242-A EVAPORATOR
CHAPTER 6.0
PROCEDURES TO PREVENT HAZARDS
CHANGE CONTROL LOG

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated, and transparent manner. Each unit addendum will have its own change control log with a modification history table. The "**Modification Number**" represents Ecology's method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit.

Modification History Table

Modification Date	Modification Number
06/28/2021	8C.2021.5F
11/12/2019	8C.2019.4F
04/09/2018	PCN-242-A-2017-02
11/16/2017	8C.2017.5F
02/18/2016	8C.2015.Q4

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6.0 PROCEDURES TO PREVENT HAZARDS

This chapter discusses security, inspection schedules, preparedness and prevention requirements, preventive procedures, structures, and equipment, and prevention of reaction of ignitable, reactive, and incompatible waste for the 242-A Evaporator.

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 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.

6.2 Inspection Plan

This section describes the method and schedule for inspections of the 242-A Evaporator. The purpose of inspections is to identify situations that might cause or lead to a release of mixed waste that could pose a threat to human health and the environment. Abnormal conditions identified by an inspection must be corrected on a schedule that prevents hazards to the public and environment.

6.2.1 General Inspection Requirements

This section provides an overview of inspections performed at the 242-A Evaporator. A copy of the inspection plan is kept in the 242-A Evaporator Operating Record. There are three general classes of inspections at the 242-A Evaporator:

- Monitoring of remote instrumentations and alarms are performed by operating personnel in the 242-A Evaporator control room using the Monitor Control System (MCS) computer.
- 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.
- Preventive maintenance of equipment and calibration of instruments are performed by maintenance personnel. A computerized tracking system is used to identify and schedule preventive maintenance and calibration activities.

Preventive maintenance and instrument calibrations on certain equipment might not be possible when the 242-A Evaporator is operating. Because of the limited duration of 242-A Evaporator campaigns, these activities are scheduled during outages between campaigns to avoid interference with operating activities. Per Condition II.O.3 inspection of high radiation areas will be addressed on a case-by-case basis.

6.2.1.1 Types of Problems

The 242-A Evaporator inspections include, but are not limited to, the following:

- Condition of tanks and ancillary equipment.
- Condition of secondary containment.
- Evidence of leaks or overflows from tanks, piping, or transfer lines.
- Condition of security equipment.
- Condition of safety, communications, and emergency equipment.

A schedule of inspections, including items to be inspected, problems to look for, frequency of inspections and responsible organization are provided in Table 6-1 through Table 6-4.

6.2.1.2 Frequency of Inspections

The frequency of inspections is based on the significance of a failure of the equipment and on regulatory requirements, Hanford Site and industry standards, and experience of the nature and frequency of equipment failures.

Unless otherwise noted, inspection frequencies are defined by the following periodicities:

- Daily means once per calendar day.
- Weekly means once per calendar week, spanning from Sunday to Saturday.
- Monthly means once per calendar month.
- Quarterly means once per calendar quarter.
- Annually means at least once per 12-month period ±30 days.
- Continuous monitoring means instrument monitoring performed remotely (control room) continuously during 242-A Evaporator waste processing operations and/or waste transfers, or Waste Treatment Plant (WTP) waste transfers as appropriate. If instrumentation is not functioning, visual inspections are performed as identified in Table 6-3.
- The frequency of inspections for the 242-A Evaporator is given in Tables 6-1 through Table 6.4.

6.2.1.3 Maintenance

Leak detectors are functionally checked annually. The frequency of some alarm monitoring is continuous. This means an operator must be present in the control room to monitor alarm instruments that continuously check for conditions such as leaks and high sump levels. Continuous monitoring is only required when the 242-A Evaporator is processing waste.

6.2.2 Tank System Inspections and Corrective Actions

This section discusses the inspections performed on the two tank systems at the 242-A Evaporator: the vapor liquid separator (C-A-1), and the condensate collection tank (TK-C-100). Inspections include secondary containment and leak and overfill prevention equipment.

