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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
3100 Port of Benton Blvd • Richland, WA 99354 • (509) 372-7950
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July 7, 2016

16-NWP-108

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

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Richland Operations Office
United States Department of Energy
PO Box 550, MSIN: A7-50
Richland, Washington 99352

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2435 Stevens Center Place, MSIN: H4-02
Richland, Washington 99354

Mr. John A. Ciucci, President and CEO
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Mr. Bill K. Johnson, President
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Mr. Michael H. Schlender,
Deputy Director for Operations
Pacific Northwest National Laboratory
PO Box 999, MSIN: K1-46
Richland, Washington 99352

Mr. Scott M. Sax, President
Washington Closure Hanford, LLC
2620 Fermi Avenue, MSIN: H4-24
Richland, Washington 99354

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

Re: Revision to Ecology Letter 16-NWP-107, Proposed Agency Initiated Permit Modification 8c.2016.3D to the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste*, Part III, Operating Unit Group 10, Waste Treatment and Immobilization Plant, WA7890008967

Dear Ladies and Gentlemen:

Ecology Letter 16-NWP-107, to Kevin W. Smith, et al, from Suzanne Dahl, dated July 6, 2016 was issued with incomplete enclosures. That letter and its enclosures are being replaced with this letter 16-NWP-108 and its enclosure. Please disregard Ecology Letter 16-NWP-107 and its enclosure, and replace with this version. This letter transmits the complete proposed Permit Modification 8c.2016.3D to Part III, Operating Unit Group 10, Waste Treatment and Immobilization Plant, of the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste*.

The proposed permit modification incorporates design information for the Low-Activity Waste (LAW) Melter Process System, specifically the LAW Melters.

Washington Administrative Code 173-303-840(3)(d) requires at least a 45-day public comment period for the draft permit modification. The Department of Ecology (Ecology) will hold this public comment period from July 11 through August 25, 2016. A public meeting is not scheduled, but Ecology will consider holding one if there is enough interest

The proposed permit modification is on the enclosed DVD and available on the Ecology website at http://www.ecy.wa.gov/programs/nwp/commentperiods.htm. Copies of this DVD are also available at the Hanford Public Information Repositories in Richland, Spokane, and Seattle, Washington, and in Portland, Oregon. Copies of the DVD are also available at:

Department of Ecology Nuclear Waste Program 3100 Port of Benton Boulevard Richland, Washington 99354	United States Department of Energy Administrative Record 2440 Stevens Center Place Richland, Washington 99354

If there are any questions regarding this permit modification, please contact Stacy Nichols, WTP Permit Writer, at stacy.nichols@ecy.wa.gov or (509) 372-7917.

Sincerely,

Suzanne Dahl
Dangerous Waste Permit Manager
Nuclear Waste Program

sn/jt
Enclosure

cc: See page 3

cc electronic w/o enc:

Dave Bartus, EPA
Dennis Faulk, EPA
Jan Bovier, USDOE
Mary Beth Burandt, USDOE
Cliff Clark, USDOE
Joanne Grindstaff, USDOE
Bill Hamel, USDOE
Rob Hastings, USDOE
Lori Huffman, USDOE
Ed MacAlister, USDOE
Tony McKarns, USDOE
Gae Neath, USDOE
Barry Curn, BNI
Brad Erlandson, BNI
Serena Greager, BNI
Roger Landon, BNI
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Walter Remsen, BNI
Dan Robertson, BNI
Moussa Jaraysi, CHPRC
Dru Butler, MSA
Jon Perry, MSA
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Michael Stephenson, PNNL
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Debra Alexander, Ecology
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Nitya Chandran, Ecology
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Katherine Kelly, EPA
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Lori Huffman, USDOE
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Steve Hudson, HAB
Ken Niles, ODOE
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Larry Klimek, USFWS
Mike Livingston, WDFW
John Martell, WDOH
John Wiesman, WDOH
Ted Maxwell, WSDA
Allyson Brooks, WSDAHP
Shane Early, WSDNR
BNI Correspondence Control
CHPRC Correspondence Control
Environmental Portal
Gonzaga University Foley Center Library
Hanford Operating Record General File
MSA Correspondence Control
PNNL Correspondence Control
Portland State University Library, Government Information
University of Washington Suzzallo Library, Government Information
USDOE-ORP Correspondence Control
USDOE Public Reading Room, CIC
USDOE-RL Correspondence Control
USEPA Region 10 Correspondence Control
USEPA Region 10 Hanford Field Office Correspondence Control
WCH Correspondence Control
WRPS Correspondence Control

cc w/enc, DVD and hard copy:

Administrative Record: Hanford Site-wide Permit
NWP Central File
NWP Library

cc w/o enc:

NWP Reader File

Ecology Proposes Changes to Waste Treatment Plant Permit

The Washington State Department of Ecology (Ecology) is proposing a change to the *Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit*, Revision 8C. This change affects the *Dangerous Waste Portion for the Treatment, Storage, and Disposal of Dangerous Waste* for the Waste Treatment and Immobilization Plant (WTP Permit). The proposed change is located in Part III, Operating Unit 10.

The permittees are:

U.S. Department of Energy Office of River Protection
P.O. Box 450
Richland, Washington 99352

Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

The proposed change will add to the WTP Permit a design package for installation of equipment for the Low-Activity Waste Facility Melter Process System. This design package is explained on page 2.

This proposal is one of many modifications to the original WTP Permit. Periodic updates allow the permittees to continue construction while designing other parts of the WTP.

Waste Treatment Plant Overview

The WTP has three facilities that will separate and process Hanford's tank waste for long-term disposal:

- Pretreatment Facility
- Low-Activity Waste Vitrification Facility
- High-Level Waste Vitrification Facility

At the heart of tank waste treatment is vitrification, or immobilizing waste into solid glass.

In the Pretreatment Facility, tank waste is separated into low-activity waste and high-level waste. The waste is then sent to either the low-activity waste or high-level waste vitrification facility, where it is mixed with glass formers, and piped to large heating containers called melters.

Why It Matters

The proposed permit changes affect the Waste Treatment and Immobilization Plant (WTP). WTP will immobilize in glass 56 million gallons of dangerous radioactive and chemical waste stored in 177 underground storage tanks at Hanford.

Some waste from the tanks has polluted groundwater that flows toward, and can seep into, the Columbia River. Safely treating tank waste is an important goal to help protect people and the environment.

Public Comment Period

July 11, 2016 - August 25, 2016

To Submit Comments

Please send comments by email (preferred), U.S. mail, or hand deliver them to:

Ginger Wireman
3100 Port of Benton Blvd.
Richland, WA 99354
Hanford@ecy.wa.gov

Public Hearing

A public hearing is not scheduled, but if there is enough interest, we will consider holding one. To request a hearing or for more information, contact:

Ginger Wireman
509-372-7950
Hanford@ecy.wa.gov

Special Accommodations

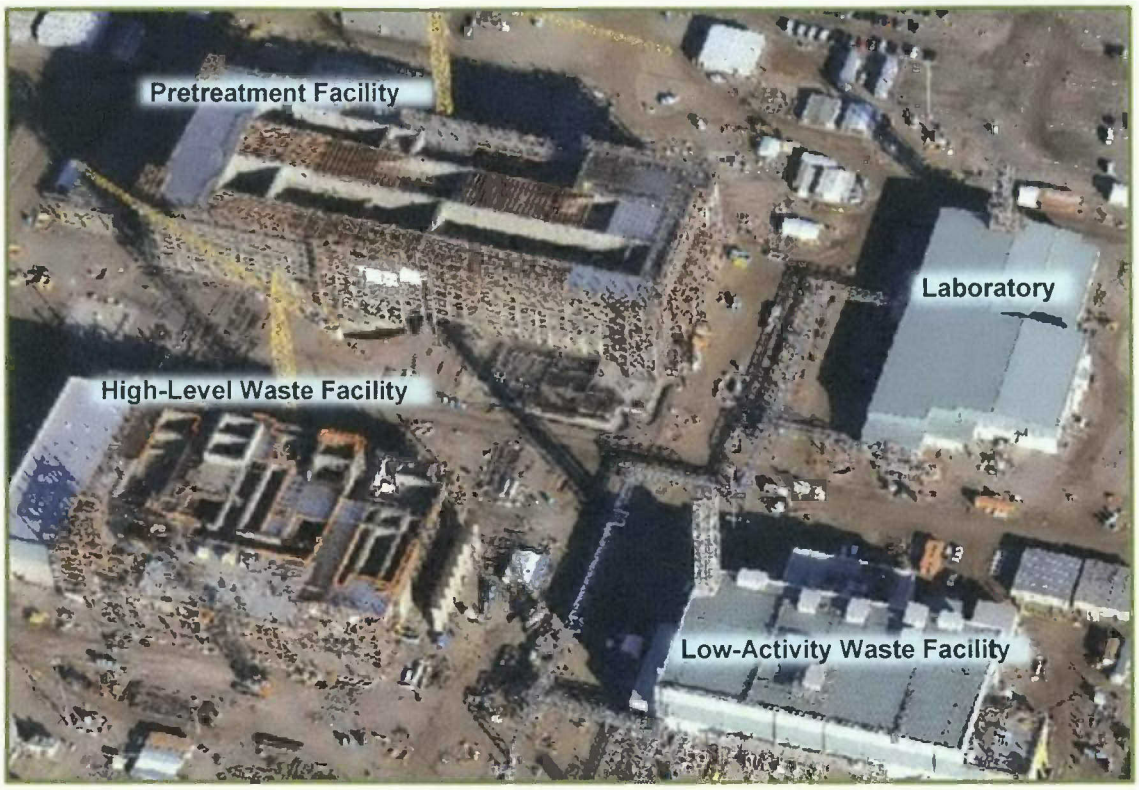
To request ADA accommodation, including materials in a format for the visually impaired, call the Nuclear Waste Program at 509-372-7950.

Persons with impaired hearing may call Washington Relay Service at 711.

Persons with speech disability may call TTY at 877-833-6341.

During vitrification, the melters will heat pretreated tank waste and glass-forming chemicals to 2,100 degrees Fahrenheit. Then the molten liquid will be poured and sealed in stainless-steel disposal containers, where it will cool into solid glass logs (solid waste).

In glass form, the waste is still radioactive. However, the solid waste will be extremely durable and waterproof, which will protect people and the environment for thousands of years as the radioactivity decays.



The Waste Treatment Plant, commonly called the vit plant, in October 2015 (photo courtesy of Bechtel).

Design Package for the Low-Activity Waste Melter Process System

The Low-Activity Waste (LAW) Facility permit package, LAW-016, addresses installation of the two LAW melters at the three foot elevation of the LAW Facility.

In the Low-Activity Waste Melter Process (LMP) System, LAW melter feed consisting of LAW waste concentrate mixed with glass former chemicals, is transferred as a slurry by air displacement pumps from the Melter 1 Feed Vessel (LFP-VSL-00002) to LAW Melter 1 (LMP-MLTR-0001) through feed nozzles in the melter lid. The process is the same for slurry transferred from the Melter 2 Feed Vessel (LFP-VSL-00004) to LAW Melter 2 (LMP-MLTR-00002).

In each melter, the slurry is fed through a system of six feed nozzles into a glass melt pool that is maintained at a temperature of 1050 °C to 1200 °C (1922 °F to 2192 °F). When the slurry first falls onto the top of the melt pool, the slurry will form a cold cap on top of the melt pool. Bubblers inside the melters agitate the glass pool to aid in mixing the cold cap with the molten glass.

Six electrodes embedded in the refractory provide the joule heating that keeps the melt pool temperature constant and melts the cold cap. When the melt pool level inside of a melter reaches an appropriate level, the process is started to lift glass into the discharge chambers into a container.

The evaporated water and waste feed volatile constituents are treated by the primary and secondary offgas treatment systems, monitored, and released to the atmosphere.

Reviewing the Proposed Changes

Ecology invites you to review and comment on this proposed WTP Permit change. The comment period runs from July 11, 2016, through August 25, 2016. See the box on the right side of page 1 for information on how to submit comments.

During the public comment period, documents will be available for review, beginning July 11, 2016, on Ecology's website and at the locations listed on page 4.

Terms To Know

Dangerous Waste Permit: A State-issued permit allowing facilities to store, treat, and/or dispose of dangerous waste.

Deep geologic repository: A long-term nuclear waste disposal site excavated underground, below 980 feet, in a stable geologic environment.

High-level waste: Results from reprocessing spent nuclear fuel. This includes liquid produced during reprocessing and solids derived from this liquid waste that contain fission products in sufficient concentrations and other highly radioactive material that, by law, requires permanent isolation.

Low-activity waste: Remains after as much radioactivity as is technically and economically practical has been separated from high-level waste. When vitrified, it may be disposed of as low-level radioactive waste in a near surface facility at Hanford.

Offgas: A gaseous and hazardous byproduct of tank waste treatment.

Resource Conservation & Recovery Act (RCRA): Law authorizing the U.S. Environmental Protection Agency to manage hazardous waste, including the generation, transportation, treatment, storage, and disposal of radioactive hazardous and other solid waste and waste in underground tanks.

Underground storage tank: A tank that is entirely below the surface of and covered by the ground.

At Hanford, two types of underground storage tanks have capacities ranging from 50,000 to 1,000,000 gallons. The single-shell tanks have one steel liner encased in reinforced concrete, and do not comply with State environmental laws. The double-shell tanks have two steel liners in reinforced concrete and contain potential leaks, in compliance with the law.

Vitrification: Immobilizing waste by mixing it with glass formers and melting the mixture into a glass form that cools into a solid.

Waste Treatment and Immobilization Plant: Facility to thermally treat and vitrify tank waste at Hanford.

DEPARTMENT OF
ECOLOGY
State of Washington

3100 Port of Benton Blvd.
Richland, WA 99354

Public Comment Period
Hanford's Waste Treatment Plant
Permit Modification
July 11, 2016 - August 25, 2016

Hanford's Information Repositories and Document Review Locations

Richland
Ecology Nuclear Waste Resource Center
3100 Port of Benton Blvd.
Richland, WA 99354
Contact: Valarie Pardue
509-372-7950

Department of Energy Administrative Record
2440 Stevens Drive, Room 1101
Richland, WA 99354
Contact: Heather Childers
509-376-2530

Department of Energy Reading Room
2770 Crimson Way, Room 101L
Richland, WA 99354
Contact: Janice Parthree
509-375-3308

Portland
Portland State University
Branford Price Millar Library
1875 SW Park Avenue
Portland, OR 97207
Contact: Claudia Weston
503-725-4542

Seattle
University of WA Suzzallo Library
P.O. Box 352900
Seattle, WA 98195
Contact: Hilary Reinert
206-543-5597

Spokane
Gonzaga University Foley Center
502 E Boone Avenue
Spokane, WA 99258
Contact: John Spencer
509-313-6110

DEPARTMENT OF
ECOLOGY
State of Washington

STATEMENT OF BASIS

Proposed Permit Modification of the
Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste,
Part III, Operating Unit Group 10, Waste Treatment and Immobilization Plant,
WA7890008967

June 2016

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STATEMENT OF BASIS

Proposed Permit Modification of the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste*, Part III, Operating Unit Group 10, Waste Treatment and Immobilization Plant, WA7890008967

Permittees

United States Department of Energy
Office of River Protection
PO Box 450
Richland, Washington 99352

Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

The Washington State Department of Ecology (Ecology) developed this Statement of Basis to fulfill the requirements of Washington Administrative Code (WAC) 173-303-840(2)(f)(iv).

The Statement of Basis provides information on Ecology's decision to modify the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste,* Part III, Operating Unit Group 10, Waste Treatment and Immobilization Plant (WTP), hereafter called the "WTP Permit."

This modification includes supporting technical information and engineering drawings for construction on the regulated portions of the WTP:

- Pretreatment Facility (PTF)
- Low-Activity Waste (LAW) Facility
- High-Level Waste (HLW) Facility
- Laboratory (LAB) Facility
- Balance of Facilities (BOF)

This modification also incorporates format changes to the WTP Permit appendices and changes to supporting information. Ecology chose to prepare a Statement of Basis as described in WAC 173-303-840(2)(f)(iv), rather than a Fact Sheet.

We prepared a Statement of Basis for previous major WTP Permit modifications. This process will be followed for all permit modifications that incorporate similar design package information and other changes to the WTP Permit Conditions.

This Statement of Basis is divided into four sections:

1.0 Hanford Facility Resource Conservation and Recovery Act Permit (Site-wide Permit).
2.0 The WTP Permitting Process.
3.0 Procedures for Reaching a Final Decision on the Draft WTP Permit Modification.
4.0 Proposed Modifications to the WTP Permit.

Also included at the end of the Statement of Basis are tables, provided by the Permittees, listing the design documents and drawings they submitted for incorporation into the WTP Permit.

1.0 HANFORD FACILITY RESOURCE CONSERVATION AND RECOVERY ACT PERMIT (SITE-WIDE PERMIT)

Ecology first issued the Site-wide Permit in 1994. The Site-wide Permit provides standard and general facility conditions, as well as unit-specific conditions for the operation, closure, and post-closure care of mixed and dangerous waste treatment, storage, and disposal (TSD) units at Hanford. Approximately 40 TSD units are operating or closing under Resource Conservation and Recovery Act final status standards.

Conditions of the Site-wide Permit are presented in six parts:

Part I	Standard Conditions.
Part II	General Facility Conditions.
Part III	Unit-Specific Conditions for Final Status Operating Units.
Part IV	Corrective Action for Past Practice Units.
Part V	Unit-Specific Conditions for Units Undergoing Closure.
Part VI	Unit-Specific Conditions for Units in Post-Closure.

The WTP TSD Unit was added to Part III of the Site-wide Permit on September 25, 2002. The WTP Permit portion was effective on October 25, 2002. The WTP TSD Unit is currently being constructed under final permit status standards.

The Washington State Dangerous Waste Regulations in WAC 173-303-830 describe the types of changes or modifications that may be made to a Dangerous Waste Permit issued by Ecology.

The WTP Permit is modified as needed, typically one or more times a year, to incorporate Class 1, [1]1, 2, and 3 modifications; Agency-Initiated modifications; and minor changes in grammar, consistency, and presentation.

2.0 THE WTP PERMITTING PROCESS

We are using a phased (or stepped) approach to permit the WTP TSD Unit. The first phase was completed on September 25, 2002, with issuance of a final Dangerous Waste Permit allowing construction of the LAW, PTF, HLW, LAB, and BOF facilities to start.

A WTP Interim Compliance Schedule for the United States Department of Energy provides Ecology additional detailed information addressing the submittal of design documents necessary to support construction of the rest of the WTP TSD Unit, and its eventual operation.

This second phase of permitting is included in the compliance schedule, and requires the Permittees to submit design and other information for Ecology approval before regulated portions of the WTP TSD Unit are constructed.

The third phase of permitting is implementation of the last portion of the compliance schedule. This requires updating portions of the Dangerous Waste Permit Application and then modifying the WTP Permit prior to facility start-up operations. These portions (for example, Contingency Plan, Closure Plan, and Training Plan) of the WTP Permit are operational in nature and cannot be completed before the design is nearly complete.

When the three phases of permitting are completed, the WTP TSD Unit will comply with all the applicable requirements of WAC 173-303. Then, after receiving written permission from Ecology, the Permittees can begin treatment and storage of dangerous and mixed waste at the WTP.

The design submittals (second permitting phase) were structured to allow the Permittees to provide design information in roughly the same order as the WTP facilities are constructed.

The design packages start at the lowest level of the facilities (below-grade levels) and are submitted for regulated areas of each level before construction begins. This process was adjusted for some design packages. When the facility process systems are installed on more than one level, the design packages will address the associated components for each level. This prevents confusion caused by one process system description being segmented into multiple design packages.

The WTP Permit organizes design packages into three general groups by the type of regulated equipment:

1. Primary containment (for example, tanks, miscellaneous units [evaporators and melters], and containment buildings).
2. Secondary containment.
3. Other associated regulated equipment (for example, ancillary equipment, equipment associated with miscellaneous units, and instrumentation).

Using tank systems as an example, secondary containment packages include details of the design of secondary containment that must be in place in regulated areas when the floors and walls are built for that level of each facility (for example, the floor slope, and sump locations).

The installation of tanks and other large equipment usually follows construction of the floors and walls. Therefore, a tank package on that level will be included in the WTP Permit before installation. The tank package would contain, for example, structural details for those tanks or miscellaneous units showing nozzle locations, unit volumes, and tank shell thickness.

The last equipment usually installed on a level for a tank system is the ancillary equipment (for example, piping, pumps, process instrumentation, and electrical equipment). Therefore, the ancillary equipment package provides details for the equipment on that level that will be included in the WTP Permit before installation. Information in the package would include, for example, materials of construction, and pump types and their operating limits.

Because each WTP facility consists of multiple levels, many design packages are required. Of the estimated 180 design packages, approximately 40 remain to be incorporated in the WTP Permit.

The primary containment, secondary containment, and the other associated regulated equipment design packages for different levels require repetitive information submittals in each package. Using tank systems as an example, most tanks will use the same construction specifications.

The WTP Permit allows the Permittees to reference the previously submitted design information, so some design packages consist mostly of references to information already provided.

3.0 PROCEDURES FOR REACHING A FINAL DECISION ON THE DRAFT WTP PERMIT MODIFICATION

The Washington State Hazardous Waste Management Act (Chapter 70.105, Revised Code of Washington [RCW]) and the rules declared in WAC Chapter 173-303 regulate the management of dangerous waste in Washington State. WAC 173-303-800 requires facilities that treat, store, and/or dispose of dangerous waste to obtain a permit for these activities.

Regulatory requirements for public notice and involvement on permit modifications are described in WAC 173-303-840(3) and (4). As required by WAC 173-303-840(3)(d), draft modifications to the WTP Permit will have at least a 45-day public comment period. The public comment period for this proposed permit modification begins on July 11, 2016, and ends on August 25, 2016.

Comments must be post-marked, received by e-mail, or hand-delivered no later than close of business (5:00 p.m. PST) August 25, 2016. Direct all written comments to:

Ginger Wireman
Washington State Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354
E-mail address: hanford@ecy.wa.gov

In accordance with WAC 173-303-840(10)(c), when a permit is modified, only the conditions subject to modification are open for comment. All other aspects of the existing Permit remain in effect for the duration of the modification.

Ecology will consider and respond to all written comments on this permit modification submitted by the deadline. Ecology will then make a final permit decision, which will become effective 30 days after Ecology provides notice of the decision to the Permittees and to all who commented. If the final decision includes substantial changes to the WTP Permit because of public comment, we will initiate a new public comment period.

Ecology will provide a Response to Comments document and a notification of the final permit decision to the Permittees and all others who commented. The final permit decision may be appealed within 30 days after issuance of that decision.

Copies of the WTP Permit, including the proposed permit modifications, are available for review at the Hanford Public Information Repositories. For additional information email hanford@ecy.wa.gov.

Hanford Public Information Repositories

Richland
Washington State Department of Ecology
Nuclear Waste Program Resource Center
3100 Port of Benton Boulevard
Richland, Washington 99354
Contact: Valarie Pardue (509) 372-7950

United States Department of Energy
Administrative Record
2440 Stevens Drive
Richland, Washington 99354
Contact: Heather Childers (509) 376-2530

United States Department of Energy
Reading Room
2770 Crimson Way, Room 101L
Richland, Washington 99354
Contact: Janice Parthree (509) 375-3308

Portland
Portland State University
Branford Price Millar Library
1875 Southwest Park Avenue
Portland, Oregon 97207
Contact: Claudia Weston (503) 725-4542

Seattle
University of Washington
Suzzallo Library
PO Box 352900
Seattle, Washington 98195
Contact: Hilary Reinert (206) 543-5597

Spokane
Gonzaga University
Foley Center
502 East Boone Avenue
Spokane, Washington 99258
Contact: John Spencer (509) 313-6110

This Statement of Basis and Public Notice for the proposed permit modification is also available online at http://www.ecy.wa.gov/programs/nwp/commentperiods.htm. If special accommodations are needed for public comment, contact Ginger Wireman, Ecology, at hanford@ecy.wa.gov.

4.0 PROPOSED MODIFICATIONS TO THE WTP PERMIT

This proposed permit modification contains the following package. New or revised documents submitted with the package are listed below. See Table 1 at the end of this document for the entire list of package documents.

This package contains four documents that are classified as confidential business information. These documents were submitted for consideration according to the criteria of the RCW 43.21A.160 and were found to meet the corresponding regulations in WAC 173-303-810(15). The documents are listed in Table 1, but are not included for public distribution or comment.

Design Package No. LAW-016, Rev. 0, for Miscellaneous Treatment Unit Subsystem for LAW Facility LMP System at El. 3 ft.

The Low-Activity Waste Facility permit package LAW-016 addresses installation of the two LAW melters at the 3 ft. elevation of the LAW Facility.

In the Low-Activity Waste Melter Process (LMP) System, LAW melter feed consisting of LAW waste concentrate mixed with glass former chemicals, is transferred as a slurry by air displacement pumps from the Melter 1 Feed Vessel (LFP-VSL-00002) to LAW Melter 1 (LMP-MLTR-0001) through feed nozzles in the melter lid. The process is the same for slurry transferred from the Melter 2 Feed Vessel (LFP-VSL-00004) to LAW Melter 2 (LMP-MLTR-00002).

In the melter, water and waste feed volatile constituents evaporate, leaving behind a layer of material known as the "cold cap". New slurry is added at about the same rate as the cold cap dissolves in the glass melt pool maintaining the quantity of cold cap material at a steady level. Waste feed components that remain in the cold cap undergo chemical reactions, are converted to their respective oxides, and dissolve in the melt pool. Bubblers inject air into the molten glass for agitation. As the slurry is fed, molten glass is formed that accumulates in the melt pool. When the melt level rises to a predetermined upper limit, and air lift mechanism is actuated and glass is discharged to a container. The evaporated water and waste feed volatile constituents are treated by the primary and secondary offgas-treatment systems, monitored, and released to the atmosphere.

Design package LAW-016, Rev. 0 consists of:

- An assessment report signed by an Independent, Qualified, Registered, Professional Engineer (IQRPE) certifying certain portions of the permit package.
- Melter assembly mechanical drawings.
- An engineering specification for the LAW melters.
- A specification change notice—update seismic clamp installation.
- A mechanical data sheet for each LAW melter.
- Corrosion evaluation for the LAW melters.

The complete list of documents included in the package is indicated by a "Y" in the "Included Column" in Table 1.

4.1 Incorporation of Class 1 and Class [1]1 Permit Modifications (PCNs) and Permit Equivalency Notices (PENs)

Previously approved Class 1 and Class [1]1 PCNs and PENs are incorporated through the Quarterly Modifications. There will be no PCNs or PENs incorporated through this proposed modification.

4.2 Supplemental Design Information

Table 1 lists the design information included in this proposed permit modification and the proposed location in the WTP Permit. At issuance of the final WTP Permit, Ecology will specify where each drawing or report resides in the WTP Permit.

Paper copies of the page changes to the WTP Permit that result from this modification will be placed in the Administrative Record.

The letter issuing the final WTP Permit decision to the Permittees and Hanford contractors will include the current WTP Permit with the modifications on a DVD.

4.3 Identifying Changes in this Proposed Permit Modification

As the WTP TSD Unit is constructed, Ecology will modify the WTP Permit for many reasons, including to clarify text, add new conditions, delete existing conditions, correct errors, or add information. To communicate the changes, proposed permit modifications will include page changes showing all significant proposed changes to the WTP Permit. The text to be deleted will be struck-out with a single line, and the new text will be redlined. Only the text being changed in the current modification will be indicated by redlines and strikeouts.

Newly added documents and drawings are provided for review in this proposed permit modification. New document and drawing numbers and titles are shown in redline/strikeout text in the affected appendix drawing lists.

When a WTP Permit modification is issued, "clean" pages incorporating permit modifications will be issued to the Permittees and placed in the Administrative Record. All redlines and strikeouts will be removed. Documents and drawings listed in the appendices will not be redlined and will be incorporated by reference only.

Ecology publication number 07-05-006, *Responsiveness Summary* (September 27, 2007), explains the reason for replacing permit version documents with source documents to which the WTP is constructed. Source documents are in a state of constant revision as design details are finalized and additional information is added to provide clarity and to correct typographical errors.

The Permittees use Document Change Notices to track changes not yet incorporated into source documents. In some cases, Document Change Notices are issued at the time of Ecology's review. These are not provided for public comment, but will appear in the next revision of the WTP Permit for review. Source documents have been replacing permit version documents since September 2007.

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Table 1 – Design Information Submitted by Permittees

Design Package No. LAW-016, Rev. 0
Miscellaneous Treatment Unit Subsystem for the LAW Facility LMP System at El. 3 ft

For Incorporation into the WTP Permit

Table of Contents

Engineering Document Title	Document Number	Revision	Permit Condition	Included	Remarks
IQRPE Independent Assessment Report	24590-CM-HC4-HXYG-00240-02-00014		III.10.H.5.c.i	Y	To be included in Appendix 9.11
Permit Package Drawings					
General Arrangement Plans	24590-LAW-P1-P01T-00002	7	III.10.H.5.c.ii	N	In Appendix 9.4
Process Flow Diagrams	24590-LAW-M5-V17T-00004	4	III.10.H.5.c.ii	N	In Appendix 9.1
	24590-LAW-M5-V17T-00005	4			
Piping and Instrument Diagrams	24590-LAW-M6-LMP-00001001 CBI	0	III.10.H.5.c.ii	N	In Appendix 9.2
	24590-LAW-M6-LMP-00002001 CBI, 00002002 CBI	0			
	24590-LAW-M6-LMP-00003001	0			
	24590-LAW-M6-LMP-00040001	0			
	24590-LAW-M6-LMP-00005001 CBI	0			
	24590-LAW-M6-LMP-00007001, 00007002	0			
	24590-LAW-M6-LMP-00008001	0			

Engineering Document Title	Document Number	Revision	Permit Condition	Included	Remarks
	24590-LAW-M6-LMP-00010001	0			
	24590-LAW-M6-LMP-00012001	0			
	24590-LAW-M6-LMP-00031001 CBI	0			
	24590-LAW-M6-LMP-00032001 CBI, 00032002 CBI	0			
	24590-LAW-M6-LMP-00033001	0			
	24590-LAW-M6-LMP-00035001 CBI	0			
	24590-LAW-M6-LMP-00037001, 00037002	0			
	24590-LAW-M6-LMP-00038001	0			
	24590-LAW-M6-LMP-00042001	0			
	24590-LAW-M6-LMP-00013001, 00013002, 00043001	0			
	24590-LAW-M6-LOP-00004001, 00004002	0			
	24590-LAW-M6-LOP-00005001, 00005002	0			
Mechanical Drawing					
LAW Melter Assembly - Isometric View	24590-LAW-MF-LMP-00001 CBI	0	III.10.H.5.c.ii III.10.H.5.c.vi	Y	To be included in Appendix 9.6
LAW Melter Assembly - Plan View	24590-LAW-MF-LMP-00002 CBI	0		Y	To be included in Appendix 9.6
LAW Melter Assembly – East, West and North Elevation	24590-LAW-MF-LMP-00003 CBI	0		Y	To be included in Appendix 9.6

Engineering Document Title	Document Number	Revision	Permit Condition	Included	Remarks
LAW Melter Assembly – Section A-A	24590-LAW-MF-LMP-00004 CBI	0		Y	To be included in Appendix 9.6
Engineering Specifications:					
Pressure Vessel Design and Fabrication	24590-WTP-3PS-MV00-T0001	5	III.10.H.5.c.ii III.10.H.5.c.iii III.10.H.5.c.vi	N	In Appendix 7.7. Rev 5 is going in LAW-025
Seismic Qualification Criteria for Pressure Vessels	24590-WTP-3PS-MV00-T0002	3		N	In Appendix 7.7
Pressure Vessel Fatigue Analysis	24590-WTP-3PS-MV00-T0003	3		N	In Appendix 7.7
Positive Material Identification (PMI) for Shop Fabrication	24590-WTP-3PS-G000-T0002	9		N	In Appendix 7.7. Rev 9 is going in LAW-028
Low Activity Waste Melters	24590-LAW-3PS-AE00-T0001	6		Y	To be included in Appendix 9.7
Specification Change Notice – Update Seismic Clamp Installation	24590-LAW-3PN-LMP-00002	N/A		Y	To be included in Appendix 9.7
Mechanical Data Sheets:					
Low-Activity Waste Melter 1	24590-LAW-M0D-LMP-00001	3	III.10.H.5.c.ii III.10.H.5.c.vi	Y	To be included in Appendix 9.6
Low-Activity Waste Melter 2	24590-LAW-M0D-LMP-00002	3		Y	To be included in Appendix 9.6
Secondary Containment Design	24590-WTP-PER-CSA-02-001	10	III.10.H.5.c.ii III.10.H.5.c.iii	N	In Appendix 7.5
Corrosion Protection for Buried Components	N/A	-	III.10.H.5.c.iv	N	There are no buried components in contact with soil or water in the LAW facility El. 3 ft.
Corrosion Evaluation: LAW Melter 1 and Melter 2 Gas-barrier and Cooling Panels	24590-LAW-N1D-LMP-00001	1	III.10.H.5.c.iii III.10.H.5.c.v	Y	To be incorporated into Appendix 9.9
LAW Vitrification Offgas System Bypass Analysis	24590-LAW-PER-PR-03-001	2	III.10.H.5.c.ix	N	In Appendix 9.18
Installation of Tank Systems and Miscellaneous Unit Systems	24590-WTP-PER-CON-02-001	6	III.10.H.5.c.x	N	In Appendix 7.12.

Engineering Document Title	Document Number	Revision	Permit Condition	Included	Remarks
Completed Permit Tables for Primary Containment Sumps and Floor Drains	Not Applicable	-	III.10.H.5.c.vii	N	There are no primary containment sumps or floor drains in the LAW facility El. 3 ft.

For Incorporation into the Administrative Record

Engineering Document Title	Document Number	Revision	Permit Condition	Included	Remarks
Structural Support Calculations Specific to Off-Specification, Non-Standard and Field Fabricated Subsystems	Not Applicable	-	III.10.H.5.c.iii	N	There are no off-specification, non-standard and field fabricated subsystems in the LAW facility El. +3 ft
Low-Activity Waste Melter Process System Design Description	24590-LAW-3ZD-LMP-00001	0	III.10.H.5.c.vii	Y	For incorporation into Administrative Record
Flowsheet Bases, Assumptions, and Requirements	24590-WTP-RPT-PT-02-005	7	III.10.H.5.c.viii	N	In Administrative Record (CCN 282694)
2010 WTP Material Balance and Steady State Flowsheet Assessment, Deliverable 2.7	24590-WTP- RPT-PET-10-022	0	III.10.H.5.c.viii	N	In Administrative Record (CCN 241137)
Steady-State (AES) Model Run Report for 2010 Material Balance and Process Flowsheet Analysis Assessment Report	24590-WTP-MRR-PET-10-010	0	III.10.H.5.c.viii	N	In Administrative Record (CCN 241137)
Control of Toxic Vapors and Emissions from WTP Tank Systems and Miscellaneous Treatment Unit Systems	24590-WTP-PER-PR-03-002	3	III.10.H.5.c.xi	N	In Administrative Record (CCN 178564)
Prevention of Hydrogen Accumulation	LAW Miscellaneous Treatment Unit Hydrogen Accumulation Document for the DWP Administrative Record (CCN 280210)	N/A	III.10.H.5.c.xii	N	Incorporate into Administrative Record. Submitted with LAW-025.

PART III, OPERATING UNIT GROUP 10 – SPECIFIC CONDITIONS
WASTE TREATMENT AND IMMOBILIZATION PLANT

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PART III, OPERATING UNIT GROUP 10 – SPECIFIC CONDITIONS WASTE TREATMENT AND IMMOBILIZATION PLANT

The Waste Treatment and Immobilization Plant (WTP) is the operating treatment and storage unit designed to treat the mixed (radioactive and dangerous) waste currently stored in underground tanks at the Hanford Site. Once the mixed waste is received at the WTP, it will be separated into High-level and Low-activity waste streams in the Pretreatment Building. The waste streams are then transferred to either the High-level Waste Building or the Low-Activity Waste Building, mixed with glass forming additives and heated to 950-1250°C in melters, and then poured into containers. As the containerized waste cools, it is immobilized in the glass matrix. Once the waste is immobilized, the container is finished (i.e. provided with a lid and decontaminated), and then transported from the WTP for disposal.

III.10.A COMPLIANCE WITH APPROVED PERMIT

The Permittees shall comply with all requirements set forth in the Hanford Facility RCRA Dangerous Waste Permit including all approved modification. All chapters, subsection, files, tables, addendums, and appendices included in the following unit-specific Conditions are enforceable in their entirety. In the event that a Unit-Specific Condition conflicts with Permit Conditions in Parts I or II of this Permit, the Unit-Specific Conditions shall prevail.

Where information regarding treatment, management, and disposal of the radioactive source, byproduct material, special nuclear material (as defined by the Atomic Energy Act of 1954, as amended) and/or the radionuclide component of mixed waste has been incorporated into this permit, it is not incorporated for the purpose of regulating the radiation hazards of such components under the authority of this permit and chapter 70.105 RCW. In the event of any conflict between Permit Condition III.10.A and any statement relating to the regulation of source, special nuclear, and byproduct material contained in portions of the permit application that are incorporated into this permit, Permit Condition III.10.A will prevail.

