Operation 3.2.1 Condition A.1 for 2402-WG to perform FP-23-04099. Required Action A.1.1 complete and A.1.2 initiated.
- 1022 (10:22 a.m.): Initiated a planned entry into Limiting Condition for Operation 3.2.1 Condition A.1 for 2402-WH to perform FP-23-04099. Required Action A.1.1 complete and A.1.2 initiated.
- 1040 (10:40 a.m.): Initiated a planned entry into Limiting Condition for Operation 3.2.1 Condition A.1 for 2402-WI to perform FP-23-04099. Required Action A.1.1 complete and A.1.2 initiated.
- 1535 (3:35 p.m.): Completed FP-23-04099 for 2402-WG, 2402-WH, and 2402-WI. Limiting Condition for Operation 3.2.1 Surveillance Requirements for 2402-WG, 2402-WH, and 2402-WI met. Operability restored and Condition A.1 Required Action A.1.2 complete. Exiting Limiting Condition for Operation 3.2.1 Condition A.1 for 2402-WG, 2402-WH, and 2402-WI.

June 14, 2023

- 0535 (5:35 a.m.): 2402-WJ remains in Limiting Condition for Operation 3.2.1 Condition A.2. Required Action A.3. Required Action A.3.1 is due 6/26/23.
- 0936 (9:36 a.m.): Initiated a planned entry into Limiting Condition for Operation 3.2.1 Condition A.1 for building 2402-WB to support dry pipe sprinkler system torquing per work package FP-23-04096.

- 1228 (12:28 p.m.): Initiated a planned entry into Limiting Condition for Operation 3.2.1 Condition A.1 for 2402-WD to support dry pipe sprinkler system torquing per FP-23-04096.
- 1248 (12:48 p.m.): Initiated a planned entry into Limiting Condition for Operation 3.2.1 Condition A.1 for 2402-WE to support dry pipe sprinkler system torquing per FP-23-04096.
- 1545 (3:45 p.m.): Completed dry pipe sprinkler system torquing per FP-23-04096 for 2402-WB, 2402-WD, and 2402-WE. Limiting Condition for Operation 3.2.1 Surveillance requirements for 2402-WB, 2402-WD, and 2402-WE met. Operability restored and Condition A.1 Required Action A.1.2 completed. Exiting Limiting Condition for Operation 3.2.1 Condition A.1 for building 2402-WB, 2402-WD, and 2402-WE.

June 15, 2023

- 0535 (5:35 a.m.): 2402-WJ remains in Limiting Condition for Operation 3.2.1 Condition A.2. Required Action A.3. Required Action A.3.1 is due 6/26/23.
- 1245 (12:45 p.m.): Initiated a planned entry into Limiting Condition for Operation 3.2.1 Condition A.1 for building 2402-WB to support dry pipe sprinkler system torquing per FP-23-04096.
- 1312 (1:12 p.m.): Initiated a planned entry into Limiting Condition for Operation 3.2.1 Condition A.1 for building 2402-WF to support dry pipe sprinkler system torquing per work package FP-23-04096.
- 1330 (1:30 p.m.): Completed troubleshooting and repair of the 2402-WJ dry pip sprinkler system per 2X-23-02027. Fire protection engineer contacted. Two-hour fire surveillances no longer required. Operability will be restored in accordance with Limiting Condition for Operation 3.2.1 and 3.0.2 once the operability evaluation is completed per CPCC-PRO-EN-52742.
- 1542 (3:42 p.m.): Completed dry pipe sprinkler system torquing per FP-23-04096 for 2402-WB and 2402-WF per FP-23-04096. Limiting Condition for Operation 3.2.1 Surveillance requirements for 2402-WB and 2402-WF met. Operability restored and Condition A.1 Required Action A.1.2 completed. Exiting Limiting Condition for Operation 3.2.1 Condition A.1 for building 2402-WB and building 2402-WF.

Response Checklist 230528-1

I requested Response Checklist 230528-1 including any updates. I observed Response Checklist for Environmental Events Report Number 230528-1, dated June 13, 2023, stated the following in part:

- Date and Time of Spill or Discovery – 6:04 p.m. - May 28.
- Date and Time of Spill Reported to SPOC – 8:35 a.m. May 29.
- Location of Spill – 2402-WJ, CWC.

- Quantity Spilled – 63,745 gallons.
- Released to – Asphalt, Ground, Concrete, Inside Building, Secondary Containment.
- Cause of Event – Fire System – Approximately 63,745 gallons of sanitary water was discharged from the 2402-WJ Fire Riser.
- Mitigation and Immediate Cleanup Actions – There were no recent spills or contamination events within the interior (including secondary containment) or exterior of 2402-WJ. There were no signs of an oil sheen, coloration, solids, or other abnormal conditions in the water pooled in the interior of the building. All containers were in good condition, as noted in the previous week's surveillance. Following Water Discharge Best Management Practices, water that had pooled was managed by distributing it to other supporting engineered water collection systems within CWC. Over 150 radiological surveys (alpha and beta/gamma) were taken of water, tools, and personnel; no contamination was detected.
- Additional Actions – A follow-up inspection identified the likely cause was a failure/malfunction of the 2402-WJ Riser Assembly.

Questions on CWC Flooding Incident

I asked to explain the cause of the flooding event that occurred in Building 2402-WJ. I received the following responses from CPCCo:

> There were numerous possible causes for the 2402WJ event. After performing in-depth investigation and troubleshooting activities on the 2402WJ fire riser it was concluded that the cause of the 2402WJ flooding event was most likely improper installation of a flange adapter that provides the interface between the water supply piping and the fire riser.

I asked to explain what repairs were made to fix the issue that caused the flooding event that occurred in Building 2402-WJ. I received the following responses from CPCCo:

> There are torquing requirements for set screws on the flange adapter specified by the manufacturer's installation instructions. Although the set screws were tightened to some indeterminate value, there is no documentation that the values met the minimum requirements specified by the manufacturer's data. Investigation of the riser post-leak provided evidence that the set screws appeared to not have been adequately torqued, causing the flange to slip off the supply piping, resulting in the flooding event.
>
> The 2402WJ riser was reassembled in accordance with 2X-23-02027. Additional controls were incorporated into the package that documents the torquing of these flange set screws in accordance with manufacturer recommendations and a signoff for Quality Assurance personnel to witness performance. After reassembly the 2402WJ riser Acceptance Test Plan was performed and successfully passed.

I asked to explain if these repairs or additional inspections need to be made to other CWC Buildings, including listing all buildings this repair will need to be done on. I received the following responses from CPCCo:

> These flanges were replaced or adjusted at additional CWC buildings identified in Item #6 response except for 2401W. These flanges have been verified to be torqued in accordance with the manufacturer's installation instructions using the additional controls incorporated into 2X-23-02027.

I asked to explain how CPCCo is using this event to improve upon their current inspection plan or processes. (e.g., adding an inspection of the fire system valves once every five years). I received the following responses from CPCCo:

> The inadequate torquing of the flange adapter is being incorporated as a Lessons Learned. There is a Causal Analysis being performed that will identify follow-on corrective actions. Moving forward work package 2X-23-02027 was updated to require verification of fire riser torquing in accordance with the manufacturer's installation instructions. 8.0 CP-ENG-0240_-_Rev_00.

Fire Watch Records

I requested records of fire watches being conducted on Building 2402-WJ from May 28, 2023, until the fire suppression system is fixed or until waste is removed from the building. I received the following response from CPCCo regarding this request:

> On-shift, facility personnel conducted the fire surveillances as they performed work in or adjacent to 2402-WJ. Off-shift, the fire watches were recorded in the Fire Surveillance Log.

I observed fire surveillances were conducted every two hours with no issues observed for Building 2402-WJ between the below times:

- 7:00 a.m. on May 29, 2023, through 5:00 a.m. May 30, 2023.
- 5:00 p.m. on May 30, 2023, through 7:00 a.m. on May 31, 2023.
- 5:00 p.m. on May 31, 2023, through 5:00 a.m. on June 1, 2023.
- 5:00 p.m. on June 1, 2023, through 5:00 a.m. on June 2, 2023.
- 1:30 a.m. on June 3, 2023, through 5:30 a.m. on June 8, 2023.
- 3:30 p.m. on June 8, 2023, through 5:30 a.m. on June 12, 2023.
- 5:30 p.m. on June 12, 2023, through 5:30 a.m. on June 13, 2023.
- 5:30 p.m. on June 13, 2023, through 5:30 a.m. on June 14, 2023.
- 5:30 p.m. on June 14, 2023, through 5:30 a.m. on June 15, 2023.

