Interface Control Document between the 242-A Evaporator Facility and the Liquid Effluent Retention Facility

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management
Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

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Approved for Public Release;
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Interface Control Document between the 242-A Evaporator Facility and the Liquid Effluent Retention Facility

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INTERFACE CONTROL DOCUMENT BETWEEN THE 242-A EVAPORATOR FACILITY AND THE LIQUID EFFLUENT RETENTION FACILITY

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TERMS

CHPRC  CH2M HILL Plateau Remediation Company
DOE   U. S. Department of Energy
DST   double-shell tank
ETF   Effluent Treatment Facility
ICD   Interface Control Document
LDR   land disposal restriction
LERF  Liquid Effluent Retention Facility
LWFS  Liquid Waste and Fuels Storage
MOA  Memorandum of Agreement
ORP   Office of River Protection
PC    process condensate
PCB   polychlorinated biphenyls
RL    Richland Operations Office
SOM   [ETF] Shift Operations Manager
SSC   structures, systems and components
SSM  [WRPS] Senior Shift Manager
TSR   Technical Safety Requirements
USQ   Unreviewed Safety Question
WRPS  Washington River Protection Solutions, LLC
WTP   Waste Treatment Plant
1.0 SCOPE

1.1 SYSTEM PURPOSE

This Interface Control Document (ICD) provides the physical and technical requirements for interfacing the 242-A Evaporator Facility and the Liquid Effluent Retention Facility (LERF) (see Figure 1). The 242-A Evaporator is a Hazard Category 2 Nuclear Facility and LERF is a below Hazard Category 3 Nuclear Facility. The ICD identifies requirements and responsibilities, applicable references, acceptance standards, subsystem requirements, and other relevant information. The objective of this interface control is to ensure that the technical integrity of structures, systems, and components (SSC) at the physical and functional boundaries shared jointly by two Department of Energy (DOE) Contractors are properly managed.

This ICD has been written in accordance with Washington River Protection Solutions, LLC (WRPS) procedure TFC-BSM-CP-CPR-C-17, Interface Management, with guidance from CH2M HILL Plateau Remediation Company (CHPRC) procedure PRC-PRO-MS-10472, Interface Management. This ICD shall be part of the technical baseline for the 242-A Evaporator Facility and LERF. It is the responsibility of WRPS and CHPRC to ensure that their respective sides of the interface are controlled through the identification, preservation, and accurate dissemination of interface information within their implementing documentation.

This ICD provides the interface requirements for normal process condensate (PC) flows from the 242-A Evaporator to LERF and does not encompass accident scenarios. Modifications to the physical interface of SSCs between WRPS and CHPRC are maintained under configuration control as discussed in this ICD. The nonradioactive, nonhazardous wastewater discharges from the 242-A Evaporator facilities to the 200 Area Treated Effluent Disposal Facility are covered under a separate ICD (HNF-SD-W049H-ICD-001).

1.2 SYSTEM OVERVIEW

The 242-A Evaporator is operated by WRPS for the DOE, Office of River Protection (ORP); the applicable oversight organization being Base Operations. CHPRC operates the LERF for the DOE, Richland Operations Office (RL); the applicable oversight organization being the Liquid Waste and Fuels Storage (LWFS) organization. The 242-A Evaporator concentrates liquid waste from the Double Shell Tanks (DST) and returns the concentrated slurry back to the DSTs. PC from the 242-A Evaporator discharges to LERF.
Figure 1. Interfaces Responsibilities Between the 242-A Evaporator Facility and LERF
2.0 RESPONSIBILITIES/REQUIREMENTS

The 242-A Evaporator is a Hazard Category 2 Nuclear Facility and LERF is a below Hazard Category 3 Nuclear Facility. They present substantial responsibilities to the operating contractors, and because of their physical interface there is ample opportunity for one system to adversely impact the safe and efficient operation of the other. The responsibilities and requirements for each contractor to ensure that the 242-A Evaporator and LERF are operated and maintained within their safety bases are provided in Sections 3.2 through 3.4.

This ICD is subordinate to the current respective Prime Contracts and the Memorandum of Agreement (MOA) Number MOA-WRPS-CHPRC-2009, Rev. 2, Memorandum of Agreement for the Performance and Payment of Services, between WRPS and CHPRC. The terms and conditions contained in the prime contracts and other agreements applicable to the respective parties shall prevail over any conflicts and conflicting terms and conditions herein.