OPERATING UNIT GROUP 10

Addendum A	Part A, Form 3 Permit Application, Revision 1 (October 2008)
Addendum B	Waste Analysis Plan
	Addendum B1 Waste Treatment Plant Waste Analysis Plan
	Addendum B2 Quality Assurance Project Plan for Waste Analysis Plan
Addendum C	Process Information
	Addendum C1 Engineering Figures
	Addendum C2 Supplement 1 RPP-WTP Compliance with Uniform Building Code Seismic Design
Addendum D	Groundwater Monitoring (RESERVED)
Addendum E	Procedures to Prevent Hazards
	Addendum E1 Inspection Schedule
Addendum F	Contingency Plan
	Addendum F1 *RPP-WTP Emergency Response Plan,*
Addendum G	Personnel Training
Addendum H	Closure
Appendix 1.0	Compliance Schedule

1	Appendix 2.0	Critical Systems
2	Appendix 3.0	RESERVED
3	Appendix 4.0	RESERVED
4	Appendix 5.0	RESERVED
5	Appendix 6.0	Risk Assessment
6	Appendix 6.0, §6.1	Environmental Risk Assessment Work Plan
7	Appendix 6.0, §6.1.1	Previously Submitted Preliminary Risk Assessment Work Plan
8	Appendix 6.0, §6.1.2	Documentation of Revisions to Preliminary Risk Assessment Work Plan
9	Appendix 6.0, §6.2	Final Risk Assessment Work Plan (RESERVED)
10	Appendix 6.0, §6.3	Pre-Demonstration Test Risk Assessment Report (RESERVED)
11	Appendix 6.0, §6.3.1	Basis and Assumptions (RESERVED)
12	Appendix 6.0, §6.4	Final Risk Assessment Report (RESERVED)
13	Appendix 6.0, §6.4.1	Basis and Assumptions (RESERVED)
14	Appendix 7.0	WTP Documents Applicable to All Regulated Areas
15	Appendix 7.0, §7.1	Process Flow Diagrams
16	Appendix 7.0, §7.2	Piping and Instrumentation Diagrams & Related Documents
17	Appendix 7.0, §7.3	System Description Documentation (RESERVED)
18	Appendix 7.0, §7.4	General Arrangement Drawings (RESERVED)
19	Appendix 7.0, §7.5	Civil, Structural, and Architectural Criteria and Typical Design Details
20	Appendix 7.0, §7.6	Mechanical Drawings (RESERVED)
21	Appendix 7.0, §7.7	Specifications
22	Appendix 7.0, §7.8	Engineering Calculations (RESERVED)
23	Appendix 7.0, §7.9	Material Selection and Corrosion Evaluation Documentation
24	Appendix 7.0, §7.10	Critical Systems Equipment/Instrument List (RESERVED)
25	Appendix 7.0, §7.11	IQRPE Reports
26	Appendix 7.0, §7.12	Installation Plans
27	Appendix 7.0, §7.13	Instrument Control Logic and Narrative Description (RESERVED)
28	Appendix 7.0, §7.14	Descriptions of Instrument Installation and Testing Procedures (RESERVED)
29	Appendix 7.0, §7.15	Operating Documents
30	Appendix 8.0	Pretreatment Building
31	Appendix 8.0, §8.1	Process Flow Diagrams
32	Appendix 8.0, §8.2	Piping and Instrumentation Diagrams
33	Appendix 8.0, §8.3	System Description Documentation (RESERVED)
34	Appendix 8.0, §8.4	General Arrangement Drawings
35	Appendix 8.0, §8.5	Civil, Structural, and Architectural Criteria and Typical Design Details

1	Appendix 8.0, §8.6	Mechanical Drawings
2	Appendix 8.0, §8.7	Specifications
3	Appendix 8.0, §8.8	Engineering Calculations
4	Appendix 8.0, §8.9	Material Selection and Corrosion Evaluation Documentation
5	Appendix 8.0, §8.10	Critical Systems Equipment/Instrument List
6	Appendix 8.0, §8.11	IQRPE Reports
7	Appendix 8.0, §8.12	Installation Plans (RESERVED)
8	Appendix 8.0, §8.13	Instrument Control Logic and Narrative Description
9	Appendix 8.0, §8.14	Descriptions of Instrument Installation and Testing Procedures (RESERVED)
10	Appendix 8.0, §8.15	Operating Documents (RESERVED)
11	Appendix 9.0	LAW Building
12	Appendix 9.0, §9.1	Process Flow Diagrams
13	Appendix 9.0, §9.2	Piping and Instrumentation Diagrams
14	Appendix 9.0, §9.3	System Description Documentation (RESERVED)
15	Appendix 9.0, §9.4	General Arrangement Drawings
16	Appendix 9.0, §9.5	Civil, Structural, and Architectural Criteria and Typical Design Details
17	Appendix 9.0, §9.6	Mechanical Drawings
18	Appendix 9.0, §9.7	Specifications
19	Appendix 9.0, §9.8	Engineering Calculations
20	Appendix 9.0, §9.9	Material Selection and Corrosion Evaluation Documentation
21	Appendix 9.0, §9.10	Critical Systems Equipment /Instrument List
22	Appendix 9.0, §9.11	IQRPE Reports
23	Appendix 9.0, §9.12	Installation Plans (RESERVED)
24	Appendix 9.0, §9.13	Instrument Control Logic, and Narrative Description
25	Appendix 9.0, §9.14	Descriptions of Instrument Installation and Testing Procedures (RESERVED)
26	Appendix 9.0, §9.15	Demonstration Test Plan (RESERVED)
27	Appendix 9.0, §9.16	Demonstration Test Report (RESERVED)
28	Appendix 9.0, §9.17	Treatment Effectiveness Report (RESERVED)
29	Appendix 9.0, §9.18	Operating Documents
30	Appendix 10.0	HLW Building
31	Appendix 10.0, §10.1	Process Flow Diagrams
32	Appendix 10.0, §10.2	Piping and Instrumentation Diagrams
33	Appendix 10.0, §10.3	System Description Documentation (RESERVED)
34	Appendix 10.0, §10.4	General Arrangement Drawings
35	Appendix 10.0, §10.5	Civil, Structural, and Architectural Criteria and Typical Design Details

1	Appendix 10.0, §10.6	Mechanical Drawings
2	Appendix 10.0, §10.7	Specifications
3	Appendix 10.0, §10.8	Engineering Calculations
4	Appendix 10.0, §10.9	Material Selection and Corrosion Evaluation Documentation
5	Appendix 10.0, §10.10	Critical Systems Equipment/Instrument List
6	Appendix 10.0, §10.11	IQRPE Reports
7	Appendix 10.0, §10.12	Installation Plans (RESERVED)
8	Appendix 10.0, §10.13	Instrument Control Logic and Narrative Description
9	Appendix 10.0, §10.14	Descriptions of Instrument Installation and Testing Procedures (RESERVED)
10	Appendix 10.0, §10.15	Demonstration Test Plan (RESERVED)
11	Appendix 10.0, §10.16	Demonstration Test Report (RESERVED)
12	Appendix 10.0, §10.17	Treatment Effectiveness Report (RESERVED)
13	Appendix 10.0, §10.18	Operating Documents
14	Appendix 11.0	Laboratory Building
15	Appendix 11.0, §11.1	Process Flow Diagrams
16	Appendix 11.0, §11.2	Piping and Instrumentation Diagrams
17	Appendix 11.0, §11.3	System Description Documentation (RESERVED)
18	Appendix 11.0, §11.4	General Arrangement Drawings
19	Appendix 11.0, §11.5	Civil, Structural, and Architectural Criteria and Typical Design Details
20	Appendix 11.0, §11.6	Mechanical Drawings
21	Appendix 11.0, §11.7	Specifications (RESERVED)
22	Appendix 11.0, §11.8	Engineering Calculations
23	Appendix 11.0, §11.9	Material Selection and Corrosion Evaluation Documentation
24	Appendix 11.0, §11.10	Critical Systems Equipment/Instrument List
25	Appendix 11.0, §11.11	IQRPE Reports
26	Appendix 11.0, §11.12	Installation Plans (RESERVED)
27	Appendix 11.0, §11.13	Instrument Control Logic and Narrative Description
28	Appendix 11.0, §11.14	Descriptions of Instrument Installation and Testing Procedures (RESERVED)
29	Appendix 11.0, §11.15	Operating Documents (RESERVED)
30	Appendix 12.0	Balance of Facilities
31	Appendix 12.0, §12.1	Process Flow Diagrams (RESERVED)
32	Appendix 12.0, §12.2	Piping and Instrumentation Diagrams (RESERVED)
33	Appendix 12.0, §12.3	System Description Documentation (RESERVED)
34	Appendix 12.0, §12.4	General Arrangement Drawings (RESERVED)

Appendix 12.0, §12.5 Civil, Structural, and Architectural Criteria and Typical Design Details (RESERVED)

Appendix 12.0, §12.6 Mechanical Drawings (RESERVED)

Appendix 12.0, §12.7 Specifications (RESERVED)

Appendix 12.0, §12.8 Engineering Calculations (RESERVED)

Appendix 12.0, §12.9 Material Selection and Corrosion Evaluation Documentation (RESERVED)

Appendix 12.0, §12.10 Critical Systems Equipment/Instrument List (RESERVED)

Appendix 12.0, §12.11 IQRPE Reports (RESERVED)

Appendix 12.0, §12.12 Installation Plans (RESERVED)

Appendix 12.0, §12.13 Instrument Control Logic and Narrative Description (RESERVED)

Appendix 12.0, §12.14 Descriptions of Instrument Installation and Testing Procedures (RESERVED)

Appendix 12.0, §12.15 Operating Documents (RESERVED)

Facility-Specific Definitions

The following definitions are specific to the WTP Unit:

Ash: means a measure of the contribution of particulate matter from the melter feeds to the melter off-gas, as determined by representative sampling and analysis of the melter feed using ASTM MethodD-482, or an equivalent method.

Batch: refers to waste staged in one DST designated as mixed waste for transfer to the WTP Unit for treatment.

Continuous monitoring system: means using a device which continuously samples the regulated parameter specified on Permit Tables III.10.H.F, III.10.I.F, III.10.J.F, and III.10.K.F, with the exception of pressure, without interruption, evaluates the detector response at least once every fifteen (15) seconds and computes and records the average value at least every sixty (60) seconds, except during allowable periods of calibration and except as defined otherwise by the CEMS Performance Specifications in 4B and 8A in Appendix B, 40 CFR Part 60. For the parameter pressure, the term "continuous monitoring system" means using a device that continuously samples the pressure without interruption and evaluates the detector response without averaging at least once each second and records the value at least every sixty (60) seconds. In addition, if the AWFCO is engaged due to a pressure exceedance, the pressure value must be recorded.

Cascade event: means when additional waste feed cut-off parameter set points deviate outside the limits specified in Permit Tables III.10.H.F, III.10.I.F, III.10.J.F, and III.10.K.F after waste feed is cut-off, but while waste or waste residues are being managed in HLW and LAW.

Critical System: as applied to determining whether a Permit Modification is required, means those specific portions of a TSD unit's structure, or equipment, whose failure could lead to the release of dangerous waste into the environment, and/or systems which include processes which treat, transfer, store, or dispose of regulated wastes. A list identifying the critical systems for the WTP is included in Appendix 2.

Dangerous and/or mixed waste management unit: means dangerous and/or mixed waste management units, areas, systems, and sub-systems as defined in Permit Tables III.10.D.A, III.10.E.A through D, III.10.F.A, III.10.G.A, III.10.H.A, III.10.I.A, III.10.J.A, and III.10.K.A.

Dioxin/furan" and "dioxins and furans: means tetra-, penta-, hexa-, hepta-, and octa-chlorinated dibenzo dioxins and furans.

HLW Vitrification System: is defined as specified on Permit Tables III.10.J.A and B, and III.10.K.A and B.

Hourly rolling average or HRA: will mean the arithmetic mean of the sixty (60) most recent one-minute readings recorded by the continuous monitoring system.

LAW Vitrification System: is defined as specified on Permit Tables III.10.H.A and B, and III.10.I.A and B.

Mode of operation: means operation of the LAW Vitrification System or the HLW Vitrification System within set limits for each operating parameter specified in Permit Tables III.10.H.D and F (for LAW) and Permit Tables III.10.I.D and F (for HLW).

One-minute average: means the average of detector responses calculated at least every sixty (60) seconds from responses obtained at least every fifteen (15) seconds.

Permittees: means the United States Department of Energy (owner/operator) and Bechtel National, Inc. (Co-operator).

Pretreatment Plant Miscellaneous Unit Systems: is defined as specified on Permit Tables III.10.G.A and B.

Primary sump: means any pit or reservoir that meets the WAC 173-303-040 definition of "tank," and those troughs/trenches connected to it, that serve to collect dangerous/hazardous waste, deliberately introduced (e.g., from decontamination or treatment activities), for transport to TSD facilities.

Rolling average: means the average of all one-minute averages over the averaging period.

Secondary sump: means any pit or reservoir that meets the WAC 173-303-040 definition of "tank," and those troughs/trenches connected to it, that serve to collect dangerous/hazardous waste, not deliberately introduced (e.g., from spills, leaks, or overflows), for transport to TSD facilities.

Secondary mixed waste stream: means treatment residues and materials derived from the treatment of mixed waste which continue to designate as a dangerous, extremely hazardous, or acutely hazardous waste and contains a radioactive component.

Standard operating procedure or SOP: will mean a written description of the procedures by which a process, equipment, etc. will be operated. An SOP may be written by the manufacturer and/or the Permittees.

Successful completion of the demonstration test: will mean operations including a minimum of three test runs without significant interruptions (i.e., once initiated, each test run must be continuous, and the samples have been preserved and maintained intact, and one in which sampling of exhaust gas was representative of the LAW Vitrification System or HLW Vitrification System Operations, whichever is applicable, and adequate to achieve evaluation of PODCs destruction and removal efficiency (DRE) to 99.99%).

TEQ or "toxic equivalents": refer to the sum of the weighted potencies of 7 polychlorinated dibenso-p –dioxins (PCDDs), 10 polychlorinated dibensofurans (PCDFs), and 12 dioxin-like (coplanar) polychlorinated biphenyl (PCBs), relative to a reference compound, 2, 3, 7, 8 – tetrachlorodibenzo-p-dioxin (2, 3, 7, 8 –TCDD).

Pre-process: means prior to introduction into a dangerous or mixed waste management unit at the WTP Unit.

In-process: means duration of a waste in a dangerous or mixed waste management unit at the WTP Unit.

Post-process: means prior to the introduction into a subsequent dangerous or mixed waste management unit at the WTP Unit or prior to shipment from the WTP Unit.

Vendor information: means documentation prepared by a vendor (e.g., catalog cut sheets) for plant items that are routinely manufactured and stocked by vendors (i.e., items that are considered "off the shelf") and are not being procured in accordance with Permittees' engineering drawings and specifications. Documentation such as catalog cut sheets will be annotated to specify selected items which meet Permittee's procurement requirements equipment specification. Documentation associated with "one of a kind", custom items, and commercial grade items (e.g., bulk pipe, valves) that will be procured in accordance with the Permittees engineering drawings and specifications is not considered vendor information. Changes to the drawings and specifications may require a permit modification.

Vitrification System Shutdown: means emergency and planned shutdowns of the vitrification system as defined in the operating procedure(s).

Vitrification System Startup: means startup of the vitrification system as defined in operating procedure(s).

FACILITY-SPECIFIC ACRONYMS

The following acronyms are specific to the WTP Unit:

AWFCO	Automatic Waste Feed Cut-off
CDR	Construction Deficiency Report
CEMS	Continuous Emissions Monitoring System
CMS	Continuous Monitoring System
CNP	Cesium Nitric Acid Recovery Process System
CRP	Cesium Resin Addition Process System
CPE	Cathodic Protection Electrical System
CXP	Cesium Ion Exchange Process System
DFETP	Dioxin and Furan Emission Test Plan
DRE	Destruction and Removal Efficiency
Dscf	Dry standard cubic feet
ERP	Emergency Response Plan
FEP	Waste Feed Evaporation Process System
FRP	Waste Feed Receipt Process System
HCP	HLW Concentrate Receipt Process System
HDH	HLW Canister Decontamination Handling System
HEH	HLW Canister Export Handling System
HEME	High Efficiency Mist Eliminator
HEPA	High Efficiency Particulate Air Filter
HFH	HLW Filter Cave Handling System
HFP	HLW Melter Feed Process System
HLP	HLW Lag Storage and Feed Blending Process System
HLW	High-level Waste

HMH	HLW Melter Handling System
HMP	HLW Melter Process System
HOP	HLW Vit Primary Offgas Treatment System
HPH	HLW Canister Pour Handling System
HSH	HLW Melter Cave Support Handling System
IHLW	Immobilized High-Level Waste (Glass)
ILAW	Immobilized Low-Activity Waste (Glass)
IQRPE	Independent, qualified, registered, professional engineer
LAB	WTP Laboratory Building
LAW	Low Activity Waste
LCP	LAW Concentrate Receipt Process System
LEH	LAW Container Export Handling System
LFH	LAW Canister Finishing Handling System
LFP	LAW Melter Feed Process System
LMH	LAW Melter Handling System
LMP	LAW Melter Process System
LOP	LAW Primary Offgas Process System
LPH	LAW Container Pour Handling System
LSH	LAW Melter Equipment Support Handling System
LSM	Locally Shielded Melter
LVP	LAW Secondary Offgas/Vessel Vent Process System
NCR	Nonconformance Report
PFH	Pretreatment Filter Cave Handling System
PIH	Pretreatment In-Cell Handling System
PJV	Pulse Jet Ventilation System
PODC	Principal Organic Dangerous Constituents
PTF	Pretreatment Building
PVP	Pretreatment Vessel Vent Process System
PVV	Process Vessel Vent System
PWD	Plant Wash and Disposal System
RDP	Spent Resin and Dewatering Process System
RDTP	Revised Demonstration Test Plan
RLD	Radioactive Liquid Waste Disposal System
RPP-WTP	River Protection Project-Waste Treatment Plant
RWH	Radioactive Solid Waste Handling System

SBS	Submerged Bed Scrubber
TCP	Treated LAW Evaporation Process System
TLP	Treated LAW Evaporation System
TOC	Total Organic Carbon
TXP	Technetium Ion Exchange Process System
TEP	Technetium Eluant Recovery Process System
UFP	Ultrafiltration Process System
WESP	Wet Electrostatic Precipitator
WTP	River Protection Project – Waste Treatment and Immobilization Project (also known as the Waste Treatment Plant and Vitrification Plant)
6% Mo	Six Percent Molybdenum Alloy
304L	ASTM A240 Grade 304L Stainless Steel
316L	ASTM A240 Grade 316L Stainless Steel

III.10.A COMPLIANCE WITH APPROVED PERMIT

III.10.B STANDARD CONDITIONS AND GENERAL FACILITY CONDITIONS

In addition to the conditions in this chapter, the Permittees must comply with all the applicable portions of the Dangerous Waste Permit for the Hanford Facility. In the event that a Unit-Specific Condition for the WTP Unit in Permit Conditions III.10.C. through III.10.K. conflicts with a general condition in Permit Conditions I and II of this permit, the Unit-Specific Condition will apply to the WTP Unit.

III.10.C UNIT-SPECIFIC CONDITIONS FOR THE WTP UNIT

III.10.C.1 RESERVED

III.10.C.2 General Waste Management

III.10.C.2.a Treatment or storage of dangerous waste or mixed waste in any new or modified portion of the facility may commence when the Permittees have submitted to Ecology, by certified mail, or hand delivery, a letter signed by the Permittees and a Registered Professional Engineer stating that the facility has been constructed or modified in compliance with the Permit in accordance with WAC 173-303-810(14)(a); and

III.10.C.2.a.i The Permittee has received a Permit modification approval pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f., or III.10.C.2.g., and

III.10.C.2.a.ii Ecology has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the Permit, or

III.10.C.2.a.iii Within fifteen days, of the date of submission of the Permittees' letter, Ecology has not notified the Permittees of intent to inspect.

III.10.C.2.b The Permittees are authorized to accept the dangerous and/or mixed waste specified in Operating Unit Group 10, Addendum A (Part A Form 3), and Addendum B (WAP).

III.10.C.2.c All dangerous and/or mixed waste must be managed only in areas authorized for dangerous and/or mixed waste management under the Permit conditions, except as allowed under WAC 173-303-200.

The authorized dangerous and/or mixed waste management areas of the WTP Unit are specified in Conditions III.10.D through III.10.K.

III.10.C.2.d Dangerous and/or mixed waste may be transferred from dangerous waste management units within the WTP operating unit to an on-site dangerous waste management unit or an off-site permitted TSD Facility using the manifest/tracking system required by permit condition II.N.

III.10.C.2.e Permit modifications pursuant to this Permit for dangerous and/or mixed waste at the request of the Permittees must be done according to the three tiered modification system specified in WAC 173-303-830(4) and Condition I.C.3. The Permit modification request must include page changes to the Permit, attachments, and permit application supporting documentation necessary to incorporate the proposed permit modification.

III.10.C.2.f In addition to other requirements in WAC 173-303-830, within forty-five (45) days of a permit change (i.e., permit modification) being put into effect or approved, the Permittees will provide copies of the Permit attachments to incorporate the change (if not already reflected in the change pages submitted in the original permit modification request). This submittal does not require re-certification in accordance with WAC 173-303-810(13).

III.10.C.2.g Permit modifications pursuant to Operating Unit Group 10, Appendix 1.0 will be prepared and issued pursuant to WAC 173-303-830(3)(a)(ii) and WAC 173-303-840.

III.10.C.2.h The Permittees must complete Compliance Schedule interim requirements as specified in Operating Unit Group 10, Appendix 1.0. If an interim requirement is not completed as specified, the Permittees will, within 14 days, notify Ecology in writing of its non-compliance. The notification will include the following:

III.10.C.2.h.i A description of any portion of the interim requirement completed;

III.10.C.2.h.ii Summaries of any problems affecting timely completion of the interim requirement;

III.10.C.2.h.iii A description of the plans for completing the remaining portion of the interim requirement, including any alternatives;

III.10.C.2.h.iv Projected interim requirement completion date.

III.10.C.2.i RESERVED

III.10.C.2.j RESERVED

III.10.C.2.k RESERVED

III.10.C.2.l During demonstration testing of the LAW Vitrification System and HLW Vitrification System, pursuant to Permit Sections III.10.H. and J., processing of materials in the LAW and HLW Vitrification Systems that would designate as dangerous waste are fully subject to the requirements of this Permit, excluding the melter feed system as identified in Tables III.10.H.A. and III.10.J.A., respectively. This exclusion does not apply to mixed waste.

III.10.C.2.m The Facility Owner will ensure WTP input is provided to the risk budget tool developed in accordance with permit condition III.11.I.5.

III.10.C.2.n The Permittees will submit the following reports, based on the August 2006 mass balance submitted to Ecology (DOE Letter 06-ESQ-081), for Ecology's review and comment/resolution. Updated information to the August 2006 Mass Balance may be used if available and mutually agreed upon by the Permittees and Ecology.

The reports will describe all of the treatment approaches identified in Permit Conditions III.10.C.2.n.i through III.10.C.2.n.v, and will be included in the administrative record.

III.10.C.2.n.i By June 30, 2010, the Permittees will perform an assessment that projects mixed waste constituents and the concentrations that are expected to be contained in each secondary mixed waste stream anticipated to be generated;

III.10.C.2.n.ii By June 30, 2010, the Permittees will identify appropriate LDR treatment standards for each mixed waste stream identified in Permit Condition III.10.C.2.n.i;

III.10.C.2.n.iii By June 30, 2010, the Permittees will identify which mixed waste streams that, from a qualitative risk perspective, reasonably may cause or may significantly contribute to an exceedance of applicable environmental standards at a disposal facility; and

III.10.C.2.n.iv By June 30, 2010, the Permittees will, for the mixed waste streams identified in Permit Condition III.10.C.2.n.iii, identify potential treatment approaches that mitigate their environmental impacts;

III.10.C.2.n.v By December 31, 2015 or 12 months prior to cold commissioning of the facility producing the waste, whichever is earlier, the Permittees will, for the mixed waste streams identified in Permit Condition III.10.C.2.n.iii, select appropriate treatment approaches that mitigate their environmental impacts.

III.10.C.2.o The Facility owner will evaluate all waste streams generated at the WTP for potential exceedances of applicable environmental standards and will ensure all mixed and dangerous waste streams generated at the WTP will not cause an exceedance of applicable environmental standards at an appropriate disposal facility on-site and is subject to the following requirements:

III.10.C.2.o.i ILAW glass will be engineered to be compliant with the disposal facility Waste Acceptance Criteria (WAC). The waste feed and ILAW glass recipes will be verified to be compliant with the permitted glass formulations (including planning for pertinent operating parameters) prior to vitrification.

III.10.C.2.o.ii Treatment methods for secondary waste streams projected to be generated by the WTP that are slated for disposal at the Hanford Site will be engineered to ensure that treated secondary wastes will comply with the on-site disposal facility WAC and applicable LDRs prior to generation. Prior to treatment, secondary wastes must be evaluated to ensure that selected treatment methods are still appropriate and continue to comply with the on-site disposal facility WAC and applicable LDRs; and

III.10.C.2.o.iii On a case-by-case basis, for any WTP mixed waste that does not meet the WAC for the disposal facility, Ecology will approve or deny acceptance of that waste into the disposal facility. This decision will be based on the disposal facility's WAC and compliance with WAC 173-303-140.

III.10.C.3 **Waste Analysis**

III.10.C.3.a RESERVED

III.10.C.3.b RESERVED

III.10.C.3.c The Permittees are responsible for obtaining accurate information for each waste stream. Inaccurate waste analysis information provided by the generating site (or unit) is not a defense for noncompliance by the Permittees with conditions of this Permit.

III.10.C.3.d Records and results of waste analyses conducted under the WAP will be maintained in accordance with Permit Condition II.I.1.

The WTP Unit operating record will include, but not be limited to, information requirements for monitoring in Permit Conditions I.F.1, I.F.2, and I.F.3.

III.10.C.3.e Prior to the initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will submit to Ecology for review and approval a revised WAP and Quality Assurance Project Plan (QAPP) pursuant to Conditions III.10.C.2.e and III.10.C.2.f, and the Compliance Schedule in Operating Unit Group 10, Appendix 1.0. The revised WAP and QAPP will include:

III.10.C.3.e.i All the elements listed in WAC 173-303-300(5), and Permit Condition II.D.1.

III.10.C.3.e.ii Requirements that characterization will be performed on the waste feed prior to transfer to the WTP Unit in conformance with the regulatory data quality objectives identified in the Regulatory Data Quality Objective (DQO) Optimization Report (24590-WTP-RPT-MGT-04-001, Rev 0), or any other parameters, and the rational for selecting these parameters. Requirements that the following analyses, at a minimum, will be conducted on each new batch prior to waste transfer to the WTP Unit, in accordance with the methods under
WAC 173-303-110: Ammonia, pH, metals, organic acids, mercury, cyanide, volatiles, semi-volatiles, PCBs/pesticides, anions, TOC, and compatibility (ASTM Method D5058-90). For the purposes of this Permit Condition, a "new batch" is one that has been sampled and analyzed in accordance with the Regulatory DQO Optimization Report (24590-WTP-RPT-MGT-04-001, Rev 0), and has received no further additions. Further additions require the Permittees to resample and reanalyze, unless an exception is approved by Ecology on a case-by-case basis. Only mixed waste meeting the definition of "new batch", or granted an exception as discussed above, are authorized for transfer to the WTP Unit. Water additions for the purposes of waste transfer are not considered additions for the purposes of this Permit Condition.

III.10.C.3.e.iii Identify and include operating parameters to be monitored/controlled and limitations for these parameters for pre-process, in-process, and post-process operations addressing on a unit specific basis treatment effectiveness, as specified in Tables III.10.E.E through H, III.10.G.C, III.10.H.C, III.10.I.C, III.10.J.C, and III.10.K.C, waste compatibility, safe operation, and compatibility with unit materials of construction. Amend the sampling, analysis, and QA/QC procedures to include these parameters and the monitoring frequency.

III.10.C.3.e.iv Requirements that the Permittees will, for Type I (primary) sumps if liquids are detected, and for Type II (secondary) sumps, as defined in Operating Unit Group 10, Addendum C, if liquid levels are outside normal operating parameters, either collect the liquid and return to the treatment process, or designate the sump contents for proper management and disposal prior to removal.

III.10.C.3.e.v For ILAW containers and IHLW canisters, a description of the procedures used for removal of mixed dangerous waste from exterior container surfaces, including a description of how contamination removal will be measured.

III.10.C.3.e.vi Requirement that wastes generated at the WTP Unit meet the receiving authorized TSD facility waste acceptance criteria prior to a waste stream transfer.

III.10.C.3.e.vii The frequency with which analysis of each waste will be reviewed, or repeated, to ensure that the analysis is accurate and current, including requirements and criteria for reevaluation of the sampling and analysis frequency for all waste streams.

III.10.C.3.e.viii Documentation demonstrating methods for obtaining samples of wastes are representative as discussed in WAC 173-303-110(2).

III.10.C.3.e.ix Where applicable, the methods for meeting the additional waste analysis requirements for specific waste management methods, as specified in WAC 173-303-140(4), 173-303-395(1), 173-303-630 through 173-303-695.

III.10.C.3.e.x For waste transferred from other permitted TSDs, the procedures for confirming that each dangerous waste received matches the identity of the waste specified on the accompanying waste profile documentation. This includes the procedure for identifying each waste movement at the Facility.

III.10.C.4 Recordkeeping

III.10.C.4.a The unit specific portion of the Hanford Facility Operating Record will include the documentation specified in Permit Attachment 6, Permit Condition II.I, (applicable to the WTP Unit), and other documentation specified in Operating Unit Group 10. Permit Attachment 6 provides a list of required records, and the methods of submittal for the facility and each unit group.

III.10.C.5 Procedure to Prevent Hazards

III.10.C.5.a The Permittees will design, construct, and operate the WTP Unit in compliance with Operating Unit Group 10, Addendum E, Section 6.1.

III.10.C.5.b The WTP Unit fire protection systems will be constructed to the applicable codes listed in Operating Unit Group 10, Addendum E, Section 6.3.1.4. Prior to the initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will update Operating Unit Group 10, Addendum E, Sections 6.3, 6.4, and 6.5 to be consistent with design details, and resubmit for approval as a permit modification pursuant to Permit Conditions III.10.C.2.e and III.10.C.2.f, and Operating Unit Group 10, Appendix 1.0. In addition to the stand-by diesel generator for the LAW and HLW melters, updated Section 6.4.4. will include descriptions of the essential loads and critical systems supplied with back-up, un-interruptible, and standby power.

III.10.C.5.c The Permittees will inspect the WTP Unit to prevent malfunctions and deterioration, operator errors, and discharges that may cause or lead to the release of dangerous waste constituents to the environment, or a threat to human health. Inspections must be conducted in accordance with the WTP Unit Inspection Schedule, Operating Unit Group 10, Addendum E, Section 6.2, and Addendum E1. Prior to the receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will update and resubmit to Ecology for review and approval Addendum E, Section 6.2 and the Inspection Schedule in Addendum E1 as a permit modification pursuant to Permit Conditions III.10.C.2.e and III.10.C.2.f, and Compliance Schedule in Operating Unit Group 10, Appendix 1.0. The revised schedule will include, but not be limited to the requirements in WAC 173-303-320(2) and III.10.C.5.c.i. through v. below.

III.10.C.5.c.i Detailed dangerous and/or mixed waste management unit specific and general inspection schedules and description of procedures pursuant to WAC 173-303-395(1)(d), 173-303-630(6), 173-303-640(4)(a)(i) and (6), 173-303-670(7)(b) in accordance with 173-303-680(3), and 173-303-695. The inspection schedule will be presented in the form

of a table that includes a description of the inspection requirements, inspection frequency, and types of problems to look for during the inspections.

III.10.C.5.c.ii The proposed locations (scaled drawing with layout) and capabilities of camera(s) (i.e., zoom angles, field of view, etc.) to be used for remote inspections.

III.10.C.5.c.iii Schedule and program description for performing integrity assessments as specified in Permit Conditions III.10.E.9.e.i., III.10.G.10.e.i., III.10.H.5.e.i., III.10.I.1.a.v., III.10.J.5.e.i., and III.10.K.1.a.v.

III.10.C.5.c.iv Inspection schedules for leak detection system and control instrumentation to include, but not limited to, valves pressure devices, flow devices, measuring devices, as specified in Permit Conditions III.10.E.9.e.xi, III.10.F.3.c, and III.10.G.10.e.xii, and Permit Conditions III.10.H.5.f.xvi, and III.10.J.5.f.xvi.

III.10.C.5.c.v Inspection schedule will include inspections for all dangerous and/or mixed waste management units specified in Permit Sections III.10.D, E, F, G, H, I, J, and K.

III.10.C.5.d The Permittees will equip the WTP Unit with the equipment specified in Operating Unit Group 10, Addendum E, as required by Permit Condition II.B.1.

III.10.C.5.e The Permittees will test and maintain the equipment specified in Operating Unit Group 10, Addendums E and E1, as necessary, to assure proper operation in the event of emergency.

III.10.C.5.f The Permittees will maintain access to communications or alarms as provided in the *RPP-WTP Emergency Response Plan*, Operating Unit Group 10, Addendum F1 and Permit Condition II.B.2.

III.10.C.6 Contingency Plan

III.10.C.6.a The Permittees will immediately carry out applicable provisions of Permit Condition II.A.1 and the *RPP-WTP Emergency Response Plan*, Operating Unit Group 10, Addendum F1 whenever there is a release of dangerous and/or mixed waste or dangerous waste constituents, or other emergency circumstance, any of which threatens human health or the environment.

III.10.C.6.b Prior to the initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will update the Contingency Plan and the *RPP-WTP Emergency Response Plan,* Operating Unit Group 10, Addendums F and F1, to be consistent with design details and WAC 173-303-350(3), incorporated by reference, and resubmit as a permit modification pursuant to Permit Conditions III.10.C.2.e and III.10.C.2.f, , in compliance with WAC 173-303-350(5)(c), and Operating Unit Group 10, Appendix 1.0.

III.10.C.6.c After initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will review and amend, if necessary, the applicable portions of the Contingency Plan and the *RPP-WTP Emergency Response Plan*, Operating Unit Group 10, Addendums F and F1 in accordance with the provision of WAC 173-303-350(5). The Addendums F and F1 will be amended as a permit modification pursuant to Permit Conditions III.10.C.2.e and III.10.C.2.f.

III.10.C.6.d RESERVED

III.10.C.6.e RESERVED

III.10.C.7 Personnel Training

III.10.C.7.a Prior to the initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will update and resubmit, to Ecology for review and approval, the Training

Program description in Operating Unit Group 10, Addendum G as a permit modification pursuant to Permit Conditions III.10.C.2.e and III.10.C.2.f, and Compliance Schedule in Operating Unit Group 10, Appendix 1.0. The revised Training Program description will include but not be limited to:

III.10.C.7.a.i Detailed unit specific and general Training Program descriptions) as required to demonstrate compliance with WAC 173-303-330 and to include:

III.10.C.7.a.i.A Job titles and descriptions for each dangerous waste management position (e.g. waste designator, waste operator, laboratory technician, etc.);

III.10.C.7.a.i.B Outline of the training program updated to discuss initial, refresher, and on-the-job training; correlated to each dangerous waste management position;

III.10.C.7.a.i.C Table G-1 in Operating Unit Group 10, Addendum G, updated to include the type and amount of introductory, refresher, and on-the-job training required for each dangerous waste management position [WAC 173-303-806(4)(a)(xii)].

III.10.C.7.a.ii Sufficient detail to document that the training and qualification program for all categories of personnel whose activities may reasonably be expected to directly affect emissions from the LAW and HLW Systems, except control room operators, is appropriately consistent with 40 CFR 63.1206(c)(6)(ii), and for control room operators, is appropriately consistent with 40 CFR 63.1206(c)(6)(i) and 63.1206(c)(6)(iii) through 63.1206(c)(6)(vi) [WAC 173-303-680(2)].

III.10.C.7.b The Permittees will ensure that the LAW and HLW Systems are operated and maintained, at all times, by persons who are trained and qualified to perform these and any other duties that may reasonably be expected to directly affect emissions from the LAW and HLW Systems [WAC 173-303-680(2)].

III.10.C.7.c The Permittees will conduct personnel training in accordance with the approved description of the WTP Dangerous Waste Training Plan, Operating Unit Group 10, Addendum G, pursuant to WAC 173-303-330. The Permittees will maintain documents in accordance with Permit Condition II.C.1 and WAC 173-303-330(2) and (3).

III.10.C.7.d RESERVED.

III.10.C.7.e The Permittees will submit, under separate cover, the actual detailed WTP Dangerous Waste Training Plan in accordance with the Compliance Schedule in Operating Unit Group 10, Appendix 1.0. The WTP Dangerous Waste Training Plan will be reviewed for compliance with the outline of the training program in Operating Unit Group 10, Addendum G and requirements of WAC 173-303-330. The Training Plan will be incorporated into the Administrative Record.

III.10.C.8 Closure

III.10.C.8.a The Permittees must conduct closure of the WTP Unit according to the Closure Plan in Operating Unit Group 10, Addendum H, and Permit Condition III.10.C.8. The closure plan will be modified according to provisions of Permit Condition I.C.3.

III.10.C.8.b Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will update and resubmit the Closure Plan, Operating Unit Group 10, Addendum H for approval as a permit modification pursuant to Permit Condition III.10.C.2.g., to be consistent with design details and schedule described in Operating Unit Group 10, Appendix 1.0. The updated Closure Plan must be consistent with the closure performance standards specified in WAC 173-303-610(2)(a)-(b), WAC 173-340 and, in

addition for Containment Buildings, consistent with 40 CFR 264.1102(b) as referenced by WAC 173-303-695.

III.10.C.8.c The Permittees will submit, for Ecology review and approval, an update to the Closure Plan, Operating Unit Group 10, Addendum H, including all documentation required by Permit Condition II.D, within one hundred eighty (180) days prior to commencing partial closure, as a permit modification pursuant to Permit Conditions III.10.C.2.e and III.10.C.2.f.

III.10.C.8.d One hundred eighty (180) days prior to commencing final closure of Operating Unit Group 10, the Permittees must submit to Ecology, for review and approval, a revised Closure Plan, including all documentation required by Permit Condition II.D, as a permit modification pursuant to Permit Conditions III.10.C.2.e and III.10.C.2.f.

III.10.C.8.e RESERVED

III.10.C.8.f To achieve clean closure, the Permittees will remove dangerous waste, dangerous waste constituents, and dangerous waste residues throughout the closing unit and throughout any areas affected by releases from the closing unit to concentrations that do not exceed numeric cleanup levels determined using residential exposure assumptions according to the Model Toxics Control Act (MTCA) Regulations, Chapter 173-340 WAC and all structures, equipment, bases, liners, and other materials containing or contaminated with dangerous waste, constituents, or residues have met specific waste removal and decontamination standards approved by Ecology, in accordance with WAC 173-303-610(2)(b)(i)-(ii).

III.10.C.8.g RESERVED.

III.10.C.8.h Documentation supporting the independent registered professional engineer's certification of closure must be submitted to Ecology with the closure certification required by WAC 173-303-610(6). In addition to the items in Operating Unit Group 10, Addendum H, the documentation must include the following and other information Ecology may request.

