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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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May 23, 2016

16-NWP-094

By certified mail

Mr. Kevin W. Smith, Manager  
Office of River Protection  
United States Department of Energy  
PO Box 450, MSIN: H6-60  
Richland, Washington 99352

Mr. Mark Lindholm, President and Project Manager  
Washington River and Protection Solutions, LLC  
PO Box 850, MSIN: H3-21  
Richland, Washington 99352

Re: Dangerous Waste Compliance Inspection on September 23, 2015, at the 242-A Evaporator,  
RCRA Site ID: WA7890008967, NWP Compliance Index No. 15.547

Dear Mr. Smith and Mr. Lindholm:

Thank you for your staff's time during the 242-A Evaporator inspection on September 23, 2015. The Department of Ecology's (Ecology) compliance report of this inspection is enclosed. The report cites four areas of non-compliance and three concerns listed in the compliance problems section of the report.

To return to compliance, complete the actions required and respond to Ecology within the timeframes specified. Include all supporting documentation in your response, (such as photographs, records, and statements explaining the actions taken and dates completed). Submit this information to Jared Mathey at 3100 Port of Benton Boulevard, Richland, Washington 99354.

Failure to correct the deficiencies may result in an administrative order, a penalty, or both, as provided by the Hazardous Waste Management Act (Revised Code of Washington 70.105.080 and .095). Persons who fail to comply with any provision of this chapter are subject to penalties of up to \$10,000 per day per violation.

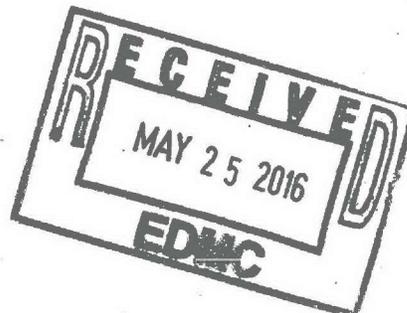
If you have questions or need further information, please contact me at [jared.mathey@ecy.wa.gov](mailto:jared.mathey@ecy.wa.gov) or (509) 372-7949.

Sincerely,

Jared Mathey  
Dangerous Waste Compliance Inspector  
Nuclear Waste Program

tkb  
Enclosure

cc: See page 2



Mr. Smith and Mr. Lindholm  
May 23, 2016  
Page 2

16-NWP-094  
242-A Evaporator  
RCRA Site ID: WA7890008967  
NWP Compliance Index No.: 15.547  
Inspection Date: September 23, 2015

cc electronic w/enc:

Dave Bartus, EPA  
Jack Boller, EPA  
Dennis Faulk, EPA  
Mary Beth Burandt, USDOE-ORP  
Paul Hernandez, USDOE-ORP  
Lori Huffman, USDOE-ORP  
Joe Sondag, USDOE-ORP  
Bryan Trimberger, USDOE-ORP  
Duane Carter, USDOE-RL  
Cliff Clark, USDOE-RL  
Tony McKarns, USDOE-RL  
Allison Wright, USDOE-RL  
Jon Perry, MSA  
Michael Greene, WRPS  
Brian Johnson, WRPS  
Jeff Voogd, WRPS  
Ken Niles, ODOE  
Shawna Berven, DOH  
John Martell, DOH  
Annette Carlson, Ecology  
Kathy Conaway, Ecology  
Suzanne Dahl, Ecology

cc electronic w/enc:

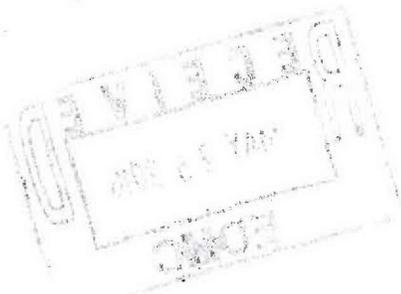
Jeff Lyon, Ecology  
Jared Mathey, Ecology  
Andrew Pomiak, Ecology  
John Price, Ecology  
Alex Smith, Ecology  
Nancy Ware, Ecology  
Cheryl Whalen, Ecology  
Environmental Portal  
Hanford Facility Operating Record  
USDOE-RL Correspondence Control  
WRPS Correspondence Control

cc w/enc:

Steve Hudson, HAB  
Administrative Record  
NWP Central File  
NWP Compliance Index File: 15.547

cc w/o enc:

Rod Skeen, CTUIR  
Gabriel Bohnee, NPT  
Russell Jim, YN  
NWP Reader File



**Washington Department of Ecology  
Nuclear Waste Program  
Compliance Report**

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**Site:** 242-A Evaporator  
**RCRA Site ID:** WA7890008967  
**Inspection Date:** September 23, 2015  
**Site Contacts:** Michael Greene, Washington River Protection Solutions (WRPS)  
Bryan Trimberger, United States Department of Energy Office of River  
Protection (USDOE-ORP)  
**Phone:** (509) 373-1582 – Michael Greene      **FAX:** N/A  
**Site Location:** Hanford Site, 200 East  
Benton County, WA  
**At This Site Since:** 1977      **NAICS#:** 562211, 541712, and 924110  
**Current Site Status:** Treatment, Storage, and Disposal Facility / Operating Unit Group #4

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**Ecology**

**Lead Contact:** Jared Mathey      **Phone:** (509) 372-7949      **FAX:** (509) 372-7971  
**Other Representatives:** Nancy Ware – Ecology Compliance Support  
Arthur Kapell - Ecology Project Support

**Report Date:** May 23, 2016  
**Index:** #15.547  
**Report By:** Jared Mathey

  
\_\_\_\_\_  
(Signed)      5/23/2016  
(Date)

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**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, as amended, (RCRA) 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 583 square miles and is located in Benton County, Washington. This site is divided into distinct Dangerous Waste Management Units (DWMUs) which are administratively organized into "unit groups." A unit group may contain only one DWMU or many; currently, there are 37 unit groups at the Hanford Site. Individual DWMUs utilize only a very 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 (DW) Portion, WA7890008967, Revision 8C (hereafter referred to as the Permit).

**Facility Background**

The 242-A Evaporator, Operating Unit Group 4, is a mixed-waste treatment and storage facility in Hanford's 200 East Area. It is a conventional forced-circulation, vacuum evaporation system that is designed to reduce waste volume in the Double Shell Tanks (DSTs).

The evaporator treats the waste by removing water and most volatile organics. This treatment creates a concentrated slurry waste stream and a process condensate waste stream. The slurry is routed back to the DST System. The process condensate stream is pumped from 242-A Tank C-100 through the Process Condensate (PC)-5000 encased underground pipeline (pipe-within-a-pipe) and routed to the

Hanford Liquid Effluent Retention Facility (LERF). Off-gases from the 242-A treatment process are routed through a de-entrainment unit, a pre-filter, and high-efficiency particulate air filters before being discharged to the environment.

Tank C-100, the condensate collection tank, is a stainless steel 4.3 meter (14-foot) diameter by 5.9 meter (19-foot) high tank located in the condensate room. Process condensate from the primary condenser, inter condenser, and after-condenser drain by gravity to Tank C-100. Tank C-100 also receives potentially contaminated liquid drainage from the vessel vent system via a seal pot. The process condensate is routed through condensate filters before release to LERF.

Other discharges during 242-A Evaporator processing include condensate from the steam used to heat the waste and cooling water used to condense the vapors. The 242-A Evaporator is designed to prevent contamination of these streams. The fluids on the uncontaminated side of the heat exchangers are maintained at a higher pressure than the waste stream so that uncontaminated fluid migrates toward the contaminated waste if a leak were to occur. The steam condensate and the cooling water are monitored continuously for radiation, pH, and conductivity, and are authorized for discharge to the Ecology permitted Treated Effluent Disposal Facility (TEDF).

#### Compliance Background for 242-A Evaporator

**Ecology Dangerous Waste Inspection 12.463 – November 13, 2012** – This was a Focused Compliance Inspection (FCI) of the 242-A Evaporator regarding an incident where there was an open air pathway between the Double Shell Tank AW-102 and the condenser room of the 242-A Evaporator. Ecology observed the following violation:

- Violation 1 – A large amount of Operation and Maintenance (O&M) records for the 242-A Evaporator seal loop and floor drain water additions were missing from April 2011 to September 2012. These missing records were associated with requirements for adding water to seal loops and floor drains in the 242-A Evaporator condenser room. These seal loops, when properly filled and maintained, provide a protective barrier from mixed-waste vapors between the head space of DST 241-AW-102 and the 242-A condenser room.

The inspection report required that immediately, upon receipt of the inspection report, that O&M records associated with adding water to seal loops and floor drains in the 242-A condenser room, to be documented and maintained in accordance with Permit Condition I.E.10.c.

- Violation 2 – From reviewing the operating records made available from the dangerous waste inspection, Ecology did not find any evidence indicating that mixed-waste vapors from the headspace of 241-AW-102 Double Shell Tank (DST) went to the 242-A Evaporator condenser room when the condensate piping was opened for maintenance activities. Regardless, the potential existed for mixed-waste vapors from the headspace of 241-AW-102 DST to enter the 242-A Evaporator condenser room, because of the combination of:
  - The opening of steam condensate lines at the specific location where there were open connectivity issues between 241-AW-102 and the 242-A condenser room.
  - Lack of proper O&M and repair of seal loop alarm LEL C-103-2.
  - Lack of complete records to verify that water was added to the seal loops weekly as required.
  - The shutting down of both DST exhausters during the same time repair of 242-A condenser piping occurred.

The lack of proper O&M of the conductivity alarm LEL C-103-2 created a situation where there was not a proper safety system or barrier in place to prevent workers from exposure of mixed-waste vapors from the head space of DST 241-AW-102. This was not in compliance with WAC 173-303-283(3)(i) and the Hanford Dangerous Waste Permit Condition I.L.1.

Ecology required within 30-days of receipt of the inspection report, for WRPS and USDOE-ORP to develop an O&M preventative maintenance datasheet procedure for all 242-A's seal loop conductivity alarms and provide a copy of the procedure to Ecology for review and approval. At a minimum, the procedure was to include a schedule for maintaining these alarms and replacement when not functioning properly.

#### **EPA Dangerous Waste Inspection – May 20, 2014**

- EPA expressed concerns that the facility's Building Emergency Plan (BEP) did not have a list of the names of all qualified persons who act as the emergency coordinator. EPA said the BEP only listed a single general phone number with no name and a secondary number to contact the Hanford Patrol for a list of home phone numbers. Without a list of contact names, how would the Hanford Patrol identify which home phone number to give out in an emergency.

#### **Inspection Summary**

This was an announced inspection. I notified the United States Department of Energy (USDOE) and Washington River Protection Solutions (WRPS) on September 17, 2015, by e-mail, that I would be performing an inspection on September 23, 2015 of the 242-A Evaporator.

On September 23, 2015, at 9:30 a.m., Ms. Nancy Ware, Ecology Compliance, Mr. Arthur Kapell, Ecology Tank Waste Storage Operations and Closure Project, and I arrived at Mobile Office (MO)-511 trailer in 200 Area East for the in-briefing. Mr. Michael Green provided a safety briefing and proceeded with group introductions. The following people were present for the compliance inspection in-briefing:

- Joe Sondag, USDOE-ORP, Environmental Compliance Division
- Paul Hernandez, USDOE-ORP, Tank Farms Programs Division
- Greta Davis, WRPS, Environmental Specialist
- Michael Greene, WRPS, Regulatory Compliance Lead
- Brian Johnson, WRPS, 242-A Operations Manager
- Annie McLain, WRPS, Environmental Field Representative
- Jeff Voogd, WRPS, Manager Environmental Compliance Production Operations
- Arthur Kapell, Ecology
- Jared Mathey, Ecology
- Nancy Ware, Ecology

Mr. Greene said they were currently in an active campaign and that vapor monitoring was being conducted by Industrial Hygiene (IH) technicians. He said for us to not be alarmed if we observed IH technicians with air monitoring instruments walking around during our inspection.

Mr. Brian Johnson said if we planned on going into the condenser room, hearing protection and an ace-in would be required. Mr. Voogd asked if we planned on entering the condenser room. I said that we did not need to go into the condenser room during this inspection.

Mr. Kapell asked what the current status of 242-A Evaporator operations was. Mr. Johnson said they were in the process of emptying the entire contents of the feed tank. He explained the feed tank was currently down to around 27 feet, that the feed pump was off, and that they were pumping slurry out to Double Shell Tank (DST) AP-107. Mr. Johnson explained they will rinse Tank C-A-1 and triple rinse the pump room sump once the campaign was completed.

Mr. Johnson said since September 2014 they have completed four evaporator campaigns reducing the waste volume equivalent to two DSTs. He explained that the candidate feed tanks for this campaign were DST-AP-103 and DST-AY-101. Mr. Johnson said they sample the feed tanks and send the samples to the 222-S Laboratory for analysis. He explained their process control plan outlines what is done during each evaporator campaign. Mr. Johnson said from the process control plan, they create the process memo that specifies the rules for operations. He said the process memo is substantially more detailed than the process control plan. Mr. Johnson said that they use the air lift circulators in DST AW-102 to mix the waste through blowing air into the tank waste to stir the liquids up.

Mr. Johnson said that when they first start up the evaporator, they use the feed pump to fill the C-A-1 tank vessel with 24,000 gallons of water. He said they recirculate the waste and turn on 10 pounds of steam to the reboiler. He explained after the process begins, the C-A-1 vessel is put under vacuum, which allows the water/waste to boil at a lower temperature (120 degrees Fahrenheit). Mr. Johnson said that the contents of the feed tanks are pumped through the tubes into 2,800 different tubes within the primary condenser. He explained that the steam is on the outside of the tubes and that water goes into the tubes at 2,500 gallons per minute. Mr. Johnson said that the condensation drops out to the condensate tank. He said after the steam condensate process begins, they start the feed pump to start processing waste. Mr. Johnson said that their target specific gravity is 1.37. He explained that when they reach their target specific gravity in C-A-1, they turn on the slurry pump to move the higher density waste to AP, AW, and conceptually to AN DST Farms. Mr. Johnson said that the process condensate is sampled and analyzed before being sent to the Liquid Effluent Retention Facility (LERF). He said they have three categories of water released from the facility, used raw water, condensate tank liquid, and steam condensate. Mr. Johnson said that all water is monitored for pH and conductivity. He explained that they typically get about 50 percent waste reduction from the process, but that every campaign has a different waste reduction rate. Mr. Johnson said that around 80 gallons of waste per minute is fed from DST-AW-102 with around 40 gallons per minute of process condensate and 40 gallons per minute of slurry being pumped out.