6.2.2.1 Overfill Prevention

The vapor liquid separator (C-A-1), is equipped with instrumentation that alarms before the tank reaches a level where the tank could overflow or entrain liquid waste into the vacuum condenser system. The alarm annunciates in the 242-A Evaporator control room allowing operating personnel to take immediate action to stop the vapor liquid separator (C-A-1) from overfilling.

The condensate collection tank (TK-C-100), was designed with an overflow line that routes waste to the Double Shell Tank (DST) System feed tank 241-AW-102. This design prevents tank overflow to the condenser room.

6.2.2.2 Visual Inspections

Visual inspections of tanks and secondary containments are performed to check for leaks, signs of corrosion or damage, and malfunctioning equipment. The following rooms containing dangerous waste are inspected:

- Condenser room.
- Pump room.
- Loadout and hot equipment storage room.

In addition, the Aqueous Makeup Unit (AMU) and Loading Room are inspected when dangerous waste is present in the room.

The vapor liquid separator (C-A-1) is located in the evaporator room, with a portion of the recirculation loop located in the pump room. Because of the high radiation dose in the evaporator room, visual inspections cannot be performed. Leaks in the evaporator room drain to the pump room sump; monitoring of the pump room sump instrumentation is performed to determine if leaks have occurred. Visual inspection of the pump room and the loadout and hot equipment storage room is performed through the shielding windows in the AMU to constrain personnel radiological exposure to levels that are As Low as Reasonably Achievable (ALARA).

6.2.2.3 Leak Detection

The sample enclosures in the loadout and hot equipment storage room have leak detectors for both the feed and slurry samplers. For information on these systems and their secondary containment, refer to Chapter 4.0, "Process Information." The DST System slurry transfer lines have a leak detection system, which is monitored and functionally tested by the DST System.

During sampling or maintenance activities associated with the evaporator room, pump room, or loadout and hot equipment storage room, a radiological contamination control curtain may be extended over the loadout room to reduce the likelihood of contaminants reaching the environment through the loadout door. When extended, the contamination control curtain will limit visibility to the loadout and hot equipment storage room from the shielding window on the AMU mezzanine while completing inspections. When this is the case, inspection forms will denote that the containment curtain was extended. Leaks in the evaporator room, pump room, and the loadout and hot equipment storage room drain to the pump room sump. The sump high-level alarm serves as a leak detector for these rooms. For information on the rooms and their drain systems, refer to Chapter 4.0, "Process Information."

During 242-A Evaporator waste transfers to Liquid Effluent Retention Facility (LERF), the PC-5000 transfer line is continuously monitored by an end-of-line electronic leak detection element, or by visual inspection employed at the corresponding sight glass at LERF Catch Basins 242AL-41 (FG-60M-002) and/or 242AL-43 (FG-60M-001), in accordance with Permit Condition III.4.C.4.a. The leak detection system alarms are monitored remotely in the 242-A Evaporator control room. If any liquid is observed the 242-A Evaporator Shift Manager is notified to take corrective actions. Section 4.1.7.3 addresses secondary containment and leak detection.

During WTP waste transfers to PC-5000, the WTP backup transfer line (3"-WTP-002-M17) is continuously monitored by an end-of-line electronic leak detection element, or by visual inspection employed at the corresponding sight glass at LERF Catch Basins 242AL-41 (FG-60M-002) and/or 242AL-43 (FG-60M-001), in accordance with Permit Condition III.4.C.4.a. The leak detection system alarms are monitored remotely in the 242-A Evaporator control room or the 200 Area Effluent Treatment Facility (ETF) control room. If any liquid is observed the shift manager is notified to take corrective actions. Section 4.1.7.3 addresses transfer line secondary containment and leak detection.