III.10.C.8.h.i Sampling procedures that were followed;

III.10.C.8.h.ii Soil and concrete locations that were sampled;

III.10.C.8.h.iii Sample labeling and handling procedures that were followed, including chain of custody procedures;

III.10.C.8.h.iv Description of procedures that were followed to decontaminate concrete or metal to meet the clean closure standards approved by Ecology, in accordance with the closure performance standards of WAC 173-303-610(2)(a)(ii) and in a manner that minimizes or eliminates post-closure escape of dangerous waste constituents, or to achieve a "clean debris surface" as specified in 40 CFR 268.45, Table 1, concrete surfaces, as incorporated by reference in WAC 173-303-140. [WAC 173-303-610(2)(b)(ii)].

III.10.C.8.h.v Laboratory and field data, including supporting QA/QC summary;

III.10.C.8.h.vi Report that summarizes closure activities;

III.10.C.8.h.vii Copy of all field notes taken by the independent registered professional engineer; and

III.10.C.8.h.viii Copy of all contamination survey results.

III.10.C.9 Critical Systems

III.10.C.9.a The WTP Unit critical systems, as defined in the definition section of Operating Unit 10 and are identified in Operating Unit Group 10, Appendix 2.0.

III.10.C.9.b As the design proceeds, Ecology will modify this Permit for reasons described in the WAC 173-303-830(3) to add additional systems to the Critical Systems in Operating Unit Group 10, Appendix 2.0.

III.10.C.9.c The Permittees will conduct all construction subject to this Permit in accordance with the approved designs, plans, and specifications that are required by this Permit, except as specified in Conditions III.10.C.9.d. or III.10.C.9.e. For purposes of Conditions III.10.C.9.d. and III.10.C.9.e., the Ecology representative will be an Ecology construction inspector, project manager, or other designated representative of Ecology.

III.10.C.9.d The Permittees will submit a nonconformance report (NCR) or construction deficiency report (CDR) to the Ecology representative (s), as applicable, within seven (7) calendar days of the Permittees becoming aware of incorporation of minor nonconformance or construction deficiency from the approved designs, plans, and specifications into the construction of critical systems, as defined in the Hanford Site-wide Permit definition section. Such minor nonconformance or construction deficiency will be defined, for the purposes of this Permit Condition, as nonconformance or construction deficiency that is necessary to accommodate proper construction and the substitution or the use of equivalent or superior materials or equipment that do not substantially alter the Permit conditions or reduce the capacity of the facility to protect human health or the environment. Such minor nonconformance or construction deficiency will not be considered a modification of this Permit. If Ecology determines that the nonconformance or construction deficiency is not minor, it will notify the Permittees in writing that a permit modification is required for the deviation and whether prior approval is required from Ecology before work proceeds which affect the nonconforming or construction deficiency item.

III.10.C.9.e The Permittees will formally document, with a nonconformance report (NCR) or construction deficiency report (CDR), as applicable, incorporation of minor nonconformance or construction deficiency from the approved designs, plans, and specifications into the construction of non-critical systems subject to this Permit. Such minor nonconformance or construction deficiency will not be considered a modification of this Permit. All NCR's and CDR's will be maintained in the WTP Unit Operating Record and will be made available to Ecology upon request or during the course of an inspection. If Ecology determines that the nonconformance or construction deficiency is not minor, it will notify the Permittees in writing that a permit modification is required for the deviation and whether prior approval is required from Ecology before work proceeds which affect the nonconforming or construction deficiency item.

III.10.C.9.f For each Critical System identified in Operating Unit Group 10, Appendix 2.0, the Permittees will submit to Ecology for review and approval, following the schedule in Operating Unit Group 10, Appendix 1.0, the information identified in Permit Conditions III.10.D.10., III.10.E.9., III.10.F.7., III.10.G.10., III.10.H.5., and III.10.J.5. Information Ecology determines to incorporate into the Permit will follow the Permit Condition III.10.C.2.g. process, unless stated otherwise within the specific permit condition.

Information Ecology determines necessary to support design basis will be incorporated into the Administrative Record.

III.10.C.9.g Upon completion of the WTP Unit construction subject to this Permit, the Permittees will produce as-built drawings of the project which incorporate the design and construction modifications resulting from all change documentation as well as modifications made pursuant to Permit Conditions III.10.C.2.e., III.10.C.2.f., and III.10.C.2.g. The Permittees will place the as-built drawings into the operating record within twelve (12) months of completing construction.

III.10.C.9.h The Permittees will formally document changes to approved designs, plans, and specifications with design change documentation [e.g., Design Change Notice (DCN), Field Change Request (FCR), Field Change Notice (FCN), Specification Change Notice (SCN), and Supplier Deviation Disposition Request (SDDR)]. All design change documentation will be maintained in the WTP Unit-specific Operating Record and will be made available to Ecology upon request or during the course of an inspection. For any design change documentation affecting any critical systems, the Permittees will provide copies to Ecology within seven (7) calendar days. Identification of critical systems will be included by the Permittees in each WTP Unit-specific dangerous waste permit application, closure plan, or permit modification, as appropriate. If Ecology determines that the design change is not minor, it will notify the Permittees in writing that a permit modification is required for the design change and whether prior approval is required from Ecology before work affected by the design change may proceed.

III.10.C.9.i Ventilation system duct work is not required to be doubly contained within the WTP Unit. However, upon discovery of accumulation of liquids within the duct work, a compliance plan will be submitted within sixty (60) days of discovery to correct the problem.

III.10.C.10 Equivalent Materials

III.10.C.10.a If certain equipment, materials, and administrative information (such as names, phone numbers, addresses, formatting) are specified in this Permit, the Permittees may use equivalent or superior substitutes. Use of such equivalent or superior items within the limits (e.g., ranges, tolerances, and alternatives) already clearly specified in sufficient detail in Operating Unit Group 10, are not considered a Permit modification. However, the Permittees must place documentation of the substitution, accompanied by a narrative explanation and the date the substitution became effective in the operating record within seven (7) days of putting the substitution into effect, and submit documentation of the substitution to Ecology, for approval. Upon review of the documentation of the substitution, if deemed necessary, Ecology may require the Permittees to submit a permit modification in accordance with Permit Conditions III.10.C.2.e. and III.10.C.2.f.

III.10.C.10.b If Ecology determines that a substitution was not equivalent to the original, they will notify the Permittees that the Permittees' claim of equivalency has been denied, of the reasons for the denial, and that the original material or equipment must be used. If the product substitution is denied, the Permittees will comply with the original approved product specification, find an acceptable substitution, or apply for a permit modification in accordance with Permit Conditions III.10.C.2.e. and III.10.C.2.f.

III.10.C.11 Risk Assessment

III.10.C.11.a The Permittees will submit a permit modification pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f., in accordance with Operating Unit Group 10, Appendix 1.0, to Ecology to incorporate revisions to the "Environmental Risk

Assessment Work Plan, Appendix 6.1. The revised document will be submitted for incorporation into Appendix 6.2 as the Final Risk Assessment Workplan. The Permittee will make revisions in consultation with Ecology to address the comments documented in Operating Unit Group 10, Appendix 6.1 and updated to address the following:

III.10.C.11.a.i EPA guidance for performance of Human Health and Ecological Risk Assessments for Hazardous Waste Combustion Facilities current at the time of the submittal, assuming both residential and non-residential use scenarios;

III.10.C.11.a.ii Toxicity data current at the time of the submittal;

III.10.C.11.a.iii Compounds newly identified or updated emissions data from current waste characterization and emission testing;

III.10.C.11.a.iv Air modeling updated to include stack gas parameters based on most current emissions testing and WTP Unit design;

III.10.C.11.a.v Physical/transport properties of constituents, current at the time of the submittal;

III.10.C.11.a.vi Process Description based on most current WTP Unit design;

III.10.C.11.a.vii Emissions data and all supporting calculations based on most current WTP Unit; and

III.10.C.11.a.viii Update of receptor locations based on land use or land use zoning changes, if any.

III.10.C.11.b Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will submit for Ecology review and approval as a permit modification pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f., a Pre-Demonstration Test Risk Assessment Report as Appendix 6.3. The Pre-Demonstration Test Risk Assessment Report will address and include the following:

III.10.C.11.b.i Direct and indirect human health and ecological risk assessments performed pursuant to the Final Risk Assessment Work Plan in Permit Condition III.10.C.11.a.

III.10.C.11.b.ii Submittal of projected stack emissions data for Tables III.10.G.D., III.10.H.E., and III.10.J.E. and;

III.10.C.11.b.iii Submittal of the Basis and Assumptions (for incorporation into Appendix 6.3.1) for these emissions, including but not limited to, projected operating conditions, feed-rates, and treatment effectiveness, consistent with information provided and approved pursuant to Permit Conditions III.10.G.6., III.10.G.10., III.10.H.1., III.10.H.5., III.10.J.1., and III.10.J.5.

III.10.C.11.c Within ninety (90) days of Ecology approval of the Demonstration Report(s) submitted pursuant to Permit Condition III.10.H.3.d.i, the Permittees will submit a Final Risk Assessment Report as Operating Unit Group 10, Appendix 6.4, incorporating the emission test results from the Demonstration Report(s). The Final Risk Assessment Report will be prepared in accordance with the Final Risk Assessment Work Plan in Appendix 6.2, (as approved pursuant to Permit Condition III.10.C.11.a), except the following updates are hereby incorporated. The Permittees will also submit with this Final Risk Assessment Report, Permit Tables III.10.G.D. and III.10.I.E. and Operating Unit Group 10, Appendix 6.4.1 (Basis and Assumptions) updated to incorporate the

emissions data from this Final Risk Assessment Report(s), as a permit modification pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f.

III.10.C.11.c.i Toxicity data current at the time of the submittal;

III.10.C.11.c.ii Compounds newly identified or updated emissions data from current waste characterization and emission testing;

III.10.C.11.c.iii Air modeling updated to include stack gas parameters based on most current emissions testing;

III.10.C.11.c.iv Physical/transport properties of constituents current at the time of the submittal;

III.10.C.11.c.v Update of receptor locations based on land use or land use zoning changes, if any;

III.10.C.11.c.vi Process description based on current WTP Unit design;

III.10.C.11.c.vii Emissions data and all supporting calculations based on current WTP Unit; and

III.10.C.11.c.viii Data from final risk assessment report pursuant to Permit Condition III.10.C.11.d, if available first, or simultaneously.

III.10.C.11.d Within ninety (90) days of Ecology approval of the Demonstration Report(s) submitted pursuant to Permit Condition III.10.J.3.d.i, the Permittees will submit a Final Risk Assessment Report as Operating Unit Group 10, Appendix 6.4, incorporating the emission test results from the Demonstration Report(s). The Final Risk Assessment Report will be prepared in accordance with the Final Risk Assessment Work Plan in Appendix 6.2, (as approved by Ecology pursuant to Permit Condition III.10.C.11.a), except the following updates are hereby incorporated. The Permittees will also submit with this Final Risk Assessment Report, Permit Tables III.10.G.D. and III.10.K.E. and Operating Unit Group 10, Appendix 6.4.1 (Basis and Assumptions) updated to incorporate the emissions data from this Final Risk Assessment Report, as a permit modification pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f.

III.10.C.11.d.i Toxicity data current at the time of the submittal;

III.10.C.11.d.ii Compounds newly identified or updated emissions data from current waste characterization and emission testing;

III.10.C.11.d.iii Air modeling updated to include stack gas parameters based on most current emissions testing;

III.10.C.11.d.iv Physical/transport properties of constituents current at the time of the submittal;

III.10.C.11.d.v Update of receptor locations based on land use or land use zoning changes, if any;

III.10.C.11.d.vi Process description based on current WTP Unit design;

III.10.C.11.d.vii Emissions data and all supporting calculations based on current WTP Unit; and

III.10.C.11.d.viii Data from final risk assessment report pursuant to Permit Condition III.10.C.11.c, if available first, or simultaneously.

III.10.C.11.e The Final Risk Assessment Report(s) required by Permit Conditions III.10.C.11.c. and III.10.C.11.d. may be combined, or provided separately, as appropriate.

III.10.C.12 RESERVED

III.10.C.13 Remote Data Access

Onsite, unrestricted, twenty-four (24) hour access to key WTP Unit operating data and emissions monitoring data will be provided to Ecology. This onsite, unrestricted access will include providing and maintaining for Ecology only use a computer terminal and printer with access to key WTP Unit operating data bases and emissions monitoring data bases. This terminal will be equipped with all necessary software and hardware to monitor, retrieve, and trend this data. Additional remote access will be provided on Ecology request if security concerns can be addressed.

III.10.C.14 Interim Period of Operation during Post Demonstration Test Period prior to receiving Ecology approval of the complete Demonstration Test Reports and the Final Risk Assessment Report.

III.10.C.14.a During this Interim Period of Operation, the Permittees are authorized to treat dangerous waste and mixed waste feed meeting the waste acceptance criteria of the Waste Analysis Plan in Addendum B, subject to the following conditions:

III.10.C.14.a.i Obtain receipt of Ecology's approval for the LAW Vitrification System according to Permit condition III.10.H.3.d.iii., prior to receiving dangerous or mixed waste feed into the LAW Vitrification System

III.10.C.14.a.ii Obtain receipt of Ecology's approval for the HLW Vitrification System according to Permit condition III.10.J.3.d.iii., prior to receiving dangerous or mixed waste feed into the HLW Vitrification System

III.10.C.14.a.iii Accept and treat up to 3 million gallons of Hanford tank waste feed in WTP.

III.10.C.15 Support Systems

III.10.C.15.a Mechanical Handling Systems

III.10.C.15.a.i The Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., in accordance with the Compliance Schedule, as specified in Operating Unit Group 10, Appendix 1.0, engineering information as specified below, for incorporation into Appendices 9.6, 9.10, 10.6, and 10.10, or into the Administrative Record where noted.

A. System Descriptions for each Mechanical Handling system identified in Permit Table III.10.C.A, for incorporation into the Administrative Record (Compliance Schedule Item 36).

B. Mechanical Handling Diagrams and Mechanical Handling Data Sheets for the following pieces of equipment (Compliance Schedule Item 37):

a. HDH-CRN-00005
b. HEH-CRN-00003
c. HPH-CRN-00001
d. HPH-CRN-00002
e. HSH-CRN-00001
f. HSH-CRN-00014
g. LEH-CRN-00003
h. LPH-CRN-00002
i. HEH-CRN-00001

C. Permit condition III.10.C.15.a. does not require:

a. Additional submittals beyond those described in permit condition III.10.C.15.a.;

b. IQRPE reports for equipment identified in III.10.C.15.a.i (B);

c. Installation inspections for equipment identified in III.10.C.15.a.i(B); and

d. Other inspection, verification, operability, maintenance, or records management beyond that which is specified elsewhere in this permit, for equipment identified in III.10.C.15.a.i (B), or by conditions III.10.C.15.a.ii and III.10.C.15.a.iii.

III.10.C.15.a.ii The Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., prior to initial receipt of dangerous waste and/or mixed waste in the WTP Unit, engineering information as identified below for incorporation into Appendices 9.13, 9.18, 10.13, and 10.18.

A. Equipment instrument logic narrative description related to safe operation of equipment covered by III.10.C.15.a.i.B, including but not limited to allowed travel path for bridge and trolley, upper and lower hook travel limits, two-blocking prevention, hook load limits, wire rope misreeling, and overspeed protection (Compliance Schedule Item 38).

B. Descriptions of operational procedures demonstrating appropriate controls and practices are in place to ensure equipment covered by III.10.C.15.a.i.B will be operated in a safe and reliable manner that will not result in damage to regulated tank systems, miscellaneous unit systems, or canisters of vitrified waste (Compliance Schedule Item 39).

III.10.C.15.a.iii Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., the following for incorporation into Addendum C: Updated Narrative Description and figures for all Mechanical Handling Systems identified in Permit Table III.10.C.A., to include but not limited to travel path, fail safe conditions, fail safe logic control, safety features and controls that minimize the potential for release of dangerous/mixed waste during normal operations, and lifting and/or load capabilities of each crane specified in III.10.C.15.a.i.B.

Tables III.10.C.A – Mechanical Handling Systems		
Pretreatment Building		
	Pretreatment Filter Cave Handling System	PFH
	Pretreatment In-Cell Handling System	PIH
	Radioactive Solid Waste Handling System	RWH
Low-Activity Waste Building		
	Radioactive Solid Waste Handling System	RWH
	LAW Melter Equipment Support Handling System	LSH
	LAW Container Pour Handling System	LPH
	LAW Container Finishing Handling System	LFH
	LAW Melter Handling System	LMH

	LAW Canister Export Handling System	LEH
High-Level Waste Building		
	HLW Melter Cave Support Handling System	HSH
	HLW Canister Export Handling System	HEH
	HLW Filter Cave Handling System	HFH
	HLW Canister Pour Handling System	HPH
	HLW Canister Decontamination Handling System	HDH
	HLW Melter Handling System	HMH
	Radioactive Solid Waste Handling System	RWH

III.10.D CONTAINERS

III.10.D.1 Container Storage Areas and Storage Limits

III.10.D.1.a The Permittees may store dangerous and/or mixed waste meeting the waste acceptance criteria for containerized waste in the WAP, Operating Unit Group 10, Addendum B, (as approved pursuant to Permit Conditions III.10.C.3. and III.10.C.2), for storage in dangerous and/or mixed waste container storage units identified in Tables III.10.D.A through C.

III.10.D.1.b The Permittees may store containerized dangerous and mixed waste only in container storage areas listed in Permit Tables III.10.D.A (as approved/modified pursuant to Permit Condition III.10.D.10.), in accordance with Permit Section III.10.D, and in accordance with Operating Unit Group 10, Chapters 1.0 and 4.0, and Appendices 9.4, 9.5, 9.7, 9.8, 9.9, 9.18, 10.4, 10.5, 10.7, 10.8, 10.9, 10.18, 12.4, 12.5, 12.7, 12.8, 12.9, and 12.15, as approved pursuant to Permit Conditions III.10.D.10.b. through d. The Permittees will limit the total volume of waste to quantities specified for the individual container storage areas listed in Permit Table III.10.D.A.

III.10.D.1.c The Permittees must maintain a free volume (i.e., free volume = total capacity of containment system minus volume occupied by equipment and containers within containment systems) within containment systems identified in Permit Tables III.10.D.B and III.10.D.C (as approved/modified pursuant to Permit Condition III.10.D.10.), equal to ten percent (10%) of the total volume of dangerous and mixed waste stored within the containment system, or the volume of the largest container stored within the containment system, whichever is greater.

III.10.D.1.d The Permittees will maintain documentation in the operating record for each container storage area listed in Permit Table III.10.D.A (as approved/modified pursuant to Permit Condition III.10.D.10.), in accordance with WAC 173-303-380.

III.10.D.1.e For the purpose of determining compliance with container storage area capacity limits and containment system requirements, every waste container will be considered to be full.

III.10.D.1.f RESERVED

III.10.D.2 Container Storage Areas Design and Construction

III.10.D.2.a The Permittees will construct container storage areas identified in Permit Tables III.10.D.A through III.10.D.C, as specified in all applicable drawings and specifications

in Operating Unit Group 10, Appendices 9.4, 9.5, 9.7, 9.8, 9.9, 10.4, 10.5, 10.7, 10.8, 10.9, 12.4, 12.5, 12.7, 12.8, and 12.9, as approved pursuant to Permit Condition III.10.D.10.b.

III.10.D.2.b RESERVED

III.10.D.2.c All container storage areas identified in Permit Tables III.10.D.A through III.10.D.C (as approved/modified pursuant to Permit Condition III.10.D.10.), must be constructed to protect containers from contact with accumulated liquids (e.g., leaks, spills, precipitation, fire water, liquids from damaged or broken pipes) [WAC 173-303-630(7)(a)(i) and WAC 173-303-630(7)(c)(ii)].

III.10.D.2.d Modifications to approved design, plans, and specifications for the container storage areas identified in Permit Tables III.10.D.A through III.10.D.C must be made in accordance with Permit Conditions III.10.C.2.e., f., and g, or III.10.C.9.d, e., and h.

III.10.D.3 **Container Storage Area Installation**

III.10.D.3.a RESERVED

III.10.D.3.b The Permittees will obtain and place in the WTP Unit operating record, within thirty (30) days of completion of each container storage area identified in Permit Tables III.10.D.A, through III.10.D.C (as approved/modified pursuant to Permit Condition III.10.D.10.), written statements by a qualified, installation inspector or a qualified registered, professional engineer, attesting that these areas were installed in compliance with WAC 173-303-630(7)(a), (b), and (c) [WAC 173-303-630(7), WAC 173-303-806(4)(b)(i)].

III.10.D.4 **Container Management Practices**

III.10.D.4.a RESERVED

III.10.D.4.b The Permittees will manage all waste in container storage areas identified in Permit Tables III.10.D.A through III.10.D.C (as approved/modified pursuant to Permit Condition III.10.D.10.), in accordance with procedures described in Operating Unit Group 10, Addendum C, Appendices 9.18, 10.18, and 12.15, as approved pursuant to Permit Condition III.10.D.10.c, and the following conditions:

III.10.D.4.b.i The operating records and waste tracking procedures will indicate all times at which containerized dangerous and mixed waste were removed from and returned to designated staging, storage, segregation, and treatment areas as approved pursuant to Permit Condition III.10.D.10.c.vi. (WAC 173-303-380).

III.10.D.4.b.ii The physical arrangement (i.e., spacing) of dangerous and mixed waste containers will be as specified in WAC 173-303-630(5)(c), except for the immobilized LAW containers and IHLW waste canisters, which must be as described in Operating Unit Group 10, Addendum C, Section 4.2.1.2.1., as updated pursuant to Permit Condition III.10.D.10.c.i.

III.10.D.4.b.iii All container storage areas must be operated to protect containers from contact with accumulated liquids resulting from leaks, spills, or precipitation [WAC 173-303-630(7)(a)(i) and (c)(ii)].

III.10.D.4.b.iv At all times, the Permittees will place and store ignitable and/or reactive dangerous and/or mixed waste in accordance with the procedures described in Operating Unit

Group 10, Appendix 8.15, 9.18, 10.18, 11.15 and 12.15, as approved pursuant to Permit Condition III.10.D.10.c.xi.

III.10.D.4.b.v At all times, the Permittees will place and store incompatible dangerous and/or mixed waste in accordance with the procedures described in Operating Unit Group 10, Appendix 8.15, 9.18, 10.18, 11.15, and 12.15, as approved pursuant to Permit Condition III.10.D.10.c.xii.

III.10.D.4.b.vi At all times, storage containers holding dangerous and/or mixed waste that contain free liquids and/or exhibit either the characteristic of ignitability or reactivity as described in WAC 173-303-090(5) or (7), must be provided with a containment system in accordance with WAC 173-303-630(7)(a)(i) through (iii) [WAC 173-303-630(7)(c)].

III.10.D.4.b.vii At all times, containers holding dangerous and/or mixed waste in container storage areas must be closed, except when it is necessary to add or remove waste [WAC 173-303-630(5)(a)].

III.10.D.4.b.viii At all times, containers holding dangerous and/or mixed waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak [WAC 173-303-630(5)(b)].

III.10.D.4.b.ix A storage container holding a dangerous and/or mixed waste that is incompatible, as defined in WAC 173-303-040, with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other waste or materials or protected from them by means of a dike, berm, or wall. [WAC 173-303-630(9)(c)].

III.10.D.4.b.x If a container holding dangerous and/or mixed waste is not in good condition (e.g., exhibits severe rusting, apparent structural defects, or any other condition that could lead to container rupture or leakage) or is leaking, the Permittees will manage the container in accordance with procedures described in Operating Unit Group 10, Appendices 8.15, 9.18, 10.18, 11.15, and 12.15, as approved pursuant to Permit Condition III.10.D.10.c.viii. [WAC 173-303-630(2)].

III.10.D.4.b.xi RESERVED

III.10.D.4.b.xii The Permittees will ensure that all containers used for dangerous and/or mixed waste management, are made of or lined with materials which will not react with and are otherwise compatible with the waste to be stored [WAC 173-303-630(4)].

III.10.D.4.b.xiii Except for lab packs assembled in compliance with WAC 173-303-161 requirements, the Permittees will not place incompatible wastes, or incompatible wastes and materials, in the same container, unless WAC 173-303-395(1)(b) is complied with [WAC 173-303-630(9)(a)].

III.10.D.4.b.xiv The Permittees will not place dangerous and/or mixed waste in an unwashed container that previously held an incompatible waste or material [WAC 173-303-630(9)(b)].

III.10.D.5 Identification of Containers and Container Storage Areas

III.10.D.5.a Pursuant to WAC 173-303-630(3), the Permittees will ensure that all dangerous and/or mixed waste containers (except as otherwise specified in Operating Unit Group 10, Addendum C, Section 4.2.1.3., as updated pursuant to Permit Condition III.10.D.10.c.i., for containers of ILAW and IHLW) are labeled in a manner that adequately identifies the

major risk(s) associated with the contents. For purposes of container labeling, major risk(s) could include but are not limited to the following:

III.10.D.5.a.i PERSISTENT (if a WP01 or WP02 waste code);

III.10.D.5.a.ii TOXIC (if a WT01, WT02, or D waste code other than D001, D002, or D003);

III.10.D.5.a.iii IGNITABILITY (if a D001 and other waste codes);

III.10.D.5.a.iv CORROSIVE (if a D002 and other waste codes);

III.10.D.5.a.v REACTIVE (if a D003 and other waste codes).

III.10.D.5.b For all dangerous and mixed waste containers (except as otherwise specified in Operating Unit Group 10, Addendum C, Section 4.2.1.3., as updated pursuant to Permit Condition III.10.D.10.c.i., for containers of ILAW and canisters of IHLW), the Permittees will ensure that:

III.10.D.5.b.i Labels are not obscured or otherwise unreadable;

III.10.D.5.b.ii Waste containers are oriented so as to allow inspection of the labels identified in Permit Conditions III.10.D.5.a and III.10.D.5.b, the container tracking number, and, to the extent possible, any labels which the generator placed upon the container; and

III.10.D.5.b.iii Empty dangerous and mixed waste containers, as defined by WAC 173-303-160(2), must have their dangerous and/or mixed waste labels destroyed or otherwise removed immediately upon being rendered empty.

III.10.D.5.c The Permittees will post entrances and access points to all ILAW containers and IHLW canister storage areas, and any other areas where containers of ILAW and IHLW are handled, with signs that, in addition to meeting the requirements of WAC 173-303-310(2)(a), clearly identify the major risk(s) associated with the containers of ILAW and IHLW.

III.10.D.6 **Containment Systems**

III.10.D.6.a Containerized dangerous and mixed waste, and other materials that are incompatible, will not be staged, segregated, or stored within the same containment system as identified in Permit Table III.10.D.C., as approved/modified pursuant to Permit Condition III.10.D.10. (e.g., metal pan, concrete berm, portable containment system) [WAC 173-303-630(9)(c)].

III.10.D.6.b The integrity of containment systems identified in Permit Table III.10.D.C. (as approved/modified pursuant to Permit Condition III.10.D.10.) must be maintained so that cracks, gaps, loss of integrity, deterioration, corrosion, or erosion of containment pads, joints in containment pads, berms, curbs, trenches, sumps, and coatings are repaired in accordance with Operating Unit Group 10, Addendum E, as approved/modified pursuant to Permit Conditions III.10.D.10.c.vii., III.10.C.5.b., and III.10.C.5.c. [WAC 173-303-320, WAC 173-303-630(7)(a)(i)].

III.10.D.6.c An impermeable coating, as specified in Operating Unit Group 10, Appendices 9.4, 9.5, 9.7, 9.8, 9.9, 10.4, 10.5, 10.7, 10.8, 10.9, 12.4, 12.5, 12.7, 12.8, and 12.9 will be maintained for all concrete containment systems and will meet the following performance standards [WAC 173-303-630(7)(a)]:

III.10.D.6.c.i The coating must seal the containment system surface such that no cracks, seams, or other pathways through which liquid could migrate are present;

III.10.D.6.c.ii The coating must be of adequate thickness and strength to withstand the normal operation of equipment and personnel within the given area such that degradation or physical

damage to the coating or lining can be identified and remedied before waste could migrate from the containment system; and

III.10.D.6.c.iii The coating must be compatible with the waste managed in the containment system.

III.10.D.6.d The Permittees must inspect all containment systems specified in Permit Table III.10.D.C in accordance with the inspection schedules and requirements in Operating Unit Group 10, Addendum E, as approved/modified pursuant to Permit Conditions III.10.D.10.c.vii. and III.10.C.5.c, and take the following actions if liquid is detected in these containment systems:

III.10.D.6.d.i Remove the liquid from the containment system in accordance with procedures described in Operating Unit Group 10, Addendum E, (as modified pursuant to Permit Conditions III.10.C.5.b. and III.10.C.5.c.), Permit Condition III.10.C.6.a., and Operating Unit Group 10, Addendum F1 (as modified pursuant to Permit Condition III.10.C.6.b. and III.10.C.6.c.). The liquid removed from containment systems will be managed as dangerous and/or mixed waste, except for liquids from the Non-Radioactive Dangerous Waste Container Storage Area which will be managed as dangerous waste, unless the Permittees demonstrate through designation, (in accordance with WAC 173-303-070, incorporated by reference), that the liquid is no longer dangerous.

III.10.D.6.d.ii Determine the source of the liquid.

III.10.D.6.d.iii If the source of the liquid is determined to be a leak in a container, the Permittees must follow the procedures specified in Permit Condition III.10.D.4.b.x.

III.10.D.6.d.iv The Permittees must take action to ensure the incident that caused liquid to enter the containment system will not reoccur.

III.10.D.6.d.v The Permittees will document in the WTP Unit operating record actions/procedures taken to comply with i. through iv. above in accordance with WAC 173-303-630(6).

III.10.D.6.d.vi The Permittees will notify and report releases to the environment to Ecology in accordance with Permit Condition III.10.C.6.a.

III.10.D.7 Inspections

III.10.D.7.a The Permittees will inspect the container storage areas in accordance with the Inspection Schedules in Operating Unit Group 10, Addendum E of this Permit, as modified pursuant to Permit Condition III.10.C.5.c.

III.10.D.7.b The inspection data for the container storage areas will be recorded, and the records will be placed in the WTP Unit operating record in accordance with Permit Condition III.10.C.4.

III.10.D.8 Recordkeeping (WAC 173-303-380)

For the container storage areas, the Permittees will record and maintain in the WTP Unit operating record, all monitoring, recording, maintenance, calibration, test data, and inspection data compiled under the conditions of this Permit, in accordance with Permit Condition III.10.C.4. and III.10.C.5.

III.10.D.9 Closure

The Permittees will close the container storage areas identified in Permit Tables III.10.D.A through III.10.D.C in accordance with Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8.

III.10.D.10 Compliance Schedules

III.10.D.10.a All information identified for submittal to Ecology in III.10.D.10.b. through III.10.D.10.d. of this compliance schedule must be signed in accordance with requirements in WAC 173-303-810(12).

III.10.D.10.b The Permittees will submit to Ecology, consistent with the schedule described in Operating Unit Group 10, Appendix 1.0, for review and approval, prior to construction of container storage area and associated containment systems as identified in Permit Tables III.10.D.A and III.10.D.B respectively, engineering information as specified below, for incorporation into Operating Unit Group 10, Appendices 9.4, 9.5, 9.7, 9.8, 9.9, 10.4, 10.5, 10.7, 10.8, 10.9, 12.4, 12.5, 12.7, 12.8, and 12.9 of this Permit. In order to incorporate engineering information specified below into Operating Unit Group 10, Appendices 9.4, 9.5, 9.7, 9.8, 9.9, 10.4, 10.5, 10.7, 10.8, 10.9, 12.4, 12.5, 12.7, 12.8, and 12.9, Permit Condition III.10.C.2.g. process will be followed. At a minimum, container storage area and containment system drawings and specifications will show the following pursuant to WAC 173-303-806(4)(b):

III.10.D.10.b.i Design drawings (General Arrangement Drawings - in plan) and specifications including references to specific building codes (e.g., UBC, ASCE) for each container storage areas' foundation and associated containment system. These items should show basic design parameters and dimensions, and location of the container storage areas and associated containment systems; how containment system design promotes positive drainage control (such as a locked drainage valve) to prevent release of contaminated liquids and so that uncontaminated liquids can be drained promptly for convenience of operation; capacity of the containment system relative to the volume of the largest container to be stored; how the base underlying the containers is sloped (i.e., floor slopes to sumps) or the containment system is otherwise designed and operated to drain and remove liquids resulting from leaks, spills, or other liquids, or how containers are kept from contact with standing liquids in the containment system (i.e., elevated or are otherwise protected); for container storage areas without associated containment systems, a description of how the storage area is designed or operated to drain and remove liquids or how containers are kept from contact with standing liquids;

III.10.D.10.b.ii Containment systems materials selection documentation (including, but not limited to, materials of construction, coatings and liner materials for concrete portions of containment systems);

III.10.D.10.b.iii Sketches, drawings, or data demonstrating compliance with WAC 173-303-630(8) (location of buffer zone and containers holding ignitable or reactive waste) and WAC 173-303-630(9)(c) (location of incompatible waste), where applicable;

III.10.D.10.b.iv Submit Permit Table III.10.D.B. completed to provide for all containment systems, the information as specified in each column heading, consistent with information to be provided in III.10.D.10.b.i. through iii. above.

III.10.D.10.c Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will update and submit to Ecology, consistent with the schedule described in Operating Unit Group 10, Appendix 1.0, for review and approval, the following, as specified below, for incorporation into Operating Unit Group 10, Addendum C, and Appendices 9.18, 10.18, and 12.15, except Permit Condition III.10.D.10.c.vii., which will be incorporated into Operating Unit Group 10, Addendum E. In order to incorporate the following information (specified below) into Operating Unit Group 10, Appendix 9.18, 10.18, and

12.15, Permit Condition III.10.C.2.g. will be followed. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions III.10.D.10.b., III.10.D.10.c., and III.10.D.10.d. as approved by Ecology, and will include at a minimum, the following information as required pursuant to WAC 173-303-630 and WAC 173-303-340:

III.10.D.10.c.i Operating Unit Group 10, Addendum C, Narrative Descriptions, updated;

III.10.D.10.c.ii Descriptions of procedures for addition and removal of waste from containers;

III.10.D.10.c.iii Descriptions of procedures for opening and closing of containers, including any inspections performed prior to opening;

III.10.D.10.c.iv Descriptions of procedures for handling and transport of containers within the WTP Unit;

III.10.D.10.c.v Description of the tracking system used to track containers throughout the WTP Unit pursuant to WAC 173-303-380. The tracking system, at a minimum, will do the following:

A. Track the location of containers within the WTP Unit;

B. Track which containers have been shipped off-facility and/or off-site, and to where they have been shipped;

C. For containers intended for transport off-site, include information in accordance with the requirements specified in WAC 173-303-190(3)(b);

D. Record the date container is placed in the container storage area;

E. Record the nature of the waste in any given container, including dangerous waste designation codes, any associated land disposal restriction treatment requirements, and the major risk(s) associated with the waste (as described in Permit Conditions III.10.D.5.a. and III.10.D.5.c.).

III.10.D.10.c.vi Descriptions of procedures for container spacing, stacking, and labeling pursuant to WAC 173-303-630(3), WAC 173-303-630(5)(c), WAC 173-303-340(3), WAC 173-303-630(6);

III.10.D.10.c.vii Descriptions of procedures for investigating container storage areas and investigating and repairing containment systems [WAC 173-303-320, WAC 173-303-630(6)];

III.10.D.10.c.viii Descriptions of procedures for responding to damaged (e.g., severe rusting, apparent structural defects) or leaking containers [WAC 173-303-630(2)];

III.10.D.10.c.ix Descriptions of operational procedures demonstrating how accumulated liquids can be analyzed and removed from containment systems to prevent overflow [WAC 173-303-806(4)(b)(i)(E)];

III.10.D.10.c.x For portable containment systems, vendor information, design drawings, or sketches showing the following information. These items will include as a minimum basic design parameters, dimensions, and materials of construction; how the design promotes positive drainage control (such as a locked drainage valve) to prevent release of contaminated liquids and so that uncontaminated liquids can be drained promptly for convenience of operation; how the base underlying the containers is sloped (i.e., floor slopes to sumps) or the containment system is otherwise designed and operated to drain and remove liquids resulting from leaks, spills, or other liquids, or how containers are kept from contact with standing liquids in the containment system (i.e., elevated or are otherwise protected); and

capacity of the containment system relative to the volume of the largest container to be stored;

III.10.D.10.c.xi Where ignitable and reactive waste are stored or otherwise managed in containers, a description of the procedures used to ensure compliance with WAC 173-303-630(8)(a) and (b);

III.10.D.10.c.xii Where incompatible waste are stored or otherwise managed in containers, a description of the procedures used to ensure compliance with WAC 173-303-630(9)(a) and (b), and 173-303-395(1)(b) and (c);

III.10.D.10.c.xiii Submit Permit Table III.10.D.C completed to provide for all portable containment systems, the information as specified in each column heading, consistent with information to be provided in III.10.D.10.c.i. through xii. above;

III.10.D.10.c.xiv Test procedures and results or other documentation or information to show that the waste do not contain free liquids, as applicable.

III.10.D.10.d Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will submit to Ecology, consistent with the schedule described in Operating Unit Group 10, Appendix 1.0, for review and approval, completed Permit Tables III.10.D.A, III.10.D.B, and III.10.D.C, for incorporation into Operating Unit Group 10, Addendum C, and Appendices 9.18, 10.18, and 12.15 of this Permit. In order to incorporate the information into Operating Unit Group 10, Addendum C, and Appendices 9.18, 10.18, and 12.15 of this Permit, Permit Condition III.10.C.2.g. process will be followed.