Mr. Johnson explained that it was a delicate balance of getting as much waste volume reduction as possible without getting too high of a specific gravity that can cause crystallization of the waste. He explained that they do not want to send crystals or solids back to the DSTs in the slurry. Mr. Johnson said they take two 60 ml samples of the slurry and that they monitor for radiation on tank TK-C-100.

Mr. Johnson said when they are finished feeding waste out of AW-102, the vacuum is taken off the C-A-1 vessel and the remaining waste is cooled down and recirculated. He explained they then pump the waste out of the C-A-1 vessel to AW-102 and that they have to monitor how much waste is discharged to AW-102 to make sure the pressure inside the tank does not go positive. Mr. Johnson said that in cases of emergency that the C-A-1 vessel can be emptied in around 10 minutes.

Mr. Kapell asked how many people were on staff during an evaporator campaign. Mr. Johnson said that there is always one shift manager and three to four operators on duty 24/7 during an evaporator campaign. He explained there is always at least, one A-1 control room operator and one A-2 backside operator. Mr. Johnson said that the A-1 operator gives direction to the A-2 operator. He explained there

are currently two crews of three people; and one crew of four people on this campaign. Mr. Joe Sondag asked how an A-1 operator stays at the facility when they need a break or need to leave the control room. Mr. Johnson said they typically have a backup A-1 operator on duty to fill their spot. Mr. Kapell asked if the interlocks on the 242-A Evaporator could be overridden by an operator. Mr. Johnson said that the interlocks for safety automatically shutdown systems and cannot be overridden by facility personnel.

Mr. Johnson said before going over to the Evaporator that we should respect the red line on the floor in the control room, wear appropriate personal protective equipment, if in the condenser room we will need ear plugs, and to note and keep out of the area in front of the grass courtyard in front of the 242-A Evaporator as it was posted as a Contamination Area (CA). He explained that they call this grassy area in front of the evaporator the "rabbit area" because a rabbit that ate a contaminated tumble weed and left contaminated droppings. Mr. Johnson said they were in the process of trapping the rabbit.

I provided the scope for the inspection and explained I would not be looking at any generator activities, but that I would be looking at all parts of the Permit for the Treatment, Storage, and Disposal Facility (TSDF) aspects of the facility. I explained I wanted to look at all entrances and exits to the facility, internal and external communication devices, emergency response equipment, general permit requirements, and the alarm panel in the control room. Mr. Johnson said that he would have an A-1 operator available for any questions that I had.

Mr. Sondag asked if there were any entrances that were non-accessible. Mr. Johnson said that north entrance to the facility was inaccessible due to rabbit area CA.

At 10:32 a.m., we left MO-511 and walked to Building 272-AW, Room 4, which was the 242-A Evaporator Simulator Room.

Mr. Johnson started the simulator and showed how the black screens tracked graphic trends over time. He explained these indicators show the operators if adverse conditions are occurring before alarms ever sound. Mr. Johnson said that the 242-A Evaporator could be run by the D-3 board or by a computer mouse. He said that when the steam is on, they use the PIC-CA1-7 Air Bleeder to control the vacuum so that it stays steady. Mr. Johnson explained there were three levels of alarms. White alarms were the lowest level alarms, yellow alarms or P2 were for operational parameters, and red alarms or P1 were critical alarms. Mr. Johnson said that addressing yellow alarms prevents a red alarm from happening. He explained when any alarm goes off, they pull the Alarm Response Procedure (ARP) and follow the procedure to respond. Mr. Johnson said that each alarm correlated to a specific procedure that lists the problems and responses for operators to follow. I observed a diagram on the wall that outlined all of the interlocks and how they interrelated for the 242-A Evaporator.



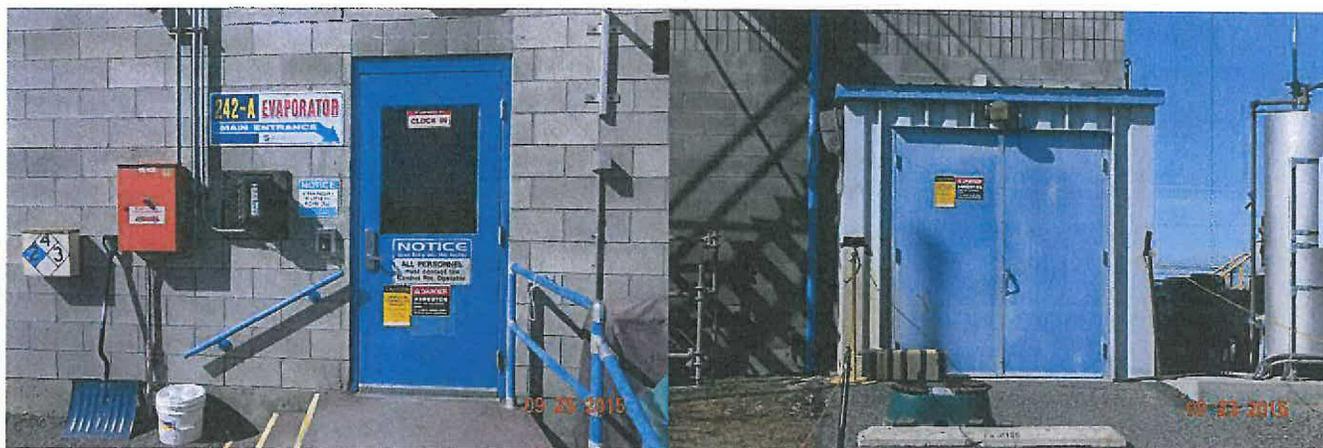


Photo #DSC01047, Front door to the 242-A Evaporator and signage

Photo #DSC01048, Control room back exit door and signage

We walked to the south side of the 242-A Evaporator where I observed four different sets of doors. I asked what the doors were for. Mr. Johnson said that the smaller doors were for the HPT office and supply room and that the two double doors were to the Aqueous Makeup (AMU) room. I asked if these doors were locked and Mr. Johnson said all of these doors were locked. I asked if there was any mixed-waste beyond any of these doors and Mr. Johnson said only to the AMU room. I observed a sign stating "Danger - Hazardous Materials - Unauthorized Personnel Keep Out" on the door to the AMU.



Photo #DSC01049, South doors to HPT office and supply room

Photo #DSC01050, South door to AMU Room and signage

We walked to the west side of the 242-A Evaporator where I observed a roll up door. I asked what room was behind this door and if it was locked. Mr. Johnson said this was the door to the load out room, it was locked and was not routinely accessed. I asked what was in the load-out room and Mr. Johnson said that it was used to store contaminated equipment. I observed signs stating "Caution - Beryllium Control Facility", "Danger - Asbestos - Cancer and Lung Disease Hazard", and "Caution - Contamination Area". I did not observe a sign stating or equivalent to "Danger - Hazardous Materials - Unauthorized Personnel Keep Out" near the door.



Photo #DSC01051, West rollup door to loading room

At 11:40 a.m. we went in the front door to the 242-A Evaporator. I asked Mr. Johnson how long the Monitoring Control System (MCS) Backup battery lasted when the power went out. Mr. Johnson said that he thought around 20 minutes, but said that we could ask the A-1 operator that question to get a more accurate timeframe. We walked to and requested permission to enter the 242-A Evaporator Control Room. We were granted access and were introduced to Mr. Kim Armatis and Mr. Dave Meyer who are both A-1 Operators. Mr. Meyer said they just took the C-A-1 vessel off of vacuum and that it was still full. He said that they just turned on the slurry pump and that they would be pumping out about 22,500 gallons of waste back to DST-AW-102. Mr. Meyers said that the current waste temperature in the C-A-1 vessel was 100 degrees Fahrenheit. I asked to see and was shown the alarm panel. We were introduced to Mr. John Conner, Engineering. Mr. Johnson said we could talk to Mr. Conner later as he had a meeting to go to now.

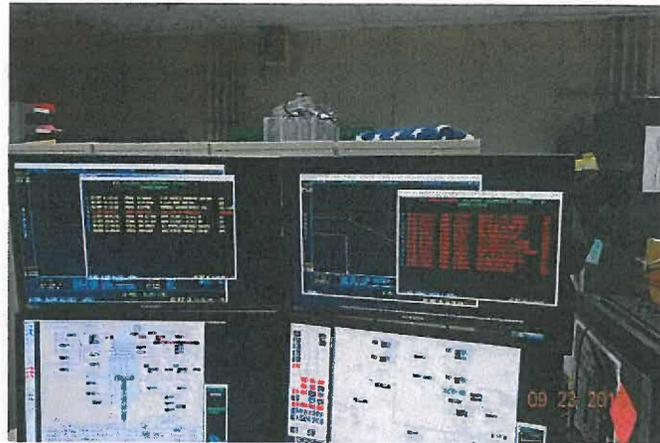


Photo #DSC01052, Control room alarm panel monitors

We left the control room and walked up the hallway to the doors to the condenser room and AMU. I observed that both doors had signs stating, "Danger - Hazardous Materials - Unauthorized Personnel Keep Out". We entered the door to the AMU room and walked to the window to the pump room. Mr. Johnson showed me the locations of the P-B-1 pump, P-B-2 pump, and pump room sump.



Photo #DSC01053, Door to condenser room and signage

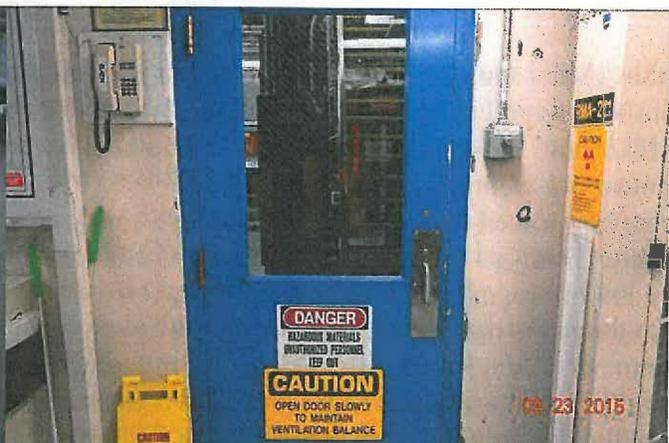


Photo #DSC01054, Door to AMU room and signage

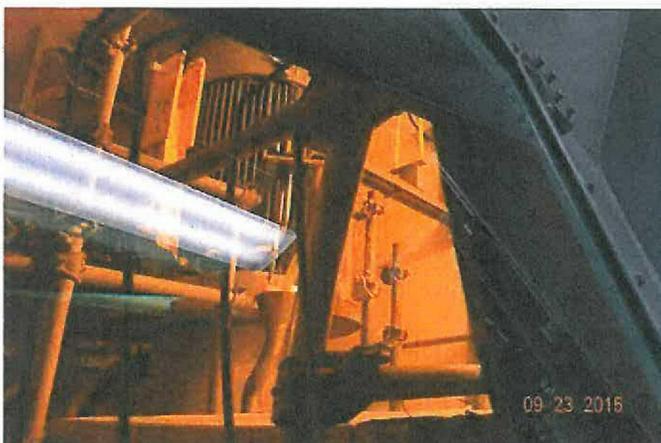


Photo #DSC01055, P-B-1 Pump

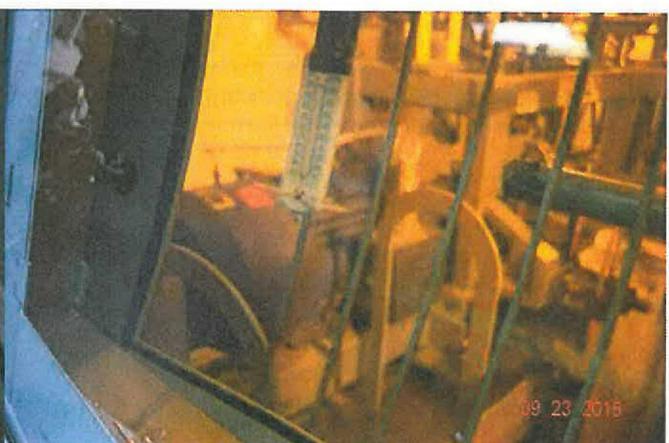


Photo #DSC01056, P-B-2 Pump



Photo #DSC01058, Pump room sump

In the AMU room, Mr. Johnson showed us the equipment they use to make anti-foam mixtures to ensure that they do not get foaming during the evaporator campaign. I asked if any waste was processed in the AMU room. Mr. Johnson answered no and explained that the anti-foam product that was mixed in this room, was a commercial grade food additive. Mr. Johnson walked us to the south end of the AMU, where he showed us the safety shower, eye wash, and the door to the loading room. I observed a sign stating, "Danger - Hazardous Materials (Corrsive) - Unauthorized Personnel Keep Out" on the door to the load-out room. Ms. Ware asked what corrosive items were stored in this area, and Mr. Johnson said that there were products stored within the area, which were corrosive. I asked what was in the load-out room. Mr. Johnson said the load-out room was used to access the pump room sample cabinet. He said the room contained hazardous waste, corrosive materials, and contaminated equipment. Mr. Johnson said the load-out room was called the hot equipment storage room in the permit. I also observed a sign on the door stating "Contaminated Reusable Equipment Label" with a description listed as "P-B-1 Spare Pump".

**Note:** The security sign on the door in the AMU room has the word "corrosive" mis-spelled on the sign.

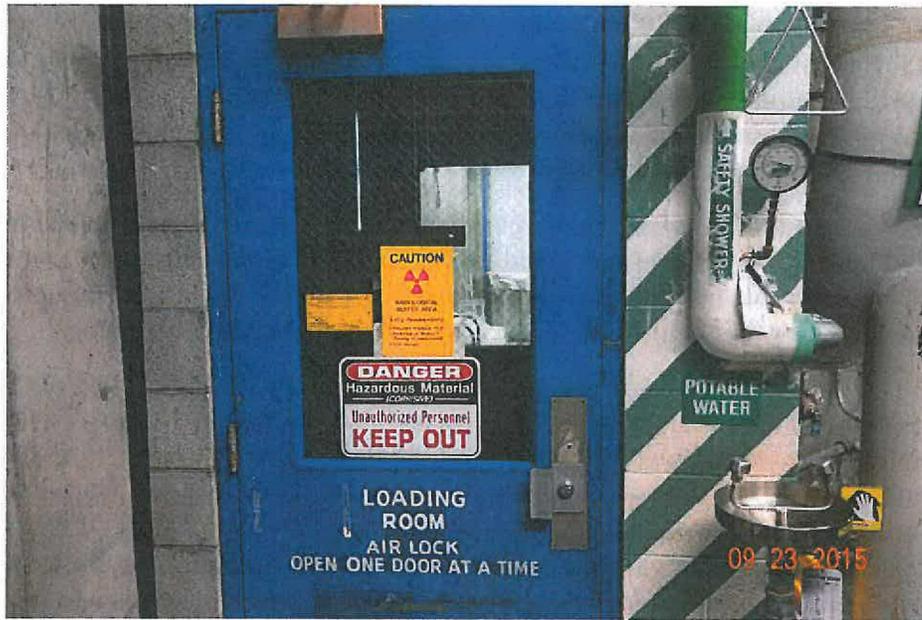


Photo #DSC01059, Room to load-out room with signage, safety shower and eyewash

**Note:** The Chapter 7.0 Contingency Plan in the permit lists the room with the rollup door as the “loading room” and the room directly adjacent with the longest shared wall as the “Loadout and Hot Equipment Storage” room.

