



ICD 15 – Interface Control Document for Immobilized Low- Activity Waste

Document title:

Document number: 24590-WTP-ICD-MG-01-015, Rev 6

Contract: DE-AC27-01RV14136 **Contract deliverable:** C.9.1

Department: Project Management

NOTE: Obtain concurrence and approval signatures on the following page prior to approval of this ICD.

Approved by: Walt Taylor

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Signature *Date*

BNI Area Project Manager

Issue Status: Approved



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NOTE: This document defines current service needs, future needs, and service gaps. The identified service levels do not represent contractual obligations between service recipient and providers. Future contractual and funding actions to close service gaps will be accomplished by integration between the federal offices as part of the budget planning process.





Interface Signature Page

Interface organizations, as appropriate, sign this sheet indicating concurrence and approval with the ICD contents. These signatures signify that the ICD accurately reflects the current baselines of interface organization's contracts, except as indicated in Appendix A, ICD 15 Issues and Open Items. The BNI Area Project Manager does not approve this ICD until all required signatures on this page have been obtained.

Contractor Concurrence

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History Sheet

Rev	Date	Reason for revision	Revised by
0	14 Mar 2002	Provided for ORP Contracting Officer to issue as Operative ICDs. Upon issuance, this document will supersede BNFL-5193-ID-15, Rev. 6.	A Kruger
1	15-Nov-2002	Provided for ORP Contracting Officer to issue as Operative ICDs.	A Kruger
2	15-Nov-2003	Annual Update. Incorporated ICF: 24590-WTP-ICF-ENG-03-009, Deletion of DOE Sampling Details from ICD-15.	A Kruger
3	01-Aug-2012	Periodic update. Incorporated all outstanding ICFs. Transitioned tracking of all Issues and Action Items to the Action Tracking System (ATS)	M Miller
4	15-Jun-2016	Incorporated 24590-LAW-ICF-ENG-04-001 and 24590-LAW-ICF-ENG-04-002 for configuration purposes; content of these ICFs was included in Revision 3. Updated ILAW transporter system requirements. Formatted to ICD template. Revised Table 1. Revised interface sequence in Figure 2 and Section 2.5. Updated references. Closed Open Items 0001 through 0008, 0011, 0012, and 0013. Added Open Items 0014 and 0016.	M Pell D Reinemann
5	07-May-2019	Revised per scope document CCN 311012. Added Sections 3, 4, and 5 and revised Appendixes based on current ICD template. This is a major revision, and change bars are not shown. Incorporated 24590-WTP-ICF-MGT-18-0010 and 24590-WTP-ICF-MGT-18-0011 with changes to Sections 3.1.1.2, 3.1.2.1, 3.2.1.1, 3.2.1.2, 3.2.1.3, 3.3.1.2, 3.3.3.1, 3.3.4.1, and 4.1. Sections 3.3.1.3 and 3.3.1.4 were added as new requirements.	D Reinemann
6	15-Apr-2021	Revised per scope document CCN 322843. Closed Issues I15-22, I15-23, and I15-24.	D Reinemann

Revision Description

ICD Section	Description
General	Replaced “PRC” with “IDF” throughout due to contractor transition.
1.1	Updated contractor roles in first paragraph.
1.2	Updated Figure 1. Inserted new third paragraph to describe the WTP transporter staging area.
1.3	Updated Table 1 to align with revised requirements. Deleted MSC column.
2.1	Replaced paragraph for interface location..
2.1.1	Updated ILAW container drawing references and added current change documents.
2.2.3.1	Updated Figure 2 and description of steps.
2.2.4	Updated Table 2 based on DFLAW Integrated Schedule
2.3	Updated fourth paragraph for non-conforming ILAW.
2.3.2	Deleted reference to Plateau Remediation Contract in first paragraph. Updated second paragraph based on issued IDF Waste Acceptance Criteria and Performance Assessment..
3.1.2.1 Table 2	Revised ILAW Product Package Mass based on updated calculation in row 3. Revised basis for ILAW Product Package Surface Dose Rate in row 4 based on current calculations. Deleted row 8 for transporter fuel.
3.1.2.1.	Added requirement implementation documents.
3.1.3.	Deleted MSC Technical Requirements. Moved IDF Technical Requirements from 3.1.4 to 3.1.3.
3.2.3	Deleted MSC Activity Level Requirements. Re-named section as IDF Activity Level Requirements.
3.3.1.1	Replaced TOC with IDF.
3.3.1.2	Inserted new requirement to prepare waste profile.
3.3.1.3	Deleted existing rev 5 requirement. Re-numbered 3.3.1.2 from rev 5 as 3.3.1.3. Changed notifications to TOC and IDF only.
3.3.1.5	Inserted new requirement to complete generator section of the ILAW Glass Log Shipment Checklist.
3.3.1.6	Inserted new requirement to conduct shipment surveys.
3.3.2.2	Deleted existing rev 5 requirement. Re-numbered remaining requirements. Deleted return of transporter to WTP. Deleted scheduling of transportation services.
3.3.2.4	Deleted bullet to conduct surveys. Added bullet to complete shipper section of the ILAW Glass Log Shipment Checklist. Revised second bullet to verify placards. Inserted new first sentence into Requirement Basis. Updated Requirement Source documents
3.3.2.5	Changed notifications to WTP and IDF only.
3.3.3	Deleted MSC Programmatic Requirements. Moved IDF Programmatic Requirements from 3.3.4 to 3.3.3.
3.3.3.1	Revised to IDF enters approved waste profile into WMIS.
3.3.3.2	Inserted new requirement for IDF to provide tractors and drivers for the ILAW transporter.

Revision Description

ICD Section	Description
3.3.3.3	Replaced third bullet to complete transporter system inspection.
3.3.3.4	Revised requirement to complete a record of disposal.
3.3.3.5	Changed notification to TOC and WTP only.
3.3.3.6	Replaced “LAW Facility Export High Bay” with “WTP site”.
4.2.3	Shown as completed.
4.3	Deleted MSC Requisite Interface Items. Moved IDF Requisite Interface Items from 4.4 to 4.3.
4.3.1	Shown as completed.
4.3.2	Added new requisite item.
4.4.1	Deleted existing requisite item from rev 5.
5	Updated references in this section and throughout the document.
Appendix A	Updated information to align with ICD Action Item List. Changed status of Action A15-07 to closed.
Appendix A	Closed Issues I15-22, I15-23, and I15-24.
Appendix B	Updated aerial photo of the IDF.

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Acronyms

BNI	Bechtel National, Incorporated
BOF	Balance of Facilities
CCN	correspondence control number
CPCC	Central Plateau Cleanup Contractor
DFLAW	direct-feed low-activity waste
DOE	US Department of Energy
ERDF	Environmental Restoration Disposal Facility
HMESC	Hanford Mission Essential Services Contractor
ICD	interface control document
ICF	interface change form
IDF	Integrated Disposal Facility
ILAW	immobilized low-activity waste
LAW	low-activity waste
LEH	LAW container export handling
LFH	LAW container finishing handling
LRH	LAW container receipt handling
ORP	US Department of Energy, Office of River Protection
OWTF	on-site waste tracking form
PA	Performance Assessment
PSSD	Package Specific Safety Document
RAM	Requirement Area Manager
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
RL	US Department of Energy, Richland Operations Office
RPP	River Protection Project
SDDR	supplier deviation disposition request
TOC	Tank Operations Contractor
WAC	Washington Administrative Code
WIR	waste incidental to reprocessing
WMIS	Waste Management Information System
WRPS	Washington River Protection Solutions
WTP	Hanford Tank Waste Treatment and Immobilization Plant

Units

Ci/m ³	Curies per cubic meter
dpm/100 cm ²	disintegrations per minute per 100 square centimeters
mrem/hr	millirem per hour
MTG/day	metric tons of glass per day

1 Interface Description

1.1 Interface Scope

This Interface Control Document (ICD) describes the physical and administrative interactions for managing the transfer of immobilized low-activity waste (ILAW) from the Hanford Waste Treatment and Immobilization Plant (WTP) to the Hanford Site Integrated Disposal Facility (IDF). The WTP Contractor produces the ILAW product package and interfaces with the Tank Operations Contractor (TOC), who serves as the shipper for this transfer. The TOC coordinates ILAW shipments with the IDF, and the IDF operates the transporter system.

US Department of Energy (DOE) Contract DE-AC27-01RV14136 (DOE 2000), Section C.8, Specification 2, Section 2.2.2.1, Package Description, states: “The ILAW product shall be in the form of a package. The constituent parts of each package are a sealed stainless-steel container enclosing a poured glass waste form and an optional filler material of sand or glass.” Throughout this ICD, this package is referred to as the ILAW product package.

The ILAW transporter system is the vehicle and handling system used to move the ILAW product package from the WTP to the IDF. The vehicle is comprised of an ILAW transporter trailer, shielded pallets, and tractor. The system, as defined by the Washington River Protection Solutions (WRPS) ILAW Transporter System project T3W20, is only comprised of the trailer and pallets.

This ICD addresses the physical interfaces related to the ILAW product package for transport and disposal.

The administrative interface addressed by this ICD is limited to the documentation necessary to ship the ILAW product package from WTP to the IDF. This ICD does not address ILAW production documentation beyond requirements for transport and acceptance of the ILAW product packages at the IDF.