Receipt, storage and treatment of 242-A Evaporator PC at the LERF and Effluent Treatment Facility (ETF) are provided by CHPRC to WRPS at no cost as delineated in Attachment J-3, Hanford Site Services and Interface Requirements Matrix, contained in the WRPS Tank Operations Contract, Number DE-AC27-08RV14800, and the CHPRC Plateau Remediation Contract, Number DE-AC06-08RL14788.

3.0 INTERFACE INFORMATION

3.1 PHYSICAL INTERFACES

The interfaces between the 242-A Evaporator Facility and LERF are defined as follows (see Figure 1):

LERF consists of three lined surface impoundments, or basins. The LERF receives PC from the 242-A Evaporator through a dedicated pipeline, PC-5000. The interface point of the PC-5000 pipeline is the LERF fence line. WRPS is responsible for the PC-5000 pipeline up to the LERF fence, including isolation valves HV-80W-001 and HV-80W-002.

WRPS will also be responsible for the entire electronic leak detection system (leak sensors, cabling, leak detection module, and collection tank 60M-TK-1) on this PC-5000 pipeline. CHPRC will be responsible for the wiring between the PC-5000 leak detection module and the LERF control system. WRPS is responsible to maintain hardware, software and controls at the 242-A Evaporator necessary to prevent the accidental discharge of material to LERF. CHPRC is responsible to maintain instruments, hardware, and software in the LERF control system to communicate necessary LERF signals and PC-5000 electronic leak detection signals to the 242-A Evaporator.

Waste Treatment Plant (WTP) backup line to the LERF ties into the PC-5000 pipeline at manhole MH-WTP-01. The WTP backup line and Manhole MH-WTP-01 will remain the responsibility of CHPRC, along with isolation valves HV-80W-003 and HV-80W-004. Physical access control to the isolation valves is described in Section 3.2.1.

3.2 ADMINISTRATIVE INTERFACES

To ensure effective communication, single points of contact have been established. For WRPS the single point of contact with the LERF is the ETF Shift Operations Manager (SOM). For
CHPRC, the single point of contact with the 242-A Evaporator is the 242-A Evaporator Senior Shift Manager (SSM), or designated alternate.

3.2.1 Work Control

**LWFS**

1. Notify 242-A Control Room Operator upon entering and exiting the 242-A Evaporator Facility.


3. Notify 242-A Evaporator SSM and obtain approval of any operation or maintenance work having the potential to impact 242-A Evaporator equipment or systems one working day in advance.
   - Perform energy control (i.e., lock and tag) as follows: LWFS Operations performs “first on/last off” lock and tag of all equipment inside the LERF fence, regardless of equipment ownership or work initiator. Base Operations may choose to overtag or use administrative locks on the equipment after notifying the ETF SOM. All LWFS lock and tags performed in the LERF must comply with DOE-0336, *Hanford Site Lockout/Tagout*.

   - LWFS notifies 242-A Evaporator SSM if performing lock and tag on equipment in the 242-A Evaporator Facility or isolation valves in MH-WTP-01. Any potential impacts to 242-A Evaporator equipment or processes shall be evaluated and understood, prior to lock and tag of equipment, between the Base Operations Engineering and LWFS Engineering. All lock and tags performed in the 242-A Evaporator Facility must comply with DOE-0336, *Hanford Site Lockout/Tagout*.

   - 242-A Evaporator Operations performs “first on/last off” lock and tag of all 242-A Evaporator equipment, including isolation valves HV-80W-001 and HV-80W-002. LWFS Operations may choose to overtag the equipment after notifying 242-A Evaporator SSM with either a Controlling Organization lock and tag or by an Authorized workers lock.

**Base Operations**

1. Obtain ETF Control Room approval before accessing manhole MH-WTP-01 and before entry within the LERF fence.

2. Perform maintenance work on PC-5000 equipment up to the LERF fence and any Base Operations equipment inside the LERF fence.

3. Receive permission from ETF SOM before performing maintenance work on 242-A Evaporator System equipment located inside the LERF fence. Provide documentation to ETF SOM of work that has been released.

4. Perform energy control (i.e., lock and tag) as described under LWFS responsibilities above. All Base Operations Controlling Organization lock and tag will be administered in accordance with the current revision of DOE-0336, *Hanford Site Lockout/Tagout*. 
3.2.2 Communications

The 242-A PC often contains constituents which exceed their land disposal restriction (LDR) levels in 40 CFR 268. Surface impoundments such as LERF cannot accept such wastes without an exemption that requires annual removal of wastes which exceed LDR treatment standards. To address the conditions of this exemption, LWFS: 1) prohibits solids from transferring to LERF and 2) removes basin supernate (i.e., liquid component) provided the basin inventory still exceeds LDR treatment standards.