I observed the form was also used to track fire system air and water pressures required once daily for Buildings 2402-WG, 2402-WH, 2402-WI, 2402-WK, and 2402-WL. I observed these occurred on May 29, 2023, (not including 2402-WL), May 31, 2023, and June 2, 2023. I observed the following notation on the logbook:

Update 6/01/23: 3.3k-ohm resistors installed on RFAR 2864 Zone 7 and 8. RFAR 2864 fully enabled. Fire surveillances no longer required for 2402-WG, WH, WI, WK, and WL.

Fire Suppression System Records

I requested all records and work packages associated with any maintenance, system upgrades, and any changes made to the fire suppression system in the last year for Building 2402-WJ.

Work Package FP-23-00749 2402WJ 12m Dry Riser Testing and Inspection, showed an annual inspection and three-month inspection of the dry pipe sprinkler system in 2402-WJ occurred on April 6, 2023. Work packages FP-22-06755, FP-22-05034, FP-22-02514, and 2402WJ 3m Dry Riser Testing and Inspections, showed three-month inspections of the dry pipe sprinkler system in 2402-WJ occurred on July 12, 2022, October 3, 2022, and January 3, 2023. Work Package FP-22-05053, 2402 WG through WL 12m Device Testing and Inspection, showed an annual functional testing of the fire alarm system initiating and notification devices in 2402-WJ occurred on October 3, 2022. I observed Work Package FP-23-00805, 2402WJ 1yr Dry Riser Maintenance, showed that an annual maintenance of the dry pipe sprinkler system in 2402-WJ occurred on April 6, 2023. I observed the inspection records included the date and time of the inspection, the printed name and hand-written signature of the primary inspector, and notations of observations made. There were no deficiencies reported in the work packages.

I observed the work involved the following procedures:

- FSM-PRO-ITM-61678, *Maintenance on Fire Systems Dry Pipe Valves*, Rev. 0, Change 5, dated April 5, 2022.
- FSM-PRO-ITM-61682, *Inspecting and Testing Dry Riser Fire Sprinkler System*, Rev. 0, Change 5, dated January 26, 2023.
- FSM-PRO-ITM-61685, *Bypass, Restoration, Valve Status, Main Drain, and Work Interruption and Resumption*, Rev. 0, Change 3, dated November 2, 2022.
- FSM-PRO-ITM-61719, *Functional Test and Inspect Initiating and Notification Devices*. Rev. 0, Change 3, dated August 8, 2022.

Procedure FSM-PRO-ITM-61678, included processes to remove, inspect, and clean dry pipe fire system valves. Procedures FSM-PRO-ITM-61678 and FSM-PRO-ITM-61682 both related to instructions for inspecting and testing dry riser fire sprinkler systems and associated fire alarm and supervisory devices. I observed FSM-PRO-ITM-61685 provided instructions for setting up fire systems for testing/maintenance; performing a valve status test or main drain test following any testing/maintenance involving closure of a fire sprinkler system control valve or other upstream water valve; restoration of the fire system to normal operation; and managing interruption of work. Procedure FSM-PRO-ITM-61719, included direction to functionally test, inspect, troubleshoot, repair, and replace Fire Alarm System Initiating and Notification Devices.

Note: Records for Work packages 2X-23-03662 2402-WJ DPSS Fire Riser Troubleshoot and Inspection, 2X-23-02027 DPSS Riser Replacements – 2402-Ws and 2403-Ws, and 2X-22-05873 CWC Dry Pipe Sprinkler Systems Inspection and Valve Replacements were still in process. On

October 5, 2023, I met with Bryan Trimberger USDOE and Mitch Marrott CPCCo to review some of the records during a Teams meeting. Below are my observations from this meeting.

I reviewed work package 2X-23-03662 *2402-WJ DPSS Fire Riser Troubleshoot and Inspection.*

I observed the scope was for the Dry Pipe Sprinkler System Riser Piping in Building 2402-WJ at CWC. It indicated it was leaking after replacement and the work involved troubleshooting and inspecting to investigate the original leak. I observed the following notations of work.

June 12, 2023

- At 8:20 am - They brought water back up to the system to check for underground leaks.
- At 9:30 am – The system filled with a pressure of 95 psi, and they let it sit for two hours.
- At 11:30 am – The pressure rose in the system to 98 psi with no underground leaks found. They drained the system and turned the water back on to check for riser movement and they did not see any. Notations were made that the system pressures were at 100 to 105 psi which is not normal for what they normally see.

M. Marrott said work packages 2X-23-02027 *DPSS Riser Replacements – 2402-Ws and 2403-Ws,* Work packages 2X-22-05873 *CWC Dry Pipe Sprinkler Systems Inspection and Valve Replacements* are still in execution and if they pulled it for review that it would stop the work. I said I would request these to be reviewed as part of the next inspection.

I asked if any changes, upgrades, or updates to the fire suppression system, including the riser room piping, (that occurred in Building 2402-WJ) have been completed in other CWC buildings and if so, could CPCCo specify all building numbers, descriptions of the changes, upgrades, or updates to the fire suppression system including the riser room piping, and dates of these activities. I received the following response from CPCCo:

Yes, similar upgrades to the 2402WJ riser were completed in other CWC buildings. The upgrade replaced the entire fire riser.

- 2401-W – Entire riser replaced. Completed 4/3/23.
- 2402-WB - Entire riser replaced. Completed 4/12/23.
- 2402-WD - Entire riser replaced. Completed 4/19/23.
- 2402-WE - Entire riser replaced. Completed 4/26/23.
- 2402-WF - Entire riser replaced. Completed 4/7/23.
- 2402-WG - Entire riser replaced. Completed 5/3/23.
- 2402-WH - Entire riser replaced. Completed 5/10/23.
- 2402-WI - Entire riser replaced. Completed 5/17/23.

Building 2402-WJ Work Packages Associated with May 28, 2023, Flooding Event

I requested all work packages associated with work being performed in Building 2402-WJ in relation to the water flooding event that occurred on May 28, 2023. I received the following from CPCCo:

> Work was performed under the provided procedure.

I received SWSD-PRO-OP-51631, *Sample and Drain Secondary Containment System*, Rev. 5, Change 8, dated April 17, 2019. I observed this procedure provided instructions for sampling and discharging (draining) liquids from Solid Waste Storage and Disposal (SWSD) secondary containment systems at CWC. This procedure identified that the ECO could choose to not sample the liquid in secondary containment if there is no evidence of leakage (e.g., signs of oil sheen, coloration, solids, or other abnormal indications) into secondary containment or documented contamination in the past seven days. If tested, the liquid in secondary containment would be required to be within the following limits for the following parameters:

- pH (Greater than or equal to 6.5 and less than or equal to 8.5).
- Total alpha (Less than or equal to 15 picocuries/l [1.5 x 10-5 µCi/l)].
- Total beta (Less than or equal to 50 picocuries/l [5.0 x 10-5 µCi/l)].

I requested all tests results of liquid in secondary containment in Building 2402-WJ after the May 28, 2023, flooding incident. I received the following response from CPCCo:

> Per SWSD-PRO-OP-51631, chemical sampling of water in the secondary containment in 2402-WJ was not performed as there were no recent spills, visual inspection indicated no suspect material in the water, and all containers were in good condition, as noted in the previous weeks radiological and operational surveillance. Radiological surveys were taken of the secondary containment and other areas throughout the work evolution. No radiological contamination was detected.