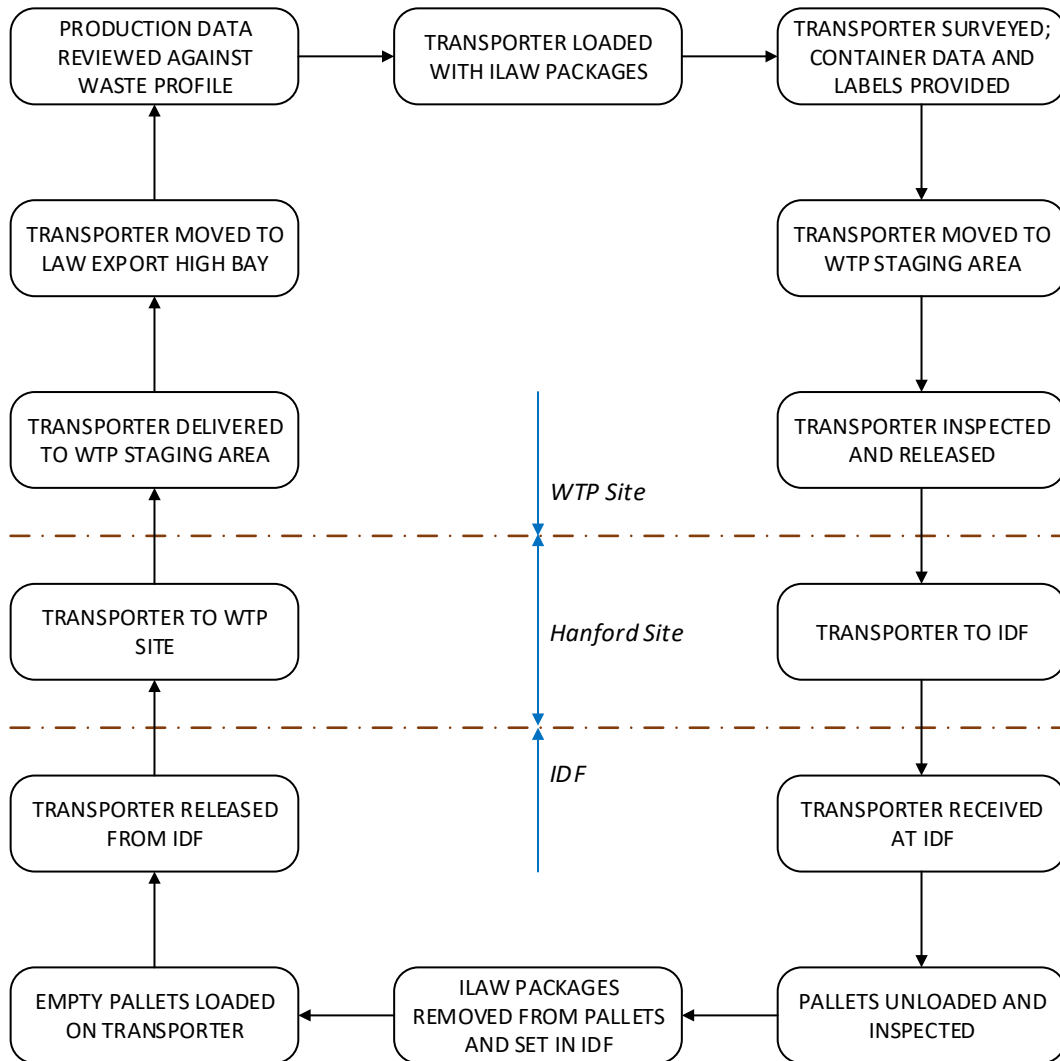
The requirements and other information in this ICD are subject to change based on the final Low Activity-Waste (LAW) Facility operating and IDF operating unit group permits that are approved and issued by the Washington State Department of Ecology.

This ICD focuses on the WTP direct-feed low-activity waste (DFLAW) operating configuration.

1.2 System Overview

The interfaces for transport and disposal of the ILAW product packages are illustrated in Figure 1. The boundary lines shown are only geographical to show where the activity takes place. Figure 1 should not be used to imply any organizational responsibilities.

Figure 1 Interface Block Diagram



Molten LAW glass is poured from a LAW melter into a stainless-steel container in the LAW Melter Pour Cave. The container remains in the LAW Melter Pour Cave until the glass cools and solidifies. After the cooling cycle is completed, the container is transported to one of two finishing lines. The glass level is measured, and inert fill is added if needed to meet the minimum fill level. Then the container is lidded and decontaminated as needed, and the surfaces are swabbed for removable contamination and measured for surface radiation. After the contamination and radiation levels are verified as acceptable, the finished ILAW product package is moved into the export position. In the LAW Export High Bay, a bridge crane picks up the ILAW product package from the finishing line using an ILAW container grapple and transfers it to the ILAW transporter.

The ILAW transporter system is illustrated in Figure 3 and Figure 4 (Appendix B). It consists of three removable shielded pallets on a commercial drop-deck trailer. The pallets are locked onto the trailer and have a hinged clamshell cover that can be closed once the ILAW product package is inside. Each pallet can be removed from the trailer to provide greater operational flexibility for in-trench handling at the IDF, which precludes the purchasing of multiple complex trailer systems. The routes used by the ILAW transporter are shown in Figure 5 (Appendix B).

The WTP site has added a transporter staging area on the south side of the DFLAW operating area to facilitate transporter trailer drop-off and pick up. The staging area has space for three transporter trailers. A trailer with loaded pallets can be staged to accommodate paperwork completion or other delays. A trailer with empty pallets can be staged until needed in the LAW Export High Bay.

The IDF is shown in Figure 6 (Appendix B). The IDF is a near subsurface Resource Conservation and Recovery Act (RCRA) facility, built with engineered soil and a protected liner system. The IDF is partitioned into two cells, and it can accommodate four layers of ILAW product packages in addition to secondary solid waste packages from the WTP. Each layer of ILAW product packages is backfilled with soil for stability and shielding. At the IDF, each pallet is removed from the transporter with a forklift and transferred to an on-grade staging area to facilitate additional cooling of the ILAW product package in its pallet. After cooling, each pallet is moved by forklift or other vehicle down an access ramp into the IDF trench. A remote crane or other lifting device with an ILAW container grapple is used to remove the ILAW product package from the pallet and set it on the IDF soil base for permanent disposal. Empty pallets are surveyed for contamination, inspected, and placed onto the ILAW transporter. Following completion of a truck release survey, the transporter returns to the WTP.

1.3 Interface Functions

Table 1 presents the general interface functions and corresponding responsibilities for each interfacing contractor. Requirements derived from these functions are listed in Section 3 for each contractor.

Table 1 Functions of the Immobilized Low-Activity Waste Interface

Interface Function	WTP Responsibility	TOC Responsibility	IDF Responsibility
Provide regulatory documents to support the interface.	Provide information to support IDF waste acceptance criteria. Maintain the WTP <i>Radioactive Waste Management Basis</i> , 24590-WTP-PL-RACW-WM-0008 (BNI 2020r). Communicate changes to the LAW Documented Safety Analysis that affect this interface.	Prepare the Waste Incidental to Reprocessing (WIR) Evaluation. Maintain the TOC Radioactive Waste Management Basis and the ILAW Package Specific Safety Document (PSSD).	Prepare the IDF waste acceptance criteria. Maintain the IDF Performance Assessment (PA) and the IDF Radioactive Waste Management Basis.
Develop and deliver the ILAW transporter system.	Provide technical data for ILAW transporter design input.	Manage the project to design, test, and procure the ILAW transporter systems to support commissioning at WTP.	Provide interface-related data to support ILAW transporter system design.
Coordinate testing and training with the ILAW transporter system.	Support TOC prototype testing. Communicate training plan and schedule to TOC.	Provide prototype transporter system for testing purposes.	Support TOC prototype testing. Provide transporter to WTP for testing and training
Define shipping, transportation, and waste acceptance documentation to support ILAW disposal.	Provide characterization and product data to enable completion of shipping documentation.	Provide shipping and transport documentation data requirements to WTP Contractor and IDF. Prepare shipping documentation and provide to IDF.	Approve receipt of ILAW product packages.

Interface Function	WTP Responsibility	TOC Responsibility	IDF Responsibility
Define the integrated process for ILAW transfer from WTP to IDF.	Receive empty ILAW transporter trailers from IDF at the WTP transporter staging area. Move transporter to the LAW Facility Export High Bay and secure for loading. Load and secure ILAW product packages onto the ILAW transporter trailer. Complete shipment survey, apply labeling, and provide container data for completion of shipping documentation. Move loaded transporter to WTP transporter staging area for pickup by IDF. Provide support to prepare the loaded ILAW transporter system for shipment.	Prepare shipping documentation. Coordinate shipment of ILAW product packages to IDF.	Operate loaded ILAW transporters from WTP to IDF. Provide area for receipt of ILAW shipments and staging of empty transporter trailers and pallets for return to WTP. Unload ILAW product packages from ILAW transporter system and place in the IDF for final disposal.
Define the integrated process for the return of empty ILAW transporter trailers and pallets to the WTP staging area.	Review release survey for acceptance and receive returned empty transport trailers and pallets at the WTP staging area.	None.	Complete release survey for returning empty ILAW trailers and pallets and provide release survey to the WTP Contractor. Transport empty transport trailers and pallets from IDF staging area back to WTP staging area.
Establish communications for interruptions in operations and ILAW shipments.	Provide notification of delays impacting ILAW transfers.	Provide notification of delays impacting ILAW transfers.	Provide notification of delays impacting ILAW transfers.
Develop approach for non-conforming ILAW product packages.	Coordinate corrective actions for dispositioning non-conforming product packages.	Support the WTP Contractor in resolving final disposition of non-conforming product packages.	Support the WTP Contractor in resolving final disposition of non-conforming product packages.

1.4 Special Interface Roles

N/A

2 Interface Background Information

This section only contains background information pertinent to the interface. For requirements, along with their basis, implementation, and configuration management, see Section 3. Other actions needed to complete the interface are listed in Section 4.

2.1 Physical Information

The physical interface for the transfer of ILAW transporters from the WTP Contractor to the IDF is at the WTP transporter staging area, shown on the *RPP-WTP Plot Plan*, 24590-BOF-P1-50-00001 (BNI 2019c).