6.2.2.4 Alternative Leak Detection during Electrical/Ventilation Outages

As part of maintenance or system upgrades, the need to secure electrical power or ventilation to the 242-A Evaporator sometimes becomes necessary. This includes activities such as, but not limited to: cleaning and inspection of the Motor Control Centers (MCCs) for distributing electrical power to the systems at the 242-A Evaporator, ventilation system maintenance and upgrades. Planned electrical or ventilation outages are performed during periods when DST System waste is not being processed.

During times when access is limited as a result of electrical or ventilation outages, performance of daily inspections specified in Table 6-1 may be impacted. When impacted, an alternative method of leak detection is implemented for the condenser room, and the inspections are suspended in the pump room, loadout and hot equipment storage room, and the loading room.

- **Condenser Room**. A camera will be placed above the floor drain to detect the presence of leaks or spills during maintenance as appropriate. If required, the camera and subsequent television monitor will be provided electrical power via an alternative source. Operators will complete their daily inspections for leaks or spills using this method for the condenser room. Facility personnel will document the use of this alternative method in the 242-A Evaporator Operating Record. The process condensate collection tank (TK-C-100), located in the condenser room, is the only tank storing dangerous waste on a routine basis. It is not normal to allow personnel access into the condenser room during extended electrical or ventilation outages unless maintenance activities or upgrades require entry.
- **Pump Room, Loadout and Hot Equipment Storage Room, and Loading Room**. Performance of Table 6-1 daily inspection is not possible during maintenance activities affecting the electrical power supply to the overhead lighting because these rooms do not have the capability for a camera. Storage of mixed waste does not occur in these rooms because systems which manage mixed waste within the pump room and the loadout and hot equipment storage room are flushed and gravity drained to the extent possible after each campaign. Should any remaining liquid leak from primary containment; it is captured by the secondary containment system and routed to the pump room sump and ultimately to the 241-AW-102 DST System feed tank. Quantities of liquid sufficient to reach 241-AW-102 would cause a change in tank level. Facility personnel will document when inspections cannot be performed due to electrical outages in the 242-A Evaporator Operating Record.

The process described in the preceding paragraphs of this section may also be implemented when external events cause electrical or ventilation outages.

6.2.2.5 Cathodic Protection

Cathodic protection is not required for the equipment within the 242-A facility boundaries. The only portion of the system, which is underground, is the PC-5000 transfer line. The PC-5000 transfer line is constructed of fiberglass.

6.2.2.6 Tank Assessments

The Integrity Assessment Reports were issued in 1998 and 2008. The frequency and nature of these assessments are discussed in Chapter 4.0, “Process Information.”

6.2.3 Storage of Reactive and Ignitable Wastes

Inspection of areas where ignitable or reactive wastes are stored is conducted by a professional person who is familiar with the International Fire Code, or in the presence of the local, state, or federal fire marshal. The inspection record includes the date and time of the inspection, the name of the professional inspector, a notation of the observations made, and any remedial actions which were taken as a result of the inspection. The completed inspection record is included in the 242-A Evaporator Operating Record.

6.2.4 Air Emissions Control and Detection Inspections

The process vent at the 242-A Evaporator is subject to 40 Code of Federal Regulations (CFR) 264, Subpart AA, which requires organic emissions be limited to 1.4 kilograms (3 pounds) per hour, and 2.8 mega grams (3.1 tons) per year, or controls be installed to reduce organic emissions by 95 percent. Organic concentrations in the waste processed at the 242-A Evaporator are limited to ensure the values of 1.4 kilograms (3 pounds) per hour and 2.8 mega grams (3.1 tons) per year are not exceeded. Therefore, no emission control devices are installed on the 242-A Evaporator vessel ventilation system and no inspections are required (Chapter 4.0, “Process Information”).