Actions Taken to Remedy the Flooding Event in Building 2402-WJ

I asked to provide a summarized timeline of events and actions taken to remedy the flooding event in Building 2402-WJ from May 30, 2023, until the flooding issue at Building 2402-WJ is resolved. I received the following response from CPCCo:

> On 5/28/2023, at approximately 1804 hours (6:04 p.m.), the Solid Waste Operations Complex (SWOC) on-call Building Emergency Director (BED) was notified by Hanford Fire Department (HFD) of a failure/malfunction of the Central Waste Complex (CWC) Building 2402-WJ riser assembly. Hanford Patrol identified water flowing outside of the building and approximately 6” of standing water inside the 2402-WJ secondary containment system. There was no indication of a fire inside the building. The CWC Shift Office Duty Officer initiated an unplanned entry into Limiting Condition for Operation (LCO) 3.2.1 Condition A.1 for 2402-WJ due to the fire system failure/malfunction. The flow of water

> was stopped by isolating the PIV. HFP established a hot/cold zone where Radiological Control Technicians (RCTs) performed surveys of the boundary and personnel that made initial entry into 2402-WJ. No radiological contamination was detected and access to Dayton was later re-established. The Environmental Compliance Officer (ECO) was notified, and the water discharge best management practices were integrated into the response actions.
>
> At 2040 hours (8:40 p.m.), the CWC SDO/BED reviewed CPCC-PRO-EM-060 and determined the failure of the riser system, a safety significant system, met the criteria for Appendix D, Group 4, Subgroup A (1) L. Notifications were made on the event reportability criteria being met.
>
> At 2200 hours (10:00 p.m.), the work crew began to drain the 2402-WJ secondary containment system in accordance with SWSD-PRO-OP-51631. RCTs performed radiological surveys throughout the work evolution. No radiological contamination was detected.
>
> At 2300 hours (11:00 p.m.), a 2-hour fire watch was implemented for 2402-WJ.
>
> On 5/29/2023, at 0620 hours (6:20 a.m.), the 2402-WJ secondary containment system was drained until ¾" of water remained. At 0835 (8:35 a.m.), the ECO notified the Single Point of Contact (SPOC).
>
> From 5/30/2023 to 6/1/2023, the remaining water in the 2402-WJ secondary containment system was drained to completion.
>
> On 6/15/2023, at 1330 (1:30 p.m.), the troubleshooting and repair of the 2402-WJ fire riser assembly was completed per 2X-23-02027. The 2402-WJ Fire Suppression System was fully restored and the RAFAR was fully enabled. 2402-WJ subsequently exited the 2-hour fire surveillance requirement.
>
> On 6/20/2023, the Operability Evaluation of the 2402-WJ Fire system Piping integrity was completed, allowing 2402-WJ to exit LCO 3.2.1 Condition A.1.

2402-WJ Inspection Records

I requested weekly inspection records for Building 2402-WJ for the weeks of May 21, 2023, and May 28, 2023, and results of the May 28, 2023, borescope inspection of the fire system on Building 2402-WJ. I received the following response from CPCCo:

> The borescope inspection was performed as part of the investigation and troubleshooting for the 2402WJ water discharge event. There was a possibility that an underground line break that caused the water leak. The borescope inspection that was performed did not identify any evidence that suggested that the underground piping was compromised in any way.

I observed weekly container inspections occurred for Building 2402-WJ on May 22, 2023, and May 30, 2023. The inspection records contained the printed name and hand-written signature of the inspector, that date and time of the inspection, and notations of observation made. I

observed no deficiencies noted on the May 22, 2023, inspection. However, the May 30, 2023, inspection record marked "No" for the question, "area is dry and free of accumulated water or liquids?" with the following notations and references to open item numbers:

> Water on floor of building due to fire riser malfunction and flooded building.
>
> Water removal from secondary containment started on 5/28/23 and is still currently ongoing. Approximately ¼" – ½" of water being pumped out and pushed out of building. (SK 5/31/23)
>
> NR-25-009-2
>
> NR-23-003

I was also provided with the following radiological survey reports with the following observations:

- SW-2302251, dated May 28, 2023.
  - Description of Work: Responses to fire system flooding building 2402-WJ.
  - Comments: Responded to T-Plant to assemble for a briefing to enter CWC area surveyed guards and fire personnel with whole body surveys (9 people) that had entered CWC to turn off the water to building 2402-WJ. No contamination found on personnel. After a pre-job briefing an entry was made into CWC and surveys were performed on the road up to building 2402-WJ and then around the building on the ledge where the metal siding is attached to the concrete foundation (concentrating on the areas where the water had run out under the metal siding). Smears were taken inside the building as water receded (as it was being pumped out of 2402-WJ). These smears were dried and counted on the Ludium 2929 at 0300 (3:00 a.m.) and 0700 hours (7:00 a.m.). These results were put on the SAL tool # S-SW-2301151. No contamination was found. At 0230 hours (2:30 a.m.) the small sump pumps were changed out for a large one with a fire hose attached. At approximately 0700 hours (7:00 a.m.) the large sump pump was shut off and all pumps and hoses were stored inside of 2402-W until further use. Pumps were surveyed and no contamination was found. Smears shown on outside map of buildings (first map) were approximately 40% of those taken. Smears shown on inside maps of building (maps two and three) were 100% of those taken.
  - I observed:
    - A map with 41 represented radiological contamination smears taken all around the outside of 2402-WJ, in between 2402-WH and 2402-WJ, in between 2402-WG and 2402-WH, in between 2402-WG and 2402-WI, and 2402-WJ and 2402-WI and if representing 40% would be ~102-103 technical smears taken.
    - A map of 2402-WJ with 18 radiological contamination smears taken on the dry parts of the building (east and west side) and one dose rate measurement taken in the general work areas in both the east and west sides.

    - A diagram showing radiological contamination smears taken on three sump pumps.
- SW-2301189, dated May 30, 2023
    - Comments: Area inside of 2402-WJ had evaporated several inches from Monday morning when the last survey was taken so all dry areas were smeared and Large Area Wipes (LAWs) were taken in the am prior to setting up sump pumps. Smears/LAWs were taken in the pm prior to individuals from the Tour were allowed to enter the building for inspections. No contamination was found. Pumps were surveyed out at the end of shift and stored in 2402-W until further use.
    - I observed a map showing:
        - 32 radiological contamination smears taken in dry areas inside of 2402-WJ after evaporation on Monday and pumping on Tuesday.
        - 2 radiological contamination smears taken on sump pumps.
        - 14 LAWs taken in dry areas.
        - 2 dose rate measurements one taken on the east inside 2402-WJ and the other on the west inside of 2402-WJ.
- SW-2301185, dated May 31, 2023
    - Comments: Supported operations in water removal due to apparent fire system failure at 2402-WJ. No contamination found.
    - I observed a map showing:
        - 44 radiological contamination smears were taken with 13 taken outside of 2402-WJ and 31 taken inside of 2402-WJ.
        - 4 dose rate measurements all taken inside 2402-WJ.
- SW-2301204, dated June 1, 2023
    - Description of Work: SW-w033 – 2402-WJ weekly dose rate and contamination survey.
    - Comments: Visually inspected waste containers for signs of degradation or leakage. Beta-gamma direct surveys not feasible due to radiation levels in building. Smears and Direct Readings shown on map represent 40% of those taken.
    - Discrepancies/Issues found: Water on floor from flood.
    - Corrective Actions Taken: Smear taken on drums and dry part of floor.
    - I observed a map showing:
        - 9 radiological contamination technical smears were taken inside of 2402-WJ and if representing 40% would be ~22-23 technical smears taken.
        - 7 radiological contamination direct smears were taken inside of 2402-WJ and if representing 40% would be ~17-18 direct smears taken.
        - 5 different types of dose rate measurements all taken inside 2402-WJ.

Hanford Patrol and Fire Department Reports

I requested and reviewed the Hanford Patrol and Hanford Fire Department reports of the flooding incident on May 28, 2023, at CWC. I observed the following for the Hanford Patrol report:

> 17:49 (5:49 p.m.) Non-Routine Condition: Unit 29 Hanford Patrol reported water coming out of the siding of 2402WJ in the Central Waste Complex. The POC contacted the HFD to investigate a water flow issue. HFD responded and shut the water off to the facility which stopped the water flowing. HFD reported 9 inches of standing water inside 2402WJ. CPCCo management was notified and responded. Sections of Dayton Avenue were closed to through traffic out of caution. HPTs arrived and surveyed HPD and HFD employees that entered the facility. The IC declared the area safe, and Dayton was opened back up, Patrol units cleared. HFD turned the scene over to CWC staff and cleared.