2.1.1 Design of the ILAW Product Package

The ILAW product package is remotely handled. The ILAW product package includes a right circular cylindrical stainless-steel container with nominal dimensions of 1.22 meters (48 inches) diameter and 2.286 meters (90 inches) height and is depicted in the following LAW Container Receipt Handling (LRH) System drawings and change documents:

- 24590-LAW-M0-LRH-00004001, *LAW Vitrification System LRH Product Container Assembly* (BNI 2019d), as affected by
 - 24590-WTP-SDDR-PENG-20-00014, *ILAW Container Heat Sensitive Paint Band Dimension Datum Reference and Tolerance* (BNI 2020a)
- 24590-LAW-M0-LRH-00004002, *LAW Vitrification System LRH Product Container Weldment Details* (BNI 2019e), as affected by
 - 24590-WTP-SDDR-PENG-20-00003, *Alternate Method of Welding Metal Seal Ring to ILAW Container* (BNI 2020b)
 - 24590-WTP-SDDR-PENG-20-00005, *Use of Copper Backing Bar During Welding* (BNI 2020c)
 - 24590-WTP-SDDR-PENG-20-00010, *ILAW Container Serial Number Font, Dimensions and Tolerances* (BNI 2020d)
 - 24590-WTP-SDDR-PENG-20-00013, *ILAW Container Serial Number Positioning Height (Shell)* (BNI 2020e)
 - 24590-WTP-SDDR-PENG-20-00015, *ILAW Container Top Flange Parallelism Tolerance* (BNI 2020f)
 - 24590-WTP-SDDR-PENG-20-00024, *ILAW Container - Relaxation of Penetrant Testing (PT) Frequency* (BNI 2020g)
- 24590-LAW-M0-LRH-00004003, *LAW Vitrification System LRH Product Container Details* (BNI 2019f), as affected by
 - 24590-WTP-SDDR-PENG-20-00006, *Change of Reference Plane for Dimensions on Top Flange of ILAW Container* (BNI 2020h)
 - 24590-WTP-SDDR-PENG-20-00011, *ILAW Container Top and Bottom Head Height Tolerance* (BNI 2020i)
 - 24590-WTP-SDDR-PENG-20-00016, *ILAW Container Top Head Height Tolerance (Revisited)* (BNI 2020j)

- 24590-WTP-SDDR-PENG-20-00018, *ILAW Container Bottom Head R61.5 Dimension Made Reference* (BNI 2020k)
- 24590-WTP-SDDR-PENG-21-00001, *ILAW Container Top Flange Flatness Tolerance*, (BNI 2021a).
- 24590-LAW-M0-LRH-00004004, *LAW Vitrification System LRH Product Container Details* (BNI 2005a), as affected by
 - 24590-WTP-SDDR-PENG-20-00019, *ILAW Container Lid Locking Bar Feature Minor Edit* (BNI 2020m)

Bounding contract limits for the ILAW product package are specified in the WTP Contract (DOE 2000), as follows:

- The mass of each package shall not exceed 10,000 kilograms (22,046 lbs) (Specification 2.2.2.4).
- The dose rate at any point on the external surface of the package shall not exceed 500 mrem/hr (Specification 2.2.2.9).
- The temperature of the accessible external surfaces of the package shall not exceed 465°F (alternating pour) or 550°F (single pour). This temperature constraint shall assume a shaded, still air environment at an ambient temperature of 38°C (Specification 2.2.2.13).

2.1.2 Design of the ILAW Container Grapple

The design for the ILAW container grapple is based on the system in place at the West Valley Demonstration Project and is depicted in drawing 24590-QL-POA-FH00-00001-03-00009, *LAW Container Grapple - Grapple Arrangement* (BNI 2016a).

2.1.3 Design of the ILAW Transporter System

Functions and requirements, establishing the design bases envelope, for the ILAW transporter system are documented in the TOC *ILAW Transporter System Functions and Requirements*, RPP-SPEC-60684 (WRPS 2019b). This specification will be revised to include information from final design and testing. Specific design inputs are listed in Section 3.1.2.1.

2.1.4 Design of the Integrated Disposal Facility

The ILAW disposal facility has been designed and constructed using the design criteria in *System Specification for the Integrated Disposal Facility*, RPP-15833 (CH2 2004). As stated in the document, the IDF meets the following design characteristics:

- Capacity for disposal of 160,000 cubic meters of low-level waste and mixed low-level waste.
- Consist of a single landfill with two separate, expandable cells. Both cells will be permitted for RCRA waste.
- Provide a double liner and leak detection/leachate collection system.
- Capability of receiving ILAW product packages within 24 hours after notification that an ILAW product package has met acceptance criteria and is available for physical transfer.
- Total production capability of an average of at least 5 ILAW product packages per day.

The IDF physically interfaces with the ILAW transporter system. The IDF provides the appropriate personnel and facilities to remove the ILAW product package from the ILAW transporter trailer and physically place the ILAW product package in the IDF for permanent disposal. In addition, the IDF is

capable of receiving and offloading spent and failed LAW melters for disposal per *System Specification for the Integrated Disposal Facility* (CH2 2004).

2.1.5 Interface Capacity

The *System Specification for the Integrated Disposal Facility* (CH2 2004, Section 3.2.5.3, Availability) states, “The activities associated with receipt, delivery, and emplacement of ILAW packages will occur with sufficient frequency to ensure meeting the RPP-WTP capacity requirement as defined in the 24590-WTP-ICD-MG-01-015.” The current WTP Contract nominal design capacity of the WTP is 30 MTG/day. This equates to a nominal production rate of five (5) ILAW product packages per day.

2.1.6 Commissioning

During cold commissioning activities for the LAW Facility in the DFLAW configuration, the melters will produce non-radioactive glass in the same containers used for ILAW. *Disposition Evaluation for Non-Radioactive Glass Disposal Containers Generated During Low-Activity Waste Vitrification Facility Cold Commissioning*, 24590-WTP-RPT-MGT-17-015 (RPP-RPT-59980) (BNI 2017a), describes alternatives for disposal of this glass. The report provides recommendations for dangerous and non-dangerous glass, depending on the composition of the simulant fed to the melter. *One System Decision Document 0012, LAW Cold Commissioning Glass Containers Disposition Managed by TOC*, CCN 307995 (BNI 2018p), recommends that TOC has the contractual responsibility for the management of transportation and disposal of these glass containers. Since an existing contract mechanism covers this scope, this ICD establishes no requirements or guidance for the disposal of glass containers produced during cold commissioning.

The WTP handling of glass-filled LAW containers during cold commissioning is the same as during hot commissioning with appropriate data to support the selected disposal path.

2.2 Administrative Information

2.2.1 Safety Information

The interface contractors’ design processes include integrated safety management principles and are communicated through the interface in the configuration management documents identified in Section 3.

No new hazards or accident scenarios are introduced through this interface that are not adequately controlled by the interface partners and through controls placed across this interface. The physical and administrative controls to mitigate these risks using a graded approach have been adequately addressed through requirements on each participant’s authorization basis and no additional physical and administrative controls are necessary.

The *Documented Safety Analysis for the Low-Activity Waste Facility*, 24590-LAW-DSA-NS-18-0001 (BNI 2020p), includes the results of hazards identification, analysis, and evaluation for the transport of ILAW product packages within the WTP site. Once the loaded transporter system exits the WTP site, the movement is governed by the *ILAW Package-Specific Safety Document* (PSSD), RPP-RPT-60378 (WRPS 2020a). Upon entrance to the IDF boundary and transfer of custody, all activities fall under the facility purview and are no longer covered under the shipping authorization. The IDF is a less than hazard category 3 facility and does not have a documented safety analysis but operates under a managed change process.

2.2.2 Regulatory Information

LAW feed, while in the double-shell tanks, is managed by DOE as high level waste. Once the waste is treated by the TOC for the DFLAW configuration (or through WTP Pretreatment for the baseline configuration), the ILAW product is immobilized low-level mixed waste. DOE received a decision from the Nuclear Regulatory Commission in 1997 on the separation of high-level waste and ILAW and is currently implementing the WIR process.

The onsite WTP and IDF facilities were designed and will be operated by the standards established by the *Resource Conservation and Recovery Act of 1976* (RCRA), 42 USC 6901, as implemented by Washington Administrative Code (WAC) 173-303, *Dangerous Waste Regulations*. In addition to RCRA, the ILAW disposal cells at the IDF are to comply with DOE O 435.1, *Radioactive Waste Management*, and the WTP product are to comply with Chapter IV, section J.(1), of DOE M 435.1-1, *Radioactive Waste Management Manual*.

The administrative interface for ILAW ensures that the on-site transportation requirements in Condition II.Q of the Hanford Facility RCRA Permit, Dangerous Waste Portion (WA7890008967) are met. TOC provides shipping and transport documentation based on characterization and other product data supplied by the WTP Contractor. When the documentation specified by the WTP Contract (DOE 2000), Section C.8, Specification 2, paragraph 2.2.2.23, Manifesting, is received by the driver, the loaded transportation container can be transported. Each contractor is responsible for RCRA compliance within each facility. The documentation required by Condition II.Q supports RCRA compliance across the administrative interface.

The WTP Contract (DOE 2000), Section C.8, Specification 2.2.2.10, specifies ILAW product package surface contamination limits. Due to the design of the LAW Facility Export High Bay, the limits established in 10 CFR 835, *Occupational Radiation Protection*, Appendix D, are applicable. Since 10 CFR 835 is more restrictive than Specification 2.2.2.10, 10 CFR 835 is the limiting standard for residual surface contamination in the Export High Bay.

The TOC is completing the WIR evaluation to support classification of the LAW waste feed as low-level waste.

The TOC has prepared the *Performance Assessment for the Integrated Disposal Facility*, RPP-RPT-59958 (WRPS 2019c), and the IDF maintains the IDF Performance Assessment (PA) to estimate the long-term impact of near surface waste disposal on the groundwater.

2.2.3 Post-Commissioning/Maintenance

The interfacing contractors' design processes incorporate reliability, availability, maintainability, and inspectability (RAMI) requirements. These requirements are included in the design to ensure that the interface requirements documented in this ICD are met. Consequently, there are no RAMI requirements that must be managed across the interface.