1 **Table III.10.D.A –Container Storage/Containment Building Areas Description**

Dangerous and Mixed Waste Container Storage Areas	Maximum Capacity Gallons (Solids)(ft^3)[d]	Maximum Operating Volume (Liquid[c])
HLW Vitrification Plant		
IHLW Canister Storage Cave[a] (Room H-0132)	163,599 gal. (21,870 ft^3)	NA
HLW East Corridor El. 0' (Rooms HC-0108/09/10)	183,721 gal. (24,560 ft^3)	NA
HLW Loading Area (Room H-0130)	142,204 gal. (19,010 ft^3)	NA
Other Areas		
Non-Radioactive Dangerous Waste Container Storage Area[b]	56,104 gal. (7,500 ft^3)	RESERVED
Failed Melter Storage Facility (Building 32)[f]	403,947 gal. (54,000 ft^3)	RESERVED
Lab Waste Management Area (Rooms A-0139, A-0139A/B/C/D)	139,586 gal. (18,660 ft^3)	RESERVED
Containment Buildings/Container Storage	**Maximum Capacity Gallons (Solids)(ft^3)[d]**	**Maximum Operating Volume (Liquid[c])**
Pretreatment Plant	RESERVED	RESERVED
P-0123 Pretreatment Hot Cell Containment Building	RESERVED	RESERVED
Pretreatment Maintenance Containment Building	RESERVED	RESERVED
PM0124 Hot Cell Crane Maintenance Area	RESERVED	RESERVED
P-0121A Spent Resin Dewatering	RESERVED	RESERVED
P-0421A General Filter Room	RESERVED	RESERVED
P-0122A Waste Packaging Area	RESERVED	RESERVED
P-0123A Remote Decontamination Maintenance Cave	RESERVED	RESERVED
P-0124 C3 Workshop	RESERVED	RESERVED
P-0124A C3 Workshop	RESERVED	RESERVED
P-0125 Filter Cask Airlock	RESERVED	RESERVED
P-0125A Filter Cask Area	RESERVED	RESERVED
P-0128A MSM Repair Area	RESERVED	RESERVED
P-0128 Temporary Storage Room	RESERVED	RESERVED
P-0223 Pretreatment Filter Package Maintenance Containment Building		
P-0335 Pretreatment Filter Cave Room	RESERVED	RESERVED

P-0335A Decon Chamber	RESERVED	RESERVED
P-0431A General Filter Room	RESERVED	RESERVED
LAW Vitrification Plant		
L-0112 LAW LSM Gallery Containment Building	RESERVED	RESERVED
ILAW Container Finishing Containment Building	RESERVED	RESERVED
L-0109B Swabbing Area Line 2	RESERVED	RESERVED
L-0109C Decontamination Area Line 2	RESERVED	RESERVED
L-0109D Inert Fill Area Line 2	RESERVED	RESERVED
L-0115B Swabbing Area Line 1	RESERVED	RESERVED
L-0115C Decontamination Area Line 1	RESERVED	RESERVED
L-0115D Inert Fill Area Line 1	RESERVED	RESERVED
L-0109E Container Monitoring/Export Area	RESERVED	RESERVED
L-0115E Container Monitoring/Export Area	RESERVED	RESERVED
L-0119B LAW Consumable Import/Export Containment Building	RESERVED	RESERVED
L-0226A LAW C3 Workshop Containment Building	RESERVED	RESERVED
LAW Pour Cave Containment Building	RESERVED	RESERVED
L-B015A Melter 1 Pour Cave	RESERVED	RESERVED
L-B013C Melter 1 Pour Cave	RESERVED	RESERVED
L-B013B Melter 2 Pour Cave	RESERVED	RESERVED
L-B011C Melter 2 Pour Cave	RESERVED	RESERVED
L-B011B Future Melter 3 Pour Cave	RESERVED	RESERVED
L-B009B Future Melter 3 Pour Cave	RESERVED	RESERVED
ILAW Buffer Container Containment Building	RESERVED	RESERVED
L-B025C Container Buffer Store	RESERVED	RESERVED
L-B025D Container Rework	RESERVED	RESERVED
HLW Vitrification Plant		
HLW Melter Cave 1 Containment Building:	RESERVED	RESERVED
H-0117 Melter Cave 1		
H-0116B Melter Cave 1 C3/C5 Airlock		
H-0310A Melter Cave 1 Equipment Decon Pit		
HLW Melter Cave 2 Containment Building:	RESERVED	RESERVED
H-0106 Melter Cave 2		
H-0105B Melter Cave 2 C3/C5 Airlock		
H-0304A Melter Cave 2 Equipment Decon Pit		
H-0136 IHLW Canister Handling Cave Containment Building	RESERVED	RESERVED
H-0133 IHLW Canister Swab and Monitoring Cave Containment Building	RESERVED	RESERVED
HLW C3 Workshop Containment Building:	RESERVED	RESERVED
H-0311A C3 Workshop		

H-0311B C3 MSM Maintenance Workshop		
H-0104 HLW Filter Cave Containment Building	RESERVED	RESERVED
H-B032 HLW Pour Tunnel 1 Containment Building	RESERVED	RESERVED
H-B005A HLW Pour Tunnel 2 Containment Building	RESERVED	RESERVED
HLW Waste Handling Area Containment Building:	RESERVED	RESERVED
H-0410B E&I Room		
H0411 Waste Handling Room		
HLW Drum Swabbing and Monitoring Area Containment Building:	RESERVED	RESERVED
H-0126A Crane Maintenance Room		
H-0126B Swabbing and Monitoring Area		
H-B028 Cask Transfer Tunnel		

Footnotes:

[a]Capacity is for immobilized glass waste storage.

[b]Capacity is for dangerous and/or mixed waste storage.

[c]All material within the containment systems will be considered waste for the purposes of calculating free volume, where free volume is the amount of space available in containment systems (i.e., free volume = total capacity of containment systems [which includes total capacity of portable containment systems] minus volume occupied by equipment and containers within containment systems).

[d]Gallons converted to cubic feet using a conversion factor of 1 gallon (liquid) x 0.134 = 1ft^3 (rounded to the nearest whole number).

[e]Location and capacities of containers stored within portable containment systems specified on Table III.10.D.C are limited to the dangerous and mixed waste container storage areas and capacities specified above.

[f]The dimension for height (H) is based on the height of the largest waste container stored in the area (i.e., LAW container is 7.5 ft., HLW canister is 15 ft., melters are assumed to be 16 ft., and a B-25 box is 5 ft. – stacked a maximum of two high is 10ft).

Table III.10.D.B – Container Storage Area Containment Systems

Container Storage Areas	Permanent Containment System Description – Drawing #s	Permanent Containment System Sump/Floor Drain ID#	Permanent Containment System Dimensions[a] (ft) & Materials of Construction	Permanent Containment System Capacity (gal) (relative to 10% of the volume of all containers within the container storage area, or 100% of the volume of the largest container, whichever is greater).
Failed Melter Storage Facility (Building 32)	24590-BOF-P1-32-00001, Rev. 2	N/A	45' x 75" x 16'[b]	403,947 gal. (54,000 ft^3)

[a]Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

[b]The dimension for height (H) is based on the height of the largest waste container stored in the area (i.e., LAW container is 7.5 ft., HLW canister is 15 ft., melters are assumed to be 16 ft., and a B-25 box is 5 ft. – stacked a maximum of two high is 10 ft).

1 **Table III.10.D.C – Container Storage Area Portable Containment Systems[a]**

Portable Containment System Description – Specifications and Vendor Information	Portable Containment System Container Storage Area(s) Location(s)	Portable Containment System Dimensions[b] (ft) & Materials of Construction	Portable Containment System Capacity (gal) (relative to 10% of the volume of all containers managed within the portable containment system, or 100% of the volume of the largest container, whichever is greater).
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a] Location and capacities of containers stored within portable containment systems specified on this Permit Table are limited to the dangerous and mixed waste container storage areas and capacities specified in Permit Table III.10.D.A.

[b]Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

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III.10.E TANK SYSTEMS

III.10.E.1 Approved Waste and Storage Limits

III.10.E.1.a The Permittees may store in tank systems all dangerous and/or mixed waste listed in the Part A Forms, Operating Unit Group 10, Addendum A of this Permit and in accordance with the Waste Analysis Plan, Operating Unit Group 10, Addendum B as approved pursuant to Permit Condition III.10.C.3. of this Permit. Total tank system dangerous and/or mixed waste storage at the Facility will not exceed the volume(s) specified in the Part A Form 3 Permit Application, Addendum A of this permit.

III.10.E.1.b The Permittees may store and manage dangerous and/or mixed waste only in approved tank systems listed in Permit Tables III.10.E.A through D, I, K, M, and O, as approved/modified pursuant to Permit Condition III.10.E.9., in accordance with Permit Section III.10.E of this Permit, and in accordance with Operating Unit Group 10, Adendums1.0 and 4.0, and Operating Unit Group 10, Appendices 8.1 through 8.15, 9.1 through 9.14, 9.18, 10.1 through 10.14, 10.18, and 11.1 through 11.15 of this Permit, as approved pursuant to Permit Conditions III.10.E.9.b through e. The Permittees will limit the total volume of waste to quantities specified for the individual units listed in Permit Tables III.10.E.A through D, I, K, M, and O.

III.10.E.1.c The Permittees will manage ignitable and reactive, and incompatible waste in accordance with WAC 173-303-395(1). Any tank system specified in Permit Tables III.10.E.A through D and III.10.E, I, K, M, and O as approved/modified pursuant to Permit Condition III.10.E.9., in which ignitable, reactive, or incompatible waste are managed will meet the requirements specified in WAC 173-303-640(9) and (10).

III.10.E.1.d The Permittees will ensure all certifications required by specialists (e.g., independent, qualified, registered professional engineer; independent corrosion expert; independent, qualified installation inspector; etc.) use the following statement or equivalent pursuant to Permit Condition III.10.C.10 of this Permit:

"I, (Insert Name) have (choose one or more of the following: overseen, supervised, reviewed, and/or certified) a portion of the design or installation of a new tank system or component located at (address), and owned/operated by (name(s)). My duties were: (e.g., installation inspector, testing for tightness, etc.), for the following tank system components (e.g., the tank, venting piping, etc.), as required by the Dangerous Waste Regulations, namely, WAC 173-303-640(3) (applicable paragraphs (i.e., (a) through (g)).

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

III.10.E.1.e In all future permit submittals, the Permittees will include tank names with the tank designation (e.g., Process Condensate Vessels located in the RLD System are designated V45028A and V45028B, respectively).

III.10.E.2 Tank System Design and Construction

III.10.E.2.a The Permittees will construct the tank systems identified in Permit Tables III.10.E.A through D, I, K, M, and O, as approved/modified pursuant to Permit Condition III.10.E.9., as specified in Operating Unit Group 10, Appendices 8.1 through 8.14, 9.1

through 9.14, 10.1 through 10.14, and 11.1 through 11.14 of this Permit, as approved pursuant to Permit Conditions III.10.E.9.b., III.10.E.9.c., and III.10.E.9.d.

III.10.E.2.b The Permittees will construct all secondary containment systems identified in Permit Tables III.10.E.A through D, and I through P, as approved/modified pursuant to Permit Condition III.10.E.9., as specified in Operating Unit Group 10, Appendices 8.2, 8.4 through 8.15, 9.2, 9.4 through 9.14, 9.18, 10.2, 10.4 through 10.14, 10.18 and 11.2, 11.4 through 11.15, 11.15 of this Permit, as approved pursuant to Permit Conditions III.10.E.9.b., III.10.E.9.c., and III.10.E.9.d.

III.10.E.2.c Modifications to approved design, plans, and specifications in Operating Unit Group 10 of this Permit for the WTP Unit Tank Systems will be allowed only in accordance with Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g., III.10.C.9.d, e., and h.

III.10.E.2.d The Permittees will maintain construction access to the internal portions of installed tanks with pulse jet mixers until Ecology has provided written approval of the tank system designs for wear allowance pursuant to WAC 173-303-640(3)(a).

III.10.E.2.d.i The Permittees will not install the following tanks in the WTP Unit until Ecology has provided written approval of the tank system designs for wear allowance pursuant to WAC 173-303-640(3)(a):

- Plant Wash Vessel, PWD-VSL-00044.
- Acidic Waste Vessel, RLD-VSL-00007.
- Plant Wash and Drains Vessel, RLD-VSL-00008.
- HLW Feed Receipt Vessel, HLP-VSL-00022.
- HLW Lag Storage Vessels, HLP-VSL-00027A and HLP-VSL-00027B.
- HLW Feed Blend Vessel, HLP-VSL-00028.
- Ultrafiltration Feed Preparation Vessels, UFP-VSL-00001A and UFP-VSL-00001B.
- Ultrafiltration Feed Vessels, UFP-VSL-00002A and UFP-VSL-00002B.

III.10.E.2.d.ii Except where exempted in writing by Ecology on the basis that wear allowance provisions will not be affected, fabrication and assembly of the following tanks and their internal components will be suspended until Ecology has provided written approval of the tank system designs for wear allowance pursuant to WAC 173-303-640(3)(a).

- HLW Feed Receipt Vessel, HLP-VSL-00022.
- HLW Lag Storage Vessels, HLP-VSL-00027A and HLP-VSL-00027B.
- HLW Feed Blend Vessel, HLP-VSL-00028.
- Ultrafiltration Feed Vessels, UFP-VSL-00002A and UFP-VSL-00002B.

III.10.E.3 Tank System Installation and Certification

III.10.E.3.a The Permittees must ensure that proper handling procedures are adhered to in order to prevent damage to the system during installation. Prior to covering, enclosing, or placing a new tank system or component in use, an independent, qualified, installation inspector or an independent, qualified, registered professional engineer, either of whom is trained and experienced in the proper installation of tank systems or components, must inspect the system for the presence of any of the following items:

III.10.E.3.a.i Weld breaks;

III.10.E.3.a.ii Punctures;

III.10.E.3.a.iii Scrapes of protective coatings;

III.10.E.3.a.iv Cracks;

III.10.E.3.a.v Corrosion;

III.10.E.3.a.vi Other structural damage or inadequate construction/installation.

All discrepancies must be remedied before the tank system is covered, enclosed, or placed in use [WAC 173-303-640(3)(c)].

III.10.E.3.b For tank systems or components that are placed underground and that are back-filled, the Permittees must provide a backfill material that is a non-corrosive, porous, homogeneous substance. The backfill must be installed so that it is placed completely around the tank and compacted to ensure that the tank and piping are fully and uniformly supported [WAC 173-303-640(3)(d)].

III.10.E.3.c The Permittees must test for tightness all new tanks and ancillary equipment prior to these components being covered, enclosed, or placed into use. If a tank system is found not to be tight, all repairs necessary to remedy the leak(s) in the system must be performed prior to the tank system being covered, enclosed, or placed in use [WAC 173-303-640(3)(e)].

III.10.E.3.d The Permittees must ensure ancillary equipment is supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction [WAC 173-303-640(3)(f)].

III.10.E.3.e The Permittees must provide the type and degree of corrosion protection recommended by an independent corrosion expert, based on the information provided in Operating Unit Group 10, Appendices 8.9, 8.11, 9.9, 9.11, 10.9, 10.11, 11.9, and 11.11 of this Permit, as approved pursuant to Permit Conditions III.10.E.9.b.i., III.10.E.9.b.iv., III.10.E.9.b.v., III.10.E.9.c.i., III.10.E.9.c.iv., III.10.E.9.c.v., III.10.E.9.d.i., III.10.E.9.d.iv., and III.10.E.9.d.v. or other corrosion protection if the Ecology believes other corrosion protection is necessary to ensure the integrity of the tank system during use of the tank system. The installation of a corrosion protection system that is field fabricated must be supervised by an independent corrosion expert to ensure proper installation [WAC 173-303-640(3)(g)].

III.10.E.3.f Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will obtain, and keep on file in the WTP Unit operating record, written statements by those persons required to certify the design of the tank system and supervise the installation of the tank system in accordance with the requirements of WAC 173-303-640(3)(b), (c), (d), (e), (f), and (g), attesting that each tank system and corresponding containment system listed in Permit Tables III.10.E.A through D and III.10.E.I through P, as approved/modified pursuant to Permit Condition III.10.E.9., were properly designed and installed, and that repairs, pursuant to WAC 173-303-640(3)(c) and (e) were performed [WAC 173-303-640(3)(a) WAC 173-303-640(3)(h)].

III.10.E.3.g The independent tank system installation inspection and subsequent written statements will be certified pursuant to Permit Condition III.10.E.1.d., comply with all requirements of WAC 173-303-640(3)(h) and will consider, but not be limited to, the following tank system installation documentation:

III.10.E.3.g.i Field installation report with date of installation;

III.10.E.3.g.ii Approved welding procedures;

III.10.E.3.g.iii Welder qualifications and certification;

III.10.E.3.g.iv Hydro-test reports, as applicable, in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII, Division 1, American Petroleum Institute (API) Standard 620, or Standard 650 as applicable;

III.10.E.3.g.v Tester credentials;

III.10.E.3.g.vi Field inspector credentials;

III.10.E.3.g.vii Field inspector reports;

III.10.E.3.g.viii Field waiver reports; and

III.10.E.3.g.ix Non-compliance reports and corrective action (including field waiver reports) and repair reports.

III.10.E.4 Integrity Assessments

III.10.E.4.a The Permittees will ensure periodic integrity assessments are conducted on the WTP Unit Tank Systems listed in Permit Tables III.10.E.A through D, I, K, M, and O, as approved/modified pursuant to Permit Condition III.10.E.9., over the term of this Permit as specified in WAC 173-303-640(3)(b), following the description of the integrity assessment program and schedule in Operating Unit Group 10, Addendum E of this Permit, as approved pursuant to Permit Conditions III.10.E.9.e.i. and III.10.C.5.c. Results of the integrity assessments will be included in the WTP Unit operating record until ten (10) years after post-closure, or corrective action is complete and certified, whichever is later.

III.10.E.4.b The Permittees will address problems detected during the tank integrity assessments specified in Permit Condition III.10.E.4.a. following the integrity assessment program in Operating Unit Group 10, Addendum E of this Permit, as approved pursuant to Permit Conditions III.10.E.9.e.i. and III.10.C.5.c.

III.10.E.4.c The Permittees must immediately and safely remove from service any Tank System or secondary containment system which through an integrity assessment is found to be "unfit for use" as defined in WAC 173-303-040, following Permit Conditions III.10.E.5.i.i through iv., vi., and vii. The affected tank system or secondary containment system must be either repaired or closed in accordance with Permit Condition III.10.E.5.i.v. [WAC 173-303-640(7)(e) and (f), WAC 173-303-640(8)].

III.10.E.5 Tank Management Practices

III.10.E.5.a No dangerous and/or mixed waste will be managed in the WTP Unit Tank System unless the operating conditions, specified under Permit Condition III.10.E.5 are complied with.

III.10.E.5.b The Permittees will install and test all process and leak detection system monitoring/instrumentation, as specified in Permit Tables III.10.E.E through H, as approved/modified pursuant to Permit Condition III.10.E.9., in accordance with Operating Unit Group 10, Appendices 8.1, 8.2, 8.14, 9.1, 9.2, 9.14, 10.1, 10.2, 10.14,

11.1, 11.2, and 11.14 of this Permit, as approved pursuant to Permit Conditions III.10.E.9.e.ix. and III.10.E.9.d.x.

III.10.E.5.c The Permittees will not place dangerous and/or mixed waste, treatment reagents, or other materials in the WTP Unit Tank System if these substances could cause the tank system to rupture, leak, corrode, or otherwise fail [WAC 173-303-640(5)(a)].

III.10.E.5.d The Permittees will operate the WTP Unit Tank System to prevent spills and overflows using the description of controls and practices as required under WAC 173-303-640(5)(b) described in Permit Condition III.10.C.5., and Operating Unit Group 10, Appendices 8.15, 9.18, 10.18, and 11.15 of this Permit, as approved pursuant to Permit Condition III.10.E.9.e.iv. [WAC 173-303-640(5)(b), WAC 173-303-806(4)(c)(ix)].

III.10.E.5.e For routinely non-accessible WTP Unit Tank Systems, as specified in Operating Unit Group 10, Addendum C of this Permit, as updated pursuant to Permit Condition III.10.E.9.e.vi., the Permittees will mark all routinely non-accessible tank system access points with labels or signs to identify the waste contained in the tanks. The label, or sign, must be legible at a distance of at least fifty (50) feet and must bear a legend that identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the tank system(s). For the purposes of this Permit condition, "routinely non-accessible" means personnel are unable to enter these areas while waste is being managed in them [WAC 173-303-640(5)(d)].

III.10.E.5.f For all tank systems not addressed in Permit Condition III.10.E.5.e., the Permittees will mark all these tank systems holding dangerous and/or mixed waste with labels or signs to identify the waste contained in the tank. The labels, or sign, must be legible at a distance of at least fifty (50) feet, and must bear a legend that identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the tank system(s) [WAC 173-303-640(5)(d)].

III.10.E.5.g The Permittees will ensure that the secondary containment systems for the WTP Unit Tank Systems listed in Permit Tables III.10.E.A through D, I, K, M, and O, as approved/modified pursuant to Permit Condition III.10.E.9., are free of cracks or gaps to prevent any migration of dangerous and/or mixed waste or accumulated liquid out of the system to the soil, ground water, or surface water at any time that waste is in the tank system. Any indication that a crack or gap may exist in the containment systems will be investigated and repaired in accordance with Operating Unit Group 10, Appendices 8.15, 9.18, 10.18, and 11.15 of this Permit, as approved pursuant to Permit Condition III.10.E.9.e.v [WAC 173-303-320, WAC 173-303-640(4)(b)(i), WAC 173-303-640(4)(e)(i)(C), WAC 173-303-640(6), and WAC 173-303-806(4)(c)(vii)].

III.10.E.5.h An impermeable coating, as specified in Operating Unit Group 10, Appendices 8.4, 8.5, 8.7, 8.9, 8.11, 8.12, 9.4, 9.5, 9.7, 9.9, 9.11, 9.12, 10.4, 10.5, 10.7, 10.9, 10.11, 10.12, 11.4, 11.5, 11.7, 11.9, 11.11, and 11.12 of this Permit, as approved pursuant to Permit Condition III.10.E.9.b.v., will be maintained for all concrete containment systems and concrete portions of containment systems for each WTP Unit Tank System listed in Permit Tables III.10.E.A through D and I through P, as approved/modified pursuant to Permit Condition III.10.E.9. Concrete containment systems that do not have a liner and have construction joints, must meet the requirements of WAC 173-303-640(4)(e)(ii)(C)

and -806(4)(c)(vii). The coating will prevent migration of any dangerous and/or mixed waste into the concrete. All coatings will meet the following performance standards:

III.10.E.5.h.i The coating must seal the containment surface such that no cracks, seams, or other avenues through which liquid could migrate are present;

III.10.E.5.h.ii The coating must be of adequate thickness and strength to withstand the normal operation of equipment and personnel within the given area such that degradation or physical damage to the coating or lining can be identified and remedied before dangerous and/or mixed waste could migrate from the system; and

III.10.E.5.h.iii The coating must be compatible with the dangerous and/or mixed waste, treatment reagents, or other materials managed in the containment system [WAC 173-303-640(4)(e)(ii)(D), WAC 173-303-806(4)(c)(vii)].

III.10.E.5.i The Permittees will inspect all secondary containment systems for WTP Unit Tank Systems listed in Permit Tables III.10.E.A through D and I through P, as approved/modified pursuant to Permit Condition III.10.E.9., in accordance with the Inspection Schedule specified in Operating Unit Group 10, Addendum E1 of this Permit, as approved pursuant to Permit Conditions III.10.E.9.e.v. and III.10.C.5., and take the following actions if a leak or spill of dangerous and/or mixed waste is detected in these containment systems [WAC 173-303-320, WAC 173-303-640(5)(c), WAC 173-303-640(6), WAC 173-303-640(7), WAC 173-303-806(4)(a)(v)]:

III.10.E.5.i.i Immediately and safely stop the flow of dangerous and/or mixed waste into the tank system or secondary containment system, in accordance with procedures based on all applicable safety analysis documentation;

III.10.E.5.i.ii Determine the source of the dangerous and/or mixed waste;

III.10.E.5.i.iii Remove the waste from the secondary containment area pursuant to WAC 173-303-640(7)(b). The waste removed from containment areas of WTP Unit Tank Systems will be managed as dangerous and/or mixed waste;

III.10.E.5.i.iv If the cause of the release was a spill that has not damaged the integrity of the tank system, the Permittees may return the tank system to service pursuant to WAC 173-303-640(7)(e)(ii). In such a case, the Permittees will take action to ensure the incident that caused liquid to enter the containment systems of these tank systems will not reoccur [WAC 173-303-320(3);

III.10.E.5.i.v If the source of the dangerous waste and/or mixed waste is determined to be a leak from a primary WTP Unit Tank System, or the system is unfit for use as determined through an integrity assessment or other inspection, the Permittees must comply with the requirements of WAC 173-303-640(7) and take the following actions [WAC 173-303-640(5)(c)]:

A. Close the tank system according to procedures in WAC 173-303-640(7)(e)(i), and Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8.; or

B. Repair and re-certify (in accordance with WAC 173-303-810(13)(a) as modified pursuant to Permit Condition III.10.E.1.d.) the tank system in accordance with Operating Unit Group 10, Appendices 8.15, 9.18, 10.18, and 11.15 of this Permit, as approved pursuant to Permit Condition III.10.E.9.e.v. before the tank system is placed back into service [WAC 173-303-640(7)(e) and (f), and WAC 173-303-806(4)(c)(vii)];

III.10.E.5.i.vi The Permittees will document in the operating record actions/procedures taken to comply with III.10.E.5.i.i. through v. above in accordance with WAC 173-303-640(6)(d);

III.10.E.5.i.vii The Permittees will notify and report releases to the environment to Ecology in accordance with WAC 173-303-640(7)(d).

III.10.E.5.j If liquids (e.g., dangerous and/or mixed waste leaks and spills, precipitation, fire water liquids from damaged or broken pipes) cannot be removed from the secondary containment system within twenty-four (24) hours, Ecology will be verbally notified within twenty-four (24) hours of discovery. The notification will provide the information in A, B, and C listed below. The Permittees will provide Ecology with a written demonstration within seven (7) business days, identifying at a minimum [WAC 173-303-640(4)(c)(iv), WAC 173-303-640(7)(b)(ii), WAC 173-303-806(4)(c)(vii)]:

A. Reasons for delayed removal;

B. Measures implemented to ensure continued protection of human health and the environment;

C. Current actions being taken to remove liquids from secondary containment.

III.10.E.5.k The Permittees will operate the WTP Unit Tank System in accordance with Operating Unit Group 10, Addendum C as updated pursuant to Permit Condition III.10.E.9.e.vi. and Appendices 8.15, 9.18, 10.18, and 11.15 of this Permit, as approved pursuant to Permit Condition III.10.E.9.e., and the following:

III.10.E.5.k.i The Permittees will operate the WTP Unit Tank System in order to maintain the systems and process parameters listed in Permit Tables III.10.E.E through H, as approved/modified pursuant to Permit Condition III.10.E.9., within the operating trips and operating ranges specified in Permit Tables III.10.E.E through H, and consistent with assumptions and basis which are reflected in Operating Unit Group 10, Appendix, 6.3.1. as approved pursuant to Permit Condition III.10.C.11.b. [WAC 173-303-815(2)(b)(ii) and WAC 173-303-640(5)(b)]. For the purposes of this permit condition, Operating Unit Group 10, Appendix 6.3.1 will be superseded by Appendix 6.4.1 upon its approval pursuant to either Permit Conditions III.10.C.11.c. or III.10.C.11.d.;

III.10.E.5.k.ii The Permittees will calibrate/function test the instruments listed on Permit Tables III.10.E.E through H in accordance with Operating Unit Group 10, Appendices 8.15, 9.18, 10.18, and 11.15 of this Permit, as approved pursuant to Permit Condition III.10.E.9.e.xi.

III.10.E.5.l Tank systems that have the potential for formation and accumulation of hydrogen gases must be operated to maintain hydrogen levels below the lower explosive limit [WAC 173-303-815(2)(b)(ii)].

III.10.E.5.m For each tank system holding dangerous waste which are acutely or chronically toxic by inhalation, operate the system to prevent escape of vapors, fumes or other emissions into the air [WAC 173-303-640(5)(e), WAC 173-303-806(4)(c)(xii)].

III.10.E.6 Inspections [WAC 173-303-640(6)]

III.10.E.6.a The Permittees will inspect the WTP Unit Tank Systems in accordance with the Inspection Schedules in Operating Unit Group 10, Addendum E1 of this Permit, as modified pursuant to Permit Condition III.10.C.5.c.

III.10.E.6.b The inspection data for the WTP Unit Tank Systems will be recorded, and the records will be placed in the WTP Unit operating record, in accordance with Permit Condition III.10.C.4.

III.10.E.7 Recordkeeping (WAC 173-303-380)

For the WTP Unit Tank Systems, the Permittees will record and maintain in the WTP Unit operating record, all monitoring, calibration, recording, maintenance, test data, and inspection data compiled under the conditions of this Permit, in accordance with Permit Conditions III.10.C.4. and III.10.C.5.

III.10.E.8 Closure

The Permittees will close the WTP Unit Tank Systems in accordance with Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8.

III.10.E.9 Compliance Schedule

III.10.E.9.a All information identified for submittal to Ecology in b. through e. of this compliance schedule must be signed and certified in accordance with requirements in WAC 173-303-810(12), as modified in accordance with Permit Condition III.10.E.1.d. [WAC 173-303-806(4)].

III.10.E.9.b The Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., prior to construction of each secondary containment and leak detection system for the WTP Unit Tank System (per level, per WTP Unit building and outside the WTP Unit buildings) as identified in Permit Tables III.10.E.A through D, J, L, N, and P, engineering information as specified below, for incorporation into Operating Unit Group 10, Appendices 8.4, 8.5, 8.7, 8.8, 8.9, 8.11, 8.12, 9.4, 9.5, 9.7, 9.8, 9.9, 9.11, 9.12, 10.4, 10.5, 10.7, 10.8, 10.9, 10.11, 11.4, 11.5, 11.7, 11.8, 11.9, and 11.11 of this Permit. At a minimum, engineering information specified below will show the following as required pursuant to WAC 173-303-640 (the information specified below will include dimensioned engineering drawings and information on sumps and floor drains):

III.10.E.9.b.i IQRPE Reports (specific to foundation, secondary containment, and leak detection system) will include review of design drawings, calculations, and other information on which the certification report is based and will include as applicable, but not limited to, review of such information described below. Information (drawings, specifications, etc.) already included in Operating Unit Group 10, Appendices 8.0 through 11.0 of this Permit, may be included in the report by reference and should include drawing and document numbers. IQRPE Reports will be consistent with the information separately provided in Permit Conditions III.10.E.9.b.ii. through ix. below. The IQRPE Report(s) (specific to foundation, secondary containment and leak detection system) for the LAW and HLW buildings (-21 foot elevation only) will be submitted with the first IQRPE Report for tanks, identified in Permit Condition III.10.E.9.c.i. [WAC 173-303-640(3)(a), WAC 173-303-806(4)(c)(i)];

III.10.E.9.b.ii Design drawings (General Arrangement Drawings in plan) and specifications for the foundation, secondary containment, including, liner installation details, and leak

detection methodology [Note: leak detection systems for areas where daily, direct, or remote visual inspection is not feasible, will be continuous in accordance with WAC 173-303-640(4)(e)(iii)(C)]. These items should show the dimensions, volume calculations, and location of the secondary containment system, and should include items such as floor/pipe slopes to sumps, tanks, floor drains [WAC 173-303-640(4)(b) through (f), WAC 173-303-640(3)(a), WAC 173-303-806(4)(c)(i)];

III.10.E.9.b.iii The Permittees will provide the design criteria (references to codes and standards, load definitions, and load combinations, materials of construction, and analysis/design methodology) and typical design details for the support of the secondary containment system. This information will demonstrate the foundation will be capable of providing support to the secondary containment system, resistance to pressure gradients above and below the system, and capable of preventing failure due to settlement, compression, or uplift [WAC 173-303-640(4)(c)(ii), WAC 173-303-806(4)(c)(vii)];

III.10.E.9.b.iv A description of materials and equipment used to provide corrosion protection for external metal components in contact with soil, including factors affecting the potential for corrosion as required under WAC 173-303-640(3)(a)(iii)(B) [WAC 173-303-806(4)(c)(v)];

III.10.E.9.b.v Secondary containment/foundation and leak detection system materials selection documentation (including, but not limited to, concrete coatings and water stops, and liner materials as applicable) [WAC 173-303-806(4)(c)(i)];

III.10.E.9.b.vi Detailed description of how the secondary containment for each tank system will be installed in compliance with WAC 173-303-640(3)(c) [WAC 173-303-806(4)(c)(vi)];

III.10.E.9.b.vii Submit Permit Tables III.10.E.J, L, N, and P, completed to provide for all secondary containment sumps and floor drains, the information as specified in each column heading, consistent with information to be provided in Permit Conditions III.10.E.9.b.i. through vi. above;

III.10.E.9.b.viii Documentation that secondary containment and leak detection systems will not accumulate hydrogen gas levels above the lower explosive limit and in accordance with Appendix 7.15 for incorporation into the Administrative Record [WAC 173-303-340].

III.10.E.9.b.ix A detailed description of how tank system design provides access for conducting future tank integrity assessments [WAC 173-303-640(3)(b), WAC 173-303-806(4)(c)(vi)];

III.10.E.9.c The Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., prior to installation of each tank as identified in Permit Tables III.10.E.A through D, and I, K, M, and O engineering information as specified below, for incorporation into Operating Unit Group 10, Appendices 8.1 through 8.9, 8.11 through 8.14, 9.1 through 9.9, 9.11 through 9.14, 10.1 through 10.9, 10.11 through 10.14, 11.1 through 11.9, and 11.11 through 11.14 of this Permit. Tanks will include primary sumps. At a minimum, engineering information specified below will show the following as required pursuant to WAC 173-303-640 (the information specified below will include dimensioned engineering drawings):

III.10.E.9.c.i IQRPE Reports (specific to tanks) will include review of design drawings, calculations, and other information on which the certification report is based and will include as applicable, but not limited to, review of such information described below. Information (drawings, specifications, etc.) already included in Operating Unit Group 10, Appendices 8.0 through 11.0 of this Permit, may be included in the report by reference and should include drawing and document numbers.

The IQRPE Reports will be consistent with the information separately provided in Permit Conditions III.10.E.9.c.ii. through xii. below and the IQRPE Report specified in Permit Condition III.10.E.9.b.i. [WAC 173-303-640(3)(a), WAC 173-303-806(4)(c)(i)];

III.10.E.9.c.ii Design drawings (General Arrangement Drawings in plan , Process Flow Diagrams, Piping and Instrumentation Diagrams [including pressure control systems], Mechanical Drawings) and specifications, and other information, specific to tanks (to show location and physical attributes of each tank) [WAC 173-303-640(3)(a), WAC 173-303-806(4)(c)(i) through (iv)];

III.10.E.9.c.iii The Permittees will provide the design criteria (references to codes and standards, load definitions, and load combinations, materials of construction, and analysis/design methodology) and typical design details for the support of the tank(s). Structural support calculations specific to off-specification, non-standard, and field fabricated tanks will be submitted for incorporation into the Administrative Record [WAC 173-303-640(3)(a), WAC 173-303-806(4)(c)(i)];

III.10.E.9.c.iv A description of materials and equipment used to provide corrosion protection for external metal components in contact with water, including factors affecting the potential for corrosion as required under WAC 173-303-640(3)(a)(iii)(B) [WAC 173-303-806(4)(c)(v)];

III.10.E.9.c.v Tank materials selection documentation (e.g., physical and chemical tolerances) [WAC 173-303-640(3)(a), WAC 173-303-806(4)(c)(i)];

III.10.E.9.c.vi Tank vendor information (including, but not limited to required performance warranties, as available), consistent with information submitted under ii. above, will be submitted for incorporation into the Administrative Record [WAC 173-303-640, and WAC 173-303-806(4)(c)];

III.10.E.9.c.vii System Descriptions related to tanks will be submitted for incorporation into the Administrative Record;

III.10.E.9.c.viii Mass balance for each projected operating condition, including assumptions and formulas used to complete the mass balance, so that they can be independently verified, and will be submitted for incorporation into the Administrative Record;

III.10.E.9.c.ix A detailed description of how the tanks will be installed in compliance with WAC 173-303-640(3)(c), (d), and (e) [WAC 173-303-806(4)(c)(vi)];

III.10.E.9.c.x Submit Permit Tables III.10.E.I, K, M, and O, completed to provide for all primary containment sumps and floor drains, the information as specified in each column heading, consistent with information to be provided in Permit Conditions III.10.E.9.c.i. through ix.;

III.10.E.9.c.xi Documentation that tanks are designed to prevent the accumulation of hydrogen gas levels above the lower explosive limit for incorporation into the Administrative Record [WAC 173-303-340];

III.10.E.9.c.xii Documentation that tanks are designed to prevent escape of vapors and emissions of acutely or chronically toxic (upon inhalation) EHW limit and in accordance with Appendix 7.15 for incorporation into the Administrative Record [WAC 173-303-640(5)(e), WAC 173-303-806(4)(c)(xii)];

III.10.E.9.d The Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., prior to installation of ancillary equipment for each tank system, as identified in Permit Tables III.10.E.A, through D, and I through P, not addressed in Permit Condition III.10.E.9.c.,

engineering information as specified below, for incorporation into Operating Unit Group 10, Appendices 8.1 through 8.9, 8.11 through 8.14, 9.1 through 9.9, 9.11 through 9.14, 10.1 through 10.9, 10.11 through 10.14, 11.1 through 11.9, and 11.11 through 11.14 of this Permit. At a minimum, engineering information specified below will show the following as required pursuant to WAC 173-303-640 (the information specified below will include dimensioned engineering drawings):

III.10.E.9.d.i IQRPE Reports (specific to ancillary equipment) will include a review of design drawings, calculations, and other information as applicable, on which the certification report is based. The reports will include, but not be limited to, review of such information described below. Information (drawings, specifications, etc.) already included in Operating Unit Group 10, Appendix 8.0 through 11.0 of this Permit, may be included in the report by reference and should include drawing and document numbers. The IQRPE Reports will be consistent with the information provided separately in Permit Conditions III.10.E.9.d.ii. through xiii. below and the IQRPE Reports specified in Permit Conditions III.10.E.9.b and III.10.E.9.c. [WAC 173-303-640(3)(a), WAC 173-303-806(4)(c)(i)];

III.10.E.9.d.ii Design drawings (Process Flow Diagrams, Piping and Instrumentation Diagrams [including pressure control systems], etc.) specifications (including required performance warranties), and other information specific to ancillary equipment (these drawings should include all equipment such as pipe, valves, fittings, pumps, instruments, etc.) [WAC 173-303-640(3)(a), WAC 173-303-806(4)(c)(i), (iii), (iv)];

III.10.E.9.d.iii The Permittees will provide the design criteria (references to codes and standards, load definitions, and load combinations, materials of construction, and analysis/design methodology) and typical design details for the support of the ancillary equipment [WAC 173-303-640(3)(a), WAC 173-303-640(3)(f), WAC 173-303-806(4)(c)(i)];

III.10.E.9.d.iv A description of materials and equipment used to provide corrosion protection for external metal components in contact with soil and water, including factors affecting the potential for corrosion as required under WAC 173-303-640(3)(a)(iii)(B) [WAC 173-303-806(4)(c)(v)];

III.10.E.9.d.v Materials selection documentation for ancillary equipment (e.g., physical and chemical tolerances) [WAC 173-303-640(3)(a), WAC 173-303-806(4)(c)(i)];

III.10.E.9.d.vi Vendor information, consistent with information submitted under ii. above, will be submitted for incorporation into the Administrative Record [WAC 173-303-640, and WAC 173-303-806(4)(c)];

III.10.E.9.d.vii Tank, ancillary equipment, and leak detection system instrument control logic narrative description (e.g., descriptions of fail-safe conditions, etc.);

III.10.E.9.d.viii System Descriptions related to ancillary equipment and system descriptions related to leak detection systems, , for incorporation into the Administrative Record;

III.10.E.9.d.ix A detailed description of how the ancillary equipment will be installed and tested [WAC 173-303-640(3)(c) through (e), WAC 173-303-640(4)(b) and (c), and WAC 173-303-806(4)(c)(vi)];

III.10.E.9.d.x For process monitoring, control, and leak detection system instrumentation for the WTP Unit Tank System as identified in Permit Tables III.10.E.E through H, a detailed description of how the process monitoring, control, and leak detection system

instrumentation will be installed and tested [WAC 173-303-640(3)(c) through (e), WAC 173-303-640(4)(b) and (c), WAC 173-303-806(4)(c)(vi)];

III.10.E.9.d.xi Mass balance for projected normal operating condition used in developing the process and instrumentation diagrams, including assumptions and formulas used to complete the mass balance, so that they can be independently verified, for incorporation into the Administrative Record;

III.10.E.9.d.xii Documentation that ancillary equipment is designed to prevent the accumulation of hydrogen gas levels above the lower explosive limit for incorporation into the Administrative Record [WAC 173-303-340].