I observed the following from the Hanford Fire Department Report completed on June 1, 2023:

> On 28 May 2023 at 17:48 (5:48 p.m.) Hanford Fire Dispatch received a report from Patrol Operations Center that a patrol officer observed a large amount of water being discharged from the foundation of 2402-WJ. E19 was initially dispatched to investigate. B19 and E19 were added to the response based on the description of the amount of water discharging from the building. On arrive a very large amount of water was observed discharging from the west wall on the southwest corner of the building near the FDC and fire system main drain. Tens of thousands of gallons of water were discharging on the ground and draining to the storm drain system for the facility. The facility was accessed with approximately 6 inches of water filling the warehouse. The water was gushing from the riser room and was at approximately doorknob level. The PIV for the fire system was closed. On investigation it appears that the main fire riser connection to the subterranean water main failed causing an uncontrolled discharge from the ground into the riser room at the base of the fire rise causing the subsequent flooding. The SPOC for CWC was contacted at approximately 18:00 (6:00 p.m.). He advised that CWC personnel and RCT personnel would be responding in.
>
> B19, E19, and E19 relocated to Dayton Avenue at the entrance to CWC to wait for RCT personnel to arrive to survey personnel and apparatus out of the area. 2402-WJ is a RMA and the discharging water had a low level potential of radiological contamination. EOC was contacted at 18:48 (6:48 p.m.) and advised of the situation. No HMOE criteria were met. EOC advised that Water Utilities estimated total water loss of 56,400 gallons between 17:02 (5:02 p.m.) and 17:50 (5:50 p.m.) that evening. Asst Chief was contacted and briefed at 18:06 (6:06 p.m.).

All personnel were surveyed clean at 20:42 (8:42 p.m.), the incident was turned over to the Facility Emergency Response Organization (FERO) at 20:52 (8:52 p.m.).

INCIDENT IMAGES

Figure 2—Incident images included in Hanford Fire Department Report.

Contamination Incident Timeline of Events

I asked CPCCo to provide a summarized timeline of events with date and time from June 2, 2023, to June 3, 2023, regarding actions taken starting from just before containers were moved out of 2402-WJ until all eight containers and waste were overpacked and moved into Building 2402-WL. I received the following response from CPCCo:

June 2nd, 2023

- 0500-0550 (5:00-5:50 a.m.) – Pre-job briefing along with other preparations put into action.

- 0635 (6:35 a.m.) – Pre-work inspections for equipment and area performed. Waste Handling Approval Form was approved.
- 0645 (6:45 a.m.) – Work initiated.
- 0737 (7:37 a.m.) – Radiological Control Technicians (RCTs) identified elevated readings on pallets #9 (second-tier pallet) and #10 (first-tier pallet). Contamination was detected on the lid of container #0062183 and bottom sidewall of container #0061960.
- 0738 (7:38 a.m.) – SWIM (Stop, warn others, isolate area, and minimize exposure) was initiated.
- 0745 (7:45 a.m.) – Body surveys detected contamination, likely radon, on the Field Work Supervisor (FWS) scrub pants. They were disposed of as waste.
- 0855 (8:55 a.m.) – Nasal smears were performed on the 6 crew members present at the event scene.
- 0903 (9:03 a.m.) – Environmental Compliance Officer was notified and updated throughout the event.
- 0911 (9:11 a.m.) – Single Point of Contact (SPOC) was notified.
- 0930 (9:30 a.m.) – Whole body surveys and nasal smears were completed, and no contamination was detected.
- 1000 (10:00 a.m.) – Confirmed container #0062183, container #0061960, and container #0061713 all had various levels of contamination. Work instructions to perform recovery actions per work package 2X-23-03850 were initiated.
- 1005 (10:05 a.m.) – Single Point of Contact (SPOC) concluded radiological contamination does not trigger Resource Conservation and Recovery Act (RCRA) contingency plan implantation.
- 1641 (4:41 p.m.) – SPOC made a courtesy notification to the Washington Department of Ecology (Ecology).
- 1657 (4:57 p.m.) – Air Subject Matter Expert (SME) made a notification to the Washington Department of Health (WDOH).
- 1840 (6:40 p.m.) – Central Waste Complex (CWC) Shift Office verified 32 containers had been relocated from 2402-WJ to 2403-WA before contamination event occurred.
- 1852 (6:52 p.m.) – CWC Shift Office approved Waste Handling Approval Form for overpack/relocation of containers.
- 2104 (9:04 p.m.) – First entry by work crew into High Contamination Area (HCA). Initial tech smears were performed.

- 2118 (9:18 p.m.) – 64,000 dpm alpha/100 cm^2 was identified on the tines of Forklift #75-4861 which had relocated pallet #9. This pallet held containers #0061820, #0061960, #0061711, and #0061713. Environmental Compliance Officer (ECO) was contacted after asphalt underneath forklift was found to have contamination.
- 2129 (9:29 p.m.) – Contamination was found on Forklift #HO-75-4865, which had relocated pallet #10, and decontamination was performed. This pallet held containers #0062183, #0061996, #0062093, and #0062112.
- 2200 (10:00 p.m.)– Work began on overpacking the 85-gallon containers from pallets #9 and #10 into 110-gallon overpack containers.
- 2302 (11:00 p.m.) – Overpacking of pallet #10 containers, #0062183, #0061996, #0062093, and #0062112, was completed.
- 2330 (11:30 p.m.) – While overpacking the containers from pallet #9, three pinholes were identified on the bottom of container #0061960. Three areas of corrosion material were identified on top of pallet #9, directly underneath where container #0061960 was located. The pallet was bagged and secured.

June 3rd, 2023

- 0030 (12:30 a.m.) – Worked continued through the night of 6/2 into the early morning of 6/2. The other three containers on pallet #9 were. All 8 containers remained in the CA with surveillance performed by Nuclear Chemical Operator (NCO).
- 0100 (1:00 a.m.) – All container handling activities were completed and CWC was placed into standby mode.
- 0730 (7:30 a.m.) – Facility management deemed container #6001960 inoperable based on pinholes and contamination.
- 1150 (11:50 a.m.) – RCRA Contingency plan was conservatively implemented. Event did not meet criteria for Hazard Material Operational Emergency (HMOE) and did not require time urgent response by the Hanford Fire Department or Hanford Patrol.
- 1430 (2:30 p.m.) – CWC placed into operations mode. 2402-WJ remained in standby mode.
- 1515 (3:15 p.m.) – RCTs complete boundary survey with no contamination detected.
- 1605 (4:05 p.m.) – The three remaining containers from pallet #9 that were bagged from the previous day were overpacked.
- 1623 – Both pallets were tripled bagged and taped. The contaminated forklift tines, mast and surrounding asphalt were sprayed with fixative.

- 1727 (5:27 p.m.) – HCA/Beryllium Controlled Area (BCA) was down posted. Area controlled as CA/Airborne Radioactivity Area (ARA).
- 1930 (7:30 p.m.) – RCTs surveyed travel path to 2403-WA as well as 32 containers that were originally relocated from 2402-WJ to 2403-WA and confirmed no contamination was detected.
- 2103 (9:03 p.m.) – ARA boundary down posted.
- 2312 (11:12 p.m.) – The 8 overpacked containers along with 2 containers of step-off pad waste, 2 wrapped radiologically contaminated pallets and 1 clean transitional pallet were taken to 2402-WL.

Building 2402-WJ – Waste Contamination Requested Information and Questions

I requested results of all radiological sampling of the inside of 2402-WJ after June 5, 2023, (relating to the contamination incident at CWC) and if any contamination (airborne or on surfaces) was found on the inside of the building. I explained this request included identifying all locations where the contamination was found. I received the following response from CPCCo:

> SW-2301256 is the radiological survey report (RSR) generated in support of work package 2X-23-03889, 2402WJ Re-Entry and Characterization. The RSR identifies areas within storage building 2402-WJ that were most likely to have removable contamination. The areas identified in the RSR are in the travel path of the compromised waste container. RSR results show that there was no accessible area with removable surface contamination in 2402-WJ in excess of 10 CFR 835 appendix D, Surface Contamination Values.
>
> The grab air sample results of the air sampling performed in 2402-WJ while obtaining characterization surveys was Total Derived Air Concentration (DAC) (α+β) 0.001.
>
> The Lapel Air Sample resulted in Total DAC-h for the work activity is 0.00 for both samples.

I observed a CPCCo Radiological Survey Report, dated June 7, 2023, stated the following:

- Description of Work: Entry into 2402-WJ for the purpose of down posting surveys after contamination event on 06/02/2023.
- Comments:
  - Beta/Gamma directs not feasible due to radiation levels.
  - Sign off sheet and status map updated.
  - Visually inspected waste containers for signs of degradation or leakage.
  - Smears and direct readings shown on map represent 20% of those taken.
  - Reference Lapel air sample record #L-SW-2301256.
  - Reference Grab air sample record # G-SW-2301256.