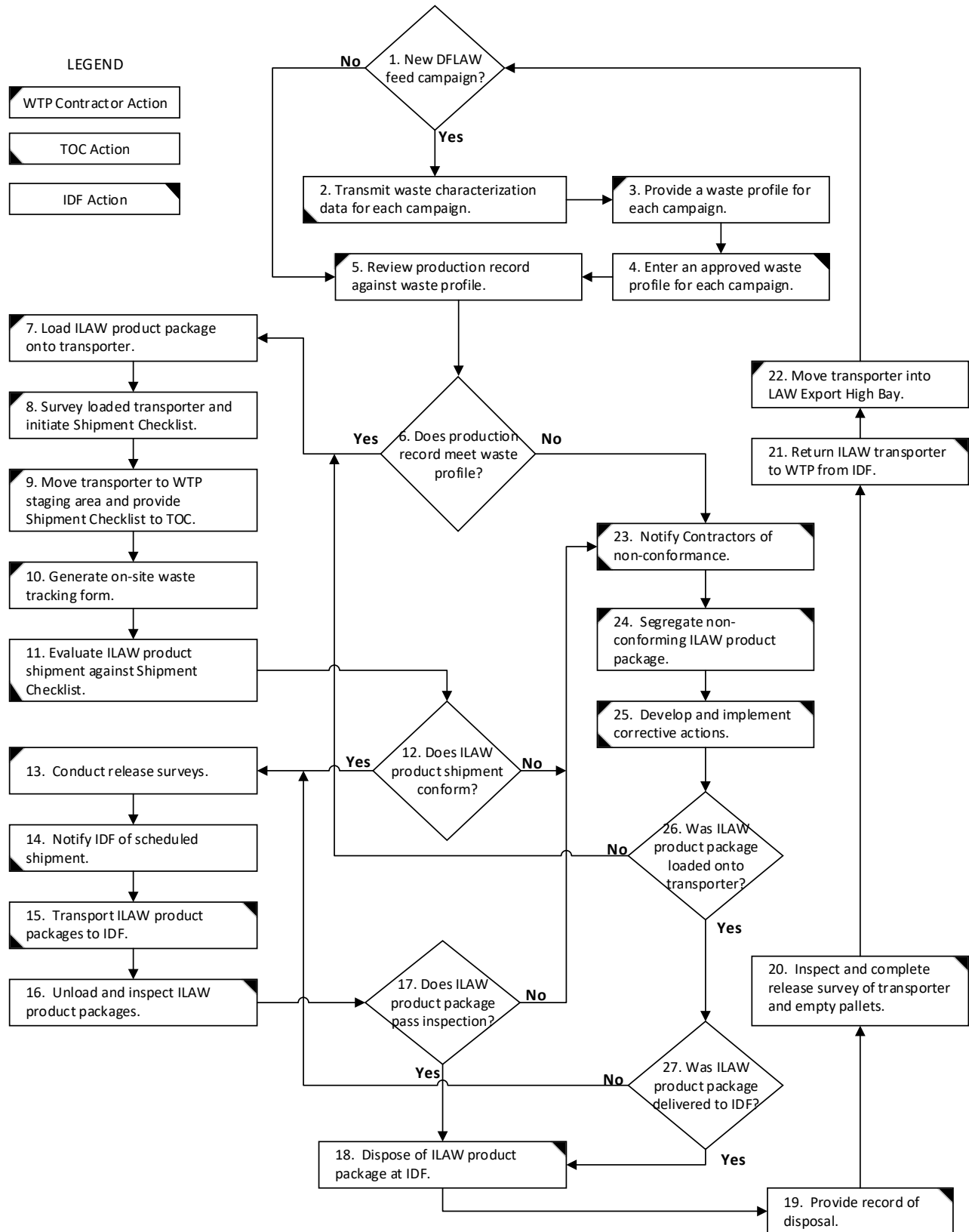
Transporter system external surfaces may agglomerate dirt, ice, and other road debris, as well as radiological contamination. Transporter systems received at the WTP do not have any requirements to be cleaned from road debris by the WTP Contractor prior to entry into the LAW Facility Export High Bay. Any such debris deposited in the Export High Bay is collected and removed as determined necessary by the WTP Contractor. Radiological contamination discovered on the transporter system or co-mingled with the road debris prompts appropriate actions to control the transporter system and contamination as

determined at the time of the discovery. The WTP Contractor is not required to provide dedicated decontamination facilities or services for the transporter system.

2.2.3.1 Interface Logic

This section provides a preliminary description of the activities that are necessary to ship ILAW product packages from WTP to the IDF; final details have not been developed. Description numbers correspond with the ICD-15 logic diagram found in Figure 2.

Figure 2 ICD 15 Logic Diagram



- 1 **New DFLAW feed campaign?** The TOC verifies when a new feed is sent to the Tank Side Cesium Removal process. If yes, the process continues with step 2. If not, the shipment cycle continues with step 5.
- 2 **Transmit waste characterization data for each campaign:** At the start of every DFLAW feed campaign, the TOC samples the DFLAW feed and provides the characterization data to the WTP Contractor (Section 3.3.2.1).
- 3 **Provide a waste profile form for each campaign:** The WTP Contractor completes a waste profile form and sends the form and the ILAW composition data to the IDF (Section 3.3.1.1 and Section 3.3.1.2).
- 4 **Enter an approved waste profile for each campaign:** The IDF reviews and approves the waste profile based on IDF acceptance criteria. The IDF enters the approved waste profile into the Waste Management Information System (WMIS). (Section 3.3.3.1)
- 5 **Review production record for each ILAW product package against the waste profile:** The WTP Contractor assembles, reviews, and verifies the production documentation for the ILAW product package as conforming to the requirements defined in the *ILAW Product Compliance Plan*, 24590-LAW-PL-PENG-17-0001 (BNI 2021c). The WTP Contractor compares the production record for each ILAW product package against the waste profile to determine if the ILAW product package is acceptable for disposal at the IDF.
- 6 **Does the production record meet the waste profile?** If the production record meets the waste profile, the process continues with step 7. If not, the ILAW product package is identified as non-conforming, and the process moves to step 23.
- 7 **Load ILAW product package onto transporter trailer:** The WTP Contractor moves the finished ILAW product package from the container finishing line onto the transporter trailer in the Export High Bay.
- 8 **Survey loaded transporter and initiate the ILAW Glass Shipment Checklist:** Prior to the transporter leaving the LAW Facility Export High Bay, the WTP Contractor closes the pallet covers and conducts a contamination and radiation level (dose-equivalent rate) survey of the transporter. The WTP Contractor places the labels and markings on each pallet and provides the container-specific data to complete the generator section of the ILAW Glass Log Shipment Checklist (Section 3.3.1.5) and enter data into the on-site waste tracking form (OWTF) in WMIS (Section 3.3.1.4).
- 9 **Move transporter to WTP staging area and provide the Shipment Checklist to TOC:** The WTP Contractor provides a tractor and moves the loaded transporter to the WTP staging area for pickup and then notifies the TOC. The WTP Contractor provides the ILAW Glass Shipment Checklist to the TOC.
- 10 **Generate on-site waste tracking form:** The WTP Contractor generates an OWTF in WMIS to allow shipment of ILAW product packages that meet the generator section of the ILAW Glass Shipment Checklist and provides the OWTF to the TOC for review prior to shipment.
- 11 **Evaluate the ILAW product shipment against Shipment Checklist:** The TOC completes the shipper checklist/certification section of the ILAW Glass Shipment Checklist (Section 3.3.2.4).
- 12 **Does ILAW product shipment conform?** If the ILAW product shipment satisfies the ILAW Glass Shipping Checklist, the process continues to step 13. If not, the ILAW product package is identified as non-conforming, and the process moves to step 23.

- 13 **Conduct release surveys:** Prior to the ILAW transporter leaving the WTP site, the WTP Contractor completes a contamination and radiation level (dose-equivalent rate) survey for the transporter and provide the survey data to IDF (Section 3.3.1.6).
- 14 **Notify IDF of scheduled shipment:** The TOC schedules and coordinates the shipment of the ILAW product packages from the WTP to the IDF (Section 3.3.2.2).
- 15 **Transport ILAW product packages to IDF:** The TOC provides the OWTF and the completed ILAW Glass Shipment Checklist to the IDF driver (Section 3.3.2.3) and verifies placarding is correctly applied (Section 3.3.2.4). The IDF completes transport (Section 3.3.3.2).
- 16 **Unload and inspect the ILAW product packages:** The IDF removes the pallets with the ILAW product packages from the transporter trailer. The IDF conducts a receipt inspection of the ILAW product packages at the IDF.
- 17 **Does ILAW product package pass inspection?** If an ILAW product package is conforming, the process continues with step 18. If not, the ILAW product package is identified as non-conforming, and the process moves to step 23.
- 18 **Dispose of ILAW product package at IDF:** The IDF places each ILAW product package in a disposal cell.
- 19 **Provide record of disposal:** The IDF makes an entry in WMIS with a record of disposal (Section 3.3.3.4).
- 20 **Inspect and complete release survey of transporter and empty ILAW pallets:** IDF performs a release survey and inspects the transporter and ILAW pallets per the requirements for shipment per the ILAW Glass Shipment Checklist, then releases the transporter to return to WTP. The IDF provides documentation of integrity inspection and acceptable contamination levels (Section 3.3.3.3).
- 21 **Return ILAW transporter to WTP from IDF:** The IDF coordinates and schedules delivery of an empty transporter trailer to the WTP site (Section 3.3.3.2).
- 22 **Move ILAW transporter into LAW Export High Bay:** The WTP Contractor provides a tractor and moves the transporter trailer from the WTP staging area to the LAW Export High Bay.
- 23 **Notify Contractors of non-conformance:** If an ILAW product package is determined to be non-conforming in step 6, the WTP Contractor notifies the TOC and the IDF of the non-conformance. If an ILAW product package is determined to be non-conforming in step 12 or step 17, the TOC or the IDF notifies the WTP Contractor of the non-conformance.
- 24 **Segregate non-conforming ILAW product package:** If the non-conformance is identified in step 6 or step 12, the WTP Contractor holds the non-conforming ILAW product package until the disposition is determined. If the non-conformance is identified in step 17, the IDF holds the non-conforming ILAW product package until the disposition is determined.
- 25 **Develop and implement corrective action plan:** The WTP Contractor, the TOC, and the IDF develop corrective actions to disposition the non-conforming ILAW product package. The corrective actions address how to convert the non-conforming condition to a non-standard condition, enabling the ILAW product package to be accepted for disposal at the IDF.
- 26 **Was the ILAW product package loaded onto the transporter?** After the non-conformance has been addressed, if the non-conforming ILAW product package was identified in step 6 prior to loading, the process returns to step 7. If not, continue to step 27.