III.10.E.9.d.xiii Leak detection system documentation (e.g. vendor information, etc.) consistent with information submitted under Permit Condition III.10.E.9.c.ii. and Permit Conditions III.10.E.9.d.ii., vii., viii. and x. above, will be submitted for incorporation into the Administrative Record.

III.10.E.9.e Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., the following as specified below for incorporation into Operating Unit Group 10, Appendices 8.15, 9.18, 10.18, 11.15 of this Permit, except Permit Condition III.10.E.9.e.v., which will be incorporated into Operating Unit Group 10, Addendum E of this Permit. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions III.10.E.9.b., c., d., and e., III.10.C.3.e., and III.10.C.11.b., as approved by Ecology.

III.10.E.9.e.i Integrity assessment program and schedule for all WTP Unit tanks will address the conducting of periodic integrity assessments on all WTP Unit tanks over the life of the tank, in accordance with III.10.E.9.b.ix. and WAC 173-303-640(3)(b), and descriptions of procedures for addressing problems detected during integrity assessments. The schedule must be based on past integrity assessments, age of the tank system, materials of construction, characteristics of the waste, and any other relevant factors [WAC 173-303-640(3)(b), WAC 173-303-806(4)(c)(vi)];

III.10.E.9.e.ii Detailed plans and descriptions, demonstrating the leak detection system is operated so that it will detect the failure of either the primary or secondary containment structure or the presence of any release of dangerous and/or mixed waste, or accumulated liquid in the secondary containment system within twenty-four (24) hours [WAC 173-303-640(4)(c)(iii)]. Detection of a leak of at least 0.1 gallons per hour within twenty-four (24) hours is defined as being able to detect a leak within twenty-four (24) hours. Any exceptions to this criteria must be approved by Ecology [WAC 173-303-640(4)(c)(iii), WAC 173-303-806(4)(c)(vii)];

A. Dangerous waste pipe penetrations that require a penetration seal in accordance with the International Building Code (IBC) and DOE-STD-1066, DOE Standard for Fire Protection Design Criteria, or to meet ventilation sealing requirements identified in Table III.10E.Q, are not required to meet the 0.1 gallons per hour within twenty-four (24) hours leak detection rate for those sections of piping that are in contact with approved silicone or equivalent low-permeability seal material.

B. Piping on either side of the penetration seal must meet the requirements of III.10.E.9.e.ii.

C. Revisions (including additions or deletions to Table III.10.E.Q will be submitted to Ecology for review and approval pursuant to Conditions III.10.C.2.e and III.10.C.2.f.

Addition of penetration seal locations to Table III.10.E.Q. will be approved by Ecology prior to installation of the penetration seals.

Table III.10.E.Q Tank System Penetration Seal Locations

Facility	Room No	Orientation	Discipline	Penetration Sequence No
Reserved	Reserved	Reserved	Reserved	Reserved

III.10.E.9.e.iii Detailed operational plans and descriptions, demonstrating that spilled or leaked waste and accumulated liquids can be removed from the secondary containment system within twenty-four (24) hours [WAC 173-303-806(4)(c)(vii)];

III.10.E.9.e.iv Descriptions of operational procedures demonstrating appropriate controls and practices are in place to prevent spills and overflows from tanks or containment systems in compliance with WAC 173-303-640(5)(b)(i) through (iii) [WAC 173-303-640(5)(b), WAC 173-303-806(4)(c)(ix)];

III.10.E.9.e.v Description of procedures for investigation and repair of tank systems [WAC 173-303-320, WAC 173-303-640(6), WAC 173-303-640(7)(e) and (f), WAC 173-303-806(4)(a)(v), WAC 173-303-806(4)(c)(vii)];

III.10.E.9.e.vi Updated Addendum C, Narrative Descriptions, Tables and Figures as identified in Permit Tables III.10.E.A through D (as modified pursuant to Permit Condition III.10.E.9.e.xii.) and updated to identify routinely non-accessible tank systems;

III.10.E.9.e.vii Description of procedures for management of ignitable and reactive, and incompatible dangerous and/or mixed waste in accordance with WAC 173-303-640(9) and (10) [WAC 173-303-806(4)(c)(x)].

III.10.E.9.e.viii A description of the tracking system used to track dangerous and/or mixed waste throughout the WTP Unit Tank System, pursuant to WAC 173-303-380.

III.10.E.9.e.ix Permit Tables III.10.E.E through H will be completed for WTP Unit Tank System process and leak detection system monitors and instruments (to include but not limited to: instruments and monitors measuring and/or controlling flow, pressure, temperature, density, pH, level, humidity, and emission) to provide the information as specified in each column heading. Process and leak detection system monitors and instruments for critical systems as specified in Operating Unit Group 10, Appendix 2.0 and as updated pursuant to Permit Condition III.10.C.9.b. and for operating parameters as required to comply with Permit Condition III.10.C.3.e.iii. will be addressed. Process monitors and instruments for non-waste management operations (e.g., utilities, raw chemical storage, non-contact cooling waters, etc.) are excluded from this permit condition.

III.10.E.9.e.x Supporting documentation for operating trips and expected operating range as specified in Permit Tables III.10.E.E through H as approved pursuant to Permit Condition III.10.E.9.e.ix.

III.10.E.9.e.xi Documentation of process and leak detection instruments and monitors (as listed in Permit Tables III.10.E.E through H) for the WTP Unit Tank Systems are to include but not be limited to the following:

A. Procurement specifications.

B. Location used.

C. Range, precision, and accuracy.

D. Detailed descriptions of calibration/functionality test procedures (e.g., method number [ASTM]) or provide a copy of manufacturer's recommended calibration procedures.

E. Calibration/functionality test, inspection, and routine maintenance schedules and checklists, including justification for calibration, inspection and maintenance frequencies, criteria for identifying instruments found to be significantly out of calibration, and corrective action to be taken for instruments found to be significantly out of calibration (e.g., increasing frequency of calibration, instrument replacement, etc.).

F. Equipment instrument control logic narrative description (e.g., descriptions of failsafe conditions, etc.), as identified in Permit Tables III.10.E.E through H not addressed in Permit Condition III.10.E.9.d.

III.10.E.9.e.xii Permit Tables III.10.E.A through D amended as follows:

A. Under column 1, update and complete list of dangerous and/or mixed waste tank systems, including plant items that comprise each system (listed by item number).

B. Under column 2, update and complete system designations.

C. Under column 3, replace the 'reserved' with the Operating Unit Group 10, Appendices 8.0, 9.0, 10.0, and 11.0, subsections specific to tank systems as listed in column 1.

D. Under column 4, update and complete list of narrative description tables and figures.

E. Under column 5, update and complete maximum capacity, for each tank.

III.10.E.9.e.xiii Permit Tables III.10.E.I, K, M, and O amended as follows:

A. Under column 1, replace the 'reserved' with the updated and complete list of sump numbers and room location.

B. Under column 2, replace the 'reserved' with the updated and complete maximum sump capacities in gallons.

C. Under column 3, replace the 'reserved' with the updated and complete sump dimensions and materials of construction.

D. Under column 4, replace the 'reserved' with the updated and complete list of engineering descriptions (drawing numbers, specifications, etc.).

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
Waste Feed Receipt Process System FRP-VSL-00002A (Waste Feed Receipt Vessel) FRP-VSL-00002B (Waste Feed Receipt Vessel) FRP-VSL-00002C (Waste Feed Receipt Vessel) FRP-VSL-00002D (Waste Feed Receipt Vessel)	FRP	**24590-PTF** -M2-FRP-P0001, Rev 2 -M2-FRP-P0002, Rev 2 -M2-FRP-P0003, Rev 2 -M2-FRP-P0004, Rev 4 -M5-V17T-00003, Rev 2 -M6-FRP-00001001, Rev 0 -M6-FRP-00001002, Rev 0 -M6-FRP-00002001, Rev 0 -M6-FRP-00002002, Rev 0 -M6-FRP-00003001, Rev 0 -M6-FRP-00003002, Rev 0 -M6-FRP-00003003, Rev 0 -M6-FRP-00003004, Rev 0 -M6-FRP-00003005, Rev 0 -M6-FRP-00005001, Rev 0 -M6-FRP-00005002, Rev 0 -M6-FRP-00005003, Rev 0 -M6-FRP-00005004, Rev 0 -M6-FRP-00005005, Rev 0 -M6-FRP-00005006, Rev 0	Section 4.1.2.1; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	FRP-VSL-00002A = 472,900 FRP-VSL-00002B = 472,900 FRP-VSL-00002C = 472,900 FRP-VSL-00002D = 472,900

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-FRP-00005007, Rev 0 -M6-FRP-00005008, Rev 0 -M6-FRP-00006001, Rev 0 -M6-FRP-00006002, Rev 0 -M6-FRP-00006003, Rev 0 -M6-FRP-00006004, Rev 0 -M6-FRP-00006005, Rev 0 -M6-FRP-00006006, Rev 0 -M6-FRP-00006007, Rev 0 -M6-FRP-00006008, Rev 0 -M6-FRP-00007001, Rev 0 -M6-FRP-00007002, Rev 0 -M6-FRP-00007003, Rev 0 -M6-FRP-00007004, Rev 0 -M6-FRP-00007005, Rev 0 -M6-FRP-00007006, Rev 0 -M6-FRP-00007007, Rev 0 -M6-FRP-00007008, Rev 0 -M6-FRP-00008001, Rev 0 -M6-FRP-00008002, Rev 0 -M6-FRP-00008003, Rev 0		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-FRP-00008004, Rev 0 -M6-FRP-00008005, Rev 0 -M6-FRP-00008006, Rev 0 -M6-FRP-00008007, Rev 0 -M6-FRP-00009001, Rev 0 -M6-FRP-00010001, Rev 0 -M6-FRP-00020001, Rev 0 -M6-FRP-00020002, Rev 0 -M6-FRP-00020003, Rev 0 -M6-FRP-00020004, Rev 0 -M6-FRP-00020005, Rev 0 -M6-FRP-00020006, Rev 0 -M6-FRP-00020007, Rev 0 -MVD-FRP-00005, Rev 12 -MVD-FRP-00006, Rev 12 -MVD-FRP-00007, Rev 12 -MVD-FRP-00008, Rev 12 -N1D-FRP-00001, Rev 7 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		24590-WTP -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		
Waste Feed Evaporation Process System FEP-VSL-00005 (Waste Feed Evaporator Condensate Vessel) FEP-VSL-00017A (Waste Feed Evaporator Feed Vessel) FEP-VSL-00017B (Waste Feed Evaporator Feed Vessel)	FEP	**24590-PTF** -3PS-MEVV-T0001, Rev 2 -M5-V17T-00004001, Rev 3 -M6-FEP-00001001, Rev 1 -M6-FEP-00001002, Rev 0 -M6-FEP-00001003, Rev 0 -M6-FEP-00001004, Rev 0 -M6-FEP-00003001, Rev 0 -M6-FEP-00003002, Rev 0 -M6-FEP-00006001, Rev 1 -M6-FEP-00006002, Rev 1 -M6-FEP-00006003, Rev 1 -M6-FEP-00006004, Rev 1 -M6-FEP-00006005, Rev 0 -M6-FEP-00007001, Rev 1 -M6-FEP-00007002, Rev 1	Section 4.1.2.2; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	FEP-VSL-00005 = 5,022 FEP-VSL-00017A = 85,496 FEP-VSL-00017B = 85,496

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-FEP-00007003, Rev 1 -M6-FEP-00007004, Rev 1 -M6-FEP-00007005, Rev 0 -M6-FEP-00008001, Rev 0 -M6-FEP-00008002, Rev 0 -MVD-FEP-P0001, Rev 2 -MVD-FEP-P0002, Rev 2 -MVD-FEP-00003, Rev 1 -MV-FEP-P0001, Rev 0 -MV-FEP-P0002, Rev 0 -N1D-FEP-00002, Rev 6 -N1D-FEP-P0003, Rev 1 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev. 4 **<u>24590-WTP</u>** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
Ultrafiltration Process System	UFP	**24590-PTF**	Section 4.1.2.3; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	UFP-VSL-00001A = 75,594
UFP-VSL-00001A (Ultrafiltration Feed Preparation Vessel)		-M5-V17T-00009, Rev 2		UFP-VSL-00001B = 75,594
UFP-VSL-00001B (Ultrafiltration Feed Preparation Vessel)		-M5-V17T-00011, Rev 2		UFP-VSL-00002A = 39,629
UFP-VSL-00002A (Ultrafiltration Feed Vessel)		-M6-UFP-00001001, Rev 0		UFP-VSL-00002B = 40,378
UFP-VSL-00002B (Ultrafiltration Feed Vessel)		-M6-UFP-00001002, Rev 0		UFP-VSL-00062A = 34,700
UFP-VSL-00062A (Ultrafilter Permeate Collection Vessel)		-M6-UFP-00001003, Rev 0		UFP-VSL-00062B = 34,700
UFP-VSL-00062B (Ultrafilter Permeate Collection Vessel)		-M6-UFP-00001004, Rev 0		UFP-VSL-00062C = 34,700
UFP-VSL-00062C (Ultrafilter Permeate Collection Vessel)		-M6-UFP-00001005, Rev 0		UFP-FILT-00001A= 474
		-M6-UFP-00001006, Rev 0		UFP-FILT-00001B = 474
		-M6-UFP-00001007, Rev 0		UPF-FILT-00002A = 474
		-M6-UFP-00002001, Rev 0		UPF-FILT-00002B = 474
		-M6-UFP-00002002, Rev 0		
		-M6-UFP-00002003, Rev 0		
		-M6-UFP-00002004, Rev 0		
		-M6-UFP-00002005, Rev 0		
		-M6-UFP-00002006, Rev 0		
		-M6-UFP-00002007, Rev 1		
		-M6-UFP-00002008, Rev 0		
		-M6-UFP-00003001, Rev 0		
		-M6-UFP-00003002, Rev 0		
		-M6-UFP-00003003, Rev 0		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
UFP-FILT-00001A (Ultrafilter)		-M6-UFP-00003004, Rev 0		
		-M6-UFP-00003005, Rev 0		UPF-FILT-00003A = 474
UFP-FILT-00001B (Ultrafilter)		-M6-UFP-00003006, Rev 0		
		-M6-UFP-00003007, Rev 1		UPF-FILT-00003B = 474
UFP-FILT-00002A (Ultrafilter)		-M6-UFP-00003008, Rev 0		
		-M6-UFP-00004001, Rev 1		UPF-FILT-00004A = 380
UFP-FILT-00002B (Ultrafilter)		-M6-UFP-00004002, Rev 1		
		-M6-UFP-00004003, Rev 1		UPF-FILT-00004B = 380
UFP-FILT-00003A (Ultrafilter)		-M6-UFP-00005001, Rev 0		
		-M6-UFP-00005002, Rev 0		UPF-FILT-00005A = 380
UFP-FILT-00003B (Ultrafilter)		-M6-UFP-00005003, Rev 0		
		-M6-UFP-00005004, Rev 0		UPF-FILT-00005B = 380
UFP-FILT-00004A (Ultrafilter)		-M6-UFP-00005005, Rev 0		
		-M6-UFP-00005006, Rev 0		
UFP-FILT-00004B (Ultrafilter)		-M6-UFP-00005007, Rev 0		
		-M6-UFP-00006001, Rev 0		
UFP-FILT-00005A (Ultrafilter)		-M6-UFP-00006002, Rev 0		
		-M6-UFP-00006003, Rev 0		
UFP-FILT-00005B (Ultrafilter)		-M6-UFP-00006004, Rev 0		
		-M6-UFP-00006005, Rev 0		
		-M6-UFP-00006006, Rev 0		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-UFP-00006007, Rev 0 -M6-UFP-00007001, Rev 1 -M6-UFP-00007002, Rev 1 -M6-UFP-00007003, Rev 1 -M6-UFP-00007004, Rev 1 -M6-UFP-00007005, Rev 1 -M6-UFP-00007006, Rev 1 -M6-UFP-00007007, Rev 1 -M6-UFP-00009001, Rev 0 -M6-UFP-00009002, Rev 0 -M6-UFP-00009003, Rev 0 -M6-UFP-00009004, Rev 0 -M6-UFP-00009005, Rev 0 -M6-UFP-00009006, Rev 0 -M6-UFP-00010001, Rev 0 -M6-UFP-00010002, Rev 0 -M6-UFP-00010003, Rev 0 -M6-UFP-00010004, Rev 0 -M6-UFP-00010005, Rev 0 -M6-UFP-00010006, Rev 0 -M6-UFP-00010007, Rev 0		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-UFP-00011001, Rev 0 -M6-UFP-00011002, Rev 0 -M6-UFP-00011003, Rev 0 -M6-UFP-00011004, Rev 0 -M6-UFP-00011005, Rev 0 -M6-UFP-00015001, Rev 0 -M6-UFP-00015002, Rev 0 -M6-UFP-00016001, Rev 0 -M6-UFP-00017001, Rev 0 -M6-UFP-00021001, Rev 0 -M6-UFP-00021002, Rev 0 -M6-UFP-00022001, Rev 0 -M6-UFP-00022002, Rev 0 -M6-UFP-00027001, Rev 0 -M6-UFP-00027002, Rev 0 -M6-UFP-00027003, Rev 0 -M6-UFP-00027004, Rev 0 -M6-UFP-00027005, Rev 0 -M6-UFP-00027006, Rev 0 -M6-UFP-00027007, Rev 0 -MLD-UFP-P0007, Rev 1		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-MVD-UFP-00001, Rev 12 -MVD-UFP-00014, Rev 11 -MVD-UFP-00015, Rev 11 -MVD-UFP-00002, Rev 12 -MVD-UFP-00005. Rev 11 -MVD-UFP-00006, Rev 11 -MVD-UFP-00007, Rev 11 -MV-UFP-00001001, Rev 1 -MV-UFP-00001002, Rev 1 -MV-UFP-00001003, Rev 1 -MV-UFP-00002001, Rev 1 -MV-UFP-00002002, Rev 1 -MV-UFP-00002003, Rev 1 -MV-UFP-00003, Rev 6 -MV-UFP-00004, Rev 6 -MV-UFP-P0005, Rev 0 -MV-UFP-P0006, Rev 0 -MV-UFP-P0007, Rev 0 -MV-UFP-00016, Rev 3 -MV-UFP-00017, Rev 3 -MV-UFP-00018, Rev 3		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-MV-UFP-00028, Rev 1 -MV-UFP-00029, Rev 1 -MV-UFP-00030, Rev 1 -MV-UFP-00031, Rev 1 -N1D-UFP-P0001, Rev 2 -N1D-UFP-P0002, Rev 2 -N1D-UFP-P0003, Rev 5 -N1D-UFP-P0004, Rev 3 -N1D-UFP-P0005, Rev 2 -N1D-UFP-P0008, Rev 2 -N1D-UFP-00009, Rev 0 -P1-P01T-00001, Rev 7 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		
HLW Lag Storage and Feed Blending Process System	HLP	**24590-PTF** -M5-V17T-00007, Rev 2 -M5-V17T-00008, Rev 3 -M6-HLP-00001001, Rev 0	Section 4.1.2.4; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	HLP-VSL-00022 = 268,800 HLP-VSL-00027A = 127,260

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
HLP-VSL-00022 (HLW Feed Receipt Vessel) HLP-VSL-00027A (HLW Lag Storage Vessel) HLP-VSL-00027B (HLW Lag Storage Vessel) HLP-VSL-00028 (HLW Feed Blend Vessel)		-M6-HLP-00001002, Rev 0 -M6-HLP-00001003, Rev 1 -M6-HLP-00001004, Rev 0 -M6-HLP-00002001, Rev 0 -M6-HLP-00002002, Rev 1 -M6-HLP-00003001, Rev 0 -M6-HLP-00003002, Rev 1 -M6-HLP-00003003, Rev 1 -M6-HLP-00005001, Rev 0 -M6-HLP-00005002, Rev 0 -M6-HLP-00005003, Rev 0 -M6-HLP-00005004, Rev 0 -M6-HLP-00005005, Rev 0 -M6-HLP-00005006, Rev 0 -M6-HLP-00005007, Rev 0 -M6-HLP-00006001, Rev 0 -M6-HLP-00006002, Rev 0 -M6-HLP-00006003, Rev 0 -M6-HLP-00006004, Rev 0 -M6-HLP-00006005, Rev 0 -M6-HLP-00006006, Rev 0		HLP-VSL-00027B = 127,260 HLP-VSL-00028 = 142,200

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-HLP-00006007, Rev 0 -M6-HLP-00007001, Rev 0 -M6-HLP-00007002, Rev 0 -M6-HLP-00007003, Rev 0 -M6-HLP-00007004, Rev 0 -M6-HLP-00007005, Rev 0 -M6-HLP-00007006, Rev 0 -M6-HLP-00007007, Rev 0 -M6-HLP-00009001, Rev 0 -M6-HLP-00009002, Rev 0 -M6-HLP-00009003, Rev 0 -M6-HLP-00010001, Rev 0 -M6-HLP-00010002, Rev 0 -M6-HLP-00010003, Rev 0 -M6-HLP-00027001, Rev 0 -M6-HLP-00027002, Rev 0 -M6-HLP-00027003, Rev 0 -M6-HLP-00027004, Rev 0 -M6-HLP-00027005, Rev 0 -M6-HLP-00027006, Rev 0 -M6-HLP-00028004, Rev 0		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-HLP-00028005, Rev 0 -M6-HLP-00028006, Rev 0 -MVD-HLP-00006, Rev 8 -MVD-HLP-00007, Rev 8 -MVD-HLP-00008, Rev 9 -MVD-HLP-00009, Rev 8 -MV-HLP-00003001, Rev 0 -MV-HLP-00004, Rev 2 -MV-HLP-00005, Rev 2 -MV-HLP-00006, Rev 2 -N1D-HLP-00001, Rev 6 -N1D-HLP-P0003, Rev 1 -N1D-HLP-00007, Rev 6 -N1D-HLP-00010, Rev 6 -P1-P01T-00001, Rev 7 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0003, Rev 3		
Cesium Ion Exchange Process System	CXP	**24590-PTF** -M5-V17T-00012001, Rev 0	Section 4.1.2.5; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit	CXP-VSL-00004 = 10,633

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
CXP-VSL-00004 (Cesium Ion Exchange Feed CXP-VSL-00026A (Cesium Ion Exchange Treated LAW Collection Vessel) CXP-VSL-00026B (Cesium Ion Exchange Treated LAW Collection Vessel) CXP-VSL-00026C (Cesium Ion Exchange Treated LAW Collection Vessel) CXP-IXC-00001 (Cesium Ion Exchange Column) CXP-IXC-00002 (Cesium Ion Exchange Column) CXP-IXC-00003 (Cesium Ion Exchange Column)		-M5-V17T-00012002, Rev 0 -M5-V17T-00013, Rev 3 -M5-V17T-00025, Rev 1 -M6-CXP-00001002, Rev 1 -M6-CXP-00001003, Rev 1 -M6-CXP-00001004, Rev 2 -M6-CXP-00001006, Rev 0 -M6-CXP-00001007, Rev 0 -M6-CXP-00002001, Rev 1 -M6-CXP-00002002, Rev 1 -M6-CXP-00003001, Rev 1 -M6-CXP-00003002, Rev 1 -M6-CXP-00003003, Rev 0 -M6-CXP-00005001, Rev 1 -M6-CXP-00005002, Rev 1 -M6-CXP-00005003, Rev 1 -M6-CXP-00005004, Rev 0 -M6-CXP-00007, Rev 2 -M6-CXP-000100001, Rev 0 -M6-CXP-000100002, Rev 0 -M6-CXP-000100003, Rev 0	Group 10, Addendum C of this Permit.	CXP-VSL-00026A = 38,000 CXP-VSL-00026B = 38,000 CXP-VSL-00026C = 38,000 CXP-IXC-00001 = 680 CXP-IXC-00002= 680 CXP-IXC-00003 = 680 CXP-IXC-00004 = 680

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
CXP-IXC-00004 (Cesium Ion Exchange Column)		-M6-CXP-000100004, Rev 0 -M6-CXP-00011001, Rev 0 -M6-CXP-00011002, Rev 0 -M6-CXP-00011003, Rev 0 -M6-CXP-00011004, Rev 0 -M6-CXP-00011005, Rev 0 -M6-CXP-00011006, Rev 0 -M6-CXP-00011007, Rev 0 -M6-CXP-00012001, Rev 0 -M6-CXP-00012002, Rev 0 -M6-CXP-00012003, Rev 0 -M6-CXP-00012004, Rev 0 -M6-CXP-00013, Rev 2 -MV-CXP-P0002, Rev 0 -MV-CXP-P0008, Rev 0 -MV-CXP-P0009, Rev 0 -MV-CXP-P0010, Rev 0 -MVD-CXP-P0015, Rev 0 -MVD-CXP-P0021, Rev 1 -MVD-CXP-P0022, Rev 1 -MVD-CXP-P0023, Rev 1		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-N1D-CXP-P0003, Rev 1 -N1D-CXP-P0007, Rev 1 -P1-P01T-00001, Rev 7 -P1-P01T-00002, Rev 7 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		
Cesium Nitric Acid Recovery Process System CNP-VSL-00001 (Cesium Evaporator Eluant Lute Pot) CNP-VSL-00003 (Eluate Contingency Storage Vessel) CNP-VSL-00004 (Cesium Evaporator Recovered Nitric Acid Vessel)	CNP	**24590-PTF** -M5-V17T-00014, Rev 2 -M6-CNP-00001001, Rev 0 -M6-CNP-00001002, Rev. 0 -M6-CNP-00001003, Rev. 0 -M6-CNP-00002001, Rev 0 -M6-CNP-00002002, Rev 0 -M6-CNP-00002003, Rev 0 -M6-CNP-00003001, Rev 0 -M6-CNP-00003002, Rev 0 -M6-CNP-00003003, Rev 0 -M6-CNP-00003004, Rev 0	Section 4.1.2.6; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	CNP-VSL-00001 = 109 CNP-VSL-00003 = 21,713 CNP-VSL-00004 = 11,115

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-CNP-00004, Rev 3 -M6-CNP-00005, Rev 2 -MV-CNP-P0001, Rev 1 -MV-CNP-P0002, Rev 1 -MV-CNP-P0005, Rev 0 -MVD-CNP-P0003, Rev 1 -MVD-CNP-P0007, Rev 2 -MVD-CNP-P0010, Rev 0 -N1D-CNP-P0006, Rev 3 -N1D-CNP-P0009, Rev 1 -N1D-CNP-P0011, Rev 1 -P1-P01T-00001, Rev 7		
Treated LAW Concentrate Storage Process System TCP-VSL-00001 (Treated LAW Concentrate Storage Vessel)	TCP	**24590-PTF** -M5-V17T-00006, Rev 1 -M6-TCP-00001001, Rev 0 -M6-TCP-00001002, Rev 0 -M6-TCP-00001003, Rev 0 -M6-TCP-00002001, Rev 1 -M6-TCP-00002002, Rev 1 -M6-TCP-00002003, Rev 1 -M6-TCP-00002004, Rev 1	Section 4.2.2.12; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	TCP-VSL-00001 = 146,740

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-TCP-00002005, Rev 1 -MV-TCP-P0002, Rev 1 -MVD-TCP-P0002, Rev 2 -N1D-TCP-P0001, Rev 2 -P1-P01T-00001, Rev 7 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		
Treated LAW Evaporation Process System TLP-VSL-00002 (Treated LAW Evaporator Condensate Vessel) TLP-VSL-00009A (LAW SBS Condensate Receipt Vessel) TLP-VSL-00009B (LAW SBS Condensate Receipt Vessel)	TLP	**24590-PTF** -3PS-MEVV-T0001, Rev 3 -M5-V17T-00005, Rev 2 -M6-TLP-00001, Rev 3 -M6-TLP-00002001, Rev 0 -M6-TLP-00002002, Rev 0 -M6-TLP-00002003, Rev 0 -M6-TLP-00002004, Rev 0 -M6-TLP-00003001, Rev 0 -M6-TLP-00003002, Rev 0 -M6-TLP-00003003, Rev 0	Section 4.1.2.11; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	TLP-VSL-00002 = 2,227 TLP-VSL-00009A = 130,010 TLP-VSL-00009B = 130,010

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-TLP-00003004, Rev 0 -M6-TLP-00005001, Rev 0 -M6-TLP-00005002, Rev 0 -M6-TLP-00005003, Rev 0 -M6-TLP-00005004, Rev 0 -M6-TLP-00005005, Rev 0 -M6-TLP-00006001, Rev 0 -M6-TLP-00006002, Rev 0 -M6-TLP-00006003, Rev 0 -M6-TLP-00006004, Rev 0 -M6-TLP-00006005, Rev 0 -MVD-TLP-P0001, Rev 2 -MVD-TLP-P0002, Rev 2 -MVD-TLP-00004, Rev 1 -MV-TLP-P0001, Rev 1 -MV-TLP-P0002, Rev 1 -N1D-TLP-P0001, Rev 2 -N1D-TLP-P0006, Rev 1 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		24590-WTP -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		
Spent Resin and Dewatering Process System RDP-VSL-00002A (Spent Resin Slurry Vessel) RDP-VSL-00002B (Spent Resin Slurry Vessel) RDP-VSL-00002C (Spent Resin Slurry Vessel) RDP-VSL-00004 (Spent Resin Dewatering Moisture Separation Vessel)	RDP	**24590-PTF** -3PS-MWD0-TP003, Rev 1 -M5-V17T-00020, Rev 2 -M6-RDP-00001001, Rev 0 -M6-RDP-00001002, Rev 0 -M6-RDP-00001003, Rev 0 -M6-RDP-00001004, Rev 0 -M6-RDP-00001005, Rev 0 -M6-RDP-00002, Rev 4 -M6-RDP-00006, Rev 3 -MVD-RDP-P0005, Rev 1 -MVD-RDP-P0006, Rev 1 -MVD-RDP-P0007, Rev 3 -MVD-RDP-P0008, Rev 0 -MV-RDP-P0001, Rev 0 -MV-RDP-P0002, Rev 0	Section 4.1.2.13; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	RDP-VSL-00002A = 15,230 RDP-VSL-00002B = 15,230 RDP-VSL-00002C = 15,230 RDP-VSL-00004 = 101

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-MV-RDP-P0003, Rev 0 -P1-P01T-00001, Rev 7 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		
Pretreatment Plant Radioactive Liquid Waste Disposal System RLD-TK-00006A (Process Condensate Tank) RLD-TK-00006B (Process Condensate Tank) RLD-VSL-00017A (Alkaline Effluent Vessel) RLD-VSL-00017B (Alkaline Effluent Vessel)	RLD	**24590-PTF** -M5-V17T-00022003, Rev 2 -M5-V17T-00022004, Rev 3 -M6-RLD-00001001, Rev 0 -M6-RLD-00001002, Rev 0 -M6-RLD-00001003, Rev 0 -M6-RLD-00001004, Rev 0 -M6-RLD-00002001, Rev 0 -M6-RLD-00002002, Rev 0 -M6-RLD-00002003, Rev 0 -M6-RLD-00003001, Rev 0 -M6-RLD-00003002, Rev 0 -M6-RLD-00003003, Rev 0 -M6-RLD-00004, Rev 2	Section 4.1.2.16; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	RLD-TK-00006A = 343,734 RLD-TK-00006B = 343,734 RLD-VSL-00017A = 34,340 RLD-VSL-00017B = 34,340

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-RLD-00005, Rev 3 -M6-RLD-00006, Rev 3 -M6-RLD-00007001, Rev 0 -MVD-RLD-P0005, Rev 3 -MVD-RLD-P0006, Rev 3 -MV-RLD-P0001, Rev 0 -MV-RLD-P0002, Rev 0 -N1D-RLD-P0002, Rev 2 -P1-P01T-00001, Rev 7 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		
Pretreatment Plant Wash and Disposal System PWD-VSL-00015 (Acidic/Alkaline Effluent Vessel) PWD-VSL-00016 (Acidic/Alkaline Effluent Vessel)	PWD	**24590-PTF** -M5-V17T-00022001, Rev 2 -M5-V17T-00022002, Rev 2 -M6-PWD-00001, Rev 2 -M6-PWD-00002001, Rev 0 -M6-PWD-00002002, Rev 0 -M6-PWD-00003001, Rev 0	Section 4.1.2.15; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	PWD-VSL-00015 = 119,150 PWD-VSL-00016 = 119,150 PWD-VSL-00033 = 41,650 PWD-VSL-00043 = 41,650

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
PWD-VSL-00033 (Ultimate Overflow Vessel) PWD-VSL-00043 (HLW Effluent Transfer Vessel) PWD-VSL-00044 (Plant Wash Vessel) PWD-VSL-00046 (C3 Floor Drain Collection Vessel)		-M6-PWD-00003002, Rev 0 -M6-PWD-00003003, Rev 0 -M6-PWD-00003004, Rev 0 -M6-PWD-00005, Rev 3 -M6-PWD-00006, Rev 2 -M6-PWD-00007, Rev 3 -M6-PWD-00008, Rev 3 -M6-PWD-00009, Rev 3 -M6-PWD-00010, Rev 3 -M6-PWD-00011, Rev 2 -M6-PWD-00012, Rev 2 -M6-PWD-00014, Rev 3 -M6-PWD-P0018, Rev 0 -M6-PWD-P0019, Rev 0 -M6-PWD-00020001, Rev 0 -M6-PWD-00020002, Rev 0 -M6-PWD-00020003, Rev 0 -M6-PWD-00020004, Rev 0 -M6-PWD-00020005, Rev 0 -M6-PWD-00020006, Rev 0 -M6-PWD-00021001, Rev 0		PWD-VSL-00044 = 103,024 PWD-VSL-00046 = 4,982

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-PWD-00021002, Rev 0 -M6-PWD-00021003, Rev 0 -M6-PWD-00021004, Rev 0 -M6-PWD-00021005, Rev 0 -M6-PWD-00021006, Rev 0 -M6-PWD-00023001, Rev 0 -M6-PWD-00023002, Rev 0 -M6-PWD-00023003, Rev 0 -M6-PWD-00023004, Rev 0 -M6-PWD-00023005, Rev 0 -M6-PWD-00024001, Rev 0 -M6-PWD-00024002, Rev 0 -M6-PWD-00024003, Rev 0 -M6-PWD-00024004, Rev 0 -M6-PWD-00024005, Rev 0 -M6-PWD-00024006, Rev 0 -M6-PWD-00024007, Rev 0 -M6-PWD-00025001, Rev 0 -M6-PWD-00025002, Rev 0 -M6-PWD-00025003, Rev 0 -M6-PWD-00025004, Rev 0		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-PWD-00026, Rev 2 -M6-PWD-00029, Rev 3 -M6-PWD-00033, Rev 2 -M6-PWD-00041, Rev 3 -M6-PWD-00043, Rev3 -M6-PWD-00044, Rev 3 -M6-PWD-00046, Rev 2 -M6-PWD-00050, Rev 2 -M6-PWD-00051, Rev 2 -M6-PWD-00057, Rev 4 -M6-PWD-00058, Rev 4 -MVD-PWD-P0001, Rev 3 -MVD-PWD-P0002, Rev 3 -MVD-PWD-P0003, Rev 2 -MVD-PWD-P0010, Rev 1 -MVD-PWD-P0011, Rev 3 -MVD-PWD-P0012, Rev 3 -MV-PWD-P0001001, Rev 1 -MV-PWD-P0001002, Rev 1 -MV-PWD-P0003001 , Rev 1 -MV-PWD-P0003002, Rev 1		

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-MV-PWD-P0005, Rev 1 -MV-PWD-P0006, Rev 1 -MV-PWD-P0007, Rev 1 -MV-PWD-P0010, Rev 1 -N1D-PWD-P0001, Rev 1 -N1D-PWD-P0002, Rev 5 -N1D-PWD-P0003, Rev 3 -N1D-PWD-P0005, Rev 2 -N1D-PWD-P0006, Rev 2 -P1-P01T-00001, Rev 7 -P1-P01T-00006, Rev 4		
Pretreatment Vessel Vent Process System PVP-VSL-00001 (Vessel Vent HEME Drain Collection Vessel)	PVP	**24590-PTF** -M5-V17T-00021001, Rev 2 -M5-V17T-00021002, Rev 2 -M5-V17T-00021004, Rev 2 -M6-PVP-00002, Rev 3 -M6-PVP-00004001, Rev 0 -M6-PVP-00004002, Rev 0 -M6-PVP-00017001, Rev 0 -M6-PVP-00017002, Rev 0 -M6-PVP-00017003, Rev 0	Section 4.1.2.16; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	PVP-VSL-00001 = 1,969