We walked upstairs where Mr. Johnson showed me a window that looked into the loadout and hot equipment storage room with the sample cabinet. I observed the loading room and the loadout and hot equipment storage room (aka sample room) shared the same airspace. Mr. Johnson walked us to the far south window upstairs where I viewed the loading room. I observed a spare P-B-1 pump in the loading room. Mr. Johnson said the spare pump was located here because they are preparing to rebuild it.

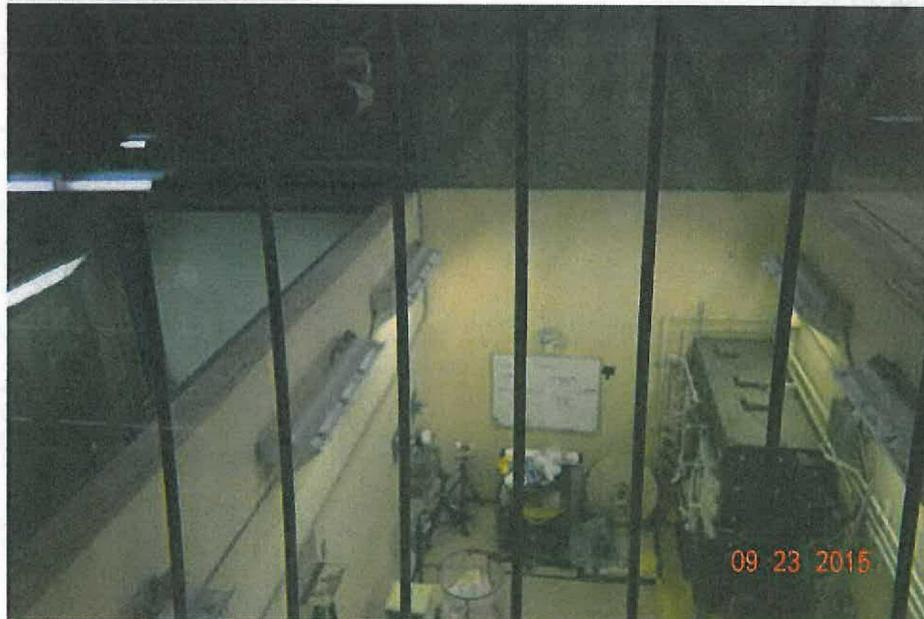


Photo #DSC01060, Window view to the loading room (left) and loadout and hot equipment storage room (aka sample room) (right)

Upstairs, I observed a telephone marked PAX and asked what this phone was used for. Mr. Johnson said that this was their internal communication device that goes throughout the facility. Mr. Johnson picked up the phone and called the control room. Mr. Armatis answered the phone. Mr. Johnson handed the phone to me to show that it connected to the control room. I said hello and Mr. Armatis asked if he could call us back later. I said okay.

On departing the AMU room, I observed the fire extinguisher in the AMU was inspected in September of 2015. We walked back to the main entrance hallway where Ms. Ware observed a second fire extinguisher in hall that was also inspected in September of 2015 (AE-1-ABC #0739). Ms. Ware observed an Automated External Defibrillator (AED) and a first aid kit by front door.

I went back into the control room with Mr. Johnson where we met up with Mr. Meyers. Mr. Johnson said that Mr. Meyers could answer any specific questions I had. I asked if I could see the emergency battery backup system. Mr. Meyers walked us to the Mux Room and on the way, I asked if he was free to leave the control room. Mr. Meyers answered that he was relieved from his position and was free to leave the control room. Mr. Meyers showed me the uninterrupted power supply (UPS) system. I asked how long the UPS system would provide backup power to the MCS computer system. Mr. Meyers answered that it would provide 30 minutes of backup power. I asked if the power went out, would the PAX system be operational. Mr. Meyers said the PAX system stays on if the power is out. I asked what internal communications were used to provide communications to personnel at the 242-A Evaporator. Mr. Meyers said they use two-way radios and the PAX system. Mr. Johnson said that the PAX system can also be used as a Public Address (PA) system for building announcements. I asked if the PAX system was the same device used for external communications. Mr. Meyers said that the same phone system was used for both internal and external communications. I asked where the locations for spill kits and safety showers were in the facility. Mr. Meyers said spill kit was in the back hallway and that safety showers were located on the third floor and in the AMU. I thanked Mr. Meyers for his time and we departed the facility.



Photo #DSC01061, UPS backup battery power system to the MCS computer system

At 1:00 p.m. we started the documents review and personnel interview portion of the inspection in MO-511. Due to an emergency situation at the 2750 Building on-site, several personnel were detained at the building and did not make it for the entire document review and personnel interview portion of the inspection. I was introduced to Mr. Jim Foster, EV Team Area Manager and Mr. John Conner, Waste Acceptance Process Engineer. I asked if they could walk me through the process from start to finish to get ready for an Evaporator Campaign. Mr. Conner said that the 242-A Permit Chapter 3.0, Waste Analysis Plan (WAP) listed all of the requirements, and that they do the following:

- Complete a grab sample report,
- Sample Double Shell Tanks as candidate feed tanks,
- Check chemicals and volatiles for Subpart AA requirements,
- Complete emissions projections,
- Develop a Process Control Plan,
- Complete a compatibility assessment, and
- Develop a process memo.

Mr. Conner said that the Process Control Plan ensures they meet permit acceptance criteria. Mr. Conner said that readiness assessments are performed prior to upgrades and that all preventative maintenance has a unique identifier in the EAM database. Ms. Ware asked what EAM stood for and no one present could answer the question on the acronym for the database.

**Note:** EAM stands for Enterprise Asset Management

I asked if leak detectors were checked for functionality within 92 days of the start of the current campaign. Mr. Johnson answered yes and said they were documented in TO-600-005. He explained that each leak detector had a unique identifier in the EAM database for electronic work control. I asked how the PC-5000 line to LERF was being monitored for leaks during the campaign. Mr. Johnson said they were using a temporary round sheet from their Pre-Start Procedure TO-600-002. Mr. Foster said they were doing a visual examination of the process condensate using a cite glass at the LERF Basin 42. Mr. Johnson said prior to the campaign, they do inspections for operability to ensure that everything is in place for detection of leaks. He explained that electronic leak detection was not working and was down for two to three months. I asked how often they did the inspection. Mr. Johnson said they do the inspection once per shift.

**Note:** I observed that the Pre-Start Procedure TO-600-002, did not include a temporary round sheet (CSO-TR-99) to inspect the PC-5000 line to LERF for leaks during the campaign. I observed that Pre-Start Procedure TO-600-002 did include a check to determine if either the electronic process condensate transfer leak detection system or a temporary round sheet would be used for leak detection of the PC-5000 line.

I asked if the process condensate for this evaporator run was sampled at the 242-A Evaporator or at LERF. Mr. Johnson said that they sampled at the 242-A Evaporator. I asked how many process condensate samples were performed. Mr. Johnson said they did three separate sampling events with 61 bottles each. Mr. Johnson said that they do operability checks two weeks prior to campaigns and are performed before the campaigns begin. Ms. Davis said that operability checks are not inspections, they are readiness checks. Mr. Foster suggested we ask Jeff Voogd this question.

Mr. Voogd, Ms. Annie McLain, and Ms. Jessica Joyner joined us. I asked who the BED was this week for the 242-A Evaporator. Mr. Foster answered Ryan Maygrá was the BED for the 242-A Evaporator, 616, and tank farms. I asked if I could see a copy of the contingency plan. Ms. McLain provided a copy of the Hanford Emergency Management Plan (HEMP) (94-02) and Building Emergency Plan (BEP) (RPP-27867, Rev. 7), but explained that this was a new version and not finalized. I asked if I could see a copy of the plan they are currently operating to. Ms. Greta Davis showed me BEP (RPP-27867, Rev. 6) on the computer screen and explained that this was the current BEP they were operating to. Ms. Ware asked if copies of the BEP was maintained at the 242-A Evaporator. Ms. Davis said that the BEP was kept at the 242-A Evaporator. She explained that copies are also maintained in the control room and in Building 274-WA. I asked if they have implemented the contingency plan in the last three years for this dangerous waste management unit group. Mr. Johnson answered no.

I asked if they were still operating to TFC-PLN-07, Rev. B (July 29, 2010), *Dangerous Waste Training Plan*. Ms. Joyner answered yes. Ms. Davis said that is the current plan. I asked if they had a spill log for 242-A Evaporator. Mr. Voogd said yes, it is the same spill log that I reviewed during the SST Generator Inspection. I said that I did not need to look at it.

I asked what the numbers were for the waste compatibility assessment. Mr. Conner said the waste compatibility assessment report number was RPP-RPT-58872. I asked what the report numbers were for the final grab sample reports for the currently active campaign. Mr. Conner said RPP-RPT-58039 was the lab report for AY-101 and RPP-RPT-58884 was the lab report for AP-103. I asked what report I could find the Differential Scanning Calorimeter (DSC) tests for the currently active campaign. Mr. Conner said those were reported in RPP-RPT-58039 and RPP-RPT-58884. I asked where the calculations and organic content sampling results for compliance with Subpart AA requirements were reported. Mr. Conner said they were reported in the Process Control Plan. I asked if there was a cross reference between procedures and the requirements in the permit for inspections.

I asked what procedures were associated with the start-up of the 242-A Evaporator. Mr. Johnson said the following documents were associated with start-up of the 242-A Evaporator.

- TO-600-002 – 242-A Evaporator Pre-Start Activities
- TO-600-005 – 242-A Evaporator Operability Checks
- TO-600-010 – 242A Evaporator Pre-Start Valving Procedure
- TO-600-015 – 242-A Evaporator Electrical Line Up
- TO-600-020 – A-1 Operator Startup Status Checks
- TO-600-300 – Pump Room and 242-A Evaporator Room Close Out Combustible Materials
- TO-230-225 – Transfer Monitoring Procedure – AW-102 to Slurry Tank
- POP-60M-002 – ETF procedure for setup to receive process condensate

Mr. Conner said that Tables 6-1 through 6-4 list all of the inspection requirements. I asked if there was a matrix that listed procedures associated with the inspection listed in these tables. Ms. Joyner showed me a print-out of an Excel Spreadsheet called the compliance matrix. I asked if I could get a copy of this with my records request. Ms. Joyner said that I could.

I explained I observed the permit used the word deficiency log in regard to their inspections. I asked how they documented deficiency logs for the 242-A Evaporator. Mr. Voogd said that deficiencies are documented on inspection round sheets. He explained that the inspection sheet also listed the applicable ranges for the inspection. Mr. Voogd said that if they find something out of range, it is circled in red.

Mr. Voogd said the inspection log goes to the shift supervisor who puts the problem on the Rounds Action Tracking List (RATL). Mr. Voogd explained that the range numbers on the inspection logs are conservative, so even though it may be red circled, it may not get put on the RATL list because it may not be deficient. I asked what RATL lists they maintained. Mr. Voogd said they keep an A-1 RATL, an A-2 RATL, and a Power Operator RATL. I asked what I should request to see all of the corresponding RATLs associated with actions that were completed, but not on the current RATL list. Mr. Voogd said that I should ask for all open and closed RATLs.

I asked what category the A-1 operators fit into for their dangerous waste training plan. Ms. Joyner said they would be considered a Waste Worker. I thanked everybody for their time and we departed the facility at 2:34 p.m.

## Documents Review

### **Waste Compatibility Assessment**

I reviewed RPP-RPT-58872, Rev. 0, *Waste Compatibility Assessment of Evaporator EC-03 Slurry Waste with Tank 241-AP-107 Waste and Evaporator EC-03 Slurry Waste with Tank 241-AW-102*, dated September 8, 2015. The summary of results and conclusions stated the following:

*"The proposed waste transfers from Evaporation EC-03 slurry to Tank 241-AP-107 and Evaporator slurry to 241-AW-102 (emergency dump) meet all applicable compatibility criteria of HNF-SD-WM-OCD-015 or the criteria are favorably dispositioned. The transfers can commence in accordance with the dispositions given for the decision rules, assuming all conditions and requirements in Section 3.0 are met.*

*Refer to Section 8.0 for a discussion of criteria that were not marked "Yes" or "NA". Appendix A contains the compatibility Compliance Tables, which discuss how each compatibility criterion is met, not met, or not applicable, and how the decision rule was dispositioned.*

I observed that the waste compatibility assessment put conditions and requirements in place for both the 242-A Evaporator and the Double Shell Tank (DST) tank system tanks that were tied to this particular 242-A Evaporator campaign. I observed the following three compliance criteria were not met in RPP-RPT-58872, Rev. 0, but were resolved through the below.

- *Percent solids and specific gravity are greater than the limits for line plugging. Therefore, critical velocity and line plugging prevention must be addressed in the Process Control Plan for this campaign.*
- *The aluminum solubility screening failed, however, the Barney diagram shows that the hydroxide concentration is such that the solids will not precipitate. TFC-ENG-STD-26.*
- *Tank 241-AP-107 time to 25% Lower Flammability Limit (LFL) is 7.5 days which is less than the required 10 days. In accordance with Administrative Control (AC) 5.9.1, PER-2015-0341 and a Red Arrow was initiated, ORP was notified, and a Technical Safety Requirement (TSR) amendment was submitted. Therefore, with these controls in place the transfer is allowed.*

I observed that Administrative Control 5.9.1 stated the following in part:

*This Key Element of an Administrative Control (AC) protects assumptions used to develop surveillance frequencies and action completion times in the following TSRs.*

- *LCO 3.1, "DST Primary Tank Ventilation Systems."*
- *LCO 3.2, "SST Steady-State Flammable Gas Control."*

- LCO 3.5, "DST Annulus Flammable Gas Control."
- LCO 3.7, "DST Flammable Gas Monitoring Control."