- 27 Was the ILAW product package delivered to IDF?** If the non-conforming ILAW product package was held by the WTP Contractor on the transporter, the process returns to step 13. If the non-conforming ILAW product package is held at the IDF, the process moves to step 18.

2.2.3.2 Operating Manuals

The set of operating manuals for the LAW container export handling system, including routine and non-routine operations, is listed in the *LAW Container Export Handling System Operating Manual*, 24590-LAW-LEH-SOM-0001 (WTCC 2020a).

The set of operating manuals for the LAW container finishing handling system, including routine and non-routine operations, is listed in the *LAW Container Finishing Handling System Operating Manual*, 24590-LAW-LFH-SOM-0001 (WTCC 2020b).

2.2.4 Interface Milestones

Refer to the DFLAW Integrated Schedule for monitoring appropriate interface schedule milestones.

Table 2 ILAW Interface Milestones

Contractor	Activity ID	Activity Name
WTP	5HLC3JA6331	LAW – Ops – Conduct Melter 1 Heatup
WTP	5HLC3JA6341	LAW – Ops – Conduct Melter 2 Heatup
WTP	5HLC3WA10481	LAW – Ops – Complete DOE HQ ORR Closure
TOC	1T2620	WIR Approval
IDF	CON.F.9000	IDF Construction Complete
IDF	REGDOC33	RCRA Permit Becomes Effective
IDF	OPS.R.1305	IDF Declares Readiness to Receive Waste

2.3 Acceptance Criteria

The requirements for the ILAW waste product are defined in Specification 2 of the WTP Contract (DOE 2000). *ILAW Product Compliance Plan* (BNI 2021c), includes the compliance strategy, process/product qualification activities, production implementation, and specific documentation to be provided with the ILAW product package to demonstrate compliance and certification of each ILAW product package. The *ILAW Product Compliance Plan* (BNI 2021c) includes the strategy for compliance with *Hazardous Waste Management*, Revised Code of Washington (RCW) 70.105 as promulgated through the WAC 173-303.

There are several documents that impose interface responsibilities on the WTP Contractor, TOC, IDF, ORP, and RL concerning acceptance of the ILAW product package. Acceptance in each of these documents may not refer to a common process. Waste acceptance criteria and requirements are addressed separately in the *ILAW Product Compliance Plan* (BNI 2021c) but will be added as pertinent in this ICD.

The IDF has issued the *Waste Acceptance Criteria for the Integrated Disposal Facility*, IDF-00002 (CH2 2019). Future revisions may result in more restrictive criteria than the criteria contained in the WTP Contract (DOE 2000) for the production of ILAW. Any requirements identified in IDF waste acceptance criteria that are incompatible with the WTP Contract must be managed and resolved as an ICD issue in accordance with *Interface Management Plan*, 24590-WTP-PL-MG-01-001 (BNI 2018m).

The WTP Contract and its facility permits have no provisions to retain the ILAW product package or to accept its return from the IDF once transferred. Consequently, the potential exists that an interface incompatibility may be created where the ILAW product package must be transferred from the WTP, but the IDF deems it to be non-conforming. *Waste Acceptance Criteria for the Integrated Disposal Facility* (CH2 2019) provides for temporary storage at the IDF pending resolution of the non-conformance. To provide potential handling protocol for non-conformances, IDF has issued *Suggested Inter-Contractor Responses When Non-Conforming ILAW Containers Are Delivered To and Discovered at the Integrated Disposal Facility*, IDF-00007 (CH2 2020).

2.3.1 WTP Acceptance Criteria

The acceptance criteria for WTP Contract (DOE 2000) production credit for the ILAW product package is defined in Specification 2 and Specification 13 of the WTP Contract, and the WTP Contractor method for compliance with each requirement is set forth in the *ILAW Product Compliance Plan* (BNI 2021c). Any additional criteria for packaging and transportation will be reviewed for impact to the WTP baseline at the time they are imposed.

2.3.2 IDF Acceptance Criteria

DOE O 435.1 defines the technical and administrative requirements for acceptance of waste for treatment, storage, and disposal facilities and covers disposal of the ILAW product package at the IDF. The order states: "All radioactive waste shall be managed in accordance with the requirements of DOE M 435.1-1, Radioactive Waste Management Manual."

Waste acceptance criteria for the IDF are identified in the *Waste Acceptance Criteria for the Integrated Disposal Facility*, IDF-00002 (CH2 2019). For low-level waste, radionuclide reporting is required to determine compliance with *Performance Assessment for the Integrated Disposal Facility*, RPP-RPT-59958 (WRPS 2019c). The concentration of each major radionuclide must be established using process knowledge and/or sampling and analysis and compared with Table G-1 of IDF-00002.

The WTP Contractor will communicate proposed *ILAW Product Compliance Plan* (BNI 2021c) modifications to the IDF to allow the IDF to evaluate any proposed changes to the IDF waste acceptance criteria and the Hanford Facility RCRA Permit (WA7890008967).

3 Requirements

This section identifies all Technical (Design Criteria), Activity Level, and Programmatic requirements associated with the interfaces defined by the ICD. Specific requirements for implementation by the appropriate contractors are listed in this section only. In addition to the requirement statement, each requirement includes a basis for that requirement, the requirement source document(s), and the implementing document(s) (if known at the time of revision). Source and implementing documents are listed as configuration management items for each requirement.

3.1 Technical Requirements (Design Criteria)

Technical requirements are requirements managed by engineering organizations according to engineering procedures and work processes.

3.1.1 WTP Contractor Technical Requirements

For the WTP Contractor, technical requirements are managed in accordance with *Technical Requirements Management*, 24590-WTP-3DP-G04B-00004 (BNI 2016b). Any changes to the requirements in this subsection are reviewed with the WTP Manager of Engineering.

- 3.1.1.1 The WTP Contractor shall provide ILAW containers in accordance with Specification 2 of the WTP Contract (DOE 2000) for transport and disposal of the ILAW glass product at the IDF.

Requirement Basis: The glass waste ILAW product is required to be packaged in stainless-steel containers as described in Specification 2 of the WTP Contract (DOE 2000). These same containers may be used during cold commissioning.

Configuration Management Document(s):

Requirement Source(s):

- DOE Contract No. DE-AC27-01RV14136, *Hanford Tank Waste Treatment and Immobilization Plant* (DOE 2000)

Implementation:

- 24590-LAW-M0-LRH-00004001, *LAW Vitrification System LRH Product Container Assembly* (BNI 2019d)
- 24590-LAW-M0-LRH-00004002, *LAW Vitrification System LRH Product Container Weldment Details* (BNI 2019e)
- 24590-LAW-M0-LRH-00004003, *LAW Vitrification System LRH Product Container Details* (BNI 2019f)
- 24590-LAW-M0-LRH-00004004, *LAW Vitrification System LRH Product Container Details* (BNI 2005a)
- 24590-LAW-3PS-MV00-T0002, *Engineering Specification for LAW Production Containers* (BNI 2019a)
- 24590-LAW-M0C-LRH-00004, *LAW Production Container Volume, Weight, and Center of Gravity* (BNI 2020n)

3.1.1.2 The LAW Container Export Handling (LEH) System shall be designed to perform the following:

- Retrieve filled and lidded ILAW product packages from the LAW Container Finishing Handling (LFH) system.
- Transport the ILAW product package onto the ILAW transporter.

Requirement Basis: Filled and lidded ILAW product packages are produced in the LAW Facility to meet WTP Contract (DOE 2000) Specification 2 requirements. These ILAW product packages must be retrieved from the LFH system, moved near the ILAW transporter, positioned above the transporter trailer, and placed inside the ILAW transporter pallet for transport. As stated in the *LAW Container Finishing Handling System Design Description*, 24590-LAW-3ZD-LFH-00001 (BNI 2021b), removable contamination on the external surfaces of the ILAW product package are to be below the limits of 10 CFR 835.

Configuration Management Document(s):

Requirement Source(s):

- *Basis of Design*, 24590-WTP-DB-ENG-01-001 (BNI 2018k)

Implementation:

- 24590-LAW-M0C-LRH-00004, *LAW Production Container Volume, Weight, and Center of Gravity* (BNI 2020n)
- 24590-CM-POA-MJKG-00003-08-00036, *Drawing – General Arrangement LEH Container Storage Crane* (BNI 2006b)
- 24590-QL-POA-FH00-00001-03-00009, *Drawing – LAW Container Grapple – Grapple Arrangement* (BNI 2016a)
- 24590-CM-POA-ADDH-00003-06-00292, *Drawing – Decon Storage Trap Door North/South* (BNI 2010)
- 24590-LAW-M7-LEH-00002001, *LAW Vitrification System LEH Mechanical Handling Diagram Container Export Handling System* (BNI 2018a)
- 24590-LAW-M7-LEH-00002002, *LAW Vitrification System LEH Mechanical Handling Diagram Container Export Handling System* (BNI 2018b)
- 24590-LAW-M7-LEH-00002003, *LAW Vitrification System LEH Mechanical Handling Diagram Container Export Handling System* (BNI 2018c)

3.1.1.3 Plant road minimum turning radii necessary for ILAW transporters to operate on the WTP site shall be ≥ 45 feet.

Requirement Basis: The ILAW transporter specification, RPP-SPEC-60684 (WRPS 2019b), requires the ILAW transporter to be able to negotiate 45-foot radius turns. Therefore, plant roads on the WTP site along the transporter route must accommodate this required minimum turning radius to allow transporter access.

The planned transporter route is as follows (RPP-RPT-59093, WRPS 2017a): 1) northeast on PC Loop Road to enter the WTP site, 2) turn northwest on L Road, 3) turn west on B Road, 4) turn north on G Road, 5) turn east on D Road, 6) turn south on LAW Driveway, 7) turn east on F Road, 8) turn south on N Road, and 9) turn southwest on PC Loop Road to exit the WTP site.