6.2.5 Inspection Logs

Visual inspections (refer to Tables 6-1 through 6-4) are performed using inspection log sheets (also called round sheets or eRounds) 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 or retained on electronic media. Inspectors record the following information:

- Date and time of the visual inspection.
- Printed name and handwritten or electronic 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 in the 242-A Evaporator Operating Record. If an inspection log cannot be located in the 242-A Evaporator Operating Record, a substitute documentation/log will be added to the 242-A Evaporator Operating Record that documents the missing log. If an inspection was scheduled or attempted; but could not be performed or fully completed due to a planned event (e.g., planned power outage), then a reasonable attempt will be made to re-schedule and complete the inspection within the identified inspection frequency. If an inspection was scheduled or attempted; but could not be performed or fully completed due to an unplanned event (e.g., Hanford Site or local area emergency or injury; unplanned power outage; unexpected or radiological conditions, work, training, or safety restrictions); the missed inspection or portions thereof that were not completed shall be documented in the relevant inspection log or facility logbook; and if applicable, reported in the Hanford Facility Annual Noncompliance Report.

Maintenance inspections are performed as part of the maintenance job control system. After completion, the maintenance documentation is reviewed and signed.

6.2.6 Schedule for Remedial Action for Problems Revealed

If while performing a visual inspection (Table 6-1), a leak or spill is discovered, 242-A Evaporator management responds immediately per Chapter 7.0, “Contingency Plan.” Action is taken to stop the leak and determine the cause. The waste is removed from the secondary containment within 24 hours or in a timely manner that prevents harm to human health and the environment. The specific actions for the pump room sump are described in Chapter 4.0, “Process Information.”

If an alarm activates during inspections, an operator responds immediately and implements appropriate actions.

If an inspection identifies equipment that is missing, damaged, or not operating properly, the operator records the problem on a deficiency log in the 242-A Evaporator control room or on electronic media. Repair work is prioritized by 242-A Evaporator management to mitigate health and environmental risks.

6.3 Preparedness and Prevention Requirements

The following sections document the preparedness and prevention measures taken at the 242-A Evaporator.

6.3.1 Equipment Requirements

The following sections describe the internal and external communications and emergency equipment located at the 242-A Evaporator that can be activated by the 242-A Evaporator Building Emergency Director (BED). Hanford Facility-wide equipment is identified in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02).

6.3.2 Internal Communications

The 242-A Evaporator is equipped with internal communication systems to provide immediate emergency instruction to personnel. The on-site communication systems at the 242-A Evaporator include telephones, hand-held two-way radios, a public address system, and alarm systems. The telephone and radio systems provide for internal and external communication. Alarm systems allow personnel to appropriately respond to various emergencies, including building evacuations, take cover events, fires and/or explosions. The locations of telephones, public address systems, and alarms are given in the Chapter 7.0, "Contingency Plan."

Immediate emergency instruction to personnel is provided by a public address system using speaker horns and speakers located throughout the 242-A and 242-AB buildings and outside.

6.3.2.1 External Communications

The 242-A Evaporator is equipped with devices for summoning emergency assistance from the Hanford Fire Department, the Hazardous Materials Response Team, and/or Hanford Patrol, as necessary. External communication to summon emergency assistance is made by using a telephone communication system, fire alarm pull boxes, or hand-held radio as described in Permit Attachment 4, *Hanford Emergency Management Plan*, (DOE/RL-94-02). These devices are provided throughout the 242-A Evaporator.

During certain periods, only one operator may be available within the 200 East plateau. This operator has access to external communication using telephones located throughout the building.

6.3.2.2 Emergency Equipment

Emergency equipment is available throughout the 242-A Building. The locations of emergency equipment are provided in Chapter 7.0, "Contingency Plan."

Major fire damage is unlikely at the 242-A Evaporator because of the concrete construction and because the amount of combustible material is minimized. Temperature activated water sprinkler systems, emergency lights, fire alarms pull boxes, and fire extinguishers are located throughout the 242-A Evaporator. The 242-A Evaporator relies primarily on the Hanford Fire Department to respond to fires and other emergencies as described in Permit Attachment 4, *Hanford Emergency Management Plan*, (DOE/RL-94-02). The Hanford Fire Department is capable of providing rapid response to fires within the 200 East Area.