*The applicability of the AC Key Element is contained within the AC Key Element requirements.*

*The AC Key Element requirements are:*

- 1. The time to LFL analysis for DSTs and SSTs (including the time to LFL analysis for DST annuli) shall be VERIFIED or revised as follows.*
  - a. Prior to waste transfers to DSTs and SSTs.*
  - b. Prior to large water additions to DSTs and SSTs (i.e., > 10,000 gal to DSTs and 100-series SSTs; and > 1,000 gal to 200-series SSTs).*
  - c. Prior to chemical additions of sodium hydroxide or sodium nitrite to DSTs for waste chemistry management.*
  - d. Prior to chemical additions of sodium hydroxide to 100-series SSTs to support waste retrieval.*
  - e. Within 14 days (not to exceed 17 days) of discovering a DST waste temperature that exceeds the waste temperature assumed in the time to LFL analysis.*
  - f. Every two years.*
- 2. DST waste temperature monitoring shall be performed weekly. (Note: Weekly is defined as at least once in the period from 00:00 hours on Monday through 23:59 hours on the following Sunday.)*
- 3. If an increase in a TSR surveillance frequency or a decrease in an action completion time is required based on a revised time to LFL analysis:*
  - a. For planned activities (i.e., waste transfers, water additions, chemical additions), a TSR amendment is required prior to the planned activity OR the Tank Operations Contractor (TOC) may implement an increase TSR surveillance frequency or a decrease action completion time prior to the planned activity. If the TOC implements an increase in a TSR surveillance frequency or a decrease in an action completion time without an ORP approved TSR amendment, the TOC shall notify the U.S. Department of Energy, Office of River Protection (ORP) within 48 hours, and a TSR 12 amendment shall be submitted to ORP within 60 days.*
  - b. For continued operations, an increase in a TSR surveillance frequency or a decrease in an action completion time resulting from a DST temperature increase or the two-year update, the TOC shall implement the increase in the TSR surveillance frequency or the decrease in the action completion time IMMEDIATELY, the TOC shall notify ORP within 48 hours, and the TOC shall submit a TSR amendment to ORP within 60 days.*

*See RPP-13033, Tank Farms Documented Safety Analysis, Chapter 5.0, "Derivation of Technical Safety Requirements," Section 5.5.3.1, "Administrative Control 5.9.1 – DST and SST Time to Lower Flammability Limit," for additional information.*

I observed that Problem Evaluation Request-2015-0341 set process requirements to be completed. The following summarized recommended corrective actions on Problem Evaluation Request-2015-0341:

- *For the production operations process engineering to notify the shift manager and nuclear safety and to develop a Problem Evaluation Request, (this is what this record was).*
- *To issue a Red Arrow entry.*
- *Have the log keeper verbally notify the USDOE-ORP on-call facility representative within 48 hours of making the Red Arrow entry.*

- *Have Nuclear Safety submit a Technical Safety Requirement to USDOE-ORP within 60-day of making the red arrow entry.*

I observed the below Red Arrow listing on the March 11, 2015, Daily Report:

*AP Farm SR 3.7.1 flam gas monitoring has been revised to a frequency of 5 days. This red arrow will be closed upon DSA/TSR revision and implementation.*

I reviewed parts of the Technical Safety Requirement HNF-15279 Revision 1. I observed that the document established multiple operational criteria for the C-A-1 vessel high level control system and contained surveillance requirements that required calibrations of different pieces of C-A-1 vessel.

I observed that Section 3.2 from Chapter 3 Waste Analysis Plan from the 242-A permit states the following:

*Regulatory and safety issues are addressed in the WAP by establishing boundary conditions for waste to be received and treated at the 242-A Evaporator. The boundary conditions are set by establishing limits for items such as reactivity, waste compatibility, and control of vessel vent organic emissions. Waste that exceeds the boundary conditions would not be acceptable for processing without further actions, such as blending with other waste.*

I reviewed RPP-RPT-58839, Rev. 0, *Final Analytical Report for Tank 241-AT-101 Liquid Grab Samples in Support of Evaporator Campaign EC-03*, dated August 11, 2015. I observed that this report presented the results for the liquid grab samples collected from Double Shell Tank 241-AY-101. The report indicated that fourteen liquid grab samples, one field blank, and one trip blank were taken from AY-101 Riser 054 on June 9, 2015. The report also indicated that the samples were received at the 222-S Laboratory between June 9, 2015 and June 11, 2015 and that six samples were put into narrow mouth clear jars, in which four of the six narrow mouth clear sample jars came to the 222-S Lab with broken glass containers. Three of the four samples had leaked into the Hedgehog II shipping container. Under further review, I observed that Attachment 7 to the report indicated that the samples were broken as a part of the process of loading them into the 11A hotcell.

I observed that a Differential Scanning Calorimetry (DSC) analysis was performed on all primary subsurface grab samples, the field sample duplicate, and organic surface sample. The report indicated that the laboratory control sample met the recovery criteria and that no exotherms were exhibited in the samples in accordance with Section 3.9.1.1 in Chapter 3 Waste Analysis Plan.

As required in Section 3.9.1.3 in Chapter 3 Waste Analysis Plan, all samples were analyzed visually to determine if separable organics were present; however, no organic layer was observed for all recoverable samples. I observed that the percent of water analysis was performed on all subsurface grab samples, the field sample duplicate, two surface samples and on sample 1AY-15-01A and that these samples met the criteria for being over 25 percent water as required in Section 3.9.1.3 in Chapter 3 Waste Analysis Plan. I also observed that total organic carbon and total inorganic carbon were additionally tested on the samples.

Organic constitute analysis was performed on direct subsamples from the trip blank, the field blank, and each primary subsurface grab sample identified with the suffix "A" as required by Section 3.9.1.4 in Chapter 3 Waste Analysis Plan. I observed the report indicated that Methylene chloride was detected in all the samples, including the field blank and the trip blank, at concentration levels that exceeded the calibration range of the instrument. The report said that an investigation was performed to evaluate the factors that contributed to this contamination and it was determined that methylene chloride residue,

remaining from the bottle rinsing process at the laboratory, could have been the cause for these abnormal results. A corrective action was initiated at the 222-S laboratory to prevent this from happening in the future. A notification was sent to the responsible characterization engineer for tank 241-AY-101, and approval was received to report these results with an "E" flag (see Attachment 7 Correspondence of RPP-RPT-58839). I observed the following from Attachment 7.

*"I spoke with the Evaporator technical POC regarding the methylene chloride results, and we agree that they should be reported with the quality flag rather than be considered as non-reportable."*

I reviewed RPP-RPT-58884, Rev. 0, *Final Report for Tank 241-AP-103 Grab Sampling in Support of Evaporator Campaign EC-03, 2015*, dated August 21, 2015. I observed that this report presented the results for the liquid grab samples collected from Double Shell Tank 241-AP-103 on June 23, 2015. I observed that the report indicated that eleven liquid grab samples, one field blank, and one trip blank were taken from AP-103 Riser 029 on June 23, 2015. The samples were received at the 222-S Laboratory on June 23 and 25, 2015.

I observed that a Differential Scanning Calorimetry (DSC) analysis was performed on sample 3AP-15-02 and all SBS primary samples. The report indicated that the laboratory control sample met the recovery criteria and that no exotherms were exhibited in the samples in accordance with Section 3.9.1.1 in Chapter 3 Waste Analysis Plan.

As required in Section 3.9.1.3 in Chapter 3 Waste Analysis Plan, all samples were analyzed visually to determine if separable organics were present; however, no organic layer was observed for any of the samples. I observed that the percent of water analysis was performed on samples 3AP-15-01, 3AP-15-02, and all subsurface primary samples and that these samples met the criteria for being over 25 percent water as required in Section 3.9.1.3 in Chapter 3 Waste Analysis Plan. I also observed that total organic carbon and total inorganic carbon were additionally tested on the samples.

Organic constitute analysis was performed on direct subsamples from the trip blank, the field blank, and all grab samples identified with the suffix "A" as required by Section 3.9.1.4 in Chapter 3 Waste Analysis Plan. I observed that the 14-day holding time was not met for this analysis and that the lab control sample recoveries for all required compounds met the criteria specified in RPP-RPT-58884. I also observed that laboratory control samples for acetone, 1-butanol, and 2-butanone met the 70% to 130% requirement in this report; however I observed the matrix spike recoveries exceeded these limits, but were within the statistical process control limits of 44% to 124%. I observed that these were based on the limits listed in Table 3.2 in Chapter 3 Waste Analysis Plan and appear to be tied to Subpart AA applicability for process vents.

#### **Process Control Plan for 242-A Evaporator Campaign EC-03 to Concentrate 241-AZ-102 Waste Blend**

I reviewed RPP-PLAN-60462, Rev. 0, *Process Control Plan for 242-A Evaporator Campaign EC-03 to Concentrate 241-AZ-102 Waste Blend*, dated September 3, 2015. As required in the RPP-RPT-58872, Rev. 0, *Waste Compatibility Assessment of Evaporator EC-03 Slurry Waste with Tank 241-AP-107 Waste and Evaporator EC-03 Slurry Waste with Tank 241-AW-102*, I observed that Section 3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.3.5, 3.3.6, 3.3.7, and 3.3.8, addressed requirements for critical velocity and line plugging prevention.

I observed that Section 3.5.1 discussed emission calculations for Subpart AA and vessel vent organic discharge limits and stated the below:

*Compliance with the hourly emission rate limit is demonstrated by calculation. The Campaign EC-03 a maximum organic emissions rate, as calculated in RPP-CALC-60513, is 2.6 lbs./hr. This is less than the regulatory limit.*

*The Campaign EC-01 organic emissions were estimated to be 572 lbs. (SVF-4069). The Campaign EC-02 organic emission were estimated to be 635 lbs. (SVF-4074). The Campaign EC-03 organic emission are estimated to be 824 lbs. The meets the regulatory limit of 6200 lbs./yr.*

*Therefore, no additional controls are required in this process control plan.*

I observed that three different process condensate sampling events were required as a part of the EC-03 evaporator campaign and that the sampling would be conducted at the 242-A Evaporator. I read that process condensate sampling could be sampled at either the 242-A Evaporator or at the Liquid Effluent Retention Facility and that the sampling was reported as necessary to characterize the waste for acceptance and treatment at the Effluent Treatment Facility. I did not understand how the waste can meet Liquid Effluent Retention Facility waste acceptance criteria if sampling occurred after coming into the facility. I observed that process condensate would be sent to Basin 42 at the Liquid Effluent Retention Facility.

I observed that Section 3.5.9 (Mixing and Compatibility Study) summarized some of the permit requirements in Section 3.9.1.2 in Chapter 3 Waste Analysis Plan to conduct a mixing and waste compatibility study when staging multiple tanks for feed to the 242-A Evaporator.

Section 3.9.1.2 Compatibility from Chapter 3 Waste Analysis Plan states:

*As samples from each of the planned waste sources are mixed, observations are made to note any changes in color, temperature, clarity, or other visually determinable characteristic.*

I observed that the mixing and compatibility study, summarized in RPP-PLAN-60462, Rev. 0, *Process Control Plan for 242-A Evaporator Campaign EC-03 to Concentrate 241-AZ-102 Waste Blend*, stated that there were no changes in color or any notable precipitation observed during the mixing study. I did not see that temperature observations were noted for this study in the summary. I observed that the actual study was done in the interim boildown report, WRPS-1503604, which was not reviewed as a part of this inspection.

## Inspection Records

### **Monthly Respirator Inspections**

I observed that the monthly emergency Self-Contained Breathing Apparatus (SCBA) inspection was performed on September 8, 2015. The inspection record contained the date of the inspection, notations of what appeared to be the regulator expiration date, rack number, and bottle number. I did not observe the printed name, the hand written signature of the inspector, or the time of the inspection on the inspection log.

### **Monthly Spill Kit Inspection**

I reviewed Attachment 2 – 242-A Evaporator Spill Kit Seal Check/Inspection from the Safety Equipment inspections and Operational Checks (242-85B-005) for the month of September, 2015. The monthly spill kit seal check inspection was performed on September 22, 2015. The inspection record contained the date of the inspection, the printed name, and hand written signature of the inspector, and notations of observations made. I did not observe the time of the inspection on the inspection log.

### **Monthly Fire Extinguisher Inspection**

I reviewed Attachment 3 – Fire Extinguisher Inspection from the Safety Equipment inspections and Operational Checks (242-85B-005) for the month of September, 2015. The monthly fire extinguisher inspection was performed on September 1, 2015. The inspection record contained the date of the inspection, the printed name, and hand written signature of the inspector, and notations of observations made. I did not observe the time of the inspection on the inspection log.

### **Monthly Safety Showers / Eyewash Station Inspections**

I reviewed Attachment 4 – Weekly Safety Shower/Eyewash Station Operational Check from the Safety Equipment inspections and Operational Checks (242-85B-005). The inspection was performed on September 7, 2015. The inspection record contained the date of the inspection, the printed name, and hand written signature of the inspector, and notations of observations made. I did not observe the time of the inspection on the inspection log. I observed that Table 6.2 from Chapter 6 Procedures to Prevent Hazards, required a monthly inspection of safety showers and eyewash stations; however, the Attachment 4 inspection procedure required it to be done weekly.

### **Quarterly Phone Inspection**

I reviewed Attachment 5 – Quarterly Public Address System Operational Checks from the Safety Equipment inspections and Operational Checks (242-85B-005). The phone system quarterly inspection was conducted on August 16, 2015. The inspection records contained the date of the inspection, the printed name, and hand written signature of the inspector, notations of observations made, and notations of remedial actions. I did not observe the time of the inspection on the inspection log.

### **Quarterly Intercom/Public Address System Inspection**

I reviewed Attachment 5 – Quarterly Public Address System Operational Checks from the Safety Equipment inspections and Operational Checks (242-85B-005). The public address system quarterly inspection was conducted on August 16, 2015. The inspection records contained the date of the inspection, the printed name, and hand written signature of the inspector, notations of observations made, and notations of remedial actions. I did not observe the time of the inspection on the inspection log.

### **Weekly Personal Protective Clothing Inspections**

I reviewed Attachment 6 – 242-A Evaporator Personal Protective Equipment Check from the Safety Equipment inspections and Operational Checks (242-85B-005) for the month of September, 2015. I observed that only one weekly inspection was performed on September 23, 2015, for the month of September for personal protective equipment. The inspection record contained the date of the inspection, notations of the observations made, and the printed name and hand written signature of the inspector. I did not observe that the time of the inspection was not noted on the inspection log.