Configuration Management Document(s):

Requirement Source(s):

- *Civil Design Criteria*, 24590-WTP-DC-C-01-001 (BNI 2015b)
- *ILAW Transporter System Functions and Requirements*, RPP-SPEC-60684 (WRPS 2019b)

Implementation:

- *Roadway Typical Sections*, 24590-BOF-CS-C12T-00009 (BNI 2017c)
- *G-Road Plan and Profile – STA 0+00 to STA 3+50*, 24590-BOF-CS-C12T-00042 (BNI 2006c)
- *G-Road Plan and Profile – STA 3+50 to STA 8+82*, 24590-BOF-CS-C12T-00043 (BNI 2006d)
- *LAW Driveway Plan and Profile STA 0+00 to STA 5+36.90*, 24590-BOF-CS-C12T-00047 (BNI 2012)
- *L-Road Plan and Profile STA 0+00 to STA 2+44.75*, 24590-BOF-CS-C12T-00048 (BNI 2018f)
- *N-Road Plan and Profile STA 0+00 to STA 5+78*, 24590-BOF-CS-C12T-00049 (BNI 2018g)

3.1.2 TOC Technical Requirements

3.1.2.1 The TOC shall provide an ILAW transporter system to transport ILAW product packages from the WTP LAW Facility Export High Bay to the IDF. Specific design inputs include:

Table 3 ILAW Transporter Design Inputs		
Feature	ILAW Transporter System Design Inputs	Source/Configuration Management Documents
1. ILAW Transporter System Fleet Size	Meet the WTP production capacity of 30 MTG/day with appropriate design margin to account for transport delays (e.g., weather-related delays, etc.). Each ILAW Product Package contains 6 MTG which leads to a throughput capacity of 5 product packages per day at 100% availability, 24 hrs./day, 7 days/week.	WTP Contract, Section C.7(b)(1) (DOE 2000)
2. ILAW Product Package Dimensions	Right circular cylindrical 304L stainless steel container, 48-inch nominal diameter and 90-inch nominal height.	WTP Contract, Specification 2 (DOE 2000) <u>BNI Drawings:</u> 24590-LAW-M0-LRH-00004001 (BNI 2019d) 24590-LAW-M0-LRH-00004002 (BNI 2019e) 24590-LAW-M0-LRH-00004003 (BNI 2019f) 24590-LAW-M0-LRH-00004004 (BNI 2005a)
3. ILAW Product Package Mass	15,200 lbs. (WTP design output estimate)	BNI Calculation 24590-LAW-M0C-LRH-00004 (BNI 2020n)

Table 3 ILAW Transporter Design Inputs			
Feature	ILAW Transporter System Design Inputs	Source/Configuration Management Documents	
4.	ILAW Product Package Surface Dose Rate	100 mrem/hr (WTP design output estimate)	The calculated dose rate from <i>LAW Facility Bulk Shielding Confirmation</i> , 24590-LAW-Z0C-W13T-00002 (BNI 2015a) is 14.7 mrem/hr. This dose rate is based on a glass loading of cesium-137 of 1.59E+03 Bq/cm ³ , which converts to 0.043 Ci/m ³ . The source term for the DFLAW glass stream has been updated to 0.0536 Ci/m ³ from <i>Estimated Radionuclide Concentrations for Shielding Based on TFCOUP6 Feed Vector</i> , 24590-WTP-M4C-V11T-00020 (BNI 2019b). An estimated dose rate can be determined by direct ratio of 0.0536/0.043 x 14.7 mrem/hr = 18.3 mrem/hr. To determine a design input value, this result is scaled up based on the WTP Contract limit for cesium-137 in glass of 0.3 Ci/m ³ . The resulting design input value is 0.3/0.0536 x 18.3 mrem/hr = 100 mrem/hr (rounded off).
5.	ILAW Product Package Surface Temperature	<u>Design Output estimate:</u> 320°F (external surface) 1000°F (glass centerline)	<i>CFD Analysis of LAW Pour Caves and Finishing Lines</i> , 24590-LAW-M4C-C5V-00001 (BNI 2008c), recommends a minimum cooling time of 57.29 hours prior to transfer to the finishing line. The calculation provides a graph of surface temperature as a function of time, which is used to estimate a surface temperature of 320 °F at approximately 60 hours from the start of the glass pour. The glass centerline temperature is based on cooling curves of filled ILAW product packages found in <i>RPP Pilot Melter Prototypic LAW Container and HLW Canister Glass Fill Test Results Report</i> , 24590-101-TSA-W000-0009-101-00007 (BNI 2004c).
6.	ILAW Product Package Surface Contamination within the LAW Export High Bay and on the WTP site	10 CFR 835, Appendix D 10 CFR 835 establishes maximum permissible values of 1000 dpm/100 cm ² for beta-gamma emitters, and 20 dpm/100 cm ² for alpha emitting radionuclides.	The LAW Export High Bay is classified as a C1 Radiological Controlled Area per <i>LAW Vitrification Building General Arrangement Plan at El 3'-0"</i> , 24590-LAW-P1-P01T-00002 (BNI 2013). Per the <i>WTP Basis of Design</i> , 24590-WTP-DB-ENG-01-001 (BNI 2018k), this area and all contents must meet the surface contamination values provided in 10 CFR 835, Appendix D. This restriction for surface contamination also applies outside of the Export High Bay while on the WTP site.
7.	(Reserved)		
8.	(Deleted)		
9.	ILAW Transporter System Turning Radius	≤ 45 feet	<i>Civil Design Criteria</i> , 24590-WTP-DC-C-01-001 (BNI 2015b)

Table 3 ILAW Transporter Design Inputs			
Feature		ILAW Transporter System Design Inputs	Source/Configuration Management Documents
10.	ILAW Transporter System Maximum Width	≤ 102 inches	23 CFR 658.15 establishes a Department of Transportation maximum width limitation of 102 inches. <i>LAW Export Building Concrete Forming Plan, 24590-LAW-DB-S13T-00701 (BNI 2008d) and LAW Vitrification Building Bollard Location Plan, 24590-LAW-S1-S15T-00137 (BNI 2018j)</i> confirm this width is available in the LAW Export High Bay
11.	ILAW Transporter System Maximum Length	≤ 68 feet (tractor and trailer)	<i>ILAW Transporter Vehicle Length, 24590-LAW-ICF-ENG-04-0002 (BNI 2004d)</i> and 23 CFR 658, <i>Truck Size and Weight, Route Designations – Length, Width, and Weight Limitations, Appendix C</i>
12.	ILAW Transporter System Maximum Height	≤ 14 feet	WTP <i>Civil Design Criteria</i> (BNI 2015b), Section 4.2.2.3 establishes a 14-ft. minimum required clearance over driveways, including the LAW Driveway leading in/out of the LAW Export High Bay. RCW 46.44.020 establishes 14-ft. maximum height for commercial motor vehicles.
13.	ILAW Transporter System Maximum Axle Weight	≤ 20,000 lbs.	RCW 46.44.041 and 23 CFR 658
14.	ILAW Transporter System Gross Weight (fully loaded)	Conform to gross weight limitations contained in RCW 46.44	RCW 46.44, <i>Size, Weight, Load</i>
15.	ILAW Transporter System Load Locking Devices	Conform to 49 CFR 173.441	49 CFR 173, <i>Shippers – General Requirements for Shipments and Packaging</i>
Note: The transporter system design agent is responsible to consider appropriate design margin			

Requirement Basis: DOE Contract No DE-AC27-08RV14800, *Tank Operations Contract* (DOE 2008) requires the TOC to “design and procure the necessary equipment and arrange for transportation of ILAW, immobilized high-level waste, and unique waste forms from WTP and supplemental treatment facilities to their respective on-site disposition or storage locations”.

Configuration Management Document(s):

Requirement Source(s):

- DOE Contract No. DE-AC27-08RV14800, *Tank Operations Contract* (DOE 2008)
- *ILAW Transportation Options Analysis, RPP-RPT-59093 (WRPS 2017a)*
- See the Source/Configuration Management Documents listed in Section 3.1.2.1 Table 3 above

Implementation:

- *ILAW Transporter System Functions and Requirements*, RPP-SPEC-60684 (WRPS 2019b)
- *Code of Record (COR) Immobilized Low-Activity Waste (ILAW) Transport Project T3W20*, RPP-SPEC-64096 (WRPS 2020b)
- *ILAW Transporter Project T3W20 Prototype Qualification Testing Report*, RPP-RPT-61466, (WRPS 2019a)

3.1.3 IDF Technical Requirements

3.1.3.1 IDF shall provide a means to manage the ILAW product packages in a manner that maintains the primary (upper) landfill liner below the 160 °F design basis temperature of the landfill liner.

Requirement Basis: ILAW product packages are anticipated to have surface temperatures exceeding 160° F when they are received at the IDF. The Hanford Facility RCRA Permit (WA7890008967), Operating Unit Group 11, *Integrated Disposal Facility*, specific condition III.11.H.1 requires the IDF to manage waste packages with elevated temperatures in a manner that maintains the primary (upper) landfill liner below the design basis temperature for the liner of 160° F.

Configuration Management Document(s):

Requirement Source(s):

- WA7890008967, *Dangerous Waste Portion of the Hanford Facility Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste*, Operating Unit Group 11, Integrated Disposal Facility

Implementation:

- Implementing mechanism(s) will be established by the IDF.

3.2 Activity Level Requirements

Activity level requirements are facility and functional requirements that require incorporation into the work planning process. These include repetitive use requirements that are typically implemented in an operating technical procedure or preventative maintenance work package. They may also include task specific requirements that must be complied with when completing a specific scope of work, such as a repair or replacement of a component. These are typically performed within a maintenance work control document.

3.2.1 WTP Contractor Activity Level Requirements

For the WTP Contractor, activity level requirements are managed in accordance with *Activity Level Flow Down of Requirements Applicable to Commissioning Phase Activities*, 24590-WTP-GPP-RAOP-OP-0003 (BNI 2018n).

No activity level requirements were identified for the WTP Contractor.