- Discrepancies/issues found: None.

- A map showing radiological contamination smears taken inside of 2402-WJ in the path area where containers were moved out with dose readings taken near the containers still left in the row where containers were moved out (see below).
- I observed that C3 had the highest disintegrations per minute (dpm) of radiological smears taken (620 dpm).

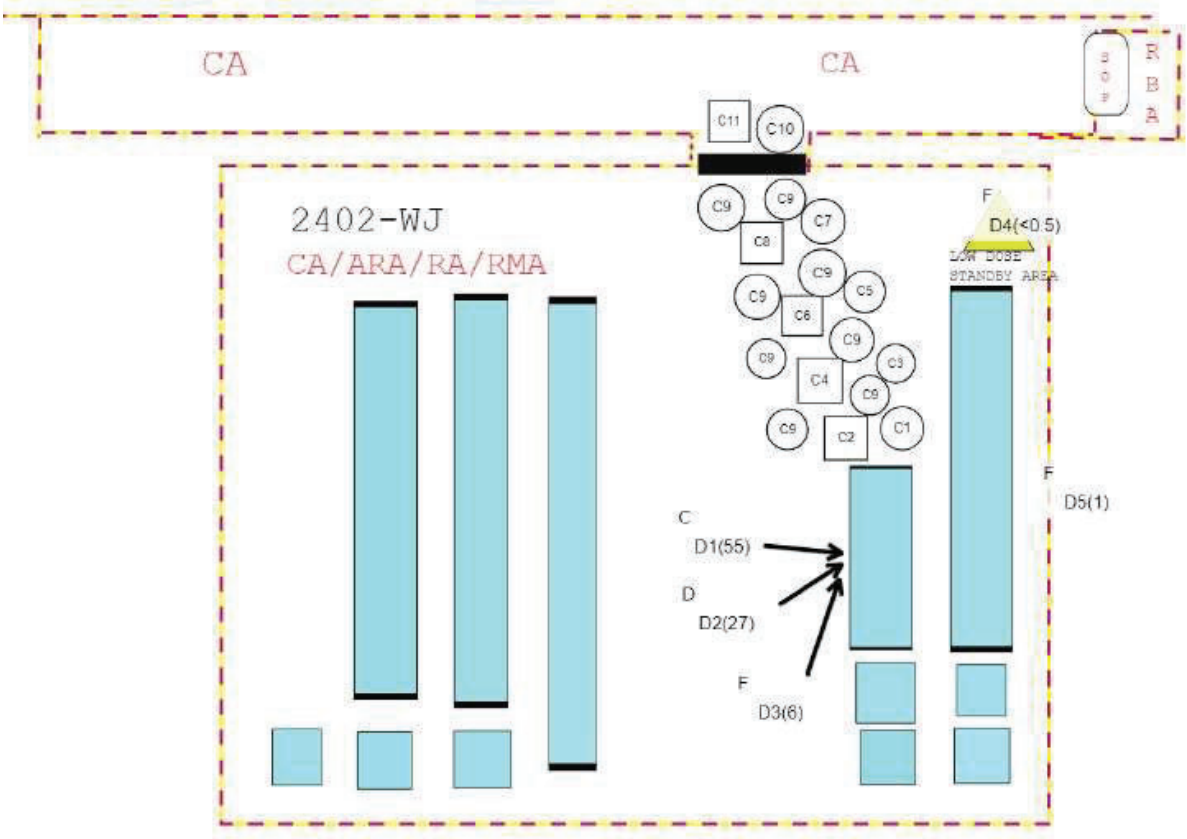

Figure 3 – Radiologic survey map showing location of contamination smears taken inside of 2402-WJ.

In my records request, I asked if any contamination was found on the bottom pallet (bottom tier pallet and not top tier pallet) in the stack of two levels of eight containers with the leaky container in 2402-WJ. I received the following response from CPCCo:

> No radiological contamination was found on the bottom pallet.

In my records request, I asked for identification of the individuals and job position titles of who found the pin holes under Container 0061960 and the individuals and job position titles of who worked on packaging the two pallets from the contamination event in wrapping. I received the following response from CPCCo:

- Tony Ball, Field Work Supervisor (FWS)/Facility Operation Specialist (FOS).
- Kevin Wallis, NCO.

In my records request, I asked if anybody was found to be internally contaminated from work activities related to any aspects of the June 2-3, 2023, contamination event at CWC. If so, identify the number of individuals. I received the following response from CPCCo:

> Nasal smears were performed on all the individuals present at the event scene when contamination was first identified. No radiological contamination was detected on any nasal smear.

I requested Ecology be notified when all containers have moved out of 2402-WJ. I received the following response from CPCCo:

> There are no current plans or need to move the remaining containers out of 2402-WJ. Moving the containers out of the building was an activity performed to restore operability. Instead, the fire system was restored to operability on June 15th and Limiting Condition for Operation (LCO) 3.2.1 exited on June 20th.

15-Day Contingency Plan Report

I requested the 15 Day Contingency Plan Report from June 3, 2023, implementation of the Contingency Plan at CWC. I observed the following from that report:

> (ii) Name, address, and telephone number of the facility
> Hanford Facility, Central Waste Complex, 200W Area, 2402-WJ Building (East Side)
> P.O. Box 550 Richland, Washington 99352
> Telephone: (509) 376-7395
>
> (iii) Date, time, and type of incident
> Removable radioactive contamination was discovered during routine container handling activities on the east side of the 2402-WJ Building. On June 3, 2023, at 11:50 a.m., the contingency plan was implemented by the Building Emergency Director as a protective measure, and as a precaution pending further investigation and monitoring of the conditions. Although this event did not meet the criteria for implementing the contingency plan, or for notification under WAC 173-303-360(2)(d), CPCCo emergency personnel conservatively elected to implement the RCRA contingency plan and provide appropriate notifications.
>
> (iv) Name and quantity of material(s) involved
> Alpha-emitting Isotopes Plutonium-238, Plutonium-239, Plutonium-240, and Americium-241 Maximum Activity Observed: 64,000 disintegrations per minute (per 100 square centimeters)
>
> (v) The extent of injuries, if any:
> No injuries occurred as a result of this event.
>
> (vi) An assessment of actual or potential hazards to human health or the environment, where this is applicable:
> Not applicable as a result of this event. An assessment resulted in the

determination that radioactive contamination was present on asphalt, a forklift tine, steel drums adjacent to the compromised drum, and the second-tier metal pallet. No release to soil or other environmental media was observed or detected. There were no hazards to human health.

(vii) Estimated quantity and disposition of recovered material that resulted from the incident

Approximately 0.63 cubic meters of personal protective equipment (such as disposable coveralls, gloves, and associated items) were generated during decontamination and cleanup efforts. In addition, the two metal pallets upon which the drums were stored were wrapped in plastic prior to being placed into storage for disposal. As a precaution, potentially-radioactively contaminated asphalt will be removed, containerized, and disposed of. All waste materials generated during decontamination and cleanup efforts are being properly managed, and will be disposed of, in accordance with applicable waste management procedures.

(viii) Cause of the incident

Corrosion of an 85-gallon steel drum (Container Identification Number 0061960) resulted in three pinholes on the bottom of the container.

(ix) Description of corrective action taken to prevent reoccurrence of the incident

Although the radioactive contamination originated from a single drum, two adjacent drums were found to be contaminated. In total, two storage pallets were impacted, each pallet containing four drums, eight drums total. Out of an abundance of caution, all eight drums were overpacked into 110-gallon steel containers. Routine radiological surveys, weekly waste container inspections, and compliance surveillances will continue to be performed and documented for all waste containers stored at the Central Waste Complex.

Package Identification Number Container Files

I requested the Package Identification Number (PIN) files (including any associated parent or daughter container PIN files) for Containers 0061960, 0091118, 0100530, 0091112, and for the two wrapped pallets being stored in 2402-WL.

Container 0061960 – Container that Leaked

I observed the following records for container 0061960:

A waste designation 4BT7-DES-02-01, dated April 25, 2011, that listed F001-F005, D004-D011, D018, D019, D022, D027-D030, D034, D025, D037, and D043 waste codes.