Table III.10.E.A – Pretreatment Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	System Designation	Engineering Description (Drawing Nos., Specifications Nos., etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-PVP-00018001, Rev 1 -M6-PVP-00018002, Rev 0 -MVD-PVP-P0001, Rev 0 -MV-PVP-P0002, Rev 1 -N1D-PVP-P0002, Rev 1 -P1-P01T-00001, Rev 7 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		
Pretreatment In-Cell Handling System PIH-TK-00001 (Decontamination Soak Tank)	PIH	**24590-PTF** -M6-PIH-00001001, Rev 0 -M6-PIH-00001002, Rev 0 -P1-P01T-00001, Rev 7 **24590-WTP** -3PS-HD00-T0001, Rev 4	Section 4.1.2.14; Tables 4-2 and 4-6; and Figures C1-1, C1-2, and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	PIH-TK-00001 = 1504

Table III.10.E.B – LAW Vitrification Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
LAW Concentrate Receipt Process System LCP-VSL-00001 (LAW Melter 1 Concentrate Receipt Vessel) LCP-VSL-00002 (LAW Melter 2 Concentrate Receipt Vessel)	LCP	**24590-LAW** -M5-V17T-P0001, Rev 0 -M5-V17T-P0002, Rev 0 -M6-LCP-00001002, Rev 0 -M6-LCP-00001003, Rev 0 -M6-LCP-00002003, Rev 0 -M6-LCP-00002004, Rev 0 -MV-LCP-P0001, Rev 0 -MV-LCP-P0002, Rev 0 -MVD-LCP-P0004, Rev 1 -MVD-LCP-P0005, Rev 1 -N1D-LCP-P0001, Rev 1 -P1-P01T-00002, Rev 7	Section 4.1.3.1; Tables 4-3 and 4-6; and Figures C1-1 and C1-3 of Operating Unit Group 10, Addendum C of this Permit.	LCP-VSL-00001 = 18,130 LCP-VSL-00002 = 18,130
LAW Melter Feed Process System LFP-VSL-00001 (Melter 1 Feed Preparation Vessel) LFP-VSL-00002 (Melter 1 Feed Vessel)	LFP	**24590-LAW** -M5-V17T-P0001, Rev 0 -M5-V17T-P0002, Rev 0 -M6-LFP-00001001, Rev 0 -M6-LFP-00001002, Rev 0 -M6-LFP-00001003, Rev 0 -M6-LFP-00001004, Rev 0	Section 4.1.3.1; Tables 4-3 and 4-6; and Figures C1-1 and C1-3 of Operating Unit Group 10, Addendum C of this Permit.	LFP-VSL-00001 = 9,123 LFP-VSL-00002 = 9,123 LFP-VSL-00003 = 9,123 LFP-VSL-00004 = 9,123

Table III.10.E.B – LAW Vitrification Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
LFP-VSL-00003 (Melter 2 Feed Preparation Vessel) LFP-VSL-00004 (Melter 2 Feed Vessel)		-M6-LFP-00001005, Rev 0 -M6-LFP-00001006, Rev 0 -M6-LFP-00003001, Rev 0 -M6-LFP-00003002, Rev 0 -M6-LFP-00003003, Rev 0 -M6-LFP-00003004, Rev 0 -M6-LFP-00003005, Rev 0 -M6-LFP-00003006, Rev 0 -MV-LFP-P0001, Rev 0 -MV-LFP-P0002, Rev 0 -MV-LFP-P0004, Rev 0 -MV-LFP-P0005, Rev 0 -MVD-LFP-P0007, Rev 1 -MVD-LFP-P0008, Rev 1 -MVD-LFP-P0010, Rev 1 -MVD-LFP-P0011, Rev 1 -P1-P01T-00002, Rev 7 -N1D-LFP-00004, Rev 2 -N1D-LFP-00006, Rev 0		

Table III.10.E.B – LAW Vitrification Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
LAW Secondary Off-gas/Vessel Vent Process System LVP-TK-00001 (LAW Caustic Collection Tank)	LVP	**24590-LAW** -M5-V17T-P0011, Rev 1 -P1-P01T-00004, Rev 5 -VDCN-M-13-00001 -MTD-LVP-00001, Rev 1 -N1D-LVP-00002, Rev 2	Section 4.1.3.3; Tables 4-3 and 4-6; and Figures C1-1 and C1-3 of Operating Unit Group 10, Addendum C of this Permit.	LVP-TK-00001= 14,232
LAW Primary Off-gas Process System LOP-VSL-00001 (LAW Melter 1 SBS Condensate Vessel) LOP-VSL-00002 (LAW Melter 2 SBS Condensate Vessel)	LOP	**24590-LAW** -M5-V17T-P0007, Rev 0 -M5-V17T-P0008, Rev 0 -M6-LOP-P0001, Rev 2 -M6-LOP-P0002, Rev2 -MV-LOP-P0001, Rev 0 -MV-LOP-P0002, Rev 0 -MVD-LOP-P0004, Rev 1 -MVD-LOP-P0005, Rev 1 -N1D-LOP-00002, Rev 3 -P1-P01T-00002, Rev 7	Section 4.1.3.3; Tables 4-3 and 4-6; and Figures C1-1 and C1-3 of Operating Unit Group 10, Addendum C of this Permit.	LOP-VSL-00001 = 9,056 LOP-VSL-00002 = 9,056
LAW Vitrification Plant Radioactive Liquid Waste Disposal System	RLD	**24590-LAW** -M5-V17T-P0014, Rev 2 -M6-RLD-00001001, Rev 0	Section 4.1.3.4; Tables 4-3 and 4-6; and Figures C1-1 and C1-3 of Operating Unit Group 10, Addendum C of this Permit.	RLD-VSL-00003 = 25,780

Table III.10.E.B – LAW Vitrification Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
RLD-VSL-00003 (Plant Wash Vessel) RLD-VSL-00004 (C3/C5 Drains/Sump Collection Vessel) RLD-VSL-00005 (SBS Condensate Collection Vessel)		-M6-RLD-00001002, Rev 0 -M6-RLD-00001003, Rev 0 -M6-RLD-00001004, Rev 0 -M6-RLD-00001005, Rev 0 -M6-RLD-00001006, Rev 0 -M6-RLD-00002001, Rev 0 -M6-RLD-00002002, Rev 0 -M6-RLD-00002003, Rev 0 -M6-RLD-00002004, Rev 0 -M6-RLD-00002005, Rev 0 -M6-RLD-00003001, Rev 0 -M6-RLD-00003002, Rev 1 -M6-RLD-00003003, Rev 1 -MVD-RLD-P0001, Rev 1 -MVD-RLD-P0006, Rev 2 -MVD-RLD-P0007, Rev 2 -MV-RLD-P0001, Rev 2 -MV-RLD-P0002, Rev 1 -MV-RLD-P0003, Rev 1 -P1-P01T-00001, Rev 4		RLD-VSL-00004 = 7696 RLD-VSL-00005 = 25,780

Table III.10.E.B – LAW Vitrification Plant Tank Systems Description

Dangerous and/or Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-P1-P01T-00002, Rev 7 -N1D-RLD-00001, Rev 5 -N1D-RLD-00002, Rev 3 -N1D-RLD-00005, Rev 4		

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Table III.10.E.C – HLW Vitrification Plant Tank Systems Description

Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
HLW Concentrate Receipt Process System The HCP System has ancillary equipment only	HCP	**24590-HLW** -M5-V17T-00001, Rev 5 -M6-HCP-00001001, Rev 1 -M6-HCP-00002001, Rev 1	Section 4.1.4.1; Tables 4-4 and 4-6; Figures C1-1 and C1-4 of Operating Unit Group 10, Addendum C of this Permit.	
HLW Melter Feed Process System HFP-VSL-00001 (Melter 1 Feed Preparation Vessel)	HFP	**24590-HLW** -3YD-HFP-00001[a] -M5-V17T-00001, Rev 5 -P1-P01T-00002, Rev 7 -M6-HFP-00001001, Rev 0 -M6-HFP-00001002, Rev 0 -M6-HFP-00001003, Rev 0 -M6-HFP-00001004, Rev 0 -M6-HFP-00007001, Rev 0 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3	Section 4.1.4.1; Tables 4-4 and 4-6; Figures C1-1 and C1-4 of Operating Unit Group 10, Addendum C of this Permit.	HFP-VSL-00001 = 8,311
Melter Feed Process System cont.	HFP	**24590-HLW** -3YD-HFP-00001[a]	Section 4.1.4.1; Tables 4-4 and 4-6; Figures C1-1 and C1-4 of	HFP-VSL-00002 = 8,311

Table III.10.E.C – HLW Vitrification Plant Tank Systems Description

Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
HFP-VSL-00002 (Melter 1 Feed Vessel)		-M5-V17T-00001, Rev 5 -P1-P01T-00002, Rev 7 -M6-HFP-00002001, Rev 0 -M6-HFP-00002002, Rev 0 -M6-HFP-00002003, Rev 0 -M6-HFP-00008001, Rev 0 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3	Operating Unit Group 10, Addendum C of this Permit.	
Melter Feed Process System cont. HFP-VSL-00005 (Melter 2 Feed Preparation Vessel)	HFP	**24590-HLW** -3YD-HFP-00001[a] -M5-V17T-00001, Rev 5 -P1-P01T-00002, Rev 7 -M6-HFP-20001001, Rev 0 -M6-HFP-20001002, Rev 0 -M6-HFP-20001003, Rev 0 -M6-HFP-20001004, Rev 0 -M6-HFP-20007001, Rev 0	Section 4.1.4.1; Tables 4-4 and 4-6; Figures C1-1 and C1-4 of Operating Unit Group 10, Addendum C of this Permit.	HFP-VSL-00005 =8,311

Table III.10.E.C – HLW Vitrification Plant Tank Systems Description

Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		24590-WTP -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		
Melter Feed Process System cont. HFP-VSL-00006 (Melter 2 Feed Vessel)	HFP	**24590-HLW** -3YD-HFP-00001[a] -M5-V17T-00001, Rev 5 -P1-P01T-00002, Rev 7 -M6-HFP-20002001, Rev 3 -M6-HFP-20002002, Rev 3 -M6-HFP-20002003, Rev 3 -M6-HFP-20008001, Rev 0 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3	Section 4.1.4.1; Tables 4-4 and 4-6; Figures C1-1 and C1-4 of Operating Unit Group 10, Addendum C of this Permit.	HFP-VSL-00006 = 8,311
Melter Off-gas Treatment Process System	HOP	**24590-HLW** -3YD-HOP-00001[a] -M5-V17T-P0003, Rev 1	Section 4.1.4.3; Tables 4-4 and 4-6; Figures C1-1 and C1-4 of Operating Unit Group 10, Addendum C of this Permit.	HOP-VSL-00903 = 9891 HOP-VSL-00904 = 9891

Table III.10.E.C – HLW Vitrification Plant Tank Systems Description

Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
HOP-VSL-00903 (Melter 1 SBS Condensate Receiver Vessel) HOP-VSL-00904 (Melter 2 SBS Condensate Receiver Vessel)		-M5-V17T-P20003, Rev 1 -M6-HOP-00004, Rev 4 -M6-HOP-00006001, Rev 0 -M6-HOP-00006002, Rev 0 -M6-HOP-20004, Rev 5 -M6-HOP-20006001, Rev 0 -M6-HOP-20006002, Rev 0 -MVD-HOP-P0001, Rev 2 -MVD-HOP-P0012, Rev 1 -MV-HOP-P0001, Rev 2 -MV-HOP-P0003, Rev 2 -N1D-HOP-P0009, Rev 2 -P1-P01T-00001, Rev 9 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		
HLW Canister Decontamination Handling System	HDH	**24590-HLW** -M5-V17T-00006, Rev 6 -M6-HDH-00001001, Rev 1	Section 4.1.4.7; Tables 4-4 and 4-6; Figures C1-1 and C1-4 of Operating Unit Group 10, Addendum C of this Permit.	HDH-VSL-00001 = 3314 HDH-VSL-00002 = 630

Table III.10.E.C – HLW Vitrification Plant Tank Systems Description

Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
HDH-VSL-00001 (Canister Rinse Vessel) HDH-VSL-00002 (Canister Decon Vessel 1) HDH-VSL-00003 (Waste Neutralization Vessel) HDH-VSL-00004 (Canister Decon Vessel 2)		-M6-HDH-00002001, Rev 1 -M6-HDH-00002002, Rev 0 -M6-HDH-00002003, Rev 1 -M6-HDH-20001001, Rev 1 -M6-HDH-20001002, Rev 0 -M0-HDH-P0012001, Rev 1 -M0-HDH-P0012002, Rev 1 -MV-HDH-P0003, Rev 1 -MVD-HDH-P0003, Rev 2 -MVD-HDH-00006, Rev 5 -MVD-HDH-P0009, Rev 0 -N1D-HDH-00003, Rev 8 -N1D-HDH-P0005, Rev 1 -N1D-HDH-P0007, Rev 1 -P1-P01T-00001, Rev 9 -P1-P01T-00002, Rev 7 -3YD-HDH-00002[a] **<u>24590-WTP</u>** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3		HDH-VSL-00003 = 5315 HDH-VSL-00004 = 630

Table III.10.E.C – HLW Vitrification Plant Tank Systems Description

Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-3PS-MV00-T0003, Rev 3		
HLW Melter Cave Support Handling System HSH-TK-00001 (Decontamination Tank Melter Cave 1) HSH-TK-00002 (Decontamination Tank Melter Cave 2)	HSH	**24590-HLW** -M6-HSH-00004001, Rev 1 -M6-HSH-00004001, Rev 1 -M6-HSH-20004001, Rev 1 -M6-HSH-20004002, Rev 1 -M0-HSH-P0072, Rev 1 -N1D-HSH-P0001, Rev 1 -P1-P01T-00002, Rev 7 **24590-WTP** -3PS-HD00-T0001, Rev 4	Section 4.1.4.7; Tables 4-4 and 4-6; Figures C1-1 and C1-4 of Operating Unit Group 10, Addendum C of this Permit.	HSH-TK-00001 = 4,000 HSH-TK-00002 = 4,000
HLW Vitrification Plant Radioactive Liquid Waste Disposal System RLD-VSL-00002 (Off-gas Drains Collection Vessel) RLD-VSL-00007 (Acidic Waste Vessel) RLD-VSL-00008 (Plant Wash & Drain Vessel)	RLD	**24590-HLW** -3YD-RLD-00001[a] -M5-V17T-P0007001, Rev 1 -M5-V17T-P0007002, Rev 1 -M6-RLD-00001001, Rev 0 -M6-RLD-00001002, Rev. 0 -M6-RLD-00001003, Rev 0 -M6-RLD-00002001, Rev 0 -M6-RLD-00002002, Rev 0 -M6-RLD-00002003, Rev 0	Section 4.1.5.5; Tables 4-4 and 4-6; Figures C1-1 and C1-4 of Operating Unit Group 10, Addendum C of this Permit.	RLD-VSL-00002 = 334 RLD-VSL-00007 = 18,145 RLD-VSL-00008 = 13,774

Table III.10.E.C – HLW Vitrification Plant Tank Systems Description

Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-M6-RLD-00002004, Rev 0 -M6-RLD-00006, Rev 4 -M6-RLD-00007, Rev 4 -M6-RLD-00014, Rev 5 -MV-RLD-00002, Rev 2 -MV-RLD-00003, Rev 0 -MV-RLD-00025001 Rev 0 -MV-RLD-00025002, Rev 0 -MV-RLD-00025003, Rev 0 -MV-RLD-00025004, Rev 0 -MVD-RLD-00005, Rev 9 -MVD-RLD-00007, Rev 7 -MVD-RLD-00008, Rev 4 -N1D-RLD-P0001, Rev 0 -N1D-RLD-P0006, Rev 0 -N1D-RLD-P0013, Rev 0 -P1-P01T-00001, Rev 9 -P1-P01T-00002, Rev 7 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5		

Table III.10.E.C – HLW Vitrification Plant Tank Systems Description

Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		

Footnotes:

[a]System Descriptions are maintained in the Administrative Record, and are listed here for information only.

Table III.10.E.D – Analytical Laboratory Tank Systems Description

Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
Radioactive Liquid Waste Disposal System RLD-VSL-00164 (Laboratory Area Sink Drain Collection Vessel) RLD-VSL-00165 (Hot Cell Drain Collection Vessel)	RLD	**24590-LAB** -3YD-RLD-00001[a] -M5-V17T-00029, Rev 3 -M6-RLD-00001001, Rev 1 -M6-RLD-00001002, Rev 0 -M6-RLD-00001003, Rev 0 -M6-RLD-00001004, Rev 0 -M6-RLD-00002001, Rev 1 -M6-RLD-00002003, Rev 0 -M6-RLD-00006001, Rev 0 -M6-RLD-00006002, Rev 0 -M6-RLD-00006003, Rev 0 -M6-RLD-00007001, Rev 0 -M6-RLD-00007002, Rev 0 -M6-RLD-00008001, Rev 0 -M6-RLD-00008002, Rev 0 -MVD-RLD-P0164, Rev 1 -MVD-RLD-P0165, Rev 1 -MV-RLD-P0001, Rev 0 -N1D-RLD-P0002, Rev 1	Section 4.1.5.5; Table C-5 and 4-6 of Operating Unit Group 10, Addendum C of this Permit.	RLD-VSl-00164 = 3180 RLD-VSL-00165 = 9100

Table III.10.E.D – Analytical Laboratory Tank Systems Description

Mixed Waste Tank Systems Name	Unit Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables & Figures	Maximum Capacity (gallons)
		-N1D-RLD-P0003, Rev 1 -P1-60-00007, Rev 3 -P1-60-00008, Rev 3 **24590-WTP** -3PS-G000-T0002, Rev 9 -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3		

Footnotes:

[a]System Descriptions are maintained in the Administrative Record, and are listed here for information only.

Table III.10.E.E – Pretreatment Plant Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
PWD-SUMP-00071[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00040[a]	Not Applicable	Bubbler Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00001[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00001A[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00002[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00002A[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00003[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00004[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED

Table III.10.E.E – Pretreatment Plant Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
PWD-SUMP-00005[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00006[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00007[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00008[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00009[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00010[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00011[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00012[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED

Table III.10.E.E – Pretreatment Plant Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
PWD-SUMP-00013[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00026[c]	Not Applicable	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00026[b]	Not Applicable	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00028[c]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00028[b]	Not Applicable	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00029[c]	Not Applicable	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00029[b]	Not Applicable	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00031[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED

Table III.10.E.E – Pretreatment Plant Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
PWD-SUMP-00032[c]	Not Applicable	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00032[b]	Not Applicable	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00033[c]	Not Applicable	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00033[b]	Not Applicable	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00034[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00035[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00036[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-SUMP-00037[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED

Table III.10.E.E – Pretreatment Plant Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
RLD-SUMP-00003[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PVP-BULGE-00001	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PVP-BULGE-00002	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
TCP-BULGE-00004	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
DIW-BULGE-00001	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
DIW-BULGE-00002	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
CRP-BULGE-00001	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
CXP-BULGE-00004	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
UFP-BULGE-00001	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED

Table III.10.E.E – Pretreatment Plant Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
UFP-BULGE-00002	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
UFP-BULGE-00005	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
UFP-BULGE-00006	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00001	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00002	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00003	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00004	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00005	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED

Table III.10.E.E – Pretreatment Plant Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
PWD-LDB-00006	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00007	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00008	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00009	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00010	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00011	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00012	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00013	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED

Table III.10.E.E – Pretreatment Plant Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
PWD-LDB-00014	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00015	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00016	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00017	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00018	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
PWD-LDB-00019	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-LDB-00012	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-LDB-00013	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED

Table III.10.E.E – Pretreatment Plant Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
ASX Sampler 00013 Lower Containment Drain	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
ASX Sampler 00017 Lower Containment Drain	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
ASX Sampler 00019 Lower Containment Drain	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
ASX Sampler 00020 Lower Containment Drain	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
ASX Sampler 00025 Lower Containment Drain	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Table III.10.E.E – Pretreatment Plant Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Locator (including P&ID designator) is located on Permit Table III.10.E J – Pretreatment Plant Tank Systems Secondary Containment Systems Including Sumps and Floor Drains.

[b]Locator (including P&ID designator) is located on Permit Table III.10.E.I – Pretreatment Plant Tank Systems Primary Containment Systems.

[c]Leak detection instruments for secondary containment to a primary containment sump.

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Table III.10.E.F – LAW Vitrification Plant Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
RLD-SUMP-00028[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-SUMP-00029[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-SUMP-00030[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-SUMP-00031[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-SUMP-00032[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-SUMP-00035[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-SUMP-00036[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
LVP-FD-00001[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED

Melter 1 Encasement Assembly Drain	Not Applicable	Conductivity Cable	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
Melter 2 Encasement Assembly Drain	Not Applicable	Conductivity Cable	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
ASX Sampler 00012 Lower Containment Drain	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
ASX Sampler 00013 Lower Containment Drain	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
		RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
		RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Locator (including P&ID designator) is located on Permit Table III.10.E L - LAW Vitrification Plant Tank Systems Secondary Containment Systems Including Sumps and Floor Drains.

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Table III.10.E.G - HLW Vitrification Plant Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
HCP-SUMP-00001[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-SUMP-00001[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HOP-SUMP-00003[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HOP-SUMP-00008[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HDH-SUMP-00001[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HDH-SUMP-00002[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HDH-SUMP-00003[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HFP-SUMP-00002[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HFP-SUMP-00005[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HSH-SUMP-00003[a]	Not Applicable	Bubbler	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED

HSH-SUMP-00007[a]	Not Applicable	Bubbler	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HSH-SUMP-00008[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HSH-SUMP-00009[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HPH-SUMP-00001[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HPH-SUMP-00003[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
HPH-SUMP-00005[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
ASX Sampler 00028 Lower Containment Drain	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
ASX Sampler 00029 Lower Containment Drain	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
ASX Sampler 00042 Lower Containment Drain	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Locator (including P&ID designator) is located on Permit Table III.10.E. N - HLW Vitrification Plant Tank Systems Secondary Containment Systems Including Sumps, and Floor Drains.

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Table III.10.E.H – Laboratory Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
RLD-SUMP-00041[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-SUMP-00042[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-SUMP-00043A[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-SUMP-00043B[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-SUMP-00044[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-SUMP-00045[a]	Not Applicable	Radar Leak Detector	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-LDB-00002[a]	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-LDB-00004[a]	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-LDB-00005[a]	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-LDB-00006[a]	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED

Table III.10.E.H – Laboratory Tank System Process and Leak Detection System Instruments and Parameters

Tank System Name and Locator (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Operating Trips (Description & Numerical Limits)	Instrument Calibration Method No. and Range
RLD-LDB-00007[a]	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-LDB-00008[a]	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-LDB-00009[a]	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RLD-LDB-00011[a]	Not Applicable	Thermal Dispersion Level Switch	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	Not Applicable	RESERVED
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Locator (including P&ID designator) is located on Permit Table III.10.E P - Laboratory Tank Systems Secondary Containment Systems Including Sumps and Floor Drains.

Table III.10.E.I – Pretreatment Plant Tank Systems Primary[a] Containment Sump Systems

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions[b] (feet) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
PWD-SUMP-00026 P-0123 (Hot Cell El. 0)	RESERVED	RESERVED	RESERVED
PWD-SUMP-00028 P-0123 (Hot Cell El. 0)	RESERVED	RESERVED	RESERVED
PWD-SUMP-00029 P-0123 (Hot Cell El. 0)	RESERVED	RESERVED	RESERVED
PWD-SUMP-00032 P-0123A (Maintenance Cave, El. 0)	RESERVED	RESERVED	RESERVED
PWD-SUMP-00033 P-0123A (Maintenance Cave, El. 0)	RESERVED	RESERVED	RESERVED

Footnotes:

[a] Primary sumps are defined in Permit Section III.10.C. and must comply with dangerous waste tank system requirements for tanks as described in WAC-173-303-640.

[b]Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
PWD-SUMP-00071 P-B005 (Pit-19, El. –19')	60	Dry Sump	30"Dia x 18"Deep Epoxy	**24590-PTF** -M6-PWD-00041, Rev 3

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
				-P1-P01T-00006, Rev 4
PWD-SUMP-00040 P-B002 (Pit-45, El. –45')	233.7	Dry Sump	60"x30"x30" Stainless Steel	**24590-PTF** -M6-PWD-00012, Rev 2 -P1-P01T-00006, Rev 4
PWD-SUMP-00001 P-0108B (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00008, Rev 3 -P1-P01T-00001, Rev 7
PWD-SUMP-00001A P-0108C (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00010, Rev 3 -P1-P01T-00001, Rev 7
PWD-SUMP-00002 P-0108A (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00008, Rev 3 -P1-P01T-00001, Rev 7
PWD-SUMP-00002A P-0108 (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00010, Rev 3 -P1-P01T-00001, Rev 7
PWD-SUMP-00003 P-0106 (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00008, Rev 3 -P1-P01T-00001, Rev 7
PWD-SUMP-00004 P-0104 (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00008, Rev 3 -P1-P01T-00001, Rev 7

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
PWD-SUMP-00005 P-0102A (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00008, Rev 3 -P1-P01T-00001, Rev 7
PWD-SUMP-00006 P-0102 (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00008, Rev 3 -P1-P01T-00001, Rev 7
PWD-SUMP-00007 P-0109 (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00009, Rev 3 -P1-P01T-00001, Rev 7
PWD-SUMP-00008 P-0111 (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00009, Rev 3 -P1-P01T-00001, Rev 7
PWD-SUMP-00009 P-0112 (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00009, Rev 3 -P1-P01T-00001, Rev 7
PWD-SUMP-00010 P-0113 (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00009, Rev 3 -P1-P01T-00001, Rev 7
PWD-SUMP-00011 P-0114 (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00009, Rev 3 -P1-P01T-00001, Rev 7
PWD-SUMP-00012 P-0117 (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00009, Rev 3

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
				-P1-P01T-00001, Rev 7
PWD-SUMP-00013 P-0117A (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00014, Rev 3 -P1-P01T-00001, Rev 7
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
PWD-SUMP-00031 P-0119 (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-00010, Rev 3 -P1-P01T-00001, Rev 7
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
PWD-SUMP-00034 P-0121A (Spent Resin Dewatering, El. 0')	75	Dry Sump	30" Dia. x 27" Deep Stainless Steel	**24590-PTF** -M6-PWD-00012, Rev 2
PWD-SUMP-00035 P-0122A (Waste Packaging Area, El. 0')	75	Dry Sump	30" Dia. x 27" Deep Stainless Steel	**24590-PTF** -M6-PWD-00012, Rev 2
PWD-SUMP-00036 P-0118 (El. 0')	75	Dry Sump	30" Dia. By ~27" deep Stainless Steel	**24590-PTF** -M6-PWD-P0012, Rev 2 -P1-P01T-00001, Rev 7

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
PWD-SUMP-00037 P-0124A	7.5		30" Dia. x 27" Deep Stainless Steel	**24590-PTF** -M6-PWD-00012, Rev 2
RLD-SUMP-00003 P-0150 (Radioactive Liquid Waste Disposal Area, El. 0', outdoor)	583	Dry Sump	78" x 48" x 36" Deep Epoxy coating	**24590-PTF** -M6-RLD-00002003, Rev 0
PVP-ZY-00037-S11B-03, P-0105 (PVP-BULGE-00001, El. 0')			3" Stainless Steel	**24590-PTF** -M6-PVP-00017002, Rev 0
PVP-ZY-00036-S11B-03, P-0101A (PVP-BULGE-00002, El. 0')			3" Stainless Steel	**24590-PTF** -M6-PVP-00018002, Rev 0
TCP-ZF-00032-S11B-03 Drain Line, P-0116 (TCP-BULGE-00004, El. 0')	N/A	N/A	3" Stainless Steel	**24590-PTF** -M6-TCP-00001002, Rev 1
DIW-ZF-01511-S11B-03 Drain Line, P-0320 (DIW-BULGE-00001, El. 56')	N/A	N/A	3" Stainless Steel	**24590-PTF** -M6-DIW-00004001
DIW-ZF-01510-S11B-03, P-0320 Drain Line (DIW-BULGE-00002, El. 56')	N/A	N/A	3" Stainless Steel	**24590-PTF** -M6-DIW-00004001
PWD-FD-00005 PWD-ZF-03000-S11B-06 P-0123 (Hot Cell, El.0')	939	N/A	6" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00011, Rev 2

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
PWD-FD-00006 PWD-ZF-03001-S11B-06 P-0123 (Hot Cell, El.0')	939	N/A	6" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00011, Rev 2
PWD-FD-00435 P-0105		NA	3" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00349 P-0105		NA	6" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00436 P-0105		NA	3" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00438 P-0105A		NA	6" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00348 P-0105A		NA	6" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00437 P-0105B		NA	3" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-347 P-0105B		NA	6" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-346 P-0105C		NA	4" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00293 P-0426 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00298 P-0425 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
PWD-FD-00309 P-0402 Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00310 P-0402 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00311 P-0402 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00312 P-0402 Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00376 P-0415 Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00377 P-0415 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00378 P-0415 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00379 P-0415 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00380 P-0415A Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00381 P-0415A Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00382 P-0415A Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
PWD-FD-00383 P-0415A Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00557 P-0430 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00559 P-0430 Drain, El. 77'	665	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00561 P-0430 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00563 P-0411 Drain, El. 77'	665	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00564 P-0411 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00565 P-0410 Drain, El. 77'	665	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00566 P-0410 Drain, El. 77'	665	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00571 P-0410 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00572 P-0410 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00573 P-0410 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
PWD-FD-00574 P-0410 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00575 P-0410 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00576 P-0410 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00583 P-0422A Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00584 P-0422A Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00589 P-0402 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00590 P-0423 Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00591 P-0423 Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00592 P-0423 Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00593 P-0423 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00594 P-0423 Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
PWD-FD-00595 P-0431A Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00596 P-0431A Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00597 P-0431A Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00598 P-0431A Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00599 P-0431A Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00600 P-0431A Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00604 P-0431A Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00605 P-0431A Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00606 P-0431A Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00607 P-0431A Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00629 P-0425 Drain, El. 77'	655	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
PWD-FD-00630 P-0425 Drain, El. 77'	140	N/A	8" Dia 304L	**24590-PTF** -M6-PWD-00044, Rev 3
CRP-ZF-00002-S11B-03, P-0317 Drain Line (CRP-BULGE-00001 drain, El. 56')	N/A	N/A	3" Stainless Steel	**24590-PTF** -M6-CRP-00003001, Rev 0
CXP-ZF-00012-S11B-03 Drain Line, P-0317 (CXP-BULGE-00004, El. 56')	N/A	N/A	3" Stainless Steel	**24590-PTF** -M6-CXP-00003003, Rev 0
UFP-ZF-00043-S11B-03 Drain Line, P-0301 (UFP-BULGE-00001, El. 56')	N/A	N/A	3" Stainless Steel	**24590-PTF** -M6-UFP-00016001, Rev 0
UFP-ZF-00042-S11B-03 Drain Line, P-0301 (UFP-BULGE-00002, El. 56')	N/A	N/A	3" Stainless Steel	**24590-PTF** -M6-UFP-00017001, Rev 0
UFP-ZY-00002-S11B-03 Drain Line, P-0311 (UFP-BULGE-00005, El. 56')	N/A	N/A	3" Stainless Steel	**24590-PTF** -M56-UFP-00031001, Rev 0
UFP-ZY-00001-S11B-03 Drain Line, P-0311A (UFP-BULGE-00006, El. 56')	N/A	N/A	3" Stainless Steel	**24590-PTF** -M6-UFP-00032001, Rev 0
PWD-LDB-00001 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00050, Rev 2

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
PWD-LDB-00002 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00050, Rev 2
PWD-LDB-00003 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00050, Rev 2
PWD-LDB-00004 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00050, Rev 2
PWD-LDB-00005 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00050, Rev 2
PWD-LDB-00006 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00050, Rev 2
PWD-LDB-00007 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00050, Rev 2

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
PWD-LDB-00008 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00050, Rev 2
PWD-LDB-00009 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00050, Rev 2
PWD-LDB-00010 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00050, Rev 2
PWD-LDB-00011 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00050, Rev 2
PWD-LDB-00012 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00051, Rev 2
PWD-LDB-00013 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00051, Rev 2

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
PWD-LDB-00014 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00051, Rev 2
PWD-LDB-00015 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length Stainless Steel	**24590-PTF** -M6-PWD-00051, Rev 2
PWD-LDB-00016 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length/ Stainless Steel	**24590-PTF** -M6-PWD-00051, Rev 2
PWD-LDB-00017 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length/ Stainless Steel	**24590-PTF** -M6-PWD-00051, Rev 2
PWD-LDB-00018 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length/ Stainless Steel	**24590-PTF** -M6-PWD-00051, Rev 2
PWD-LDB-00019 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 24" Length/ Stainless Steel	**24590-PTF** -M6-PWD-00051, Rev 2

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)
RLD-LDB-00012 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 34" Length/ Stainless Steel	**24590-PTF** -M6-PWD-00058, Rev 4
RLD-LDB-00013 P-B001 (Inter Facility Transfer Line Tunnel, El. -45')	6	N/A	8" Dia. x 34" Length/ Stainless Steel	**24590-PTF** -M6-PWD-00058, Rev 4
ASX Sampler 00017 Lower Containment Trough/Dam (P-0311B, El. 56')	N/A	N/A	3" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00007, Rev 3
ASX Sampler 00019 Lower Containment Trough/Dam (P-0302, El. 56')	N/A	N/A	3" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00007, Rev 3
ASX Sampler 00020 Lower Containment Trough/Dam (P-0301, El. 56')	N/A	N/A	3" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00007, Rev 3
ASX Sampler 00025 Lower Containment Trough/Dam (P-0307, El. 56')	N/A	N/A	3" Dia. Stainless Steel	**24590-PTF** -M6-PWD-00007, Rev 3

Table III.10.E.J – Pretreatment Plant Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, Bulges, Autosamplers, and Floor Drains

Sump, Bulge or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing No.'s, Specifications No.'s, etc.)

Footnotes:

[a]Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Note #1: These are special cases due to their location in equipment berms. The capacity for these drain lines is based on a unique bounding case for liquid spillage.

Table III.10.E.K - LAW Vitrification Plant Tank Systems Primary[a] Containment Sump Systems

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions[b] (feet) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a] Primary sumps are defined in Permit Section III.10.C, and must comply with dangerous waste tank system requirements for tanks as described in WAC-173-303-640.

[b] Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Table III.10.E.L - LAW Vitrification Plant Tank Systems Secondary Containment Systems, Including Sumps, Bulges, Autosamplers, and Floor Drains

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) or Drain Line (gallons per minute) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
RLD-SUMP-00028 L-B001B (C3/C5 Drains/Sump Collection Vessel Cell, El. –21')	59	Dry Sump	24" Dia. By 30" deep Stainless Steel (6% Mo)	**24590-LAW** -M6-RLD-00002005, Rev 0 -P1-P01T-00001, Rev 4
RLD-SUMP-00029 L-0123 (Process Cell, El. +3')	37	Dry Sump	30" Dia. By 12" deep Stainless Steel (6% Mo)	**24590-LAW** -M6-RLD-00003002, Rev 1 -P1-P01T-00002, Rev 7
RLD-SUMP-00030 L-0123 (Process Cell, El. +3')	37	Dry Sump	30" Dia. By 12" deep Stainless Steel (6% Mo)	**24590-LAW** -M6-RLD-00003002, Rev 1 -P1-P01T-00002, Rev 7

Table III.10.E.L - LAW Vitrification Plant Tank Systems Secondary Containment Systems, Including Sumps, Bulges, Autosamplers, and Floor Drains

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) or Drain Line (gallons per minute) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
RLD-SUMP-00031 L-0124 Process Cell Sump, El. +3')	37	Dry Sump	30" Dia. By 12" deep Stainless Steel (6% Mo)	**24590-LAW** -M6-RLD-00003002, Rev 1 -P1-P01T-00002, Rev 7
RLD-SUMP-00032 L-0124 (Process Cell, El. +3')	37	Dry Sump	30" Dia. By 12" deep Stainless Steel (6% Mo)	**24590-LAW** -M6-RLD-00003002, Rev 1 -P1-P01T-00002, Rev 7
RLD-SUMP-00035 L-0126 (Effluent Cell, El. +3')	37	Dry Sump	30" Dia. By 12" deep Stainless Steel (6% Mo)	**24590-LAW** -M6-RLD-00003003, Rev 1 -P1-P01T-00002, Rev 7
RLD-SUMP-00036 L-0126 (Effluent Cell, El. +3')	37	Dry Sump	30" Dia. By 12" deep Stainless Steel (6% Mo)	**24590-LAW** -M6-RLD-00003003, Rev 1 -P1-P01T-00002, Rev 7
Drain Line ID# = RLD-FD-00001 L-B001B (RLD-BULGE-00001 Drain, El. -21')	N/A	N/A	2" Dia. 316L	**24590-LAW** -M6-RLD-00002003, Rev 0
Drain Line ID# = RLD-FD-00035 L-0126 (RLD-BULGE-0000-4 Drain El. +3')	N/A	N/A	2" Dia. 6% Mo	**24590-LAW** -M6-RLD-00001005, Rev 0
Drain Line ID# = LOP-FD-00001	N/A	N/A	2" Dia. 6% Mo	**24590-LAW** -M6-LOP-0001003, Rev 0

Table III.10.E.L - LAW Vitrification Plant Tank Systems Secondary Containment Systems, Including Sumps, Bulges, Autosamplers, and Floor Drains

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) or Drain Line (gallons per minute) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
L-0123 (LOP-BULGE-00001 drain El. +3)				
Drain Line ID# = LCP-FD-00001 L-0123 (LCP-BULGE-00001 Drain, El. +3')	N/A	N/A	2" Dia. 316L	**24590-LAW** -M6-LCP-00001001, Rev 0
Drain Line ID# = LCP-FD-00002 L-0123 (LCP-BULGE-00002 Drain, El. +3')	N/A	N/A	2" Dia. 316L	**24590-LAW** -M6-LCP-00001004, Rev 0 -M6-LCP-00001005, Rev 0
Drain Line ID# = RLD-WS-20037-S11B-01 L-0123 (Melter 1 Encasement Assembly Drain, El. +3')	N/A	N/A	1" Dia. 316L	**24590-LAW** -M6-LMP-00012001, Rev 0
Drain Line ID# = LFP-FD-00001 L-0123 (LFP-BULGE-00001 Drain, El. +3)	N/A	N/A	2" Dia. 316L	**24590-LAW** -M6-LFP-00001005, Rev 0
Drain Line ID# = LOP-FD-00002 L-0124 (LOP-BULGE-00002 Drain, El. +3)	N/A	N/A	2" Dia. 6% Mo	**24590-LAW** -M6-LOP-00002003, Rev 0

Table III.10.E.L - LAW Vitrification Plant Tank Systems Secondary Containment Systems, Including Sumps, Bulges, Autosamplers, and Floor Drains

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) or Drain Line (gallons per minute) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
Drain Line ID# = LCP-FD-00003 L-0124 (LCP-BULGE-00003 Drain, El. +3)	N/A	N/A	2" Dia. 316L	**24590-LAW** -M6-LCP-00002001, Rev 0 -M6-LCP-00002002, Rev 0
Drain Line ID# = LFP-FD-00002 L-0124 (LFP-BULGE-00002 Drain, El. +3)	N/A	N/A	2" Dia. 316L	**24590-LAW** -M6-LFP-00003005, Rev 0
Drain Line ID# = RLD-WS-20033-S11B-01 L-0124 (Melter 2 Encasement Assembly Drain, El. +3')	N/A	N/A	1" Dia. 316L	**24590-LAW** -M6-LMP-00042001, Rev 0
LVP-FD-00001 L-0218 (Berm floor drain for LVP-TK-00001, El. 28')[b]	N/A	N/A	4" Dia. 316L	**24590-LAW** -M6-LVP-00002003, Rev 0
RLD-FD-00025 L-0304F (Curb floor drain for Caustic Scrubber, El. 48')[b]	N/A	N/A	4" Dia. 316L	**24590-LAW** -M6-RLD-00003001, Rev 0

Table III.10.E.L - LAW Vitrification Plant Tank Systems Secondary Containment Systems, Including Sumps, Bulges, Autosamplers, and Floor Drains

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) or Drain Line (gallons per minute) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
ASX Sampler 00012 Lower Containment Trough/Dam (L-0301, El. 48')	N/A	N/A	3" Dia. Stainless Steel (316L)	**24590-LAW** -M6-RLD-00003001, Rev 0
ASX Sampler 00013 Lower Containment Trough/Dam (L-0301, El. 48')	N/A	N/A	3" Dia. Stainless Steel (316L)	**24590-LAW** -M6-RLD-00003001, Rev 0

Footnotes:

[a] Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

[b] This sump is routinely accessible for inspections and maintenance.