Safety showers are used to decontaminate personnel. Water for these devices is supplied from the sanitary water system.

Spill kits are used to provide spill control measures. An inventory of the equipment in the spill kit is included inside the cabinet. The spill kit seal is checked monthly to ensure the spill kit has not been used. If used, the spill kit will be replenished by the next monthly inspection and a new seal applied.

If items are unavailable, then this will be noted on the inspection sheet and the kit will be left unsealed until inventory items are replenished.

The 242-A Evaporator operating personnel are trained in the use of emergency equipment (Chapter 8.0, "Personnel Training").

6.3.2.3 Water for Fire Control

Water for fire protection is supplied from the 200 East Area raw water system. The water distribution system is sized to provide adequate volume and pressure to supply firefighting needs under normal and emergency conditions. A fire hydrant is located in the immediate proximity of the 242-A Building.

In the event that the sprinkler system at the 242-A Evaporator does not put out a fire, or the sprinkler system is damaged during an accident, the Hanford Fire Department fire station will provide equipment as described in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02).

6.3.3 Spacing Requirement

Sufficient space is maintained on the exterior of the 242-A Evaporator to allow access of personnel and equipment responding to fires, spills, or other emergencies. Unobstructed fire lanes run from Fourth Street and Canton Avenue to the 242-A Building main entrance to allow emergency vehicle access to the main entrance and the nearby fire hydrant.

The 242-A Evaporator interior space is designed to allow access by emergency response personnel while maintaining barriers to contain releases of gaseous or liquid waste and hazardous substances as defined in WAC 173-303-040. Exit (egress) paths in the rooms containing dangerous waste are checked daily to ensure the walkways have not been obstructed.

6.4 Preventive Procedures, Structures, and Equipment

The following sections describe preventive procedures, structures, and equipment.

6.4.1 Loading and Unloading Operations

Loading and unloading operations, as described in WAC 173-303-395(4), do not take place at the 242-A Evaporator. Liquid mixed waste is transferred only by pipeline.

6.4.2 Runoff

Liquid waste handling at the 242-A Evaporator occurs within tank systems with secondary containment. Rooms containing mixed waste have drains that route to either the pump room sump or the DST System feed tank, 241-AW-102. The pump room sump overflows to the DST System feed tank as well. Therefore, runoff from a major leak, such as a break in a large water line within the 242-A Building, would be contained within the 242-A Evaporator or drained to the DST System feed tank 241-AW-102. Refer to Chapter 4.0, “Process Information,” for information on secondary containment and drain systems.

6.4.3 Water Supplies

Raw and sanitary water are supplied to the 242-A Evaporator via separate underground lines. Raw water is filtered to prevent organisms and other debris from clogging valves, fire hydrants, and other equipment. Sanitary water is filtered and treated before distribution through a piping system separate from the raw water system.

The raw water supply to the 242-A Evaporator enters the 242-A-81 Water Service Building, passing through a strainer and backflow preventer before entering the facility. The backflow preventer ensures contaminated water cannot flow back into the raw water system. A second backflow preventer is installed in the 242-A Evaporator on the raw water supply line connecting with the condensate recycle line. This system allows either raw water or process condensate to be used for the pump seal water and deentrainment pad spray water without risk of contamination of the raw water system.

The sanitary water system provides water to the lunchroom, drinking fountains, men’s and women’s change rooms, and safety showers. There are no connections between sanitary water and any system or piping containing mixed waste.

6.4.4 Equipment Failure and Power Outages

The 242-A Evaporator is designed to mitigate the effects of failure of a major piece of equipment. In the event of equipment failure or power outages, the evaporator process can be shut down and the vapor liquid separator (C-A-1) gravity drains to the DST System feed tank, 241-AW-102, and the process condensate collection tank (TK-C-100), is designed to overflow to DST System feed tank, 241-AW-102. This places the 242-A Evaporator in a safe configuration, and mitigates failure of the process condensate pump used to transfer the process condensate to LERF.