A justification memo dated May 5, 2016, for Containers 0061949, 0061950, 0061951, 0061954, **0061960**, 0061962, 0061963, 0061967, 0061989, 0061996, 0062006, 0062017, 0062093, 0062094, 0062112, 0062115, 0062151, 0062161, and 0062173, that stated the following:

> Justification for updating designation for the containers below to the most current designation 4BT7-DES-02-01. These containers were retrieved from 218-W-4B Trench 7. It is Waste Services policy to assign the designation that most closely describes the waste. This waste stream contains beryllium. This designation was signed by Mel Lakes 4/25/2011. No other changes or reviews were performed.

A Container Data Change Request Dated May 5-6, 2016, for Containers 0061949, 0061950, 0061951, 0061954, **0061960**, 0061962, 0061963, 0061967, 0061989, 0061996, 0062006, 0062017, 0062093, 0062094, 0062112, 0062115, 0062151, 0062161, and 0062173. The record indicated it was to update the following:

- Designation will change current waste component information in SWITS.
- Review of the Asbestos and Beryllium labels.
- To remove the note comment "Does not meet the labeling requirement per Jason Seesy."

An Addendum to Treatment, Storage, and Disposal record, dated May 7, 2016, that updated the designation for Container 0061960 to a more current version (4BT7-DES-02, Rev. 1). I observed the following were summarized as changes to the designation:

- Update designation to the current version.
- Adjust weight percentages to be 100%.
- Enter accurate waste description.
- Apply Beryllium Warning.

A Container Data Change Request Dated May 12, 2016, for Containers 0061949, 0061950, 0061951, 0061954, **0061960**, 0061962, 0061963, 0061967, 0061989, 0061996, 0062006, 0062017, 0062093, 0062094, 0062112, 0062115, 0062151, 0062161, and 0062173. The record made a reference to designation 4BT7-DES-02, Rev.1 and to a label review.

A SWITS SWIR310 Report, for Container 0061960, dated May 12, 2026, and May 18, 2016, that stated the following in part:

- Accumulation Date: March 22, 1974.
- SEC Waste Type: TRU.
- Source Facility 2345Z.
- Generator Group: PFP (Plutonium Finishing Plant).
- SWO Comments: Fissle, CPS Container Type A Drum.
- Container Type: 85 Gallon.
- Dangerous Waste Numbers: F001-F005, D004-D011, D018, D019, D022, D027-D030, D034, D025, D037, and D043.

- Form Code: Contaminated debris, paper, cloth, rags, wood, empty fiber or plastic containers, glass, piping, or solids.
- Current Location: 2402-WJ – Tier Level 2.
- Location History: Moved to 2402-WJ on September 27, 2011.

I observed the only updates between the May 12, 2016, and May 18, 2016, SWIR310 Reports were the following:

- Container Contents changed from Debris – Combustibles to 218-W-4B Trench 7 Debris.
- Generator Comments: Added a note "Addendum Filed on 5/18/16."
- Waste Component Records: Deleted numerous waste components and added glass, metal, rubber, sand, ethylbenzene, penta-sodium pentate, zinc, sulfuric acid, and potassium permanganate waste components.
- Added Beryllium Label Requirements.

A Container Index, dated July 12, 2016, for Container 0061960, which referenced the following records:

- AREVA Radioassay Data Sheet #206938694.
- Burial Record #206896582.
- Overpack Data Sheet #206942541.
- Addendum to Treatment Storage and Disposal Record #208929733.
- Container Data Change Request #208929735.
- Container Data Sheet #208934567.
- SWITS Container List Report (R310 Report) After Download #208938372.
- SWITS Container List Report (R310 Report) Before Download #208937441.
- Waste Designation Worksheet #208933890.
- Justification Memo #208942255.

Container 0091118 Daughter Container (Overpack) of Container 0061960 that Leaked

I observed the following records for container 0091118:

A Container Pre-Use Inspection Checklist for container 0091118, dated June 2, 2023. The form was used to get a container ready for use.

An Appendix F – Overpack Guidance, from SWSD-PRO-OP-51632 Overpack Containers, dated June 2, 2023. The form is instructions and materials used for overpacking another waste container.

An Overpack and Torque Data Sheet for container 0091118, dated June 15, 2023. The record showed that the 110-gallon overpack container was torqued to 38-foot pounds, had a 10 millimeter liner installed, and contained 80 pounds of absorbent material added.

A Container Data Changes Request Form for container 0091118, dated July 31, 2023. The form showed updated container information for the SWITS database.

A Hanford Site Solid Waste Container Data Sheet for container 0091118, dated July 31, 2023. The form documented general information about container size, weights, and radiological characteristics. The form indicated there was reportable levels (under 49 CFR 173.433) of Uranium-235, Uranium-238, Plutonium-238, Plutonium-239, Plutonium-240, Plutonium-241, and Americium-241.

An addendum to Treatment Storage and Disposal Record for container 0091118, dated August 1, 2023. I observed the record stated the following along with specific details of the changes in SWITs:

> Source container 0061960 was overpacked into 110-gallon drum 0091118. The changes are to update the record by transferring information from the parent container and by filling in the Container Detail blanks that occurred because of the Overpack function in SWITS.

Two SWIR310 Container Listing Reports for container 0091118, dated July 18, 2023, and August 22, 2023. The difference between the two reports was to document an update to SWITS following the overpack of container 0061960 that occurred on August 1, 2023. I observed the newer form updated the following:

- Added that the contents were from the 218-W-4B Trench 7 debris.
- Updated container and waste weights.
- Updated radioactive dose rates.
- Added information about what appeared to be NUCFIL for the overpack.
- Added information about the liners and absorbent materials added to the overpack.

A Specialty Reviews for SWOC Waste Acceptance Program for container 0091118, dated August 23, 2023. The form showed reviews and approval by Waste Management and Treatment, Storage, and Disposal Representatives for verification, chemical air emissions, industrial hygiene Beryllium, and criticality reviews.

Container 0091112 – Step Off Pad Waste from Container 0061960 that Leaked

I observed the following records for container 0091112:

- A radiologic activity sheet with no date.
- A CPCCo Radiological Survey Report, dated June 2, 2023, which documented emergency radiologic work to set up a contamination area on road and adjacent areas between buildings 2402-WH, 2402-WG, 2402-WL, and 2402-WK and other radiologic boundaries.
- A Container Pre-use Inspection Checklist for container 0091112, dated June 3, 2023. The form was used to get a container ready for use.

- An Appendix B Container Inventory Sheet under Procedure SWSD-PRO-OP-51634, dated June 15, 2023. The sheet listed the waste was step off pad mixed waste that was added to container 0091112 on June 3, 2023.
- A SWIR601 Report, dated June 19, 2023. The report designated the waste in container 0091112 with waste codes F001, F002, F003 (state-only), F004, and F005.
- An email string dated June 5, 2023, and June 25, 2023, used to document a conservative radiologic contamination value taken from the forklift tines, which was applied to the metal pallets and then also for Containers 0091112 and 0100520.
- A SWIR310 Report for container 0091112, dated July 11, 2023. The report listed the following:
    - Container contents: Step off pad waste generated during container relocation from 2402-WJ to 2403-WA when contamination was identified on three waste containers above RWP level (SW-001) thus requiring a recovery plan.
    - Accumulation Date: June 3, 2023.
    - Container Type: 110-gallon.
    - Generator comments:
        1. Source of contamination was container 0061960, a TRUM container assigned global designation 4BT7-DES-02-01 to which RCRA waste codes D004-D011, D018, D019, D022, D027-D030, D034, D037, D043 AND F001-F005 (F003 State-Only) Have been assigned.
        2. Applying the mixture rule to the listed waste codes, the resulting step off pad will be regulated as listed waste.
        3. Since the D-codes are concentration based, they will not be applied as they are not reasonably expected to be present at regulatory limits and the waste is to be macro-encapsulated at Environmental Restoration Disposal Facility (ERDF).
        4. The listed constituent concentration is assigned at 0.01 wt.% this is taken directly from global designation 4BT7-DES-02-01.
- A Land Disposal Restriction Notification Form, for containers 0091112, 0100530, and SWSD-23-154-02, dated July 25, 2023. The notification showed the following:
    - Waste codes F001, F002, F004, and F005.
    - An underlying hazardous constituent determination showing not applicable.
    - A non-wastewater determination.
    - A statement that this waste is hazardous debris that requires treatment using the alternative treatment standards of 40 CFR 268.45.