### **Monthly Radio Inventory and Radio Check Inspections**

I reviewed Attachment 9 – Radio Inventory and weekly Radio Checks from the Safety Equipment inspections and Operational Checks (242-85B-005) for the month of September, 2015. The inspection was performed on September 22, 2015. I observed that the inspection log noted a deficiency with one radio being missing and the shift manager noted that this radio was not applicable and therefore, not required as a remedial action. I also observed that the inspection was noted as weekly on the inspection log, but on Table 6.2 from Chapter 6 Procedures to Prevent Hazards it was required monthly.

I observed that the inspection record contained the date of the inspection, notations of the observations made, and the printed name and hand written signature of the inspector. I did not observe that the time of the inspection was not noted on the inspection log.

### Continuous Inspections

I observed that continuous inspections are done through constant monitoring of graphic alarms on the Monitoring Control System (MCS) computer monitors during evaporator campaigns. The following overflow protection alarms from Table 6.3 in Permit Chapter 6 Procedures to Prevent Hazards were noted on document number ARP-T-601-010 Rev. I-3, dated March 17, 2015:

- Vapor liquid separator: WFSH-CA11
- Vapor liquid separator: WFSH-CA12

I observed that the following alarms were noted on document number ARP-T-601-012 Rev. K-4, dated May 21, 2015:

- Pump room sump: WFI-SUMP1
- Sampler line: LDS-SMPL2

I did not observe sampler line LDS-SMPL1 leak detection device listed on ARP-T-601-010 Rev. I-3 or ARP-T-601-012 Rev. K-4; however this device is listed on Table 6.3 in Chapter 6 Procedures to Prevent Hazards. In a subsequent records request, I received ARP-T-601-301, *Respond to P-AW-102 and Slurry Sampler Graphic #301 Alarms at the 242-A Evaporator – Tank Farm Alarm Response Procedure*. In this procedure, I observed that Graphic 301 related to monitoring LDS-SMPL1 and that it involved responses to the alarm that relates to detecting liquids in the Feed Sampler Enclosure. I observed that LDS-SMPL-1 was associated with alarm LDS-SMPL1.

I observed that the majority of alarms identified in ARP-T-601-010 Rev. I-3 and ARP-T-601-012 Rev. K-4 were not included in the Permit, Table 6.3 in Chapter 6 Procedures to Prevent Hazards. The missing alarms appeared to be necessary for ensuring that the 242-A Evaporator is operated and maintained in a manner that ensures protection of human health and the environment. Below is a list of alarms that were not included in Table 6.3 in Chapter 6 Procedures to Prevent Hazards:

- LIC-CA1-1 – EVAP CA1-1 Controlr
- LIC-CA1-2 – EVAP CA1-2 Level Controlr
- LI-CA1-3 – EVAP CA1-3 Correctd WT Factor
- PIC-CA1-7 – EVAP CA1-3 Evaporator Absolute Pressure
- PIC-CA1-11 - EVAP Vacuum 0-30 in HG
- PDI-CA1-2 – EVSAP Upper De-Entrn Delta-P
- DI-CA1-1 – EVAP Vessel Slurry Specific Gravity
- DI-CA1-2 – EVAP Vessel Slurry Specific Gravity
- DI-CA1-3 – EVAP Vessel Slurry Specific Gravity
- TI-CA1-6 – EVAP Vessel Slurry Temp
- TI-CA1-6S – EVAP Vessel Slurry Spare T
- PSH-CA111 – EVAP Vessel Pressure
- PDI-CA1-1 – EVAP Lower De-Entrn Delta-P

- PDI-CA1-2 – EVAP Lower De-Entrn Delta-P
- PDSH-CA1 – Lower De-Entrn Pad DP
- UXS-CA1-3 – UIT-CA1-3 Fail
- PIC-CA1-7 – Evaporator Absolute Pressure
- PI-CA1-11 – EVAP Vacuum 0-30 in HG
- DI-CA1-1 – EVAP Vessel Slurry Specific Gravity
- DI-CA1-2 – EVAP Vessel Slurry Specific Gravity
- DI-CA1-3 – EVAP Vessel Slurry Specific Gravity
- FIC-CA1-6 – Upper De-Entrn Spray Flow
- PDI-FH3-1 – F-H-3 RW Strainer Delta P
- PDI-FH1-1 – F-H-1 RW Filter Delta P
- PDI-FH2-1 – F-H-2 RW Filter Delta P
- TI-CA1-7 – Recirc Bypass Slurry Temp
- FI-CA1-1 – PB-1 Seal Water Flow
- PI-CA1-9 – PB-1 Seal Water Pressure
- PI-CA1-20 – Condensate Recycle Outlet Pressure
- PB1-BYPAS – PB-1 Shut Down Bypass (Alarm)
- VI-PB1-1A – PB-1 Pump Horizont Vib
- VI-PB1-2A – PB-1 Pump Vertical Vib
- VI-PB1-3A – PB-1 Pump Lateral Vib
- II-PB1-1 – PB-1 Recirc Pump Current
- FI-CA1-3 Recirc Bypass Slurry Flow
- YS-PB1-1 – PB-1 Pump Motor Confirm
- PDI-CA1-3 – FCA1-L/R Delta-P
- HV-CA1-10 – HV-CA1-10 Condensate Recycle Valve (CF-FRW)

### **Monthly Emergency Diesel Generator Inspection**

I observed that the 242-A standby Diesel Generator was tested and serviced on September 2, 2015. The inspection records contained the date and time of the inspection, the printed name, and hand written signature of the inspector, and notations of observations made.

### **Monthly Emergency Lighting Inspection**

I observed that the emergency lighting was tested and serviced on September 10, 2015. The inspection records contained the date of the inspection, the hand written signature of the inspector, and notations of observations made. I did not observe the time of inspection or the full printed name of the inspector. The inspector put what appeared to be his first name initial and full last name.

### **Annual Ignitable Reactive Inspection**

I observed that an annual ignitable inspection was conducted on March 10, 2015. I observed the inspection records contained the date and time of the inspection, the printed name, and hand written signature of the Hanford Fire Department representative (inspector), and notations of observations made.

### **Leak Detector Functional Test Inspections**

I observed that leak detector functional tests for LDE-SMPL-1 and 2 were conducted on July 6, 2015, 69 days before the evaporator campaign EC-03 began (September 13, 2015). I observed the inspection records contained the date of the inspection, and hand written signature of the inspector, and notations of observations made. I did not observe the full printed name of the inspector or the time of the inspection on the inspection log. I observed that the inspector wrote what appeared to be their first name initial and full last name.

### **Annual Uninterrupted Power Supply Inspection**

I observed annual uninterrupted power supply inspections were conducted on July 28, 2015, and July 29, 2015. I observed the inspection records contained the date and time of the inspection, the hand written signature and printed name of the inspector, and notations of observations made.

### **Annual Vapor Liquid Separator High Level Alarms WFSH-CA1-1 and WFSH-CA1-2 Inspections**

I observed that annual vapor liquid separator high level alarms inspection for WFSH-CA1-1 and WFSH-CA1-2 were conducted on April 14, 2015. I observed the inspection records contained the date of the inspection, the hand written signature and printed name of the inspector, notations of observations made, and the date and nature of remedial actions taken. I did not observe the time of the inspection on the inspection log.

### **Annual Pump Room Sump Level Calibration Inspection of WFI-SUMP1**

I observed that annual pump room sump level calibration inspection of WFI-SUMP1 was conducted on August 4, 2015. I observed the inspection records contained the date of the inspection, the hand written signature of the inspector, notations of observations made, and the date and nature of remedial actions taken. I did not observe the full printed name of the inspector or the time of the inspection on the inspection log. I observed that the inspector wrote what appeared to be their first name initial and full last name.

### **Annual and Biennial Fire Suppressant and Notification System Inspections**

I observed that annual fire suppressant and notification systems inspections (242-A-12M Wet Riser Testing) occurred on December 10, 2015. I observed the fire suppressant and notification systems inspections were also conducted quarterly (242-A 3M Wet Riser Testing), semi-annually (242-A 6M Wet Riser Testing), and biennially (242-A 24M Wet Riser Testing). I observed that it appeared the quarterly, semi-annual, annual, and biennial inspections occurred on the same day (December 10, 2015). I observed on November 30, 2015, there was a notation from the fire department that stated that they did not want to "flow since water would flow into the parking lot". On this notation, I observed what appeared to be the printed name and hand written signature of the fire department inspector. I saw the observations of the inspection, and the date and time of the inspection were noted on the 242-A Wet Riser Testing and Inspection Data Sheet. I observed that the biennial visual inspection of the sprinkler system (to ensure integrity) occurred on December 10, 2015. From the records provided, I did not observe that the annual manual fire alarm pull boxes were tested for alarm signal, if biennial smoke

detectors and heat detectors were tested, or if an actual water flow test occurred due to the above November 30, 2015 notation. On the records request, I observed the below notation:

*The Work Document submitted for Item 16b (FT-15-06426) has not been signed off as complete. Some of the Data Sheets have not been completed due to access issues for the Hanford Fire Department. Individual training requirements were not complete to gain access to some areas of 242-A Evaporator Facility. The incomplete Data Sheets will be transmitted as soon as inspections have been completed, if needed.*

### **242-A Evaporator Backside Rounds**

I reviewed the daily 242-A Evaporator Backside Rounds (TF-OR-A-02) from August 31, 2015 to October 4, 2015. These inspections were performed for the IX column, condensate tank and piping, AMU mezzanine, pump room, load out and hot equipment storage room, loading room, condenser room, building external doors, and posted warning signs. I also observed that inspections for the ammonia monitoring system, water service building, heating ventilation and air conditioning room, K1 stack cam cabinet verification, debris/combustible verification, evaporator lighting, and diesel generator were also included as a part of the daily inspection record. I observed that inspections were conducted every day as required. I observed the inspection records contained the date and time of the inspection, the hand written signature of the inspector, and notations of observations made. I observed the full printed name of the inspector on the majority of the daily inspection records. However, the inspector put what appeared to be their first name initial, some included a middle initial, and then full last name on the September 5, 2015 through September 10, 2015, September 14, 2015, and September 23, 2015, through September 27, 2015, daily 242-A Evaporator Backside Rounds (TF-OR-A-02) inspection records.

### **Preparedness and Prevention Daily Inspections**

I observed that daily inspections were being conducted in the water service building, AMU room, pump room, hot equipment room, loading room, HVAC room, and condenser room. Inspections performed the following permit related parameters required in Table 6.1 from Chapter 6 Procedures to Prevent Hazards:

- Space for emergency movement of fire, spill and decontamination equipment is maintained. (Clear walkways)

### **Daily IX Column Room Inspections**

I observed in the daily 242-A Evaporator Backside Rounds (TF-OR-A-02) that IX column room inspected to detect if leakage is present in IX Column Room and contained the following footnote.

*Required to be recorded when process condensate is being sent to LERF. N/A when process condensate is not being sent to LERF.*

I observed that the IX column room inspections were being documented from the night shift on September 14, 2015 through September 22, 2015, and September 24, 2015 to the day shift of September 25, 2015. I observed that Table 6.1 from Permit Chapter 6 Procedures to Present Hazards listed the below two foot notes relating to the IX column room.

- IX column was removed in 2003. The remaining piping has been drained and isolated.
- Surveillance is only required if the piping is returned to service and dangerous waste is reintroduced to the piping.

### **Daily AMU Mezzanine Inspection**

I observed in the daily 242-A Evaporator Backside Rounds (TF-OR-A-02) that the AMU Mezzanine inspections performed the following permit related parameters required in Table 6.1 from Chapter 6 Procedures to Prevent Hazards:

- Inspect process system(s) for integrity and signs of corrosion. (No leakage from piping, valves, flanges, cabinets, etc. No rust buildup)
- Inspect TK-E-104 Decon and TK-E-101 Eluant Tanks for signs of corrosion, leakage, and spillage from chem. add equipment.
- Space for emergency movement of fire, spill, and decontamination equipment is maintained. (Clear walkways)
- No indications of malfunctioning equipment. (Lack of power to indicating lights, abnormal noises from operating equipment, etc.)

I did not observe where floors were inspected for damage in the AMU Mezzanine on the inspection log. I was unsure if equipment checks for leakage included inspections for spills on the floor.

### **Daily Pump Room Inspections**

I observed in the daily 242-A Evaporator Backside Rounds (TF-OR-A-02) that that the pump room inspections covered the following permit related parameters required in Table 6.1 from Chapter 6 Procedures to Prevent Hazards:

- Inspect process system(s) for integrity and signs of corrosion. (No leakage from piping, valves, flanges, cabinets, etc. No rust buildup)
- Space for emergency movement of fire, spill, and decontamination equipment is maintained. (Clear walkways)
- No indications of malfunctioning equipment. (Lack of power to indicating lights, abnormal noises from operating equipment, etc.)
- Inspect Pump Room Sump for overflows.

I did not observe where floors were inspected for damage in the pump room on the inspection log. I was unsure if leakage checks on equipment included inspections for spills on the floor.

### **Daily Loadout and Hot Equipment Storage Room Inspections**

I observed in the daily 242-A Evaporator Backside Rounds (TF-OR-A-02) that the loadout and hot equipment storage room inspections covered the following permit related parameters required in Table 6.1 from Chapter 6 Procedures to Prevent Hazards:

- Inspect process system(s) for integrity and signs of corrosion. (No leakage from piping, valves, flanges, cabinets, etc. No rust buildup)
- Space for emergency movement of fire, spill and decontamination equipment is maintained. (Clear walkways)
- No indications of malfunctioning equipment. (Lack of power to indicating lights, abnormal noises from operating equipment, etc.)

- No unsafe conditions exist. Conditions hazardous to personnel and/or detrimental to equipment. (Wet floors, exposed wiring, housekeeping, belt guards not installed, water leaking onto electrical equipment, etc.)

I did not observe where floors were inspected for damage in the Loadout and Hot Equipment Storage Room on the inspection log. I was unsure if leakage checks on equipment included inspections for spills on the floor. I also observed that monitoring of the pump room sump was not performed as a part of this inspection. This may be because the pump room sump is located in the pump room and not in the loadout and hot equipment storage room.

### **Loading Room**

I observed in the daily 242-A Evaporator Backside Rounds (TF-OR-A-02) that the loading room inspection covered the following permit related parameters required in Table 6.1 from Chapter 6 Procedures to Prevent Hazards:

- Space for emergency movement of fire, spill and decontamination equipment is maintained. (Clear walkways)

I did not observe on the inspection logs where monitoring drains in the loading room were inspected.