Upon loss of power the following automatically occur:

- Supernate feed pump AW-P-102, which is located in a DST tank, de-energizes, stopping feed to the vapor liquid separator C-A-1 vessel.
- Supernate feed valve HV-CA1-1 opens, initiating emptying of the vapor liquid separator C-A-1 vessel to 241-AW-102.
- Steam supply valve HV-EA1-5 to the E-A-1 reboiler closes, ceasing boil off in the vapor liquid separator C-A-1 vessel.
- Vapor liquid separator C-A-1 vessel vacuum breaker HV-EC1-5 opens, ceasing boil off in the vapor liquid separator C-A-1 vessel.
- Recirculation pump P-B-1 de-energizes, stopping recirculation through the recirculation loop.
- Dump valves HV-CA1-7 and HV-CA1-9 open, draining waste in the vapor liquid separator C-A-1 vessel to 241-AW-102.
- Uninterruptible Power Supply (UPS) will provide temporary power to the MCS long enough to monitor the safe shutdown of the process described above.
- Personnel emergency equipment (Fire Alarm Control Panels, Emergency lighting and exit lights) operates on backup battery power to support safe exit from the facility if an emergency condition occurs.

Power Outages are discussed in Chapter 7.0, “Contingency Plan.”

6.4.5 Personnel Exposure

Design, administrative controls, and personal protective equipment are used at the 242-A Evaporator to prevent undue exposure of personnel to mixed waste.

The following features were incorporated into the 242-A Evaporator design to minimize personnel exposure.

- The 242-A Evaporator is designed for remote operation of equipment containing highly radioactive solutions such as waste feed and slurry. These solutions usually are present only in the pump room and evaporator room, which are heavily shielded and routinely are not entered by operating personnel.
- The 242-A Building ventilation system is designed to provide airflow from uncontaminated zones to progressively more contaminated zones.
- Emergency lighting devices are located strategically throughout the 242-A Evaporator.
- Eyewash stations and safety showers are located as identified in Chapter 7.0, “Contingency Plan.”
- Methods for decontaminating vessels and equipment are available to reduce personnel exposure if entry for maintenance activity is required.
- Offices, 242-A Evaporator control room, change rooms, and lunchroom are situated to minimize casual exposure of personnel.

All operations are conducted so employee exposure to mixed waste are maintained ALARA. Exposures are minimized by engineering or administrative controls with protective gear used where such controls are not practical. Before the start of any operation that might expose personnel to the risk of injury or contamination, a review of the operation is performed to ensure the nature of hazards that might be encountered are considered and that appropriate protective gear is selected. Administrative procedures dictate the level of protective clothing worn and depend on the location within the 242-A Evaporator and the nature of the activity being performed.

6.5 Prevention of Reaction of Ignitable, Reactive, and Incompatible Waste

The following sections describe prevention of reaction of ignitable, reactive, and incompatible waste.

6.5.1 Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Waste

Administrative processes are designed to prevent the ignition or reaction of waste at the 242-A Evaporator. The precautions include the following:

- Analysis is performed on candidate waste in the DST System to check that there are no exothermic reactions when the waste is heated and that there will be no adverse effects due to mixing the contents of different waste tanks in the DST System feed tank and evaporator vessel (refer to Chapter 3.0, "Waste Analysis Plan").
- Sample analysis of the candidate feed tank waste in the DST System includes a surface sample to identify the presence of a separable organic layer that might be ignitable. Refer to Chapter 3.0, "Waste Analysis Plan," for addressing a separable organic layer. Near the end of the campaign(s), to ensure there is no separable organic layer, the condensate collection tank (TK-C-100) is allowed to overflow, transferring the organic phase to the DST System feed tank 241-AW-102.
- The condensate collection tank (TK-C-100) is overflowed to the DST System during each campaign to prevent the possibility of accumulating immiscible organics in the condensate waste tank.
- The vapor liquid separator (C-A-1) and the condensate tank are drained and flushed before any welding is performed.