Container 0100530 – Step Off Pad Waste from Leaking Container 0061960

I observed the following records for Container 0100530:

- A radiologic activity sheet with no date.
- A Container Pre-use Inspection Checklist for container 0100530, dated June 2, 2023. The form was used to get a container ready for use.
- An email string dated June 5, 2023, and June 26, 2023, used to document a conservative radiologic contamination value taken from the forklift tines, which was applied to the metal pallets and then also for Containers 0091112 and 0100520. The email stated that radiologic contamination value was taken from the activity of each container (by isotope) will be the same as the activity as for the metal pallets since the contamination levels are assumed to be the same.
- A CPCCo Radiological Survey Report, dated June 2, 2023, which documented emergency radiologic work to set up a contamination area on road and adjacent areas between buildings 2402-WH, 2402-WG, 2402-WL, and 2402-WK and other radiologic boundaries.
- An Appendix B – Container Inventory Sheet from procedure SWSD-PRO-OP-51634, dated June 15, 2023. The sheet listed step off pad mixed waste that was added to container 0100530 on June 2, 2023.
- A SWIR310 Report for container 0100530, dated July 11, 2023. The report listed the following:
    - Container contents: Step off pad waste generated during container relocation from 2402-WJ to 2403-WA when contamination was identified on three waste containers above RWP level (SW-001) thus requiring a recovery plan.
    - Accumulation Date: June 2, 2023.
    - Container Type: 208 liters.
    - Generator comments:
        1. Source of contamination was container 0061960, a TRUM container assigned global designation 4BT7-DES-02-01 to which RCRA waste codes D004-D011, D018, D019, D022, D027-D030, D034, D037, D043 AND F001-F005 (F003 State-Only) Have been assigned.
        2. Applying the mixture rule to the listed waste codes, the resulting step off pad will be regulated as listed waste.
        3. Since the D-codes are concentration based, they will not be applied as they are not reasonably expected to be present at regulatory limits and the waste is to be macro-encapsulated at ERDF.
        4. The listed constituent concentration is assigned at 0.01 wt.% this is taken directly from global designation 4BT7-DES-02-01.

I observed that waste codes D037 and D043 appeared to be mistakenly missing from the generator comments section that described the waste from the container that leaked. This waste is basically the same waste as in Container 0091112, so these SWIR310 reports should have identical language in the generator comments section.

- A Land Disposal Restriction Notification Form, for containers 0091112, 0100530, and SWSD-23-154-02, dated July 25, 2023. The notification showed the following:
    - Waste codes F001, F002, F004, and F005.
    - An underlying hazardous constituent determination showing not applicable.
    - A non-wastewater determination.
    - A statement that this waste is hazardous debris that requires treatment using the alternative treatment standards of 40 CFR 268.45.

A SWIR601 Report, dated June 19, 2023. The report designated the waste in Container 0100530 with waste codes F001, F002, F003 (state-only), F004, and F005.

Container SWSD-23-154-02 – Waste Pallets

I observed the following records for Container SWSD-23-154-02:

- A radiologic activity sheet with no date.
- An Appendix B Container Inventory Sheet under Procedure SWSD-PRO-OP-51634, for container SWSD-23-154-0215. The sheet listed the waste was a mixed-waste metal pallet wrapped in a 10-millimeter plastic wrap that was added to container SWSD-23-154-02 on June 3, 2023.
- A SWIR310 Report for container SWSD-23-154-02, dated July 11, 2023. The report listed the following:
    - Container contents: During container relocation from 2402-WJ to 2403-WA, contamination above RWP level (SW-001) was identified on two metal pallets this requiring a recovery plan.
    - Accumulation Date: June 3, 2023.
    - Generator comments:
        1. Source of contamination was container 0061960, a TRUM container assigned global designation 4BT7-DES-02-01 to which RCRA waste codes D004-D011, D018, D019, D022, D027-D030, D034, D037, D043 AND F001-F005 (F003 State-Only) have been assigned.
        2. Applying the mixture rule to the listed waste codes, the contaminated metal pallets will be regulated as listed waste.
        3. Since the D-codes are concentration based, they will not be applied as they are not reasonably expected to be present at regulatory limits and the waste is to be macro-encapsulated at ERDF.
        4. The listed constituent concentration are assigned at 0.01 wt.%. This is taken directly from global designation 4BT7-DES-02-01.

I observed that waste codes D037 and D043 appeared to be mistakenly missing from the generator comments section that described the waste from the container that leaked.

- A SWIR601 Report, dated June 19, 2023. The report designated the waste in container SWSD-23-154-02 with waste codes F001, F002, F003 (state-only), F004, and F005.

Question on Contents in Containers 0100530 and 0091112

In my records request, I asked regarding the contamination event at 2402-WJ, were any of the items that were used to remove contamination from equipment (e.g., forklift tines and tires) or the contaminated pants from the individual that had contamination found on the knee placed into Containers 0100530 or 0091112. If so, and if listed waste codes were identified in Container 0061960, I asked for evidence that the containers where this waste was added, were then managed as hazardous waste (including photos of labeling updates). I also requested records of updated waste designations and PIN files for these containers. I received the following response and photos from CPPCo:

> All radiologically contaminated PPE, step-off pad waste, and other items used during the contamination event were placed into 0100530 and 0091112. See Item 14 for information regarding the container PIN files. PIN files 0100530 and 0091112, including waste designations, will be provided upon completion as stated in item14.

CPCCo-provided photos of Containers 0100530 and 0091112 with Hazardous Waste Labels.

2402-WJ Contamination Event Work Packages

I requested records of all work packages associated with the June 2, 2023, contamination event at CWC.

Note: Records for 16.1 2X-23-035850, *Recovery Plan: 2402-WJ Container Characterizations and Overpacks*; 16.2 2X-23-03889, *2402-WJ Re-Entry and Characterization*; 16.3 2X-23-03891, *Establish Fixed Contamination Areas (FCA) East of 2402-WJ*; and 16.4 2X-23-03892, *Remove and Dispose of Fixed Contamination Areas (FCA) East of 2402-WJ* were still in process, so on October 5, 2023, I met with Bryan Trimberger, USDOE, and Mitch Marrott, CPCCo, to review

some of the records during a Microsoft Teams virtual meeting. Below are my observations from this meeting.

I observed work package 16.1 2X-23-035850, *Recovery Plan: 2402-WJ Container Characterizations and Overpacks* tied to overpacking eight containers associated with the leaky containers from 2402-WJ. I observed the following:

June 2, 2023

- Performed a confirmation survey of the forklift tines and tires with contamination found and was decontaminated.
- Found contamination on the ground below forklift.
- Installed covers on all eight containers.
- Wet wiped all containers and moved to the front of Building 2402-WL.
- Found three small piles of corrosion products from the bottom of container 0061960. Applied damp rags to the material and area was covered with plastic and stabilized.

June 3, 2023

- Overpacked the remaining three drums and applied fixative to contaminated pallet.
- Triple wrapped both contaminated pallets.
- Applied fixative to the ground in front of the buildings.
- Containers in front of 2402-WL were brought inside the building.
- Conducted radiological survey reports on the outside areas of Buildings 2402-WJ and 2402-WL.

I observed the following from work package 16.2 2X-23-03889, *2402-WJ Re-Entry and Characterization*:

June 7, 2023

- Performed radiological characterization.
- Entered Building 2402-WJ.
- Found removeable contamination on the floor levels of 30, 40, and 100 dpm/100 cm^2 on the building floor.
- Decontaminated the contamination and radiologically down posted the area.
- Radiologically cleared the interior of the Chevy Tahoe.

June 8, 2023

- Performed outside contamination areas surveys on forklift.
- Radiologically cleared the forklift Chevy Tahoe for release.

October 5, 2023

- Survey results were closed out.

Compliance Problems

The Dangerous Waste inspection on May 30, 2023, and June 5, 2023, found the following compliance problems.

Each problem is covered in three parts:
(1) **Citation from the regulations**
(2) **Specific observations** from the inspection that highlight the problem
(3) **Required actions** needed to fix the problem and achieve compliance

The problems listed below must be corrected to comply with Washington Dangerous Waste Regulations (Chapter 173-303 WAC), or other environmental laws or regulations. Complete the required actions listed below and respond to Ecology at the following address within the times specified below. Include all supporting documentation such as photographs, records, and statements explaining the actions taken and dates completed to return to compliance.