I observed that under the question "*No unsafe conditions exist. Conditions hazardous to personnel and/or detrimental to equipment. (Wet floors, exposed wiring, housekeeping, belt guards not installed, water leaking onto electrical equipment, etc.)*", that remedial action 242-A2-15-06 was tracked from August 31, 2015 to October 4, 2015. I observed that the inspection record was updated when a rounds action tracking list number was assigned for the remedial action. I observed on the rounds action tracking list, the following information related to 242-A2-15-06:

- Oil leaking from the AUX Hoist onto the loading room floor.
- Date Discovered August 31, 2015.
- Absorbent pads have been laid down.

### **Daily Condenser Room Inspections**

I observed in the daily 242-A Evaporator Backside Rounds (TF-OR-A-02) that the condenser room inspection covered the following permit related parameters required in Table 6.1 from Chapter 6 Procedures to Prevent Hazards:

- Inspect C-100 tank and process system(s) for integrity and signs of corrosion. (No leakage from tank, piping, valves, flanges, cabinets, etc. No rust buildup)
- Inspect TK-C-100 and process condensate system for labels which state "Process Condensate"
- Space for emergency movement of fire, spill, and decontamination equipment is maintained. (Clear walkways)
- No indications of malfunctioning equipment. (Lack of power to indicating lights, abnormal noises from operating equipment, etc.)

I did not observe on the inspection log where floors were inspected for damage in the condenser room. I was unsure if leakage checks on equipment included inspections for spills on the floor. I observed that under the question to inspect C-100 tank and process system(s) for integrity and signs of corrosion (i.e. No leakage from tank, piping, valves, flanges, cabinets, etc. No rust buildup) that remedial action HV-

EC2/3-1 was being tracked. I observed that HV-EC2/3-1 related to an actuator leaking oil (242A-A2-15-04). I observed that the Rounds Action Tracking List stated that the problem was discovered on July 20, 2015 and that a work order had yet to be determined. I observed what appeared to be a redundancy in the Table 6.1 in Chapter 6 Procedures to Prevent Hazards; the condensate tank and piping was listed as a daily inspection at the top of the Table 6.1; however, under the Table 6.1, tanks and piping were being inspected in the condenser room for leaks and corrosion. The condensate collection tank (TK-C-100) and piping are located in the condenser room.

I observed that under the question to “*Inspect C-100 tank and process system(s) for integrity and signs of corrosion. (No leakage from tank, piping, valves, flanges, cabinets, etc. No rust buildup)*”, that remedial action 242-A2-12-002 was tracked from August 31, 2015 to October 4, 2015. I observed on the rounds action tracking list, the following information related to 242-A2-12-002:

- 242-A Interior and Exterior Lighting that is O/S
- Discovered on January 29, 2012

#### **Daily Building External Doors and Weekly Posted Warning Sign Inspections**

I observed in the daily 242-A Evaporator Backside Rounds (TF-OR-A-02) that inspections for the building external doors and posted warning sign met the following weekly permit related parameters required in Table 6.2 from Chapter 6 Procedures to Prevent Hazards:

- Exterior Doors Closed & Locked When Not Staffed
- Doors/gates in Good Condition And Functioning Properly with Posted Warning Signs in Place

#### **Temporary Round Sheet CSO-TR-99 for the PC-5000 TraceTek Leak Detection System**

I observed that Section 6.2.2.3 Leak Detectors in Chapter 6 Procedures to Prevent Hazards stated the following in part:

*....The PC-5000 transfer line may be continuously monitored during transfers by an electronic leak detection system (Chapter 4.0, Process Information) or visually inspected at the encasement catch tank (TK-PC-101) in the Liquid Effluent Retention Facility (LERF) catch basin (242AL-43).....When necessary, visual inspections of the PC-5000 transfer line encasement are administratively controlled by the 242-A Evaporator Shift Manager and occur at a minimum once every 24 hours during waste water transfers through the PC-5000 transfer line to ensure compliance with WAC 173-303-640(4)(c)(iii). Visual inspection for leaks from the PC-5000 transfer line are performed by 242-A Evaporator Operations, by looking for signs of any liquid not attributed to rain/precipitation at the encasement catch tank (TK-PC-101). If any liquid is observed the 242-A Evaporator Shift Manager is notified to take corrective actions.*

I observed on the Temporary Round Sheet CSO-TR-99 for the 242-A Evaporator Campaign EC-03, that the PC-5000 TraceTek leak detection device was declared out of service. I observed on the round sheet that a visual inspection of the liquid in the LERF Catch Tank (60M-TK-1) sight glass (located at LERF Basin 43) occurred from September 13, 2015, through September 24, 2015. I observed that the inspection was conducted at least daily, but was more routinely done twice a day. I did not see in any case where liquid was observed in the sight glass by the inspector. I observed the inspection records contained the date and time of the inspection, the hand written signature of the inspector, and notations of observations made. I observed the full printed name of the inspector on some, but not all records. On less than half of the inspection log entries, I observed that inspectors wrote what appeared to be their first name initial, some with middle initial, and full last name.

### Repairs to Secondary Containment in Pump Room

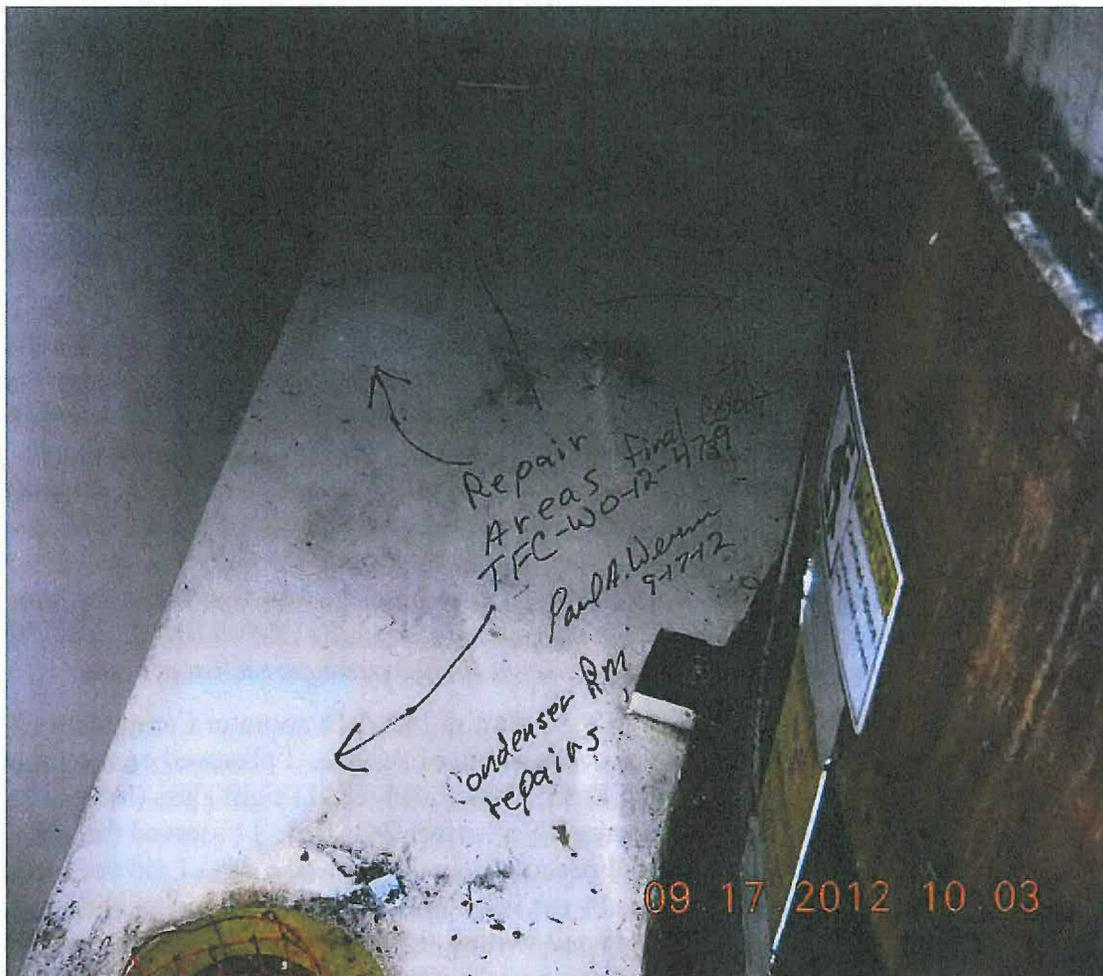
I observed records of the following painting repairs using Amerlock 2/400 white resin inside of the 242-A Evaporator Pump Room:

- Areas of the north wall on January 27, 2015
- Areas of the south wall on January 27, 2015
- Areas of the upper level east wall on unspecified date (likely January 27, 2015)
- Repairs inspected on February 4, 2015

I did not observe any repairs to the floor as a part on this work package.

### Repairs to Secondary Containment in Condenser Room

On September 12-13, 2012, I observed records of secondary containment coating repairs made to the 242-A condenser room floor and walls up to six feet high. I observed that the coating repairs were inspected on September 17, 2012. Below is one of the photos of the finalized floor repair in the condenser room.



Coating floor repairs in the condenser room

I observed records to another set of many small repairs to the secondary containment coating to the 242-A condenser room floor on March 4-5, 2015. I observed that the coatings were inspected on March 9, 2015.

### **Training Records Review**

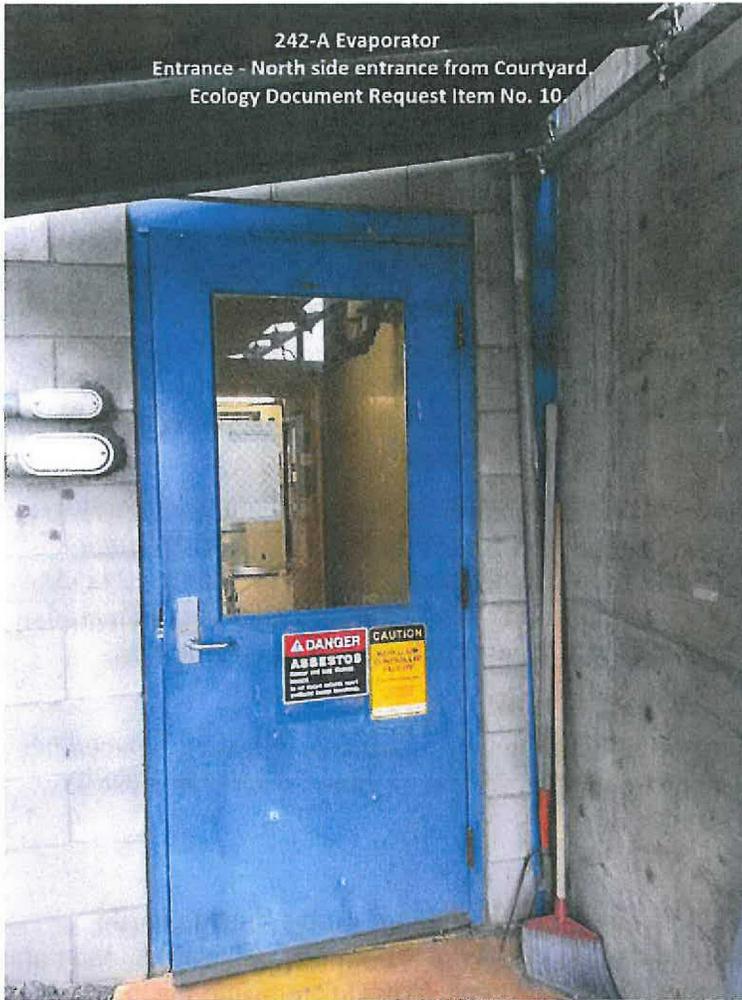
I reviewed Mr. Kim Armatis's (242-A Evaporator Nuclear Chemical Operator) training records as of September 28, 2015 –against training requirements in Permit Chapter 8 Personnel Training and TFC-PLN-07, Rev. B (July 29, 2010), *Dangerous Waste Training Plan*. This was the current training plan at the time of the inspection. I observed that Kim Armatis's training records did not include course number 350540 – 242-A Evaporator Facility Orientation and FEHIC-CBT as required for a Waste Worker under the Orientation Program, Emergency Hazards Check List, and Building Emergency Training in Table 8.1 and as specified in TFC-PLN-07, Rev. B for Waste Workers.

I reviewed the training records of Mr. David Meyer's (242-A Evaporator Nuclear Chemical Operator) with the training requirements in TFC-PLN-07, Rev. B (July 29, 2010), *Dangerous Waste Training Plan*. I observed that David Meyer's training records did not include course number 350540 – 242-A Evaporator Facility Orientation and FEHIC-CBT as required for a Waste Worker under the Orientation Program, Emergency Hazards Check List, and Building Emergency Training in Table 8.1 and as specified in TFC-PLN-07, Rev. B for Waste Workers.

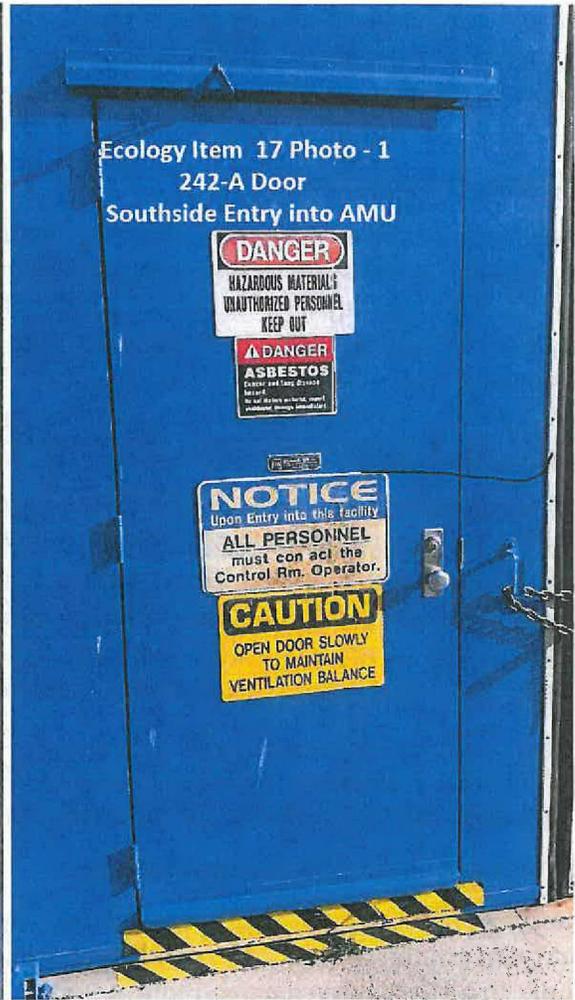
I observed that the revision to the Dangerous Waste Training Plan (TFC-PLN-07, Rev. B-1, December 7, 2015), did not remove the requirement to take course number 350540 – 242-A Evaporator Facility Orientation and FEHIC-CBT, for all worker positions.