Base Operations shall identify on the waste profile sheet (Section 3.3.2) constituents and treatment standards applicable to the PC prior to a campaign with confirmatory sampling performed during the campaign. To ensure no solids are sent to LERF, PC shall be filtered through a 5-micron (nominal) filter, as required by the LWFS waste acceptance criteria (HNF-3172) or sampled weekly to verify no suspended solids are present (95-LEP-015)(Section 3.4).

Coordination is required to allow LWFS to comply with the annual removal requirement of the LERF exemption. Typically, PC is segregated from other wastewaters in LERF because it contains ammonia. At this time, only one basin is available to receive PC. If the basin receiving PC must be emptied because it exceeds an LDR treatment standard, WRPS must shutdown transfers to LERF for a minimum of 60 days annually so that LWFS can process that basin down to the 3-foot level. These 60 days can be in one window or two 30 day windows.

**LWFS**

1. Provide an annual forecast of ETF campaigns and LERF activities which would affect transfers of PC to LERF, with monthly updates.

2. Contact the 242-A Evaporator SSM for day-to-day issues (coordinating outages, etc.). Requests for operational support should be made 24 hours in advance, if possible, to ensure adequate coverage could be made available.

3. Notify 242-A Evaporator SSM of any change in physical connections to or valve configuration of the PC-5000 pipeline.

**Base Operations**

1. Provide annual forecast of 242-A Evaporator campaigns including both scheduled campaign date and projected volume, with monthly updates.

2. Communicate directly with the ETF SOM for status of operations during evaporator campaigns. Report to the ETF Control Room daily volume transfer of PC to LERF during campaigns.

3. Communicate directly with ETF SOM for day-to-day issues requiring interface with 242-A Evaporator Facility and LERF.

4. Notify ETF SOM of any physical modification to the 242-A Evaporator PC discharge system.
3.2.3 Alarm Response

**LWFS**

1. All LERF related alarms at ETF also alarm at 242-A, so no CHPRC specific actions are required to notify WRPS of these alarms.

2. Notify the Base Operations at least one day prior to performing scheduled upgrades or maintenance work activities that could potentially activate LERF alarms in the 242-A Evaporator Facility and/or adversely impact scheduled evaporator operations.

3. Provide access to the LERF Basins for troubleshooting of the electronic PC-5000 leak detection system/alarms and/or alternative electronic PC-5000 leak detection monitoring.

**Base Operations**

1. Maintain electronic leak detection on PC-5000 pipeline or implement approved equivalent leak detection monitoring. Respond to alarms per facility Alarm Response Procedure and notify ETF Control Room of alarm.

3.2.4 Safety Basis

**LWFS**

The LERF is designated as a below Hazard Category 3 Nuclear Facility. The PC-5000 pipeline is currently in the scope of the LERF safety basis and is included in the 242-A Evaporator Documented Safety Analysis (HNF-14755). The 242-A Evaporator PC accepted at LERF will be controlled so that the wastewater dose consequence does not exceed that of the maximum bounding radiological source term evaluated in the Liquid Effluent Retention Facility Final Hazard Category Determination (HNF-SD-WM-SAD-040). The LERF is also designated as a criticality exempt facility and must stay below 15 grams of total fissile material. The radiological source term and criticality requirements are addressed in the LWFS waste acceptance criteria (HNF-3172). LWFS uses the data from the waste profile provided by Base Operations (Section 3.3.2) to confirm compliance.

**Base Operations**

Base Operations has procedures (TFC-ENG-SB-C-01, Safety Basis Issuance and Maintenance, and TFC-ENG-SB-C-03, Unreviewed Safety Question Process) in place to evaluate proposed changes and discoveries with respect to potential impact to the Safety Basis. The 242-A Evaporator Documented Safety Analysis requires that the Evaporator Technical Safety Requirements (TSR) remain compatible with the TSRs of interfacing facilities. The Unreviewed Safety Question (USQ) processes at the 242-A Evaporator and this ICD will be used to ensure continued compatibility of safety bases. A modification to an interfacing structure, system, and/or component between WRPS and CHPRC is not allowed without USQ evaluation in accordance with WRPS procedure TFC-ENG-SB-C-03.