6.5.2 Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste

Waste received at the 242-A Evaporator is protected from materials or conditions that might cause the waste to ignite or react. Much of the waste handling is done remotely to reduce the risk to operating personnel. For precautions taken to prevent the ignition or reaction of waste, refer to Section 6.5.1.

The constituents in the waste received at the 242-A Evaporator that are ignitable or reactive are not very volatile. Therefore, the evaporation process renders the waste that is evaporated (i.e., the process condensate) neither ignitable nor reactive.

Table 6-1 Visual Inspection Schedule for Tanks, Piping, and Rooms

Item	Inspection	Frequency[1]
Tank and Piping Inspection		
Condensate collection (TK-C-100) tank and piping	• Inspect piping for leaks or corrosion.	Daily
Caisson MH-WTP-01	• Inspect caisson for evidence of leaks or intrusion.	Completed 8/2018, due every 10 years thereafter
Room Inspections		
AMU Mezzanine	• Inspect piping for leaks or corrosion. • Inspect floor for spills or damage. • Inspect for equipment malfunctions. • Inspect for housekeeping.	Daily[2]
Pump room	• Inspect piping for leaks or corrosion. • Inspect floor for spills or damage. • Inspect for equipment malfunctions. • Inspect for housekeeping. • Monitor pump room sump for overflow.	Daily[3]
Loadout and hot equipment storage room	• Inspect piping for leaks or corrosion. • Inspect floor for spills or damage. • Inspect for housekeeping.	Daily[3]
Loading room	• Inspect for housekeeping. • Monitor drains.	Daily[2,3,4]
Condenser room	• Inspect tanks and piping for leaks or corrosion. • Inspect floors for spills or damage. • Inspect for equipment malfunctions. • Inspect for housekeeping.	Daily
IX column[5] room	• Inspect piping for leaks or corrosion. • Inspect floor for spills or damage.	Daily[6]

[1]Unless otherwise noted, inspection frequencies are defined in Section 6.2.1.2.

[2]When dangerous waste is present.

[3]Use viewing window in AMU Mezzanine to perform inspections except for the pump room which uses the ground floor window.

[4]Denote use of contamination control curtain when extended.

[5]IX column was removed in 2003. The remaining piping has been drained and isolated.

[6]In accordance with Section 6.2.2.4, visual surveillance is only required if the piping is returned to service and dangerous waste is reintroduced to the piping.

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Table 6-2 Inspection Schedule of Safety, Security, and Emergency Equipment

Item	Inspection	Frequency[1]
Personnel Protective Equipment		
Personal protective clothing	Verify availability.	Monthly
Security		
Building external doors	Verify external doors are closed and locked when the building is unoccupied.[2]	Daily
Posted warning signs	Verify signs are present, legible, and visible at 25 feet.	Monthly
Communications		
2-Way Radios	Verify radios are operable and batteries are charged.	Monthly
Telephone	Verify telephone is operable.	Quarterly
Intercom/public address system (PAX)	Verify the system is working properly.	Quarterly
Underground Piping Signs for Combined PC-5000 and WTP Backup Transfer Lines	Verify underground transfer pipelines located outside the 200 East Area are marked with signs reading "Buried Dangerous Waste Pipe" in accordance with Permit Condition II.V. Note: Signs and anchoring devices are made of durable plastic or metal.	Annually
Emergency Equipment		
Safety showers/eyewash station	Verify operability.	Quarterly
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
Respirators	Verify availability and shelf life.	Monthly

[1]Inspection frequencies are defined in Section 6.2.1.2.

[2]Entrances to office areas are allowed to be unlocked.