Table III.10.E.M - HLW Vitrification Plant Tank Systems Primary[a] Containment Sump Systems

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions[b] (feet) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a] Primary sumps are defined in Permit Section III.10.C, and must comply with dangerous waste tank system requirements for tanks as described in WAC-173-303-640.

[b] Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Table III.10.E.N - HLW Vitrification Plant Tank Systems Secondary Containment Systems, Including Sumps, Autosamplers, and Floor Drains

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type	Sump or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
HCP-SUMP-00001 H-B014 (Wet Process Cell, El. –21')	75	Dry Sump	30" Dia. x 18" Deep Stainless Steel	**24590-HLW** -M6-RLD-00015001, Rev 0 -P1-P01T-00001, Rev 9
RLD-SUMP-00001 H-B014 (Wet Process Cell, El. –21')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel	**24590-HLW** -M6-RLD-00015001, Rev 0 -P1-P01T-00001, Rev 9
HOP-SUMP-00003 H-B021 (SBS Drain Collection Cell 1, El. –21')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel	**24590-HLW** -M6-RLD-00015001, Rev 0 -P1-P01T-00001, Rev 9
HOP-SUMP-00008 H-B005 (SBS Drain Collection Cell 2, El. -21')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel	**24590-HLW** -M6-RLD-20004001, Rev 0 -P1-P01T-00001, Rev 9
HDH-SUMP-00001 H-B039B (Canister Rinse Tunnel, El. –16.5')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel	**24590-HLW** -M6-RLD-00016001, Rev 0 -P1-P01T-00001, Rev 9
HDH-SUMP-00002 H-B039A (Canister Rinse Bogie Maintenance Room, El. –16')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel	**24590-HLW** -M6-RLD-00016001, Rev 0 -P1-P01T-00001, Rev 9
HDH-SUMP-00003	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel	**24590-HLW** -M6-RLD-00004002, Rev 0

Table III.10.E.N - HLW Vitrification Plant Tank Systems Secondary Containment Systems, Including Sumps, Autosamplers, and Floor Drains

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type	Sump or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
H-B035 (Canister Decon Cave, El. –16')				-P1-P01T-00001, Rev 9
HFP-SUMP-00002 H-0117 (Melter Cave 1, El. 5')	50	Dry Sump	20.5" X 20.5" X 16" Stainless Steel	**24590-HLW** -M6-RLD-00008002, Rev 0 -P1-P01T-00002, Rev 7
HFP-SUMP-00005 H-0106 (Melter Cave 2 El. 5')	50	Dry Sump	20.5" X 20.5" X 16" Stainless Steel	**24590-HLW** -M6-RLD- 20005, Rev 6 -P1-P01T-00002, Rev 7
HSH-SUMP-00003 H-0117 (Melter Cave 1, El. 3')	50	Dry Sump	20.5" X 20.5" X 16" Stainless Steel	**24590-HLW** -M6-RLD-00008002, Rev 0 -P1-P01T-00002, Rev 7
HSH-SUMP-00007 H-0106 (Melter Cave 2, El. 3')	50	Dry Sump	20.5" X 20.5" X 16" Stainless Steel	**24590-HLW** -M6-RLD-20005001, Rev 0 -P1-P01T-00002, Rev 7
HSH-SUMP-00008 H-310A (Melter 1 Equip. Decon. Pit Area, El. 0')	50	Dry Sump	30" X 24" X 16" Stainless Steel	**24590-HLW** -M6-RLD-00003001, Rev 0 -P1-P01T-00002, Rev 7
HSH-SUMP-00009 H-0304A (Melter 2 Equip. Decon. Pit Area, El. 0')	50	Dry Sump	30" X 24" X 16" Stainless Steel	**24590-HLW** -M6-RLD-20003001, Rev 0 -P1-P01T-00002, Rev 7
HPH-SUMP-00001	75	Dry Sump	30" Dia. X 18" Deep	**24590-HLW** -M6-RLD-00016001, Rev 0

Table III.10.E.N - HLW Vitrification Plant Tank Systems Secondary Containment Systems, Including Sumps, Autosamplers, and Floor Drains

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type	Sump or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
H-0136 (Canister Handling Cave, El. -3')			Stainless Steel	
HPH-SUMP-00005 H-0136 (Canister Handling Cave, El. -3')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel	**24590-HLW** -M6-RLD-00004001, Rev. 0
HPH-SUMP-00003 H-B032 (Pour Tunnel 1, El. -21')	75	Dry Sump	30" Dia. X 18" Deep Stainless Steel	**24590-HLW** -M6-RLD-00016001, Rev 0
RLD-ZF-03330-S11B-03 H-B021 (SBS Drain Collection Cell 1)	N/A	N/A	Line Size Pipe Dia 3" 316L Stainless Steel	**24590-HLW** -M6-RLD-00015001, Rev 0
RLD-ZF-03447-S11B-03 H-B005 (SBS Drain Collection Cell 2)	N/A	N/A	Line Size Pipe Dia 3" 316L Stainless Steel	**24590-HLW** -M6-RLD-20004001, Rev 0
RLD-FD-0186 H-0308 (Melter 1 - Active Services Cell, El. 37')	N/A	N/A	Line Size Pipe Dia 6" Stainless Steel	**24590-HLW** -M6-RLD-00015001, Rev 0
RLD-FD-0187 H-0302 (Melter 2 - Active Services Cell, El. 37')	N/A	N/A	Line Size Pipe Dia 6" Stainless Steel	**24590-HLW** -M6-RLD-20004001, Rev 0
ASX Sampler 00028 Lower Containment Trough/Dam	N/A	N/A	3" Dia. Stainless Steel	**24590-HLW** -M6-RLD-00002002, Rev 0

Table III.10.E.N - HLW Vitrification Plant Tank Systems Secondary Containment Systems, Including Sumps, Autosamplers, and Floor Drains

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) Capacity	Sump Type	Sump or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
(H-0305A, El. 37')				
ASX Sampler 00029 Lower Containment Trough/Dam (H-0315, El. 37')	N/A	N/A	3" Dia. Stainless Steel	**24590-HLW** -M6-RLD-00002002, Rev 0
ASX Sampler 00042 Lower Containment Trough/Dam (H-0318, El. 37')	N/A	N/A	3" Dia. Stainless Steel	**24590-HLW** -M6-RLD-00002002, Rev 0
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Table III.10.E.O – Laboratory Tank Systems Primary[a] Containment Sump Systems

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions[b] (feet) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a] Primary sumps are defined in Permit Section III.10.C, and must comply with dangerous waste tank system requirements for tanks as described in WAC-173-303-640.

[b] Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Table III.10.E.P – Laboratory Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, and Floor Drains

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Type/Nominal Operating Volume (gallons)	Sump Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
RLD-SUMP-00041 A-B003 (C3 Effluent Vessel Cell, El. -18'7')	30	Dry	30" Dia. X ~13" Deep Stainless Steel	**24590-LAB** -M6-RLD-P0002, Rev 1 -P1-60-00007, Rev 3
RLD-SUMP-00042 A-B004 (C5 Effluent Vessel Cell, El. -19'2')	30	Dry	30" Dia. X ~13" Deep Stainless Steel	**24590-LAB** -M6-RLD-P0001, Rev 2 -P1-60-00007, Rev 3
RLD-SUMP-00045 A-B002 (C3 Pump Pit Sump, EL -6'-81/2"LP)	1.56	Dry	2'-0" X 2'-6" X 1/2"	**24590-LAB** -M6-RLD-P0002, Rev 1 -P1-60-00007, Rev 3

Table III.10.E.P – Laboratory Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, and Floor Drains

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Type/Nominal Operating Volume (gallons)	Sump Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
RLD-SUMP-00043A A-B007 (C5 Pump Pit Sump, EL -6'-7"LP)	1.40	Dry	1'-6" X 3'-0" X 1/2" Stainless Steel	**24590-LAB** -M6-RLD-P0001, Rev 2 -P1-60-00007, Rev 3
RLD-SUMP-00043B A-B005 (C5 Pump Pit Sump, EL -6'-7" LP)	1.40	Dry	1'-6" X 3'-0" X 1/2" Stainless Steel	**24590-LAB** -M6-RLD-P0001, Rev 2 -P1-60-00007, Rev 3
RLD-SUMP-00044 A-B006 (C5 Piping Pit Sump, EL -6'-7" LP)	1.56	Dry	2'-0" X 2'-6" X 1/2" Stainless Steel	**24590-LAB** -M6-RLD-P0001, Rev 2 -P1-60-00007, Rev 3
RLD-WU-02207-S11E-04 A-B003, (C3 Effluent Vessel Cell)	N/A	N/A	4" Dia 316L	**24590-LAB** -M6-RLD-P0002, Rev 1
RLD-ZN-02203-S11E-04 A-B004, (C5 Effluent Vessel Cell)	N/A	N/A	4" Dia 316L	**24590-LAB** -M6-RLD-P0001, Rev 2
RLD-ZN-03393-S11E-04 A-B004, (C5 Effluent Vessel Cell)	N/A	N/A	4" Dia 316L	**24590-LAB** -M6-RLD-P0001, Rev 2
RLD-ZN-03394-S11E-04 A-B004, (C5 Effluent Vessel Cell)	N/A	N/A	4" Dia 316L	**24590-LAB** -M6-RLD-P0001, Rev 2
RLD-LDB-00002 A-B004 (C5 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel	**24590-LAB** -M6-RLD-P0008, Rev 1

Table III.10.E.P – Laboratory Tank Systems Secondary Containment Systems, Including Sumps, Leak Detection Boxes, and Floor Drains

Sump I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Type/Nominal Operating Volume (gallons)	Sump Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications Nos., etc.)
RLD-LDB-00004 A-B004 (C5 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel	**24590-LAB** -M6-RLD-P0008, Rev 1
RLD-LDB-00005 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel	**24590-LAB** -M6-RLD-P0007, Rev 1
RLD-LDB-00006 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel	**24590-LAB** -M6-RLD-P0007, Rev 1
RLD-LDB-00007 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel	**24590-LAB** -M6-RLD-P0007, Rev 1
RLD-LDB-00008 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel	**24590-LAB** -M6-RLD-P0007, Rev 1
RLD-LDB-00009 A-B004 (C5 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel	**24590-LAB** -M6-RLD-P0008, Rev 1
RLD-LDB-00011 A-B003 (C3 Effluent Vessel Cell, El. -10')	6	N/A	8" Dia. x 24" Length/ Stainless Steel	**24590-LAB** -M6-RLD-00007001, Rev 0
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:
[a]Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

III.10.F CONTAINMENT BUILDING UNITS

III.10.F.1 Containment Building Units and Storage Limits

III.10.F.1.a Approved Waste and Storage Limits

III.10.F.1.a.i The Permittees may store and treat, in containment building units listed in Permit Table III.10.F.A., as modified by Permit Condition III.10.F.7.d.iv., all dangerous and mixed waste listed in the Part A Forms, Operating Unit Group 10, Addendum A of this Permit, except for those wastes outside the waste acceptance criteria specified in the WAP, Operating Unit Group 10, Addendum B, as approved pursuant to Permit Condition III.10.C.3. Total dangerous and mixed waste storage at the containment building units will not exceed the sum of the capacities in column 7 of Permit Table III.10.F.A., as modified pursuant to Permit Condition III.10.F.7.d.iv.

III.10.F.1.a.ii The Permittees may place and store dangerous and mixed waste only in the containment building units listed in Permit Table III.10.F.A., as modified pursuant to Permit Condition III.10.F.7.d.iv., in accordance with Permit Condition III.10.F., and in accordance with Operating Unit Group 10, Chapters 1.0 and 4.0, and Operating Unit Group 10, Appendices 8.1, 8.2, 8.4 through 8.10, 8.13, 8.15, 9.1, 9.2, 9.4 through 9.10, 9.13, 9.18, 10.1, 10.2, 10.4 through 10.10, 10.13, and 10.18 of this Permit, as approved pursuant to Permit Conditions III.10.F.7.c. and III.10.F.7.d. The Permittees will limit the volume of dangerous and mixed waste to quantities specified for the individual areas listed in column 7 of Permit Table III.10.F.A., as modified pursuant to Permit Condition III.10.F.7.d.iv.

III.10.F.1.b The Permittees will manage any ignitable, reactive, or incompatible waste in these units in accordance with WAC 173-303-395(1). Any containment building units specified in Permit Table III.10.F.A. in which ignitable, reactive, or incompatible waste are managed will meet the requirements specified in WAC 173-303-640(9) and (10), in accordance with WAC 173-303-680(2).

III.10.F.1.c The Permittees must maintain documentation in the operating record of the description and quantity of dangerous waste in each containment building unit listed in Permit Table III.10.F.A., as modified pursuant to Permit Condition III.10.F.7.d.iv., in accordance with WAC 173-303-380.

III.10.F.1.d The Permittees will ensure all certifications required by specialists (e.g., qualified, registered, professional engineer, etc.) use the following statement or equivalent pursuant to Permit Condition III.10.C.10.:

"I, (Insert Name) have (choose one or more of the following: overseen, supervised, reviewed, and/or certified) a portion of the design or installation of a new containment building unit or component located at (address), and owned/operated by (name(s)). My duties were: (e.g., design engineer, etc.), for the following containment building unit components (e.g., the venting piping, etc.), as required by the Resource Conservation and Recovery Act (RCRA) regulation(s), namely, 40 CFR 264.1101(c)(2) in accordance with WAC 173-303-695).

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant

penalties for submitting false information, including the possibility of fine and imprisonment."

III.10.F.2 Containment Building Unit Design and Construction

III.10.F.2.a The Permittees will design and construct the containment building units identified in Permit Table III.10.F.A., as modified pursuant to Permit Condition III.10.F.7.d.iv., as specified in Operating Unit Group 10, Appendices 8.1, 8.2, 8.4 through 8.10, 8.13, 8.15, 9.1, 9.2, 9.4 through 9.10, 9.13, 9.18, 10.1, 10.2, 10.4 through 10.10, 10.13, and 10.18 of this Permit, as approved in accordance with Permit Condition III.10.F.7.a. and WAC 173-303-695.

III.10.F.2.b The Permittees will design and construct all applicable containment building units' secondary containment systems for each unit listed in Permit Table III.10.F.A., as specified in Operating Unit Group 10, Appendices 8.4 through 8.9, 8.15, 9.4 through 9.9, 9.18, 10.4 through 10.9, and 10.18 of this Permit, as approved in accordance with Permit Condition III.10.F.7.a. and WAC 173-303-695.

III.10.F.2.c Modifications to approved design plans and specifications, in Operating Unit Group 10, Appendices 8.1, 8.2, 8.4 through 8.10, 8.13, 8.15, 9.1, 9.2, 9.4 through 9.10, 9.13, 9.18, 10.1, 10.2, 10.4 through 10.10, 10.13, and 10.18 of this permit, for the containment building units will be allowed only in accordance with Permit Conditions III.10.C.2.e. and III.10.C.2.f., or III.10.C.2.g., III.10.C.9.d, and III.10.C.9.e.

III.10.F.3 Containment Building Unit Management Practices

III.10.F.3.a The Permittees will manage all dangerous and mixed waste in containment building units in accordance with procedures described in Operating Unit Group 10, Appendices 8.15, 9.18, 10.18 and Addendum C of this Permit, as approved pursuant to Permit Condition III.10.F.7.d.iv. .

III.10.F.3.b The Permittees will follow the description of operating procedures described in Operating Unit Group 10, Appendices 8.15, 9.18, 10.18 and Addendum C, of this permit, as approved pursuant to Permit Condition III.10.F.7.d.iv. and Permit Condition III.10.F.3., and as specified below:

III.10.F.3.b.i Maintain the primary barrier to be free of significant cracks, gaps, corrosion, or other deterioration that could cause dangerous and mixed waste to be released from the primary barrier;

III.10.F.3.b.ii Maintain the level of stored/treated dangerous and mixed waste within the containment building unit walls so that the height of the wall is not exceeded;

III.10.F.3.b.iii Take measures to prevent the tracking of dangerous and mixed waste out of the unit by personnel or by equipment used in handling the waste. An area must be designated to decontaminate equipment and any rinsate must be collected and properly managed;

III.10.F.3.b.iv Maintain the containment building unit at all times to prevent the spread of airborne dangerous and/or mixed waste contamination into less contaminated or uncontaminated areas. All air pollution control devices for exhaust from containment building unit must be properly maintained and operational when storing or treating dangerous and mixed waste in the containment building units;

III.10.F.3.b.v Collect and remove liquids and waste to minimize hydraulic head on the containment system at the earliest practicable time.

III.10.F.3.c The Permittees will inspect the containment building units per requirements in the Operating Unit Group 10, Addendum E1 of this permit, as approved pursuant to Permit

Condition III.10.C.5., 40 CFR 264.1101(c)(4),in accordance with WAC 173-303-695 and WAC 173-303-320 and record in the Facility's operating record, at least once every seven (7) days, data gathered from monitoring equipment and leak detection equipment as well as the containment building unit and area immediately surrounding the containment building unit to detect signs of releases of dangerous and mixed waste.

III.10.F.3.d Throughout the active life of the containment building unit, if the Permittees detects a condition that could lead to or has caused a release of dangerous and/or mixed waste, the Permittees must repair the condition promptly, in accordance with the following procedures:

III.10.F.3.d.i Upon detection of a condition that has led to the release of dangerous and/or mixed waste (e.g., upon detection of leakage from the primary barrier) the Permittees must:

A. Enter a record of the discovery in the facility operating record;

B. Immediately remove the portion of the containment building unit affected by the condition from service;

C. Determine what steps must be taken to repair the containment building unit, remove any leakage from the secondary collection system, and establish a schedule for accomplishing the cleanup and repairs; and

D. Within seven (7) days after the discovery of the condition, notify Ecology of the condition, and within fourteen (14) working days, provide a written notice to Ecology with a description of the steps taken to repair the containment building unit, and the schedule for accomplishing the work.

III.10.F.3.d.ii Ecology will review the information submitted, make a determination regarding whether the containment building unit must be removed from service completely or partially until repairs and cleanup are complete, and notify the Permittees of the determination and underlying rationale in writing.

III.10.F.3.d.iii Upon completing all repairs and cleanup the Permittees must notify Ecology in writing and provide verification, signed by a qualified, registered, professional engineer, that repairs have been completed according to the written notice submitted in accordance with Permit Condition III.10.F.3.d.i.D.

III.10.F.4 Inspections [WAC 173-303-640(6)]

III.10.F.4.a The Permittees will inspect the containment building units in accordance with the Inspection Schedules in Operating Unit Group 10, Addendum E of this Permit, as modified pursuant to Permit Condition III.10.C.5.c.

III.10.F.4.b The inspection data for the containment building units will be recorded, and the records will be placed in the WTP Unit operating record, in accordance with Permit Condition III.10.C.4.

III.10.F.5 Recordkeeping (WAC 173-303-380)

For the containment building units, the Permittees will record and maintain in the WTP Unit operating record, all monitoring, calibration, recording, maintenance, test data, and inspection data compiled under the conditions of this Permit, in accordance with Permit Conditions III.10.C.4. and III.10.C.5.

III.10.F.6 Closure

The Permittees will close the containment building units in accordance with Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8.

III.10.F.7 Compliance Schedule

III.10.F.7.a All information identified for submittal to Ecology in Permit Conditions III.10.F.7.b. through e. of this compliance schedule must be signed in accordance with requirements in WAC 173-303-810(12), as modified in accordance with Permit Condition III.10.F.1.d. [WAC 173-303-806(4)].

III.10.F.7.b Prior to initial receipt of dangerous and/or mixed waste, the Permittees will submit to Ecology a certification by a qualified, registered, professional engineer that the containment building units design meets the requirements of Permit Conditions III.10.F.1.and III.10.F.2. in accordance with Permit Condition III.10.F.7.a. The certification will also be stored in the WTP Unit operating record. For containment buildings units in Permit Table III.10.F.A., as modified pursuant to Permit Condition III.10.F.7.d.iv., identified as allowed to manage free liquids, the certification will include an additional demonstration that the containment building meets the requirements specified in 40 CFR 264.1101(b), in accordance with WAC 173-303-695.

III.10.F.7.c The Permittees submit to Ecology pursuant to Permit Condition III.10.C.9.f., prior to construction of the containment building unit containment system, and as appropriate, leak detection system for each containment building unit (per level, per WTP Unit building) as identified in Permit Condition III.10.F.1., Permit Tables III.10.F.A., engineering information as specified below, for incorporation, as appropriate, into Operating Unit Group 10, Appendices 8.1, 8.2, 8.3, 8.4 through 8.10, 8.13, 8.15, 9.1, 9.2, 9.4 through 9.10, 9.13, 9.18, 10.1, 10.2, 10.4 through 10.10, 10.13, and 10.18 of this Permit. At a minimum, engineering information specified below will show the following as required in accordance with WAC 173-303-695 (the information specified below will include dimensioned engineering drawings showing floors, walls, and ceilings/roof of the containment building units and other information on floor drains and sumps):

III.10.F.7.c.i Design drawings (General Arrangement Drawings in plan) and specifications for the foundation, containment, including liner/coating installation details and leak detection methodology, as appropriate [40 CFR 264.1101(a)(1) and (b), in accordance with WAC 173-303-695].

III.10.F.7.c.ii The Permittees provide the design criteria (references to codes and standards, load definitions and load combinations, materials of construction, and analysis/design methodology) and typical design details for the support of the containment system. This information demonstrate the foundation will be capable of providing support to the secondary containment system, resistance to pressure gradients above and below the system, and capable of preventing failure due to settlement, compression, or uplift [40 CFR 264.1101(a)(2) in accordance with WAC 173-303-695, in accordance with WAC 173-303-695].

III.10.F.7.c.iii The Permittees provide documentation addressing how coatings will withstand the movement of personnel, waste, and equipment during the operating life of the containment building per 40 CFR 264.1101(a)(2), (a)(4), and (b) in accordance with WAC 173-303-695.

III.10.F.7.c.iv Containment/foundation and, as appropriate, for leak detection systems, materials selection documentation (including, but not limited to, concrete coatings and water stops, and liner materials as applicable [e.g. physical and chemical tolerances]) [40 CFR 264.1101(a)(4) and (b) in accordance with WAC 173-303-695].

III.10.F.7.c.v A detailed description of how the containment/foundation and, as appropriate, leak detection systems, will be installed.

III.10.F.7.c.vi Submit Permit Tables III.10.F.B and III.10.F.C, completed to provide for all secondary containment sumps and floor drains, the information as specified in each column heading, consistent with the information to be provided in i. through viii.

III.10.F.7.c.vii A detailed description of how fugitive emissions will be controlled such that any openings (e.g., doors, windows, vents, cracks, etc.) exhibit no visible emissions [40 CFR 264.1101(c)(1)(iv) in accordance with WAC 173-303-695].

III.10.F.7.c.viii Prior to installation, the Permittees will submit coating vendor information specific to containment buildings for incorporation into the Administrative Record [40 CFR 264.1101(a)(4) and (b) in accordance with WAC 173-303-695].

III.10.F.7.c.ix Prior to installation, leak detection system documentation (e.g. vendor information, etc.) consistent with information submitted under i. above, will be submitted for incorporation into the Administrative Record;

III.10.F.7.c.x Prior to installation, the Permittees will submit leak detection system instrumentation control logic narrative description (e.g., descriptions of fail-safe conditions, etc.);

III.10.F.7.c.xi Prior to installation, system descriptions related to leak detection systems will be submitted for incorporation into the Administrative Record;

III.10.F.7.c.xii For leak detection system instrumentation for containment buildings as identified in Permit Tables III.10.F.D., a detailed description of how the leak detection system instrumentation will be installed and tested [40 CFR 264.1101(b)(3) in accordance with WAC 173-303-695] will be submitted prior to installation.

Information pertaining to leak detection systems in Permit Conditions III.10.F.7.c.ix. through xii. Will be submitted pursuant to Permit Conditions III.10.E.9.d.vii., viii., x., and xiii.

III.10.F.7.d Prior to initial receipt of dangerous and mixed waste, in the WTP Unit, the Permittees will submit the following, as specified below, for incorporation into Operating Unit Group 10. The information specified below into Operating Unit Group 10, and incorporated pursuant to Permit Condition III.10.C.2.g. will be followed:

III.10.F.7.d.i Registered Professional Engineer certification documentation consistent with the information provided in III.10.F.7.b. and III.10.F.7.c. for incorporation in the Administrative Record. The certification must be maintained in the WTP Unit Operating Record [40 CFR 264.1101(c)(2)];

III.10.F.7.d.ii Updated Addendum C, Section 4.2.1., and the figures for containment building units identified in Permit Table III.10.F.A. (as modified pursuant to Permit Condition III.10.F.7.d.iv., consistent with Operating Unit Group 10, Appendices 8.1, 8.2, 8.4 through 8.10, 8.13, 8.15, 9.1, 9.2, 9.4 through 9.10, 9.13, 9.18, 10.1, 10.2, 10.4 through 10.10, 10.13, and 10.18, as approved pursuant Permit Conditions III.10.F.7.a. through d.);

III.10.F.7.d.iii Description of operating procedures demonstrating compliance with 40 CFR 264.1101(c) and (d) in accordance with WAC 173-303-695;

III.10.F.7.d.iv III. Permit Table III.10.F.A., amended as follows:

A. Under column 1, update and complete list of dangerous and mixed waste containment building units including room location and number.

B. Under column 2, update unit dimensions.

C. Under column 3, replace the 'Reserved' with the Operating Unit Group 10, Appendices 8.0, 9.0, and 10.0, subsections specific to containment building units as listed in column 1.

D. Under column 4, update and complete list of narrative description, tables, and figures.

E. Under column 5, replace the 'Reserved' to indicate if container storage is used in each containment building units (Yes or No) consistent with Permit Table III.10.D.A. updated pursuant to Permit Condition III.10.D.10.d.

F. Under column 6, replace the 'Reserved' to indicate if tank storage is used in each containment building units (Yes or No) consistent with Permit Tables III. 10.E.A-D., updated pursuant to Permit Condition III.10.E.9.e.vi.

G. Under column 7, replace the 'Reserved' with the maximum operating volume for each containment building unit, to include the container storage capacity specified in Permit Table III.10.D.A., tank capacity specified in Permit Tables III. 10.E.A-D. and update the total capacity for the containment building units.

H. Under column 8, update the status of each containment building unit.

III.10.F.7.d.v Permit Table III.10.F.D. will be completed for Containment Building leak detection system instrumentation and parameters to provide the information as specified in each column heading. Leak detection system monitors and instruments for critical systems as specified in Operating Unit Group 10, Appendix 2.0 and as updated pursuant to Permit Condition III.10.C.9.b. will be addressed.

III.10.F.7.e All information provided under Permit Condition III.10.F.7.d. must be consistent with information provided pursuant to Permit Conditions III.10.F.7.a. through d., as approved by Ecology.

Table III.10.F.A – Containment Building Unit Description

Mixed Waste Containment Building Units[a] & Systems	Dimensions (LxWxH) (in feet)	Unit Description	Narrative Description and Figures	Container Storage Areas[b]	Tank Systems[c]	Containment Building Capacity (cu ft)	Manage Free Liquids
Pretreatment Plant							
P-0123 Pretreatment Hot Cell Containment Building	350x51x52	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
Pretreatment Maintenance Containment Building							
PM0124 Hot Cell Crane Maintenance Mezzanine	27 x 51 x 33	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
P-0121A Spent Resin Dewatering	28 × 18 × 28	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
P-0122A Waste Packaging Area	26 × 51 × 28	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
P-0123A Remote Decontamination Maintenance Cell	55 × 51 × 52	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
P-0124 C3 Workshop	(24 × 24 × 16) + (34 x 24 x 15)	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No

Table III.10.F.A – Containment Building Unit Description

Mixed Waste Containment Building Units[a] & Systems	Dimensions (LxWxH) (in feet)	Unit Description	Narrative Description and Figures	Container Storage Areas[b]	Tank Systems[c]	Containment Building Capacity (cu ft)	Manage Free Liquids
P-0124A C3 Workshop	(73 + 15 × 15) + (16 × 15 + 15)	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
P-0125 Cask Lidding Airlock & Equipment Chase	24 × 20 × 28	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
P-0125ACask Lidding Room	28 × 18 × 25	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
P-0128A MSM Repair Area	24 × 18 × 28	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
P-0128 MSM Testing Room	24 × 17 × 27	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
P-0223 Spent Filter Drum Handling Area Containment Building	54 x 18 x 26	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
P-0335 Filter Cave Containment Building	198 x 51 x 52	RESERVED	Section 4.2.4; Table C-7; and	RESERVED	RESERVED	RESERVED	RESERVED

Table III.10.F.A – Containment Building Unit Description

Mixed Waste Containment Building Units[a] & Systems	Dimensions (LxWxH) (in feet)	Unit Description	Narrative Description and Figures	Container Storage Areas[b]	Tank Systems[c]	Containment Building Capacity (cu ft)	Manage Free Liquids
			Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.				
P-0431A General Filter Rm	RESERVED	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
LAW Vitrification Plant							
L-0112 LAW LSM Gallery Containment Building	150x62x24	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	Yes
ILAW Container Finishing Containment Building		RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
L-0109B Swabbing Area Line 2	21×15×24	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-0109C Decontamination Area Line 2	18×15×24	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-0109D Inert Fill Area Line 2	55×15×24	RESERVED	Section 4.2.4; Table C-7; and	RESERVED	RESERVED	RESERVED	RESERVED

Table III.10.F.A – Containment Building Unit Description

Mixed Waste Containment Building Units[a] & Systems	Dimensions (LxWxH) (in feet)	Unit Description	Narrative Description and Figures	Container Storage Areas[b]	Tank Systems[c]	Containment Building Capacity (cu ft)	Manage Free Liquids
			Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.				
L-0115B Swabbing Area Line 1	21×15×24	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-0115C Decontamination Area Line 1	18×15×24	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-0115D Inert Fill Area Line 1	55×15×24	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-0109E Container/Monitoring/Export Area	19×18×14	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-0115E Container/Monitoring/Export Area	19×18×14	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-0119B LAW Consumable Import/Export Containment Building	30x28x17	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	Yes

Table III.10.F.A – Containment Building Unit Description

Mixed Waste Containment Building Units[a] & Systems	Dimensions (LxWxH) (in feet)	Unit Description	Narrative Description and Figures	Container Storage Areas[b]	Tank Systems[c]	Containment Building Capacity (cu ft)	Manage Free Liquids
L-226A LAW C3 Workshop Containment Building	34x22x19	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
LAW Pour Cave Containment Building		RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-B015A Melter 1 Pour Cave	16.5×20x23	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-B013C Melter 1 Pour Cave	16.5×20x23	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-B013B Melter 2 Pour Cave	16.5×20x23	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-B011C Melter 2 Pour Cave	16.5×20x23	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-B011B Future Melter 3 Pour Cave	16.5×20x23	RESERVED	Section 4.2.4; Table C-7; and	RESERVED	RESERVED	RESERVED	RESERVED

Table III.10.F.A – Containment Building Unit Description

Mixed Waste Containment Building Units[a] & Systems	Dimensions (LxWxH) (in feet)	Unit Description	Narrative Description and Figures	Container Storage Areas[b]	Tank Systems[c]	Containment Building Capacity (cu ft)	Manage Free Liquids
			Fig. C1-59 (Sheets 1-2) of Operating Unit 10, Addendum C of this Permit.				
L-B009B Future Melter 3 Pour Cave	16.5×20x23	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
AW Buffer Container Containment Building		RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-B025C Container Buffer Store	22x22x23	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
L-B025D Container Rework	22x14x23	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
HLW Vitrification Plant							
HLW Melter Cave 1 Containment Building: H-0117 Melter Cave 1 H-0116B Melter Cave 1 C3/C5 Airlock	 75 x 32 x 54 24 x 25 x 54 20 x 9 x 10	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED

Table III.10.F.A – Containment Building Unit Description

Mixed Waste Containment Building Units[a] & Systems	Dimensions (LxWxH) (in feet)	Unit Description	Narrative Description and Figures	Container Storage Areas[b]	Tank Systems[c]	Containment Building Capacity (cu ft)	Manage Free Liquids
H-0310A Melter Cave 1 Equipment Decon Pit							
HLW Melter Cave 2 Containment Building: H-0106 Melter Cave 2 H-0105B Melter Cave 2 C3/C5 Airlock H-0304A Melter Cave 2 Equipment Decon Pit	 75 x 32 x 54 24 x 25 x 54 20 x 9 x 10	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
H-0136 IHLW Canister Handling Cave Containment Building	18 x 140 x 54	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
H-0133 IHLW Canister Swab and Monitoring Cave Containment Building	41 x 11 x 54	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
HLW C3 Workshop Containment Building: H-0311A C3 Workshop H-0311B MSM Maintenance Workshop	 19 x 30 x 22 58 x 69 x 22	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
H-0104 HLW Filter Cave Containment Building	105 x 36 x 36	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No

Table III.10.F.A – Containment Building Unit Description

Mixed Waste Containment Building Units[a] & Systems	Dimensions (LxWxH) (in feet)	Unit Description	Narrative Description and Figures	Container Storage Areas[b]	Tank Systems[c]	Containment Building Capacity (cu ft)	Manage Free Liquids
H-B032 HLW Pour Tunnel 1 Containment Building	85 x 11 x 30	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
H-B005A HLW Pour Tunnel2 Containment Building	85 x 11 x 30	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	No
HLW Waste Handling Area Containment Building: H-0410B E&I Room H-0411 Waste Handling Room	17 x 20 x 10 25 x 54 x 10	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED
HLW Drum Swabbing and Monitoring Area: H-0126A Crane Maintenance Room H-0126B Swabbing and Monitoring Room H-028 Cask Import/Export Room	15 x 20 x 31 30 x 18 x 31 15 x 45 x 43	RESERVED	Section 4.2.4; Table C-7; and Fig. C1-59 (Sheets 1-2) of Operating Unit Group 10, Addendum C of this Permit.	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Containment Building Units include associated process systems and equipment

[b]Requirements pertaining to the containers in the Containment Building Units are specified in Section III.10.D. of this Permit.

[c]Requirements pertaining to the tanks in the Containment Building Units are specified in Section III.10.E. of this Permit.

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Table III.10.F.B – Containment Building Primary[a] Containment Sump Systems

Sump I.D.# & Room Location	Maximum Capacity (gallons)	Dimensions[b] (feet) & Materials of Construction	Maximum Allowable Liquid Height (inches)	Secondary Containment Volume (gallons)	Unit Description Drawings
PWD-SUMP-00026 P-0123 (El. 0')	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
PWD-SUMP-00028 P-0123 (El. 0')	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
PWD-SUMP-00029 P-0123 (El. 0')	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
PWD-SUMP-00032 P-0123A	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
PWD-SUMP-00033 P-0123A (El. 0')	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a] Primary sumps are defined in Permit Section III.10.C. and must comply with dangerous waste tank system requirements for tanks as described in WAC-173-303-640.

[b] Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Table III.10.F.C – Containment Building Secondary Containment Systems Including Sumps and Floor Drains

Sump or Drain Line I.D.# & Room Location	Maximum Sump (gallons) or Drain Line (gallons per minute) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawing Nos., Specifications No.'s, etc.)
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Table III.10.F.D – Containment Building Leak Detection System Instrumentation and Parameters

Containment Building Locator and Name (including P&ID)	Type of Leak Detection Instrument	Location of Leak Detection Instrument (Tag No.)	Leak Detection Instrument Range	Expected Range	Fail States	Leak Detection Instrument Accuracy	Leak Detection Instrument Calibration Method No. and Range
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Locator (including P&ID designator) is located on Permit Table III.10.F.C – Containment Building Secondary Containment Systems Including Sumps and Floor Drains.

III.10.G PRETREATMENT PLANT MISCELLANEOUS UNIT SYSTEMS

Unless otherwise noted in Table III.10.G.A, for purposes of Permit Section III.10.G., where reference is made to WAC 173-303-640, the following substitutions apply: substitute the terms "Pretreatment Plant Miscellaneous Unit System(s)" for "tank system(s)," "miscellaneous unit(s)" for "tank(s)," "equipment" for "ancillary equipment," and "miscellaneous unit(s) or equipment of a Pretreatment Plant Miscellaneous Unit System" for "component(s)" in accordance with WAC 173-303-680. Miscellaneous unit systems, exempt from the WAC-173-303-640 requirements in Permit Section III.10.G are noted as exempt in Table III.10.G.A.