The safety basis for the 242-A Evaporator is documented in:

- HNF-14755, 242-A Evaporator Documented Safety Analysis
- HNF-15279, 242-A Evaporator Technical Safety Requirements
3.3 LIQUID EFFLUENT RETENTION BASIN (LERF) OPERATIONS

3.3.1 Sampling and Sample Delivery

**LWFS**
1. LWFS does not have any sampling and sample delivery responsibilities within the scope of this ICD.

**Base Operations**
1. Sample and analyze 242-A Evaporator discharges to LERF during a 242-A Evaporator campaign per the LWFS waste acceptance criteria (HNF-3172). In addition, the PC must be sampled for polychlorinated biphenyls (PCBs).
2. Ensure hard and electronic copies of the summary data package for 242-A Evaporator discharges are provided to LWFS within 45 days of campaign completion.

3.3.2 Waste Acceptance

Discharges to LERF must meet the LWFS waste acceptance criteria (HNF-3172).

**LWFS**
1. Perform a waste acceptance assessment for authorization of 242-A Evaporator discharges to LERF. The waste acceptance assessment shall be completed within 14 days of receipt of certified waste profile sheet submitted by WRPS.

**Base Operations**
1. Submit a certified waste profile per the LWFS waste acceptance criteria (HNF-3172) for 242-A Evaporator discharges to LERF, 30 days prior to the start of a 242-A Evaporator campaign. The waste profile must include calculated PC concentrations and a list of constituents which may exceed LDR treatment standards. A projection based on Base Operations feed tank data can be used for the required PC waste profile.

3.4 TRANSFERS

LWFS must manage LERF volumes to minimize impact to customers that transfer wastewater to LERF, allow time for ETF to process wastewater stored in LERF, and meet requirements for LERF clean-out and contingency space. To do this, WRPS must provide LWFS with updated annual forecasts of PC volumes and scheduled dates of 242-A Evaporator campaigns. LWFS will use the forecasts to communicate to WRPS the LERF volume available to for PC, based on prioritizing the need of all LWFS customers.

**LWFS**
1. Maintain capability for receiving 242-A Evaporator PC, as described above, except under those conditions addressed in Section 3.2.2, at a nominal flow rate of 50 gallons per minute.
**Base Operations**

1. Obtain approval from LWFS to discharge 242-A Evaporator effluent to LERF.

2. Ensure all PC and other solutions sent to LERF contain no solids by either transferring them through a 5-micron (nominal) filter or performing weekly sampling and analyses to confirm no total suspended solids are present.

**4.0 CONFIGURATION MANAGEMENT**

This ICD will be maintained under configuration control. The signatures on the cover page of this document indicate agreement between WRPS and CHPRC that this document reflects the current technical baseline for each system and that the responsibilities and requirements contained in this document will not be revised without the agreement of all parties.

Approved and released implementing design documentation that includes the physical interface of SSCs between WRPS and CHPRC is maintained under configuration control. Modifications made by CHPRC for change approval by WRPS on interfacing SSCs shall be documented using the CHPRC Facility Modification Package Process, PRC-PRO-EN-2001. Modification made by WRPS for change approval by CHPRC on interfacing SSCs shall be documented using a format similar to the “Interface Change” form (Site Form #A-6002-985). CHPRC shall contact the 242-A Evaporator SSM for request of WRPS approval on modification and conversely, WRPS shall contact the ETF SOM for approval on modifications. The Contractor requesting approval for modification of SSCs shall allow for a two-week turnaround, unless a shorter duration is agreed upon.

**5.0 ISSUES**

This section includes items that require resolution for either of the parties to meet their responsibilities.

**5.1 OPEN ISSUES**

This section contains only current issues and does not carry over issues from previous revisions that no longer apply.

5.1.1 Waste Treatment Plant Backup Line

The WTP backup line to the LERF ties into PC-5000 pipeline at manhole MH-WTP-01 (see Figure 1), however, this line is currently capped and WTP has yet to make their connection to the CHPRC portion of the WTP backup line. Once the tie-in has been completed CHPRC and WRPS will need to update ICD 24590-WTP-ICD-MG-01, ICD-06 – Interface Control Document for Radioactive, Dangerous Waste Liquid Effluent, and coordinate the use of the backup line for the hydrotest.

**6.0 ACCEPTANCE METHODS AND STANDARDS**

See Sections 3.3.1 through 3.4 for operational acceptance criteria for waste streams.
7.0 REFERENCES


TFC-BSM-CP-CPR-C-17, Interface Management, as amended, Washington River Protection Solutions, LLC, Richland, Washington.

TFC-ENG-SB-C-01, Safety Basis Issuance and Maintenance, as amended, Washington River Protection Solutions, LLC, Richland, Washington.