3.2.2 TOC Activity Level Requirements

No activity level requirements were identified for the TOC.

3.2.3 IDF Activity Level Requirements

No activity level requirements were identified for the IDF.

3.3 Programmatic Requirements

Programmatic requirements include those specified through the contract; federal, state, and local laws and regulations; DOE directives; and negotiated agreements such as memorandums of agreement, commitments and permits.

3.3.1 WTP Contractor Programmatic Requirements

For the WTP Contractor, programmatic requirements are managed per *Requirements Management*, 24590-WTP-GPP-RARM-RM-00001 (BNI 2018o).

3.3.1.1 Transmit glass form waste characterization data for each campaign to the IDF.

Requirement Basis: The glass form waste characterization data is required by the IDF to enter the waste profile for ILAW product packages. It is an estimate based on waste feed characterization data that is evaluated using the glass algorithm and other process knowledge.

Radioactive Waste Management DOE O 435.1 allows waste characterization through indirect methods. The campaign waste profiles are an indirect method to characterize each ILAW product package.

WAC 173-303, *Dangerous Waste Regulations*, requires waste to be designated to determine if it is dangerous waste and if it needs to be treated.

Configuration Management Document(s):

Requirement Source(s):

- *Radioactive Waste Management*, DOE O 435.1
- *Dangerous Waste Regulations*, WAC 173-303

Implementation:

- The implementing mechanism(s) and traceability will be established within the WTP Requirements Management Program. The current implementation status can be obtained from the Mission Integration Requirement Area Manager (RAM) as identified in 24590-WTP-LIST-RARM-RM-0001, *Designation of Requirement Area Managers and Subject Matter Experts* (BNI 2018h).

3.3.1.2 Prepare waste profile form for each campaign and submit to IDF for review and approval.

Requirement Basis: The requirement basis for this requirement has not been developed but is expected to closely align with the waste disposal program developed for the Environmental Restoration Disposal Facility (ERDF). At ERDF, the waste profile form initiates the process

to generate a waste profile in WMIS. The waste for a given campaign is expected to be homogeneous to the extent that a bounding waste profile can be established.

Configuration Management Document(s):

Requirement Source(s):

- The requirement sources will be provided by the IDF.

Implementation:

- The implementing mechanism(s) and traceability will be established within the WTP Requirements Management Program. The current implementation status can be obtained from the Mission Integration RAM as identified in *Designation of Requirement Area Managers and Subject Matter Experts* (BNI 2018h).

- 3.3.1.3 Notify the TOC and IDF in case of interruption of scheduled ILAW product package transfers. Acknowledge receipt of interruption of service notification from other Hanford contractors.

Requirement Basis: Interruption of ILAW product package production at WTP will impact other Hanford contractors that participate in the transportation, shipping, and disposal of these packages. Prompt communication of interruptions is needed to minimize the impact to other contractors.

Configuration Management Document(s):

Requirement Source(s):

- None

Implementation:

- The implementing mechanism(s) and traceability will be established within the WTP Requirements Management Program. The current implementation status can be obtained from the Mission Integration RAM as identified in *Designation of Requirement Area Managers and Subject Matter Experts* (BNI 2018h).

- 3.3.1.4 Submit ILAW package serial number, ILAW product package weight, waste characteristics, radionuclide inventory, waste profile number, dose, and surface contamination measurements for each ILAW product package into the receiving facility's Waste Management Information System.

Requirement Basis: *Radioactive Waste Management* DOE O 435.1 states that waste characterization will be documented in sufficient detail to ensure safe management and compliance with the waste acceptance requirements of the facility receiving the waste.

WAC 173-303, *Dangerous Waste Regulations*, requires waste to be designated to determine if it is dangerous waste and if it needs to be treated.

Configuration Management Document(s):

Requirement Source(s):

- *Radioactive Waste Management*, DOE O 435.1
- *Dangerous Waste Regulations*, WAC 173-303

Implementation:

- The implementing mechanism(s) and traceability will be established within the WTP Requirements Management Program. The current implementation status can be obtained from the Mission Integration RAM as identified in *Designation of Requirement Area Managers and Subject Matter Experts* (BNI 2018h).

- 3.3.1.5 Prior to the ILAW transporter system leaving the LAW Export High Bay, the WTP Contractor shall complete the generator section of the ILAW Glass Log Shipment Checklist. The WTP Contractor will record the use of fixatives and communicate to IDF.

Requirement Basis: As the generator of the ILAW product package, the WTP Contractor is responsible to verify that ILAW product packages meet the conditions for shipment and disposal. The WTP Contractor may elect to use fixative on containers that are not adequately cleaned of removable contamination. Any fixative that is applied to containers must be identified to the IDF for acceptance.

Configuration Management Document(s):

Requirement Source(s):

- *ILAW Package Specific Safety Document*, RPP-RPT-60378 (WRPS 2020a)
- *Review of ILAW Container Fixative Selection/Use and Transporter Pallet Posting and Labeling*, CCN 318188 (BNI 2020o)

Implementation:

- The implementing mechanism(s) and traceability will be established within the WTP Requirements Management Program. The current implementation status can be obtained from the Mission Integration RAM as identified in *Designation of Requirement Area Managers and Subject Matter Experts* (BNI 2018h).

- 3.3.1.6 Prior to the ILAW transporter system leaving the WTP site, the WTP Contractor shall conduct the contamination and radiation shipment surveys for the ILAW transporter system and make the results available to the IDF.

Requirement Basis: Contamination and radiation levels for the entire ILAW transporter system are confirmed to be acceptable for transport across the Hanford Site.

Configuration Management Document(s):

Requirement Source(s):

- *Radiation Level Limitations*, 49 CFR 173.441
- *Contamination Control*, 49 CFR 173.443
- *Dangerous Waste Regulations*, WAC 173-303

Implementation:

- The implementing mechanism(s) and traceability will be established within the WTP Requirements Management Program. The current implementation status can be obtained from the Mission Integration RAM as identified in *Designation of Requirement Area Managers and Subject Matter Experts* (BNI 2018h).

3.3.2 TOC Programmatic Requirements

3.3.2.1 Transmit tank waste characterization data for each campaign to WTP.

Requirement Basis: The tank waste characterization data for each campaign is required for the WTP Contractor to develop the glass form waste characterization data. This data provides a bounding characterization of the waste feed to WTP for a given campaign.

Radioactive Waste Management DOE O 435.1 requires low-level waste to be characterized.

WAC 173-303, *Dangerous Waste Regulations*, requires waste to be designated to determine if it is dangerous waste and if it needs to be treated.

Configuration Management Document(s):

Requirement Source(s):

- *Radioactive Waste Management*, DOE O 435.1
- *Dangerous Waste Regulations*, WAC 173-303

Implementation:

- The implementing mechanism(s) will be established by the TOC.

3.3.2.2 Ship the ILAW product packages from WTP to IDF. The transporter route shall begin and end at the WTP transporter staging area or other designated area.

Requirement Basis: TOC will provide shipping services to move the transporter trailer from the WTP site to the IDF. This allows the ILAW product package processing activities in the LAW container finishing handling system to occur independently of the activities to externally ship the transporter from the WTP site.

Configuration Management Document(s):

Requirement Source(s):

- None

Implementation:

- The implementing mechanism(s) will be established by the TOC.

3.3.2.3 Prepare ILAW product package shipping documentation and transmit to the IDF.

Requirement Basis: Shipping documentation requirements are established in *Dangerous Waste Regulations*, WAC 173-303. IDF, as the transporter, will require a copy of the shipping documentation.

Configuration Management Document(s):

Requirement Source(s):

- *Dangerous Waste Regulations*, WAC 173-303

Implementation:

- The implementing mechanism(s) will be established by the TOC.

3.3.2.4 Prior to the ILAW transporter system leaving the WTP site, the following activities shall be completed:

- Complete the Shipper section of the ILAW Glass Log Shipment Checklist.
- Verify the correct placards on the ILAW transporter system.

Requirement Basis: Completion of the ILAW Glass Log Shipment Checklist verifies that the shipment of ILAW product packages is acceptable for transport across the Hanford Site. Package markings and labels are required by *Dangerous Waste Regulations*, WAC 173-303.

Configuration Management Document(s):

Requirement Source(s):

- *Dangerous Waste Regulations*, WAC 173-303
- *ILAW Package Specific Safety Document*, RPP-RPT-60378 (WRPS 2020a)

Implementation:

- The implementing mechanism(s) will be established by the TOC.

3.3.2.5 Notify the WTP Contractor and IDF in case of interruption of scheduled ILAW product package transfers. Acknowledge receipt of interruption of service notification from other Hanford contractors.

Requirement Basis: Interruption of ILAW product package transfers will impact other Hanford contractors that participate in the production and disposal of these packages. Prompt communication of interruptions is needed to minimize the impact to other contractors.

Configuration Management Document(s):

Requirement Source(s):

- None

Implementation:

- The implementing mechanism(s) will be established by the TOC.

3.3.3 IDF Programmatic Requirements

3.3.3.1 Receive and review the waste profile form for each campaign and enter an approved waste profile into the Waste Management Information System. Ensures OWTFs are available for future shipments of ILAW product packages within the bounds of the waste profile.

Requirement Basis: The requirement basis for this requirement has not been developed but is expected to closely align with the waste disposal program developed for the ERDF. At ERDF, waste profiles are developed by the generator and OWTFs are used to authorize waste shipments.

Configuration Management Document(s):

Requirement Source(s):

- The requirement sources will be established by the IDF.

Implementation:

- The implementing mechanism(s) will be established by the IDF.

3.3.3.2 Provide tractors and drivers to transport ILAW product packages and empty transporter systems between the WTP and the IDF in accordance with the *Hanford Sitewide Transportation Safety Document*.

Requirement Basis: IDF will complete transportation activities per the requirements of the *Hanford Sitewide Transportation Safety Document*.

Configuration Management Document(s):

Requirement Source(s):

- *Hanford Sitewide Transportation Safety Document*, DOE/RL-2001-36 (DOE 2017)

Implementation:

- The implementing mechanism(s) will be established by the IDF.