### **Photos of the 242-A Doors and Signage**

In my records request, I asked for photos of the doors and associated signage on the outside north courtyard entrance to the 242-A Evaporator and to the door to the sample room from inside the load out room. In a subsequent records request, I also received a photo of the south side entry into the aqueous makeup room. Below are the pictures that were provided in these requests.



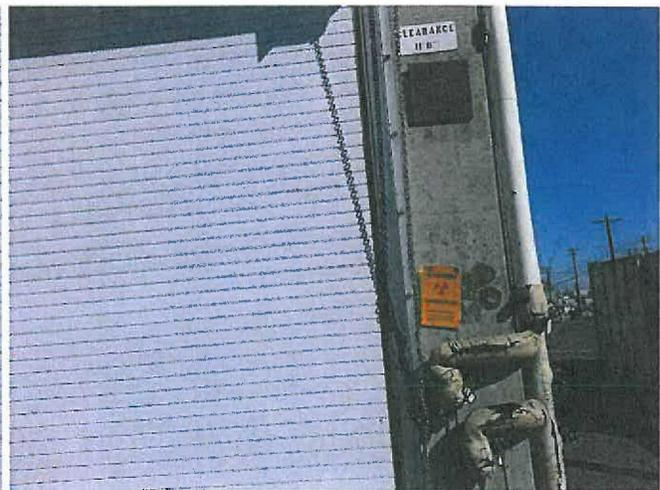
North side entrance from Courtyard



Southside Entry Door into AMU



Outside rollup door to loading room (left side)



Outside rollup door to loading room (right side)



Photo of door to loadout and hot equipment storage (aka sample room) from inside the loading room

I observed that the door from the loading room to the loadout and hot equipment storage room (aka sample room) did not contain a sign stating "Danger - Hazardous Materials - Unauthorized Personnel Keep Out".

### Compliance Problems

The Dangerous Waste inspection on September 23, 2015, 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 within 60 days of receipt of this compliance report. 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 (509) 372-7949**

This does not relieve you of your continuing responsibility to comply with the regulations at all times.

### Security and Signs

1) Permit No. WA 7890008967 Revision 8C – Part III Operating Units – 242-A Evaporator Operating Unit Group 4 (OUG-4)

**Chapter 6 Procedures to Prevent Hazards - Permit Condition 6.1 Security. Refer to Permit Attachment 3, Security for compliance with Washington Administrative Code (WAC) 173-303-310(2)(b) and (c). The 242-A Evaporator is located within the 200 Area of the Hanford Facility and access is controlled by physical barriers, which complies with WAC 173-303-310(2)(c). To meet the requirements of WAC 173-303-310(2)(a), signs stating Danger-Unauthorized Personnel Keep Out, or equivalent language, legible at 7.6 meters (25 feet) or more, are posted at each entrance to the active portion or each entrance that will lead to the active portion. The Permittees will post signs on or near the outside doors to the 242-A Evaporator.**

**WAC 173-303-040- "Active portion" means that portion of a facility which is not a closed portion, and where dangerous waste recycling, reuse, reclamation, transfer, treatment, storage or disposal operations are being or have been conducted after: The effective date of the waste's designation by 40 C.F.R. Part 261; and March 10, 1982, for wastes designated only by this chapter and not designated by 40 C.F.R. Part 261.**

**Observations:** On the west outside wall of the 242-A Evaporator I observed a roll up door. I asked what room was behind this door and if it was locked. A WRPS employee told me this was the door to the load out room, it was locked and was not routinely accessed. I asked what was in the load-out room and a WRPS employee told me that it was used to store contaminated equipment. I observed signs stating "Caution – Beryllium Control Facility", "Danger – Asbestos – Cancer and Lung Disease Hazard", and "Caution – Contamination Area". I did not observe a sign bearing the legend "Danger - Hazardous Materials - Unauthorized Personnel Keep Out" or an equivalent legend near the door.

I also observed that the door from the loading room to the loadout and hot equipment storage room did not contain a sign bearing the legend or equivalent to "Danger - Hazardous Materials - Unauthorized Personnel Keep Out". The loadout and hot equipment storage room (aka sample room) is the room where 242-A mixed-waste slurry samples are taken.

During my inspection, I observed that the loading room and the loadout and hot equipment storage room were separated by a one story wall and door, but both rooms shared the same airspace at the second story level.

**Action Required:** Within 60 days of receipt of this compliance report, USDOE-ORP and WRPS must post signs stating "Danger-Unauthorized Personnel Keep Out", or equivalent legend, written in English, and legible at 25 feet or more next to the roll up door to the loading room on the west outside wall of the 242-A Evaporator and on the door to the loadout and hot equipment storage room from the loading room.

### **Incomplete Inspection Records**

#### **2) Permit No. WA 7890008967 Revision 8C – Part III Operating Units – 242-A Evaporator Operating Unit Group 4 (OUG-4) Chapter 6 Procedures to Prevent Hazards - Permit Condition 6.2.5 Inspection Logs**

**Visual inspections (refer to Tables 6.1-6.4) are performed using inspection log sheets (also called round sheets) that outline frequency, the components to inspect, operating conditions and ranges, and types of problems. Log sheets are kept in the 242-A Evaporator control room. Inspectors record the following information:**

- **Date and time of the visual inspection.**
- **Printed name and signature of the person performing the inspection.**
- **Notations of the observations made, including space for writing comments.**
- **An account of spills or discharges in accordance with WAC 173-303-145.**

**Completed log sheets are reviewed and approved by the shift supervisor, collected, and stored for at least 5 years.**

**Permit No. WA 7890008967 Revision 8C – Part II General Facility Conditions – II.O.1 The Permittees will inspect the Facility to prevent malfunctions and deterioration, operator errors,**

and discharges, which may cause or lead to the release of dangerous waste constituents to the environment, or threaten human health. Inspections must be conducted in accordance with the provisions of WAC 173-303-320(2).

WAC 173-303-320(2)(d) The owner or operator must keep an inspection log or summary, including at least the date and time of the inspection, the printed name and the handwritten signature of the inspector, a notation of the observations made, an account of spills or discharges in accordance with WAC 173-303-145, and the date and nature of any repairs or remedial actions taken. The log or summary must be kept at the facility for at least five years from the date of inspection.

**Observations:** The following are incomplete inspection records marked with an “X” missing from the following inspection records:

Inspection Log				X=Deficient		The Date and Nature of Any Repairs or Remedial Actions Taken
Date of Inspection	Time of Inspection	The Printed Name of the Inspector	The Handwritten Signature of the Inspector	A Notation of the Observations Made		
1	Weekly Personal Protective Clothing Inspection - September 23, 2015		X			
2	Monthly Radio Inventory and Radio Check Inspections - September 22, 2015		X			
3	Monthly Respirator Inspections - September 8, 2015		X	X	X	
4	Monthly Spill Kit Inspection - September 22, 2015		X			
5	Monthly Fire Extinguisher Inspection - September 1, 2015		X			
6	Monthly Emergency Lighting Inspection - September 10, 2015		X	X		
7	Phone System Inspection - August 16, 2015		X			
8	Public Address System Inspection - August 16, 2015		X			
9	Monthly Safety Showers / Eyewash Station Inspection - September 7, 2015		X			
10	LDE-SMPL-1 and 2 Leak Detector Functional Test Inspections - July 6, 2015		X	X		
11	Vapor Liquid Separator High Level Alarms WFSH-CA1-1 and WFSH-CA1-2 - April 14, 2015		X			
12	242-A Evaporator Backside Rounds - August 31, 2015 to October 4, 2015			X		
13	Temporary Round Sheet CSO-TR-99 for the PC-5000 TraceTek Leak Detection System - September 13, 2015 through September 24, 2015			X		

**Action Required:** Immediately upon receipt of this compliance report, USDOE-ORP and WRPS must include the date and time of the inspection, the printed name and handwritten signature of the inspector, notations of the observations made, and the date and nature of any repairs or remedial actions taken on inspection records. Within 60 days of receiving this compliance report, USDOE-ORP and WRPS must submit one week of 242-A Evaporator inspection records to Ecology showing that they are compliant with Condition 6.2.5 from Chapter 6 Procedures to Prevent Hazards, Permit Condition II.O.1, and WAC 173-303-320(2)(d) requirements.

**Missing Inspections**

3) Permit No. WA 7890008967 Revision 8C – Part III Operating Units – 242-A Evaporator Operating Unit Group 4 (OUG-4) Chapter 6 Procedures to Prevent Hazards - Permit Condition 6.2.1. This section provides an overview of inspections performed at the 242-A Evaporator. A copy of the inspection plan is kept in the Hanford Facility Operating Record, 242-A Evaporator unit-specific portion. There are three general classes of inspections at the 242-A Evaporator:....Visual inspections of tanks and equipment are performed by operating personnel. Other inspections of 242-A Evaporator equipment are performed as noted in Table 6.1 through Table 6.4....

Table 6.1. Visual Inspection Schedule for Tanks, Piping, and Rooms

Item	Inspection	Frequency <sup>1</sup>
<b>Tank and Piping Inspection</b>		
Condensate collection (TK-C-100) tank and piping	<ul style="list-style-type: none"> <li>Inspect piping for leaks or corrosion</li> </ul>	Daily
<b>Room Inspections</b>		
AMU Mezzanine	<ul style="list-style-type: none"> <li>Inspect piping for leaks or corrosion</li> <li>Inspect floor for spills or damage</li> <li>Inspect for equipment malfunctions</li> <li>Inspect for housekeeping</li> </ul>	Daily <sup>2</sup>
Pump room	<ul style="list-style-type: none"> <li>Inspect piping for leaks or corrosion</li> <li>Inspect floor for spills or damage</li> <li>Inspect for equipment malfunctions</li> <li>Inspect for housekeeping</li> <li>Monitor pump room sump for overflow</li> </ul>	Daily <sup>3</sup>
Loadout and hot equipment storage room	<ul style="list-style-type: none"> <li>Inspect piping for leaks or corrosion</li> <li>Monitor pump room sump and inspect floor for spills or damage</li> <li>Inspect for housekeeping</li> </ul>	Daily <sup>5</sup>
Loading room	<ul style="list-style-type: none"> <li>Inspect for housekeeping</li> <li>Monitor drains</li> </ul>	Daily <sup>2,3,4</sup>
Condenser room	<ul style="list-style-type: none"> <li>Inspect tanks and piping for leaks or corrosion</li> <li>Inspect floors for spills or damage</li> <li>Inspect for equipment malfunctions</li> <li>Inspect for housekeeping</li> </ul>	Daily
Loading room	<ul style="list-style-type: none"> <li>Inspect for housekeeping</li> <li>Monitor drains</li> </ul>	Daily <sup>2,3,4</sup>
Condenser room	<ul style="list-style-type: none"> <li>Inspect tanks and piping for leaks or corrosion</li> <li>Inspect floors for spills or damage</li> <li>Inspect for equipment malfunctions</li> <li>Inspect for housekeeping</li> </ul>	Daily
IX column <sup>5</sup> room	<ul style="list-style-type: none"> <li>Inspect piping for leaks or corrosion</li> <li>Inspect floor for spills or damage</li> </ul>	Daily <sup>6</sup>

<sup>1</sup> Daily: Once each calendar day

<sup>2</sup> When dangerous waste is present

<sup>3</sup> Use viewing window in AMU Mezzanine to perform inspections except for the pump room which uses the ground floor window

<sup>4</sup> Denote use of contamination control curtain when extended

<sup>5</sup> IX column was removed in 2003. The remaining piping has been drained and isolated.

<sup>6</sup> Surveillance is only required if the piping is returned to service and dangerous waste is reintroduced to the piping

**Table 6.2. Inspection Schedule of Safety, Security, and Emergency Equipment**

Item	Inspection	Frequency <sup>1</sup>
<b>Security</b>		
Building external doors	Verify external doors are closed and locked <sup>2</sup>	Daily
Posted warning signs	Verify signs are present, legible, and visible at 7.6 meters (25 feet)	Weekly
<b>Communications</b>		
Radios	Verify radios are operable and batteries are charged	Monthly
Telephones	Verify telephones are operable	Quarterly
Intercom/public address system	Verify systems are working properly	Quarterly
<b>Emergency Equipment</b>		
Safety showers/ eyewash station	Verify operability	Monthly
Emergency lighting	Verify operability	Monthly
Fire extinguishers	Verify fire extinguishers are in their proper location	Monthly
Spill kit	Verify the spill kit is present and that the seal is intact.	Monthly
Personal protective clothing	Verify availability	Weekly
Respirators	Verify availability and shelf life	Monthly

<sup>1</sup> Daily: Once each calendar day  
 Weekly: Once each calendar week  
 Monthly: Once each calendar month  
 Quarterly: Once each quarter, not to exceed 124 days

<sup>2</sup> Entrances to office areas are allowed to be unlocked

Table 6.4. Inspection Schedule for Maintenance and Other Inspections

Item	Inspection	Frequency <sup>1</sup>
<b>Instrumentation Functional Checks and Calibrations</b>		
Leak detectors	Perform leak detector functional checks.	Within 92 days of campaign startup and every 92 days thereafter until the campaign is over
Vapor liquid separator (C-A-1) high level alarms: WFSH-CA11 WFSH-CA12	Perform calibrations of loop instruments.	Annually
Pump room sump level: WFI-SUMP1	Perform calibrations of loop instruments.	Annually
<b>Backup Electrical Equipment</b>		
Diesel generator	Verify operability.	Monthly
Uninterruptible power supply	Verify output voltage and inspect battery for signs of damage or tampering.	Annually
<b>Fire Systems</b>		
Fire suppressant and notification systems (i.e., sprinkler system and fire alarm pull boxes)	Water flow alarm tests of the sprinkler system to ensure the operation of a single sprinkler head will transmit an alarm, and that any of the manual fire alarm boxes will properly transmit an alarm signal.	Annually
Visual inspection of the physical condition of the sprinkler system, testing, and calibration of smoke detectors, and testing of heat detectors	A visual inspection of the sprinkler system to ensure system integrity as well as the required testing and calibration of detectors to ensure functionality. A flow test at the sprinkler system is performed to ensure proper flow to the system riser.	Biennial
Annual ignitable and reactive waste inspection	Inspect areas where ignitable or reactive wastes are permitted to be stored per <u>WAC 173-303-395(1)(d)</u> .	Annually

<sup>1</sup> Continuously: an operator must be present in the control room to respond to alarms.  
 Monthly: Once each calendar month  
 Annually: Once each calendar year, not to exceed 365 days  
 Biennial: Once every 2 years, not to exceed 730 days

**Observations:** From my review of the 242-A Evaporator Backside Rounds Inspections (TF-OR-A-02), I observed floors were not inspected for damage on the daily AMU Mezzanine, pump room, condenser room, and loadout and hot equipment storage room inspection records for the month of September 2015. I reviewed Attachment 6 – 242-A Evaporator Personal Protective Equipment Check from the Safety Equipment inspections and Operational Checks (242-85B-005) for the month of September, 2015. I observed that only one weekly inspection was performed on September 23, 2015, for the month of September for personal protective equipment.