Attention: Jared Mathey
Washington Department of Ecology
Nuclear Waste Program
3100 Port of Benton Blvd
Richland, WA 99354

You may request an extension of the deadlines to achieve compliance. Make the request in writing, including the reasons an extension is necessary and proposed date(s) for completion, and send it to Jared Mathey before the date specified above. Ecology will provide a written approval or denial of your request.

If you have any questions about information in this Compliance Report, please call: Jared Mathey at (360) 481-9830

This does not relieve you of your continuing responsibility to always comply with the regulations.

1) **WAC 173-303-400(3), as referenced by the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C – Condition I.A Effect of Permit.**

   WAC 173-303-070(3) Designation procedures.
   (a) The dangerous waste designation for each solid waste must begin promptly at the point of waste generation or upon the discovery of a solid waste on their site. This must be done before any dilution, mixing, or other alteration of the waste occurs, and at any time in the course of its management that it has, or may have, changed its properties as a result of exposure to the environment or other factors that may change the properties of

the waste such that the solid waste or dangerous waste classification of the waste may change.

(b) A person must determine whether the solid waste is excluded from regulation under WAC 173-303-071.

(c) A person must check each section, in the order set forth in (d) of this subsection, to determine whether the waste is designated as a dangerous waste. When the waste is determined to be a dangerous waste following the steps in (d)(i) through (iii) of this subsection, further designation is not required except as required by subsection (4) or (5) of this section. If a person has checked the waste against each section and the waste is not designated, then the waste is not subject to the requirements of this chapter 173-303 WAC.

Any person who wishes to seek an exemption for a waste which has been designated DW or EHW must comply with the requirements of WAC 173-303-072.

(d) To determine whether or not a solid waste is designated as a dangerous waste a person must:

(i) First, determine if the waste is a listed discarded chemical product, WAC 173-303-081;

(ii) Second, determine if the waste is a listed dangerous waste source, WAC 173-303-082;

(iii) Third, determine if the waste also exhibits one or more dangerous waste characteristics, WAC 173-303-090; and

(iv) Fourth, if the waste is not listed in WAC 173-303-081 or 173-303-082, and does not exhibit a characteristic in WAC 173-303-090, determine if the waste meets one or more dangerous waste criteria, WAC 173-303-100.

Observations: During the June 5, 2023, inspection at the Central Waste Complex, in Building 2402-WL, I observed Containers 0100530 and 0091112 with no hazardous waste labels. I asked what was inside of these two containers. A CPCCo representative said these containers had step off pad low-level waste.

In my records request, I asked regarding the contamination event at 2402-WJ, were any items that were used to remove contamination from equipment (e.g., forklift tines and tires) and the contaminated pants from the individual that had contamination found on the knee placed into Containers 0100530 or 0091112. If so, and if listed waste codes were identified in Container 0061960, I asked for evidence that the containers where this waste was added, were then managed as hazardous waste (including photos of labeling updates). I also requested records of an updated waste designation and PIN file for these containers. I received the following response and photos from CPPCo:

> All radiologically contaminated PPE, step-off pad waste, and other items used during the contamination event were placed into 0100530 and 0091112. See Item 14 for information regarding the container PIN files. PIN files 0100530 and

0091112, including waste designations, will be provided upon completion as stated in item14.

For container 0061960, I observed on April 25, 2011, it was designated with waste codes F001-F005, D004-D011, D018, D019, D022, D027-D030, D034, D025, D037, and D043. Container 0061960 was the container that leaked and spread mixed-waste contamination on other containers, on a metal pallet(s), and inside and outside of Building 2402-WJ.

For Container 0100530, I observed a SWIR601 Report, dated June 19, 2023. The report designated the waste in Container 0100530 with waste codes F001, F002, F003 (state-only), F004, and F005.

For Container 0091112, I observed a SWIR601 Report, dated June 19, 2023. The report designated the waste in Container 0091112 with waste codes F001, F002, F003 (state-only), F004, and F005.

Action Required: On September 21, 2023, Ecology received records that containers 0100530 and 0091112 were properly designated as mixed waste. **No Further Action Required**.

2) **WAC 173-303-400(3), as referenced by the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C – Condition I.A Effect of Permit.**

   WAC 173-303-630(3) Identification of containers. The owner or operator storing dangerous waste in containers must do the following:

   (a) Clearly label or mark containers with the words "Dangerous Waste" or "Hazardous Waste." Except for containers one gallon (or four liters) and under, the lettering must be legible from a distance of twenty-five feet or the lettering size is a minimum of one-half inch in height.

   (b) Clearly label or mark containers with an indication of the hazards of the contents (examples include, but are not limited to, the applicable dangerous waste characteristic(s) and criteria of ignitable, corrosive, reactive and toxic and the applicable hazard(s) identified for listed dangerous wastes). The label or marking must be:

   (i) Legible and/or recognizable from a distance of twenty-five feet or the lettering size is a minimum of one-half inch in height; and

   (ii) Include descriptive word(s) and/or pictogram(s) that identifies the hazards associated with the contents of the containers for employees, emergency response personnel, waste handlers, and the public; for containers one gallon (or four liters) and under the label, marking or lettering can be appropriate for the size of the container.

Observations: During the June 5, 2023, inspection at the Central Waste Complex, in Building 2402-WL, I observed Containers 0100530 and 0091112 with no hazardous waste labels. I asked

what was inside of these two containers. A CPCCo representative said these containers had step off pad low-level waste.

In my records request, I asked regarding the contamination event at 2402-WJ, were any items that were used to remove contamination from equipment (e.g., forklift tines and tires) and the contaminated pants from the individual that had contamination found on the knee placed into Containers 0100530 or 0091112. If so, and if listed waste codes were identified in Container 0061960, I asked for evidence that the containers where this waste was added, were then managed as hazardous waste (including photos of labeling updates). I also requested records of an updated waste designation and PIN file for these containers. I received the following response and photos from CPPCo:

> All radiologically contaminated PPE, step-off pad waste, and other items used during the contamination event were placed into 0100530 and 0091112. See Item 14 for information regarding the container PIN files. PIN files 0100530 and 0091112, including waste designations, will be provided upon completion as stated in item14.

Action Required: On June 28, 2023, Ecology received photos showing containers 0100530 and 0091112, were labeled as Hazardous Waste with the hazard of toxic. **No Further Action Required**.

Concerns

1) Procedure SWSD-PRO-OP-51631, *Sample and Drain Secondary Containment System*, Rev. 5, Change 8, dated April 17, 2019, provides instructions for sampling and discharging (draining) liquids from Solid Waste Storage and Disposal secondary containment systems at CWC. This procedure states the ECO can choose to not sample the liquid in secondary containment if there is no evidence of leakage (e.g., signs of oil sheen, coloration, solids, or other abnormal indications) into secondary containment or documented contamination in the past seven days.

   In the case of the CWC flood event that occurred on May 28, 2023, the ECO chose to not sample the water in secondary containment before discharging it outside to the ground. A few days later, a container on the second-tier pallet level was found to be leaking in Building 2402-WJ. CWC has a history of containers leaking and the facility stores many containers of hazardous waste that are designated with listed waste codes. If any listed waste inadvertently contacts liquid in secondary containment, it will cause all the liquid to designate as hazardous waste. If this container had been on the first tier, the pumping of liquid out of secondary containment could have been a significant release of hazardous waste to environment.

   Procedure SWSD-PRO-OP-51631 should be revised to mandate comprehensive sampling every time when secondary containment is flooded. Even if pH sampling does occur, Procedure SWSD-PRO-OP-51631 only requires additional sampling of total alpha and total beta if pH is less than 6.5 or greater than 8.5. Sampling total alpha and beta would be a better indicator of a leak from a mixed-waste container at CWC than just sampling pH, which would be unlikely to exceed these pH levels due to dilution. To lessen the chance of a release of mixed-waste to the environment, Procedure SWSD-PRO-OP-51631 should be revised to:

   - Expand initial sampling to include total alpha and beta, and other indicators, and not just pH.
   - Mandate that comprehensive sampling (not just pH) occur every time before liquid is discharged from secondary containment to the ground.
   - Remove the ability of the ECO to allow no sampling to occur.

To request ADA accommodation including materials in a format for the visually impaired, call Ecology at (509) 372-7950 or visit https://ecology.wa.gov/accessibility. People with impaired hearing may call Washington Relay Service at 711. People with speech disability may call TTY at (877) 833-6341.