3.3.3.3 Prior to the ILAW transporter system leaving the IDF, the following activities shall be completed:

- Complete contamination survey of the ILAW transporter system. The contamination limits shall be compliant with 10 CFR 835 Appendix D.
- Decontaminate ILAW transporter system as required to achieve 10 CFR 835 Appendix D contamination limits.
- Complete inspection of the ILAW transporter system and communicate results to the WTP Contractor.

Requirement Basis: The contamination survey limits are established due to the ILAW transporter system interface with the LAW Facility Export High Bay. The LAW Facility Export High Bay is not designed as a contamination area. Accordingly, WTP is required by 10 CFR 835, Appendix D, to maintain the Export High Bay less than or equal to 20 dpm/100 cm² alpha and less than or equal to 1,000 dpm/100 cm² beta-gamma. Since the ILAW transporter and pallets enter the Export High Bay, they will be limited to the contamination levels required for the Export High Bay.

Configuration Management Document(s):

Requirement Source(s):

- 10 CFR 835 Appendix D

Implementation:

- The implementing mechanism(s) will be established by the IDF.

3.3.3.4 Complete a record of disposal of each ILAW product package in the Waste Management Information System and notify the WTP Contractor that the record is available.

Requirement Basis: *Dangerous Waste Regulations*, WAC 173-303, requires the disposal facility to notify the generator of the final disposal of each ILAW product package.

Configuration Management Document(s):

Requirement Source(s):

- *Dangerous Waste Regulations*, WAC 173-303

Implementation:

- The implementing mechanism(s) will be established by the IDF.

- 3.3.3.5 Notify the TOC and the WTP Contractor in case of interruptions at IDF that impact scheduled ILAW product package transfers. Acknowledge receipt of interruption of service notification from other Hanford contractors.

Requirement Basis: Interruption of ILAW product package receipt or disposal at IDF will impact other Hanford contractors that participate in the production, transportation, and shipping of these packages. Prompt communication of interruptions is needed to minimize the impact to other contractors.

Configuration Management Document(s):

Requirement Source(s):

- None

Implementation:

- The implementing mechanism(s) will be established by the IDF.

- 3.3.3.6 Once an ILAW product package has departed the WTP site and is determined to be non-conforming, then it shall be segregated from conforming packages while the disposition is determined. The WTP Contractor and TOC shall be notified once an ILAW product package is determined to be non-conforming.

Requirement Basis: ILAW product packages that are outside of the established criteria are considered non-conforming. The criteria are in *Waste Acceptance Criteria for the Integrated Waste Disposal Facility* (CH2 2019). *Radioactive Waste Management* DOE O 435.1 requires a process for the disposition of non-conforming wastes. This requirement will initiate this process.

Configuration Management Document(s):

Requirement Source(s):

- *Radioactive Waste Management*, DOE O 435.1
- *Waste Acceptance Criteria for the Integrated Disposal Facility*, IDF-00002 (CH2 2019)

Implementation:

- The implementing mechanism(s) will be established by the IDF.

4 Requisite Interface Items

Some interfaces may have additional actions to be performed to establish a complete interface. Any of these actions that do not fall into the above requirements categories are listed as requisite interface items. These items are typically single actions to be performed prior to commissioning. A requisite interface item is considered completed when objective evidence is provided to verify the action was performed.

The requisite interface items are excluded from the WTP Requirements Management Program and associated procedures. The Mission Integration RAM may use the requirements management tool to track requisite interface items.

4.1 WTP Contractor Requisite Interface Items

No requisite interface items were identified for the WTP Contractor.

4.2 TOC Requisite Interface Items

- 4.2.1 Provide data requirements to the WTP Contractor and IDF for shipping, quality assurance, environmental, permitting, and radioactive release information documentation.
- 4.2.2 Provide requirements for package markings and labels to the WTP Contractor.
- 4.2.3 Issue the PSSD for the ILAW product package.
(This item was completed with the issue of RPP-RPT-60378 [WRPS 2020a].)

4.3 IDF Requisite Interface Items

- 4.3.1 Provide IDF waste acceptance criteria to WTP and TOC prior to hot commissioning.
(This item was completed with the issue of IDF-00002 [CH2 2019].)
- 4.3.2 Update the PSSD for the ILAW product package.

5 References

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Appendix A - ICD 15 Issues and Open Items

NOTE: This appendix lists open ICD issues, ICD issues that have been closed since the last revision, and new ICD open items. New open items are added to each ICD revision with a tracking number or schedule activity to track their completion outside the ICD. Open items are removed from the ICD in the next revision following their introduction.

Issue/Action/ Open Item No.	Description	Tracking No	Responsible Org.	Responsible Actionee	Originator	Status/ Due Date	Support Information / Basis for Closure	Comments
I15-22	Provide a recommendation to ORP to address protocol, including any needed contract changes, in the event that an ILAW product package is rejected.	24590-WTP-ATS-MGT-12-0476	WTP IDF	Matt Vanatta/Tim Dallas Randy Havenor	N/A	Closed White paper completed 7/15/2020	Develop and document a recommended protocol for WTP-TOC action for rejected ILAW container(s). Include recommended contract changes.	White Paper for Non-Conforming ILAW Containers at IDF (IDF-00007 Rev 0) was completed and signed on 07/15/20. ORP approved issue closure per CCN 291798.
I15-23	Finalize the inclusion of an ILAW transporter staging/parking area on the WTP site to support operational needs in the event that ILAW product package transportation off the site is delayed.	PAIL 19-1260	WTP	Walt Taylor Brian Ponte	N/A	Closed WTP Contract Mod issued 1/11/2021	A LEAN evaluation in 2015, RPP-RPT-59097 (WRPS 2016) determined that a staging area at the WTP site would be highly beneficial for operational reasons to provide an area for loaded ILAW transporters to park on the WTP site in the event of transportation delays to the IDF. Potential delays could be weather-related, shipping documentation related, or the planned IDF receipt schedule for ILAW packages of dayshift only while the WTP LAW facility is producing the ILAW packages on a 24/7 production schedule.	For background information, please see the following three (3) documents: 1) RPP-RPT-59097, ILAW Transporter Design LEAN Evaluation, page 41 of 42 (WRPS 2016) 2) CCN 282254, One System Decision Document 0009, page 4 of 5 (BNI 2016c) 3) RPP-RPT-59093, ILAW Transportation Options Analysis (WRPS 2017a), Section 4.0, page 10. Contract Modification 502 to incorporate the staging area proposal was issued on 1/11/2021. ORP approved issue closure per CCN 291798.
I15-24	Identify owner of ILAW Transporter System for WTP hot commissioning and ensuing operation, including responsible future contractor for managing ILAW Transporter System operational interfaces.	DFLAW Integrated Schedule Activity 1T2935	TOC	Buddy Cunningham	Rick Tedeschi	Closed 3/17/2021 Transporter fleet to be transferred from WRPS to IDF.	Current TOC, PRC, MSC, and WTP contracts do not qualify ILAW transporter system ownership. The current final Tank Closure Contract Request for Proposal does not mention any ILAW transporter scope. The DOE has decided that WTP LAW will be operated by a future (TBD) contract other than the Tank Closure Contract.	Decision Document 0028 was issued in September 2020 which designated Central Plateau Cleanup Contract (CPCC) as the contractor that will own and operate the ILAW Transporter system. The decision process for identifying CPCC as the contractor with ownership of the ILAW Transporter System is documented through an Inter-Contractor Transfer Order form rather than contract modification is not needed. ORP approved issue closure per CCN 291799.
A15-07	Establish a schedule for WTP receipt of empty ILAW container transport equipment and required pickup of filled ILAW container transport equipment. (formerly Appendix B, A15-1).	24590-WTP-ATS-MGT-12-0477	WTP	Greg Jager	N/A	Closed 5/01/19	Establish working level schedule of empty transport equipment staging and filled transport equipment pickup as a fragnet for planning WTP-TOC ILAW container transfers.	This action was created to help drive discussion and decisions that were needed to further design for both the container transport trailers and the container staging area at WTP. These designs are significantly mature and the detailed operating procedures which will have reviews as prescribed in the ICD will coordinate the staging and transport. This action can close.
A15-08	Define, review, and finalize ILAW container transfer procedures and protocol. (formerly Appendix B, A15-2).	24590-WTP-ATS-MGT-12-0478	WTP TOC IDF	Tim Dallas/Matt Vanatta Buddy Cunningham Randy Havenor	N/A	Open 6/30/22	Finalize ILAW Container Transfer protocols interfacing WTP and TOC. Develop WTP draft ILAW container transfer protocol description document for interface discussions with TOC.	ILAW Handling Procedure completion date forecast has been revised based on contractor ORR prior to hot commissioning. This change aligns the ICD action date to the WTP project schedule associated with updating the radioactive waste program to support ILAW and secondary waste.

Refer to the ICD Action Item List for open items created in previous revisions of this ICD.

Appendix B - Illustrations for ILAW Disposal

Figure 3 ILAW Transporter System Concept
(Graphic courtesy of WRPS)



Figure 4 **Prototype ILAW Transporter Trailer with Pallets**

(Photo courtesy of WRPS)



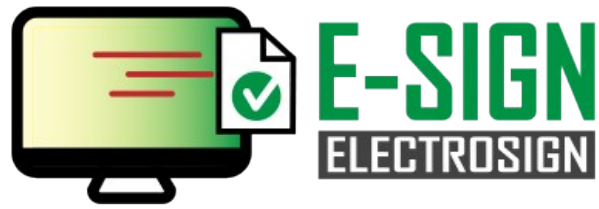
Figure 5 ILAW Transporter Routes
(Graphic courtesy of WRPS)



Figure 6 Aerial View of the Integrated Disposal Facility

(Photo courtesy of CPCC)





This document has been digitally signed using the Electrosign process.

Document for Signature

Document Number: 24590-WTP-ICD-MG-01-015 **Rev:** 6

Participants	Signature	Completed	Status	Result	Comments
Final Approver	4/15/2021 1:08 PM				
Taylor, Walt		4/20/2021 11:18 AM	Completed	Approve	