I reviewed the annual fire suppressant and notification systems inspections (242-A-12M Wet Riser Testing) and the biennial visual inspection of the sprinkler system to ensure integrity (242-24M-Wet Riser Testing) that occurred on December 10, 2015. I observed on November 30, 2015, there was a notation on the inspection record that stated that they did not want to “flow since water would flow into the parking lot”. On a records request, I observed the below notation:

*The Work Document submitted for Item 16b (FT-15-06426) has not been signed off as complete. Some of the Data Sheets have not been completed due to access issues for the Hanford Fire Department. Individual training requirements were not complete to gain access to some areas of 242-A Evaporator Facility. The incomplete Data Sheets will be transmitted as soon as inspections have been completed, if needed.*

I did not observe that the annual manual fire alarm pull boxes were tested to see if they properly transmitted an alarm signal, if biennial smoke detectors and heat detectors were tested, or if an actual water flow test occurred due to the November 30, 2015 notation on the inspection record.

#### **Action Required:**

1 - Immediately upon receipt of this compliance report, USDOE-ORP and WRPS must perform and document daily inspections for floor damage in the 242-A Evaporator AMU Mezzanine, pump room, condenser room, and loadout and hot equipment storage rooms. Within 60 days of receipt of this inspection report, submit one week of inspection records that show that the floors were inspected in these areas.

2 – No further action required. On February 26, 2016, Ecology received letter number 16-ESQ-0044 from the USDOE-RL that reported non-compliance for failure to conduct weekly inspections of personnel protective clothing at the 242-A Evaporator from May 2014 through September 2015. The attachment to the letter stated that coding in the action tracker system was corrected, and personal protective equipment inspections are being performed according to the weekly frequencies identified in Table 6.2. The attachment also stated that the non-compliance was documented in the unit-specific operating record.

3 - Within 60 days of receipt of this compliance report, USDOE-ORP and WRPS must perform the missing inspections for the annual and biennial fire system inspections (i.e. testing to see that all the manual fire alarm pull boxes properly transmit an alarm signal, test smoke detectors and heat detectors, and conduct an actual water flow test of the sprinkler system to determine it will transmit an alarm) and submit records showing these inspections were completed to Ecology.

#### **Incomplete Training Records**

**4) Permit No. WA 7890008967 Revision 8C – Part III Operating Units – 242-A Evaporator Operating Unit Group 4 (OUG-4) Chapter 8 Personnel Training – Permit Condition 8.0 PERSONNEL TRAINING Specific requirements for the Hanford Facility Personnel Training program are described in Permit Attachment 5, incorporated by reference. The Permittees will comply with the training matrix below which provides training requirements for Hanford Facility personnel associated with the 242-A Evaporator. Refer to the 242-A Evaporator Dangerous Waste Training Plan (DWTP) for a complete description of the personnel training requirements.**

**Table 8.1. 242-A Evaporator Training Matrix**

Attachment 5 Training Category	Training Category				
	General Hanford Facility Training	Contingency Plan Training	Emergency Coordinator Training	Operations Training	
Operating Unit 4: 242A Evaporator	Orientation Program	Emergency Hazards Check List	Building Emergency Training	General Waste Management	Tank System Management
<b>Dangerous Waste Worker Categories</b>					
Waste Worker	X	X	X	X	X
Waste Worker Supervisor/ Manager	X	X	X	X	
Advanced Waste Worker	X	X	X	X	
Building Emergency Director	X	X	X		

**Observations:** I reviewed training records as of September 28, 2015, for two WRPS employees who were both 242-A Evaporator Nuclear Chemical Operators (waste workers) against training requirements in Chapter 8 Personnel Training and TFC-PLN-07, Rev. B (July 29, 2010), *Dangerous Waste Training Plan*. I observed that both WRPS employee's training records did not include course number 350540 – 242-A Evaporator Facility Orientation and FEHIC-CBT as required for a Waste Worker under the Orientation Program, Emergency Hazards Check List, and Building Emergency Training in Table 8.1 and specified in TFC-PLN-07, Rev. B for Waste Workers.

**Action Required:** Within 60 days of receipt of this compliance report, the two WRPS employees referenced in this inspection report and identified as missing training course 350540 - 242-A Evaporator Facility Orientation and FEHIC-CBT, must complete course 350540 for the 242-A Evaporator waste worker category prior to resuming duties as a waste worker as specified in Section 8.1.1 in Chapter 8 Personnel Training. **OR** if another course has replaced the requirements of training course 350540, revise TFC-PLN-07, Rev. B-1 (December 7, 2015), *Dangerous Waste Training Plan* to remove course number 350540 - 242-A Evaporator Facility Orientation and FEHIC-CBT and submit the revised dangerous waste training plan to Ecology with an explanation as to how the requirements of course 350540 are being met through another training course or are not needed to properly training a 242-A Evaporator waste worker.

## Areas of Concern

### **Incomplete Permitting of the 242-A Evaporator**

- 1) The scope of the permit discusses many of the 242-A Evaporator systems; however requirements for a large portion of the 242-A Evaporator system are missing from the permit. For example, many of the inspection checks that are performed prior to start-up of treatment of waste are discussed in procedure TO-600-005. The appropriate inspection checks should be included in the permit for operational requirements prior to startup, because most or all of these systems are needed to safely treat and store waste.

Another example is the steam condensate system. The heat used from the steam condensate system is used to treat the waste; however there are no requirements for the steam condensate system in the permit. Systems used to treat waste and systems essential in supporting dangerous waste management systems and their operations all need to be included in the permit.

There is also ancillary equipment at the 242-A Evaporator, such as the steam condensate emergency divert drain line, that are not described in the permit, but may at times of emergency, be used to transport mixed-waste to double shell tank 241-AW-102.

The 242-A Evaporator is currently permitted as tank system dangerous waste management units; however the unit group may have more appropriately been permitted as multiple tank system dangerous waste management units with multiple miscellaneous unit dangerous waste management units.

An analysis at the time of permit renewal should take place to make sure that all parts of the 242-A Evaporator are being inspected and maintained to ensure that the dangerous waste management units within the unit group are operated and maintained in a manner that ensures compliance with permit conditions and protection of human health and the environment. This should include, but not be limited to, operating, detection, and monitoring requirements, and responses to releases of dangerous waste or dangerous constituents from the unit. It should not be limited to pieces of equipment that only directly touch dangerous waste. For example, all of the below operational alarms are not included in the process information or inspection sections of the permit, but relate directly to the safe operation of the treatment and storage dangerous waste management units.

The current scope of permitting only addresses systems that physically touch waste. This is because parts of the permit (primarily inspection and process information sections) are missing large portions of the 242-A Evaporator that are used to safely monitor and operate the tank waste treatment process. Equipment essential in supporting dangerous waste management systems and their operations all need to be included in the permit.

- LIC-CA1-1 – EVAP CA1-1 Controlr
- LIC-CA1-2 – EVAP CA1-2 Level Controlr
- LI-CA1-3 – EVAP CA1-3 Corrected WT Factor
- PIC-CA1-7 – EVAP CA1-3 Evaporator Absolute Pressure
- PIC-CA1-11 - EVAP Vacuum 0-30 in HG
- PDI-CA1-2 – EVSAP Upper De-Entrn Delta-P
- DI-CA1-1 – EVAP Vessel Slurry Specific Gravity

- DI-CA1-2 – EVAP Vessel Slurry Specific Gravity
- DI-CA1-3 – EVAP Vessel Slurry Specific Gravity
- TI-CA1-6 – EVAP Vessel Slurry Temp
- TI-CA1-6S – EVAP Vessel Slurry Spare T
- PSH-CA111 – EVAP Vessel Pressure
- PDI-CA1-1 – EVAP Lower De-Entrn Delta-P
- PDI-CA1-2 – EVAP Lower De-Entrn Delta-P
- PDSH-CA1 – Lower De-Entrn Pad DP
- UXS-CA1-3 – UIT-CA1-3 Fail
- PIC-CA1-7 – Evaporator Absolute Pressure
- PI-CA1-11 – EVAP Vacuum 0-30 in HG
- DI-CA1-1 – EVAP Vessel Slurry Specific Gravity
- DI-CA1-2 – EVAP Vessel Slurry Specific Gravity
- DI-CA1-3 – EVAP Vessel Slurry Specific Gravity
- FIC-CA1-6 – Upper De-Entrn Spray Flow
- PDI-FH3-1 – F-H-3 RW Strainer Delta P
- PDI-FH1-1 – F-H-1 RW Filter Delta P
- PDI-FH2-1 – F-H-2 RW Filter Delta P
- TI-CA1-7 – Recirc Bypass Slurry Temp
- FI-CA1-1 – PB-1 Seal Water Flow
- PI-CA1-9 – PB-1 Seal Water Pressure
- PI-CA1-20 – Condensate Recycle Outlet Pressure
- PB1-BYPAS – PB-1 Shut Down Bypass (Alarm)
- VI-PB1-1A – PB-1 Pump Horizont Vib
- VI-PB1-2A – PB-1 Pump Vertical Vib
- VI-PB1-3A – PB-1 Pump Lateral Vib
- II-PB1-1 – PB-1 Recirc Pump Current
- FI-CA1-3 Recirc Bypass Slurry Flow
- YS-PB1-1 – PB-1 Pump Motor Confirm
- PDI-CA1-3 – FCA1-L/R Delta-P
- HV-CA1-10 – HV-CA1-10 Condensate Recycle Valve (CF-FRW)

### Need for Reporting Temperature Observations for Mixing and Waste Compatibility Study

- 2) In reviewing RPP-PLAN-60462, Rev. 0, *Process Control Plan for 242-A Evaporator Campaign EC-03 to Concentrate 241-AZ-102 Waste Blend*, dated September 3, 2015, I observed that Section 3.5.9 (Mixing and Compatibility Study) summarized some of the requirements in Section 3.9.1.2 in Chapter 3 Waste Analysis Plan to conduct a mixing and waste compatibility study when staging multiple tanks for feed to the 242-A Evaporator.

Section 3.9.1.2 Compatibility from Chapter 3 Waste Analysis Plan states:

*As samples from each of the planned waste sources are mixed, observations are made to note any changes in color, temperature, clarity, or other visually determinable characteristic.*

I observed that the report stated that there were no changes in color or any notable precipitation observed during the mixing study. I did not see that temperature observations were noted for this study as summarized in the process control plan. I did not review the mixing and compatibility study as a part of my inspection (documented in the Interim Boil-Down Report, WRPS-1503604); however in the future, all permit requirements, when summarized elsewhere should clearly reflect all results which are required by the permit.

### Inspection Plan

- 3) IX column room inspections are performed to detect if leakage is present in IX Column Room (on the 242-A Evaporator Backside Round inspection records), but contained the following footnote.

*Required to be recorded when process condensate is being sent to LERF. N/A when process condensate is not being sent to LERF.*

I observed that the IX column room inspections were being documented from the night shift on September 14, 2015 through September 22, 2015, and September 24, 2015 to the day shift of September 25, 2015. I observed that the Table 6.1 from Chapter 6 Procedures to Present Hazards listed the below two foot notes relating to the IX column room.

- IX column was removed in 2003. The remaining piping has been drained and isolated.
- Surveillance is only required if the piping is returned to service and dangerous waste is reintroduced to the piping.

The permit states that no inspections occur in the IX column room, but in actuality, there are operational requirements to conduct dangerous waste inspections when process condensate is being sent to LERF. If dangerous waste inspections are being performed, the permit should be revised following the appropriate permit modification process to include these inspections.

Addendum 1  
Permit Deficiencies

## Chapter 6 Procedures to Prevent Hazards

- I observed that monitoring of the pump room sump was not conducted as a part of the daily loadout and hot equipment storage room inspections, but was conducted as a part of the daily pump room inspection. It appears that there may be a mistake in Table 6.1 from Chapter 6 Procedures to Prevent Hazards, as the pump room sump is located in the pump room and not the loadout and hot equipment storage room.
- There appears to be a redundancy in Table 6.1 in Chapter 6. At the top of the Table 6.1, I observed that the condensate collection (TK-C-100) tank and piping was inspected daily for leaks or corrosion; however, I also observed that under the Table 6.1, that tanks and piping were being inspected in the condenser room for leaks and corrosion. The condensate collection tank (TK-C-100) and piping are located in the condenser room, so it appears that there are two places in the permit that require the same inspection.
- I observed that Table 6.2 from Chapter 6 Procedures to Prevent Hazards, required a monthly inspection safety showers and eyewash stations; however, the Attachment 4 inspection procedure required it to be done weekly. A basis for inspection frequency should be looked at to determine if the monthly frequency is adequate.
- I observed that Section 6.2.5 Inspection Logs in Chapter 6 Procedures to Prevent Hazards stated the following:

*Visual inspections (refer to Tables 6.1-6.4) are performed using inspection log sheets (also called round sheets) that outline frequency, the components to inspect, operating conditions and ranges, and types of problems. Log sheets are kept in the 242-A Evaporator control room. Inspectors record the following information:*

- *Date and time of the visual inspection.*
- *Printed name and signature of the person performing the inspection.*
- *Notations of the observations made, including space for writing comments.*
- *An account of spills or discharges in accordance with WAC 173-303-145.*

*Completed log sheets are reviewed and approved by the shift supervisor, collected, and stored for at least 5 years.*

This section is missing the requirements to include the date and nature of any repairs or remedial actions taken from inspections as specified in Permit Condition II.O.1 and WAC 173-303-320(2)(d).

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