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Table 6-3 Inspection Schedule for Alarm Monitoring

Item	Inspection	Frequency[1]
Overfill Protection		
Vapor liquid separator (C-A-1): WFSH-CA11 WFSH-CA12	Monitor for vapor liquid separator (C-A-1) high level. Surveillance required only when solution is in the vapor liquid separator.	Continuously
Leak Detection		
Sampler line: LDS-SMPL2	Monitor slurry sampler lines for leaks. Surveillance required only during slurry sampling.	Continuously
Pump room sump: WFI-SUMP1	Monitor for leaks in the evaporator room, pump room, loadout and hot equipment storage room and loading room by monitoring the pump room sump (leaks from these rooms drain to the pump room sump). Surveillance required only when waste solution is present in the rooms listed. Surveillance is not required during maintenance activities or power outages.	Continuously
Transfer pipeline 242-A Evaporator to LERF Basin 41 Leak Alarm LDA-41-5	Verify no leak alarm for transfer pipeline in 242-A Evaporator control room; or perform once-per-shift visual inspection to check for liquid in the sight glass at LERF Catch Basin 242AL-41 (FG-60M-002). Note: Monitoring required only during 242-A Evaporator waste transfers.	Continuously[2,3]
Transfer pipeline 242-A Evaporator to LERF Basin 43 Leak Alarm LDA-43-2	Verify no leak alarm for transfer pipeline; or perform once-per-shift visual inspection to check for liquid in the sight glass (FG-60M-001) at the encasement catch tank 60M-TK-1, located in LERF Catch Basin 242AL-43. Note: Monitoring required only during 242-A Evaporator waste transfers.	Continuously[2,3]

Table 6-3 Inspection Schedule for Alarm Monitoring

Item	Inspection	Frequency[1]
WTP backup transfer pipeline (3”-WTP-002-M17) to PC-5000 to LERF Basin 242AL-41 Leak Alarm LDA-41-5	Verify no leak alarm for transfer pipeline in 242-A Evaporator control room or 200 Area ETF control room; or perform once-per-shift visual inspection to check for liquid in the sight glass at LERF Catch Basin 242AL-41 (FG-60M-002). Note: Monitoring required only during WTP waste transfers. Either the 242-A Evaporator or LERF and 200 Area ETF personnel can perform the monitoring, and either can perform the visual inspection.	Continuously[2,3]
WTP backup transfer pipeline (3”-WTP-002-M17) to PC-5000 to LERF Basin 242AL-43 Leak Alarm LDA-43-2	Verify no leak alarm for transfer pipeline in 242-A Evaporator control room or 200 Area ETF control room; or perform once-per-shift visual inspection to check for liquid in the sight glass (FG-60M-001) at LERF Catch Basin 242AL-43. Note: Monitoring required only during WTP waste transfers. Either the 242-A Evaporator or LERF and 200 Area ETF personnel can perform the monitoring, and either can perform the visual inspection.	Continuously[2,3]

[1]Unless otherwise noted, inspection frequencies are defined in Section 6.2.1.2.

[2]Refer to Section 6.2.2.3, for continuous instrument monitoring during waste transfers.

[3]In accordance with Permit Condition III.4.C.4.a, if either electronic leak detection system LDS-41-5 or LDE-43-2 is not operational for transfers to LERF, visual inspection shall be employed at the corresponding LERF Catch Basins 242AL-41 sight glass FG-60M-002, or 242AL-43 sight glass FG-60M-001 once per shift, during transfers.

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Table 6-4 Inspection Schedule for Maintenance and Other Inspections

Item	Inspection	Frequency[1]
Instrumentation Functional Checks and Calibrations		
PC-5000 leak detectors LDS-41-5 LDE-43-2	Perform leak detector functional checks.	Annually[2]
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
Backup Electrical Equipment		
Uninterruptible power supply	Verify output voltage and inspect battery for signs of damage or tampering.	Annually
Fire Systems		
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 WAC 173-303-395(1)(d).	Annually

[1]Unless otherwise noted, inspection frequencies are defined in Section 6.2.1.2.

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