III.10.G.1 Waste and Storage Limits

III.10.G.1.a The Permittees may process, in the Pretreatment Plant Miscellaneous Unit Systems listed in Permit Table III.10.G.A, as approved/modified pursuant to Permit Condition III.10.G.10, all dangerous and mixed waste listed in the Part A Forms, Operating Unit Group 10, Addendum A of this Permit, and in accordance with in the WAP, Operating Unit Group 10, Addendum B of this Permit, as approved pursuant to Permit Condition III.10.C.3. Total Pretreatment Plant Miscellaneous Unit dangerous and mixed waste storage at the Facility will not exceed the limits specified in Permit Table III.10.G.A.

III.10.G.1.b The Permittees may process dangerous and mixed waste only in approved Pretreatment Plant Miscellaneous Unit Systems listed in Permit Table III.10.G.A in accordance with Permit Section III.10.G and in accordance with Operating Unit Group 10, Chapters 1.0 and 4.0 of this Permit, and Operating Unit Group 10, Appendices 8.1 through 8.15 of this Permit, as approved pursuant to Permit Conditions III.10.G.10.b. through e. The Permittees will limit the total volume of wastes to quantities specified for the individual miscellaneous units listed in Permit Table III.10.G.A.

III.10.G.1.c The Permittees will manage ignitable and reactive, and incompatible waste in accordance with WAC 173-303-395(1). Any Pretreatment Plant Miscellaneous Unit System specified in Permit Tables III.10.G.A and III.10.G.B in which ignitable, reactive or incompatible waste are managed will meet the requirements specified in WAC 173-303-640(9) and (10), in accordance to WAC 173-303-680.

III.10.G.1.d The Permittees will ensure all certifications required by specialists (e.g., independent, qualified, registered professional engineer; independent corrosion expert; independent, qualified installation inspector; etc.) use the following statement or equivalent pursuant to Permit Condition III.10.C.10:

"I, (Insert Name) have (choose one or more of the following: overseen, supervised, reviewed, and/or certified) a portion of the design or installation of a new miscellaneous unit system or component located at (address), and owned/operated by (name(s)). My duties were: (e.g., installation inspector, testing for tightness, etc.), for the following miscellaneous unit system components (e.g., the venting piping, etc.), as required by the Dangerous Waste Regulations, namely, WAC 173-303-640(3) (applicable paragraphs (i.e., (a) through (g)) in accordance with WAC 173-303-680).

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

III.10.G.1.e In all future narrative permit submittals, the Permittees will include miscellaneous unit system names with the unit designation (e.g., Waste Feed Evaporator Separator Vessels are designated V11002A and V11002B, respectively).

III.10.G.2 **Miscellaneous Unit Systems Design and Construction [WAC 173-303-640, in accordance with WAC 173-303-680(2) and WAC 173-303-340].**

III.10.G.2.a The Permittees will construct the Pretreatment Plant Miscellaneous Unit Systems identified in Permit Table III.10.G.A, as specified in Operating Unit Group 10, Appendices 8.1 through 8.14 of this Permit, as approved pursuant to Permit Conditions III.10.G.10.b., III.10.G.10.c., and III.10.G.10.d.

III.10.G.2.b The Permittees will construct secondary containment systems for the Pretreatment Plant Miscellaneous Unit Systems identified in Permit Tables III.10.G.A and III.10.G.B, as specified in Operating Unit Group 10, Appendices 8.2, 8.4 through 8.14 of this Permit, as approved pursuant to Permit Conditions III.10.G.10.b., III.10.G.10.c., and III.10.G.10.d.

III.10.G.2.c Modifications to approved design, plans, and specifications in Operating Unit Group 10 of this Permit for the Pretreatment Plant Miscellaneous Unit Systems will be allowed only in accordance with Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g., III.10.C.9.d., e., and h.

III.10.G.3 **Miscellaneous Unit System Installation and Certification [WAC 173-303-640, in accordance with WAC 173-303-680(2) and (3), and WAC 173-303-340].**

III.10.G.3.a The Permittees must ensure that proper handling procedures are adhered to in order to prevent damage to Pretreatment Plant Miscellaneous Unit Systems during installation. Prior to covering, enclosing, or placing a new Pretreatment Plant Miscellaneous Unit System(s) or component(s) in use, an independent, qualified, installation inspector or an independent, qualified, registered professional engineer, either of whom is trained and experienced in the proper installation of similar systems or components, must inspect the system for the presence of any of the following items:

III.10.G.3.a.i Weld breaks;

III.10.G.3.a.ii Punctures;

III.10.G.3.a.iii Scrapes of protective coatings;

III.10.G.3.a.iv Cracks;

III.10.G.3.a.v Corrosion;

III.10.G.3.a.vi Other structural damage or inadequate construction/installation;

III.10.G.3.a.vii All discrepancies must be remedied before the Pretreatment Plant Miscellaneous Unit Systems are covered, enclosed, or placed in use [WAC 173-303-640(3)(c) in accordance with WAC 173-303-680(2) and (3)].

III.10.G.3.b For Pretreatment Plant Miscellaneous Unit Systems or components that are placed underground and that are back-filled, the Permittees must provide a backfill material that is a non-corrosive, porous, homogeneous substance. The backfill must be installed so that it is placed completely around the miscellaneous unit and compacted to ensure that the miscellaneous unit and piping are fully and uniformly supported [WAC 173-303-640(3)(d), in accordance with WAC 173-303-680(2) and (3)].

III.10.G.3.c The Permittees must test for tightness all new Pretreatment Plant miscellaneous units and equipment, prior to being covered, enclosed, or placed into use. If the Pretreatment Plant Miscellaneous Unit Systems are found not to be tight, all repairs necessary to remedy the

leak(s) in the system must be performed prior to the Pretreatment Plant Miscellaneous Units Systems being covered, enclosed, or placed in use [WAC 173-303-640(3)(e), in accordance with WAC 173-303-680(2) and (3)].

III.10.G.3.d The Permittees must ensure Pretreatment Plant Miscellaneous Unit Systems equipment is supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction [WAC 173-303-640(3)(f), in accordance with WAC 173-303-680(2) and (3)].

III.10.G.3.e The Permittees must provide the type and degree of corrosion protection recommended by an independent corrosion expert, based on the information provided in Operating Unit Group 10, Appendices 8.9 and 8.11 as approved pursuant to Permit Conditions III.10.G.10.b.i., III.10.G.10.b.iv., III.10.G.10.b.v., III.10.G.10.c.i., III.10.G.10.c.iv., III.10.G.10.c.v., and III.10.G.10.d.i., III.10.G.10.d.iv. III.10.G.10.d.v., or other corrosion protection if Ecology believes other corrosion protection is necessary to ensure the integrity of the Pretreatment Plant Miscellaneous Unit Systems during use of the Pretreatment Plant Miscellaneous Unit Systems. The installation of a corrosion protection system that is field fabricated must be supervised by an independent corrosion expert to ensure proper installation [WAC 173-303-640(3)(g), in accordance with WAC 173-303-680(2) and (3)].

III.10.G.3.f Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will obtain, and keep on file in the WTP Unit operating record, written statements by those persons required to certify the design of the Pretreatment Plant Miscellaneous Unit Systems and supervise the installation of the Pretreatment Plant Miscellaneous Unit Systems, as specified in WAC 173-303-640(3)(b), (c), (d), (e), (f), and (g), in accordance with WAC 173-303-680, attesting that each Pretreatment Plant Miscellaneous Unit System and corresponding containment system listed in Permit Tables III.10.G.A and III.10.G.B, as approved/modified pursuant to Permit Condition III.10.G.10., were properly designed and installed, and that repairs, in accordance with WAC 173-303-640(3)(c) and (e), were performed [WAC 173-303-640(3)(a), WAC 173-303-640(3)(h), in accordance with WAC 173-303-680(3)].

III.10.G.3.g The independent Pretreatment Plant Miscellaneous Unit System installation inspection and subsequent written statements will be certified in accordance with WAC 173-303-810(13)(a) as modified pursuant to Permit Condition III.10.G.1.d., comply with all requirements of WAC 173-303-640(3)(h), in accordance with WAC 173-303-680, and will consider, but not be limited to, the following miscellaneous unit system installation documentation:

III.10.G.3.g.i Field installation report with date of installation;

III.10.G.3.g.ii Approved welding procedures;

III.10.G.3.g.iii Welder qualifications and certification;

III.10.G.3.g.iv Hydro-test reports, as applicable, in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII, Division 1, American Petroleum Institute (API) Standard 620, or Standard 650 as applicable;

III.10.G.3.g.v Tester credentials;

III.10.G.3.g.vi Field inspector credentials;

III.10.G.3.g.vii Field inspector reports;

III.10.G.3.g.viii Field waiver reports; and

III.10.G.3.g.ix Non-compliance reports and corrective action (including field waiver reports) and repair reports.

III.10.G.4 Integrity Assessments [WAC 173-303-340 and WAC 173-303-640, in accordance with WAC 173-303-680(2) and (3)].

III.10.G.4.a The Permittees will ensure periodic integrity assessments are conducted on the Pretreatment Plant Miscellaneous Unit Systems listed in Permit Table III.10.G.A, as approved/modified pursuant to Permit Condition III.10.G.10., over the term of this Permit in accordance with WAC173-303-680(2) and (3) as specified in WAC 173-303-640(3)(b), following the description of the integrity assessment program and schedule in Operating Unit Group 10, Addendum E of this Permit, as approved pursuant to Permit Conditions III.10.G.10.e.i. and III.10.C.5.c. Results of the integrity assessments will be included in the WTP Unit operating record until ten (10) years after post-closure, or corrective action is complete and certified, whichever is later.

III.10.G.4.b The Permittees will address problems detected during Pretreatment Plant Miscellaneous Unit Systems integrity assessments specified in Permit Condition III.10.G.4.a. following the integrity assessment program in Operating Unit Group 10, Addendum E of this Permit, as approved pursuant to Permit Conditions III.10.G.10.e.i. and III.10.C.5.c.

III.10.G.4.c The Permittees must immediately and safely remove from service any Pretreatment Plant Miscellaneous Unit System or secondary containment system which through an integrity assessment is found to be "unfit for use" as defined in WAC 173-303-040, following Permit Condition III.10.G.5.j.i. through iv., and vi. The affected Pretreatment Plant Miscellaneous Unit or secondary containment system must be either repaired or closed in accordance with Permit Condition III.10.G.5.j.v. [WAC 173-303-640(7)(e) and (f) and WAC 173-303-640(8), in accordance with WAC 173-303-680(3)].

III.10.G.5 Miscellaneous Unit Management Practices

III.10.G.5.a No dangerous and/or mixed waste will be managed in the Pretreatment Plant Miscellaneous Unit Systems unless the operating conditions, specified under Permit Condition III.10.G.5, are complied with.

III.10.G.5.b The Permittees will install and test all process and leak detection system monitoring/instrumentation, as specified in Permit Table III.10.G.C, as approved/modified pursuant to Permit Condition III.10.G.10, in accordance with Operating Unit Group 10, Appendices 8.1, 8.2, and 8.14 of this Permit, as approved pursuant to Permit Condition III.10.G.10.d.x.

III.10.G.5.c The Permittees will not place dangerous and/or mixed waste, treatment reagents, or other materials in the Pretreatment Plant Miscellaneous Unit Systems if these substances could cause the systems to rupture, leak, corrode, or otherwise fail [WAC 173-303-640(5)(a), in accordance with WAC 173-303-680(2)].

III.10.G.5.d The Permittees will operate the Pretreatment Plant Miscellaneous Unit Systems to prevent spills and overflows using the description of controls and practices, as required under WAC 173-303-640(5)(b), described in Permit Condition III.10.C.5, and Operating Unit Group 10, Appendix 8.15 of this Permit, as approved pursuant to Permit Condition

III.10.G.10.e.iv. [WAC 173-303-640(5)(b), in accordance with WAC 173-303-680(2) and (3) and WAC 173-303-806(4)(c)(ix)].

III.10.G.5.e For routinely non-accessible Pretreatment Plant Miscellaneous Unit Systems, as specified in Operating Unit Group 10, Addendum C of this Permit, as updated pursuant to Permit Condition III.10.G.10.e.vi., the Permittees will mark all routinely non-accessible Pretreatment Plant Miscellaneous Unit System access points with labels or signs to identify the waste contained in the units. The label, or sign, must be legible at a distance of at least fifty (50) feet and must bear a legend which identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the miscellaneous unit system(s). For the purposes of this Permit condition, "routinely non-accessible" means personnel are unable to enter these areas while waste is being managed in them [WAC 173-303-640(5)(d), in accordance with WAC 173-303-680(2)].

III.10.G.5.f For all Pretreatment Plant Miscellaneous Unit Systems not addressed in Permit Condition III.10.G.5.e, the Permittees will mark all these miscellaneous unit systems holding dangerous and/or mixed waste with labels or signs to identify the waste contained in the unit. The labels, or sign, must be legible at a distance of at least fifty (50) feet, and must bear a legend which identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the miscellaneous unit system(s) [WAC 173-303-640(5)(d), in accordance with WAC 173-303-680(2)].

III.10.G.5.g. The Permittees will ensure that the secondary containment systems for Pretreatment Plant Miscellaneous Unit Systems listed in Permit Tables III.10.G.A and III.10.G.B, as approved/modified pursuant to Permit Condition III.10.G.10, are free of cracks or gaps to prevent any migration of dangerous and/or mixed waste or accumulated liquid out of the system to the soil, ground water, or surface water at any time waste is in the Pretreatment Plant Miscellaneous Units System. Any indication that a crack or gap may exist in the containment systems will be investigated and repaired in accordance with Operating Unit Group 10, Appendix 8.15 of this Permit, as approved pursuant to Permit Condition III.10.G.10.e.v. [WAC 173-303–640(4)(b)(i), WAC 173-303–640(4)(e)(i)(C), and WAC 173-303-640(6) in accordance with WAC 173-303-680(2) and (3), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-320].

III.10.G.5.i. An impermeable coating, as specified in Operating Unit Group 10, Appendices 8.4, 8.5,8.7, 8.9, 8.11, and 8.12 of this Permit, as approved pursuant to Permit Condition III.10.G.10.b.v. of this Permit, will be maintained for all concrete containment systems and concrete portions of containment systems for each Pretreatment Plant Miscellaneous Unit System listed in Permit Tables III.10.G.A and III.10.G.B, as approved/modified pursuant to Permit Condition III.10.G.10 [concrete containment systems that do not have a liner pursuant to WAC-173-303-640(4)(e)(i), in accordance with WAC 173-303-680(2), and have construction joints, will meet the requirements of WAC 173-303-640(4)(e)(ii)(C), in accordance with WAC 173-303-680(2)]. The coating will prevent migration of any dangerous and mixed waste into the concrete. All coatings will meet the following performance standards:

III.10.G.5.i.i. The coating must seal the containment surface such that no cracks, seams, or other avenues through which liquid could migrate are present;

III.10.G.5.i.ii. The coating must be of adequate thickness and strength to withstand the normal operation of equipment and personnel within the given area such that degradation or physical

damage to the coating or lining can be identified and remedied before dangerous and mixed waste could migrate from the system; and

III.10.G.5.i.iii. The coating must be compatible with the dangerous and mixed waste, treatment reagents, or other materials managed in the containment system [WAC 173-303-640(4)(e)(ii)(D), in accordance with WAC 173-303-680(2) and (3) and WAC 173-303-806(4)(i)(i)(A)].

III.10.G.5.j. The Permittees will inspect all secondary containment systems for the Pretreatment Plant Miscellaneous Unit Systems listed in Permit Tables III.10.G.A and III.10.G.B., as approved/modified pursuant to Permit Condition III.10.G.10., in accordance with the Inspection Schedule specified in Operating Unit Group 10, Addendum E1 of this Permit, as approved pursuant to Permit Conditions III.10.G.10.e.i. and III.10.C.5.c., and take the following actions if a leak or spill of dangerous and/or mixed waste is detected in these containment systems [WAC 173-303-640(5)(c) and WAC 173-303-640(6), in accordance with WAC 173-303-680(2) and (3), WAC 173-303-320, and WAC 173-303-806(4)(i)(i)(B)]:

III.10.G.5.j.i. Immediately and safely stop the flow of dangerous and/or mixed waste into the miscellaneous unit system or secondary containment system;

III.10.G.5.j.ii. Determine the source of the dangerous and/or mixed waste;

III.10.G.5.j.iii. Remove the waste from the containment area in accordance with WAC 173-303-680(2) and (3), as specified in WAC 173-303-640(7)(b). The dangerous and/or mixed waste removed from containment areas of miscellaneous unit systems will be, as a minimum, managed as dangerous and/or mixed waste;

III.10.G.5.j.iv. If the cause of the release was a spill that has not damaged the integrity of the miscellaneous unit system, the Permittees may return the miscellaneous unit system to service in accordance with WAC 173-303-680(2) and (3), as specified in WAC 173-303-640(7)(e)(ii). In such a case, the Permittees will take action to ensure the incident that caused liquid to enter the containment system will not reoccur [WAC 173-303-320(3)];

III.10.G.5.j.v. If the source of the dangerous and/or mixed waste is determined to be a leak from the primary Pretreatment Plant Miscellaneous Unit System into the secondary containment system, or the system is unfit for use as determined through an integrity assessment or other inspection, the Permittees must comply with the requirements of WAC 173-303-640(7), and take the following actions:

A Close the miscellaneous unit following procedures in WAC 173-303-640(7)(e)(i) and in accordance with WAC 173-303-680, and Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8; or

B. Repair and re-certify (in accordance with WAC 173-303-810(13)(a), as modified pursuant to Permit Condition III.10.G.1.d.) the Pretreatment Plant Miscellaneous Unit System in accordance with Operating Unit Group 10, Appendix 8.15 of this Permit, as approved pursuant to Permit Condition III.10.G.10.e.v. before the Pretreatment Plant Miscellaneous Unit System is placed back into service [WAC 173-303-640(7)(e)(iii) and WAC 173-303-640(7)(f), in accordance with WAC 173-303-680].

III.10.G.5.j.vi. The Permittees will document, in the operating record, actions/procedures taken to comply with i. through v. above, as specified in WAC 173-303-640(6)(d) and in accordance with WAC 173-303-680(2) and (3).

III.10.G.5.j.vii. In accordance with WAC 173-303-680(2) and (3), the Permittees will notify and report releases to the environment to Ecology as specified in WAC 173-303-640(7)(d).

III.10.G.5.k. If liquids (e.g., Dangerous and/or mixed waste leaks and spills, precipitation, fire water, liquids from damaged or broken pipes) cannot be removed from the secondary containment system within twenty-four (24) hours, Ecology will be verbally notified within twenty-four (24) hours of discovery. The notification will provide the information in A., B., and C. listed below. The Permittees will provide Ecology with a written demonstration, within seven (7) business days, identifying at a minimum [WAC 173-303-640(4)(c)(iv) and WAC 173-303-640(7)(b)(ii), in accordance with WAC 173-303-680(3) and WAC 173-303-806(4)(i)(i)(B)]:

A. Reasons for delayed removal.

B. Measures implemented to ensure continued protection of human health and the environment.

C. Current actions being taken to remove liquids from secondary containment.

III.10.G.5.l. The Permittees will operate the Pretreatment Plant Miscellaneous Unit Systems in accordance with Operating Unit Group 10, Addendum C as updated pursuant to Permit Condition III.10.G.10.e.vi. and Appendix 8.15 of this Permit, as approved pursuant to Permit Condition III.10.G.10.e., and the following:

III.10.G.5.l.i. The Permittees will operate the Pretreatment Plant Miscellaneous Unit Systems in order to maintain the systems and process parameters listed in Permit Table III.10.G.C. as approved/modified pursuant to Permit Condition III. 10.G.10., within the operating trips and operating ranges specified in Permit Table III.10.G.C., and consistent with assumptions and basis which are reflected in Operating Unit Group 10, Appendix 6.3.1, as approved pursuant to Permit Condition III.10.C.11.b. [WAC 173-303-815(2)(b)(ii) and WAC 173-303-680(2) and (3)]. For the purposes of this Permit Condition, Operating Unit Group 10, Appendix 6.3.1. will be superseded by Appendix 6.4.1. upon its approval pursuant to either Permit Conditions III.10.C.11.c. or III.10.C.11.d.

III.10.G.5.l.ii. The Permittees will calibrate/function test the instruments listed in Permit Table III.10.G.C., in accordance with Operating Unit Group 10, Appendix 8.15, as approved pursuant to Permit Condition III.10.G.10.e.xii.

III.10.G.5.m. For any portion of the Pretreatment Plant Miscellaneous Unit Systems which have the potential for formation and accumulation of hydrogen gases, the Permittees will operate the portion to maintain hydrogen levels below the lower explosive limit [WAC 173-303-815(2)(b)(ii)].

III.10.G.5.n. For each miscellaneous unit holding dangerous waste which are acutely or chronically toxic by inhalation, the Permittees will operate the system to prevent escape of vapors, fumes, or other emissions into the air [WAC 173-303-806(4)(i)(i)(B) and WAC 173-303-640(5)(e), in accordance with WAC 173-303-680].

III.10.G.6 Air Emissions

III.10.G.6.a Treatment effectiveness, feed-rates, and operating rates for dangerous and mixed waste systems and sub-systems contained in the Pretreatment Plant (as specified in Permit Tables III.10.E.A, III.10.F.A, and III.10.G.A, as approved/modified pursuant to Permit Conditions III.10.E.9., III.10.F.5., III.10.G.10., respectively) will be as specified in Permit Sections III.10.E, III.10.F, and III.10.G, and consistent with the assumptions and basis reflected in Operating Unit Group 10, Appendix 6.3.1 of this Permit, as approved

pursuant to Permit Condition III.10.C.11.b. For the purposes of this permit condition, Operating Unit Group 10, Appendix 6.3.1 will be superseded by Appendix 6.4.1, upon its approval, pursuant to either Permit Condition III.10.C.11.c. or III.10.C.11.d. [WAC 173-303-680(2) and (3), and WAC 173-303-815(2)(b)(ii)].

III.10.G.6.b Compliance with Permit Condition III.10.G.6.a. of this Permit will be regarded as operating within the emission limits specified in Permit Table III.10.G.D., as approved pursuant to Permit Conditions III.10.C.11.b., III.10.C.11.c., or III.10.C.11.d. of this Permit.

III.10.G.6.c All air pollution control devices and capture systems in the Pretreatment Plant Miscellaneous Unit Systems will be maintained and operated at all times in a manner so as to minimize the emissions of air contaminants and to minimize process upsets. Procedures for ensuring that the above equipment is properly operated and maintained so as to minimize the emission of air contaminants and process upsets will be established.

III.10.G.6.d The Permittees will ensure that for all dangerous and/or mixed waste areas, systems, and units contained in the Pretreatment Plant (as specified in Permit Tables III.10.E.A, III.10.F.A, and III.10.G.A, as approved pursuant to Permit Conditions III.10.E.9.e.xii., III.10.F.7.d.iv., and III.10.G.10.e.ix., respectively), the Pretreatment Vessel Vent Process System specified in Permit Table III.10.G.A.i will be in operation prior to waste being introduced into these dangerous and/or mixed waste areas, systems, and units contained in the Pretreatment Building. At any time the Pretreatment Vessel Vent Process System ceases to operate or produces insufficient vacuum to recover emissions from the areas, systems, or units, the Permittees will not commence new treatment activities within the dangerous and mixed waste areas, systems, or units contained in the Pretreatment Building, and take measures to minimize evolution of emissions from on-going treatment, and will not receive new dangerous and/or mixed waste shipments into the Pretreatment Building. The Permittees will not re-commence new treatment activities until the Pretreatment Vessel Vent Process System is operational and producing sufficient vacuum to recover emissions.

III.10.G.7 Inspections [WAC 173-303-680(3)]

III.10.G.7.a The Permittees will inspect the Pretreatment Plant Miscellaneous Unit Systems in accordance with the Inspection Schedules in Operating Unit Group 10, Addendum E1 of this Permit, as modified in accordance with Permit Condition III.10.C.5.c.

III.10.G.7.b The inspection data for Pretreatment Plant Miscellaneous Unit Systems will be recorded, and the records will be placed in the WTP Unit operating record for the Pretreatment Plant Miscellaneous Unit Systems, in accordance with Permit Condition III.10.C.4.

III.10.G.8 Recordkeeping

The Permittees will record and maintain in the WTP Unit operating record for the Pretreatment Plant Miscellaneous Unit Systems, all monitoring, calibration, maintenance, test data, and inspection data compiled under the conditions of this Permit, in accordance with Permit Conditions III.10.C.4 and III.10.C.5.

III.10.G.9 Closure

The Permittees will close the Pretreatment Plant Miscellaneous Unit Systems in accordance with Operating Unit Group 10, Addendum H, as approved pursuant to Permit Condition III.10.C.8.

III.10.G.10 Compliance Schedule

III.10.G.10.a All information identified for submittal to Ecology in a. through e. of this compliance schedule must be signed and certified in accordance with requirements in WAC 173-303-810(12), as modified in accordance with Permit Condition III.10.G.1.d. [WAC 173-303-806(4)].

III.10.G.10.b The Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., prior to construction of each secondary containment and leak detection system for the Pretreatment Plant Miscellaneous Unit Systems (per level) as identified in Permit Tables III.10.G.A and III.10.G.B, engineering information as specified below, for incorporation into Operating Unit Group 10, Appendices 8.2, 8.4, 8.5, 8.7, 8.8, 8.9, 8.11, and 8.12 of this Permit. At a minimum, engineering information specified below will show the following as described in WAC 173-303-640, in accordance with WAC 173-303-680 (the information specified below will include dimensioned engineering drawings and information on sumps and floor drains):

III.10.G.10.b.i IQRPE Reports (specific to foundation, secondary containment, and leak detection system) will include review of design drawings, calculations, and other information on which the certification report is based and will include as applicable, but not limited to, review of such information described below. Information (drawings, specifications, etc.) already included in Operating Unit Group 10, Appendix 8.0 of this Permit may be included in the report by reference and should include drawing and document numbers. IQRPE Reports will be consistent with the information separately provided in ii. through ix. below [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)];

III.10.G.10.b.ii Design drawings (General Arrangement Drawings, in plan) and specifications for the foundation, secondary containment, including, liner installation details, and leak detection methodology [Note: leak detection systems for areas where daily, direct, or remote visual inspection is not feasible, will be continuous in accordance with WAC 173-303-640(4)(e)(iii)(C)]. These items should show the dimensions, volume calculations, and location of the secondary containment system, and should include items such as floor/pipe slopes to sumps, tanks, floor drains [WAC 173-303-640(4)(b) through (f) and WAC 173-303-640(3)(a), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)];

III.10.G.10.b.iii The Permittees will provide the design criteria (references to codes and standards, load definitions, and load combinations, materials of construction, and analysis/design methodology) and typical design details for the support of the secondary containment system. This information will demonstrate the foundation will be capable of providing support to the secondary containment system, resistance to pressure gradients above and below the system, and capable of preventing failure due to settlement, compression, or uplift [WAC 173-303-640(4)(c)(ii), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(B)];

III.10.G.10.b.iv A description of materials and equipment used to provide corrosion protection for external metal components in contact with soil, including factors affecting the

potential for corrosion [WAC 173-303-640(3)(a)(iii)(B), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.G.10.b.v Secondary containment/foundation and leak detection systems materials selection documentation (including, but not limited to, concrete coatings and water stops, and liner materials), as applicable [WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.G.10.b.vi Detailed description of how the secondary containment for each miscellaneous unit system will be installed in compliance with WAC 173-303-640(3)(c), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(A) through (B);

III.10.G.10.b.vii Submit Permit Table III.10.G.B. completed to provide for all secondary containment sumps and floor drains, the information as specified in each column heading, consistent with information to be provided in i. through vi. above;

III.10.G.10.b.viii Documentation that secondary containment and leak detection systems will not accumulate hydrogen gas levels above the lower explosive limit for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A), and WAC 173-303-806(4)(i)(v)];

III.10.G.10.b.ix A detailed description of how miscellaneous unit design provides access for conducting future miscellaneous unit integrity assessments [WAC 173-303-640(3)(b) and WAC 173-303-806(4)(i)(i)(B)].

III.10.G.10.c The Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., prior to installation of each Pretreatment Plant Miscellaneous Unit System as identified in Permit Tables III.10.G.A and III.10.G.B, engineering information as specified below, for incorporation into Operating Unit Group 10, Appendix 8.1 through 8.14 of this Permit. At a minimum, engineering information specified below will show the following as required pursuant to WAC 173-303-640 and in accordance with WAC 173-303-680 (the information specified below will include dimensioned engineering drawings):

III.10.G.10.c.i IQRPE Reports (specific to miscellaneous unit) will include review of design drawings, calculations, and other information on which the certification report is based and will include as applicable, but not limited to, review of such information described below. Information (drawings, specifications, etc.) already included in Operating Unit Group 10, Appendix 8.0 of this Permit may be included in the report by reference and should include drawing and document numbers. The IQRPE Reports will be consistent with the information separately provided in ii. through xi. below and the IQRPE Report specified in Permit Condition III.10.G.10.b.i. [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)];

III.10.G.10.c.ii Design drawings (General Arrangement Drawings in plan , Process Flow Diagrams, Piping and Instrumentation Diagrams [including pressure control systems], and Mechanical Drawings) and specifications, and other information specific to miscellaneous units (to show location and physical attributes of each miscellaneous unit), [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)];

III.10.G.10.c.iii Miscellaneous unit design criteria (references to codes and standards, load definitions, and load combinations, materials of construction, and analysis/design methodology) and typical design details for the support of the miscellaneous unit(s). Structural support calculations specific to off-specification, non-standard, and field fabricated miscellaneous units will be submitted for incorporation into the Administrative

Record [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(B)];

III.10.G.10.c.iv A description of materials and equipment used to provide corrosion protection for external metal components in contact with water, including factors affecting the potential for corrosion [WAC 173-303-640(3)(a)(iii)(B), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.G.10.c.v Miscellaneous unit materials selection documentation (e.g., physical and chemical tolerances) [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A)];

III.10.G.10.c.vi Miscellaneous unit vendor information (including, but not limited to, required performance warranties, as available), consistent with information submitted under ii. above, will be submitted for incorporation into the Administrative Record [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(v)];

III.10.G.10.c.vii System Description related to miscellaneous units will be submitted for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(v)].

III.10.G.10.c.viii Mass and energy balance for normal projected operating conditions used in developing the Piping and Instrumentation Diagrams and the Process Flow Diagrams, including assumptions and formulas used to complete the mass and energy balance, so that they can be independently verified for incorporation into the Administrative Record [WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)];

III.10.G.10.c.ix A detailed description of how the miscellaneous unit will be installed in compliance with WAC 173-303-640(3)(c), (d), and (e), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B);

III.10.G.10.c.x Documentation that miscellaneous units are designed to prevent the accumulation of hydrogen gas levels above the lower explosive limit for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A), and WAC 173-303-806(4)(i)(v)];

III.10.G.10.c.xi Documentation that miscellaneous units are designed to prevent escape of vapors and emissions of acutely or chronically toxic (upon inhalation) EHW, for incorporation into the Administrative Record [WAC 173-303-640(5)(e), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(B)];

III.10.G.10.d The Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., prior to installation of equipment as identified in Permit Tables III.10.G.A and III.10.G.B, not addressed in Permit Condition III.10.G.10.c., engineering information as specified below for incorporation into Operating Unit Group 10, Appendices 8.1through 8.14 of this Permit. At a minimum, engineering information specified below will show the following as required pursuant to WAC 173-303-640, in accordance with WAC 173-303-680 (the information specified below will include dimensioned engineering drawings):

III.10.G.10.d.i IQRPE Reports (specific to equipment) will include a review of design drawings, calculations, and other information as applicable, on which the certification report is based. The reports will include, but not be limited to, review of such information described below. Information (drawings, specifications, etc.) already included in Operating Unit Group 10, Appendix 8.0 of this Permit may be included in the report by reference and should include drawing and document numbers. The IQRPE Reports will

be consistent with the information provided separately in ii. through xiii. below and the IQRPE Reports specified in Permit Conditions III.10.G.10.b. and III.10.G.10.c. [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.G.10.d.ii Design drawings (Process Flow Diagrams, Piping and Instrumentation Diagrams [including pressure control systems]) specifications and other information specific to equipment (these drawings should include all equipment such as pipe, valves, fittings, pumps, instruments, etc.) [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.G.10.d.iii The Permittees will provide the design criteria (references to codes and standards, load definitions, and load combinations, materials of construction, and analysis/design methodology) and typical design details for the support of the equipment [WAC 173-303-640(3)(a) and WAC 173-303-640(3)(f), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B)];

III.10.G.10.d.iv A description of materials and equipment used to provide corrosion protection for external metal components in contact with soil and water, including factors affecting the potential for corrosion [WAC 173-303-640(3)(a)(iii)(B), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A)];

III.10.G.10.d.v Materials selection documentation for equipment (e.g., physical and chemical tolerances) [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A)];

III.10.G.10.d.vi Vendor information (including, but not limited to, required performance warranties, as available), consistent with information submitted under ii. above, for equipment will be submitted for incorporation into the Administrative Record [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(iv)];

III.10.G.10.d.vii Miscellaneous unit, equipment, and leak detection system instrument control logic narrative description (e.g., descriptions of fail-safe conditions, etc.) [WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)].

III.10.G.10.d.viii System Descriptions related to equipment and system descriptions related to leak detection systems, for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(v)];

III.10.G.10.d.ix A detailed description of how the equipment will be installed and tested [WAC 173-303-640(3)(c) through (e) and WAC 173-303-640(4)(b) and (c), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B)];

III.10.G.10.d.x For process monitoring, control, and leak detection system instrumentation for the WTP Unit Miscellaneous Unit Systems as identified in Permit Table III.10.G.C, a detailed description of how the process monitoring, control, and leak detection system instrumentation will be installed and tested [WAC 173-303-640(3)(c) through (e), WAC 173-303-640(4)(b) and (c), WAC 173-303-806(4)(c)(vi), and WAC 173-303-806(4)(i)(i)(B)];

III.10.G.10.d.xi Mass and energy balance for projected normal operating conditions, used in developing the Piping and Instrumentation Diagrams and Process Flow Diagrams, including assumptions and formulas used to complete the mass and energy balance, so

that they can be independently verified, for incorporation into the Administrative Record [WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)];

III.10.G.10.d.xii Documentation that miscellaneous units are designed to prevent the accumulation of hydrogen gas levels above the lower explosive limit for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A), and WAC 173-303-806(4)(i)(v)].

III.10.G.10.d.xiii Leak detection system documentation (e.g. vendor information, etc.) consistent with information submitted under Permit Condition III.10.G.10.c.ii. and Permit Conditions III.10.G.10.d.ii., vii., viii., and x. above, will be submitted for incorporation into the Administrative Record.

III.10.G.10.e Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., the following as specified below for incorporation into Operating Unit Group 10, Appendix 8.15, except Permit Condition III.10.G.10.e.i., which will be incorporated into Operating Unit Group 10, Addendum E, of this Permit. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions III.10.G.10.b., c., d., and e., III.10.C.3.e., and III.10.C.11.b., as approved by Ecology.

III.10.G.10.e.i Integrity assessment program and schedule for the Pretreatment Plant Miscellaneous Unit Systems will address the conducting of periodic integrity assessments on the Pretreatment Plant Miscellaneous Unit Systems over the life of the systems, as specified in Permit Condition III.10.G.10.b.ix. and WAC 173-303-640(3)(b), in accordance with WAC 173-303-680, and descriptions of procedures for addressing problems detected during integrity assessments. The schedule must be based on past integrity assessments, age of the system, materials of construction, characteristics of the waste, and any other relevant factors [WAC 173-303-640(3)(b), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B)];

III.10.G.10.e.ii Detailed plans and descriptions, demonstrating the leak detection system is operated so that it will detect the failure of either the primary or secondary containment structure or the presence of any release of dangerous and/or mixed waste or accumulated liquid in the secondary containment system within twenty-four (24) hours WAC 173-303-640(4)(c)(iii). Detection of a leak of at least 0.1 gallons per hour within twenty-four (24) hours is defined as being able to detect a leak within twenty-four (24) hours. Any exceptions to this criteria must be approved by Ecology in accordance with WAC 173-303-680, WAC 173-303-640(4)(c)(iii), and WAC 173-303-806(4)(i)(i)(B)];

III.10.G.10.e.iii Detailed operational plans and descriptions, demonstrating that spilled or leaked waste and accumulated liquids can be removed from the secondary containment system within twenty-four (24) hours [WAC 173-303-806(4)(i)(i)(B)];

III.10.G.10.e.iv Descriptions of operational procedures demonstrating appropriate controls and practices are in place to prevent spills and overflows from the Pretreatment Plant Miscellaneous Unit Systems, or containment systems, in compliance with WAC 173-303-640(5)(b)(i) through (iii), in accordance with WAC 173-303-680 [WAC 173-303-806(4)(i)(i)(B)];

III.10.G.10.e.v Description of procedures for investigation and repair of the Pretreatment Plant Miscellaneous Unit Systems [WAC 173-303–640(6) and WAC 173-303-640(7)(e) and

(f), in accordance with WAC 173-303-680, WAC 173-303-320, WAC 173-303-806(4)(a)(v), and WAC 173-303-806(4)(i)(i)(B)];

III.10.G.10.e.vi Updated Addendum C, Narrative Descriptions, Tables and Figures as identified in Permit Tables III.10.G.A and III.10.G.B., as modified pursuant to Permit Condition III.10.G.10.e.ix., and updated to identify routinely non-accessible Pretreatment Plant Miscellaneous Unit Systems [WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.G.10.e.vii Descriptions of procedures for management of ignitable and reactive, and incompatible dangerous and/or mixed waste, in accordance with WAC 173-303-640(9) and (10), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B).

III.10.G.10.e.viii A description of the tracking system used to track dangerous and/or mixed waste generated throughout the Pretreatment Plant Miscellaneous Unit Systems, pursuant to WAC 173-303-380.

III.10.G.10.e.ix Permit Table III.10.G.A, amended as follows [WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(A) through (B)]:

A. Under column 1, update and complete list of dangerous and mixed waste Pretreatment Plant Miscellaneous Unit Systems, including plant items which comprise each system (listed by item number).

B. Under column 2, update and complete system designations.

C. Under column 3, replace the 'Reserved' with the Operating Unit Group 10, Appendix 8.0 subsections specific to miscellaneous unit systems as listed in column 1.

D. Under column 4, update and complete list of narrative description tables and figures.

E. Under column 5, update and complete maximum operating volume for each miscellaneous unit, as applicable.

F. Permit Table III.10.G.A.i., amended as follows:

1. Under column 1, update and complete list of plant items that comprise the Pretreatment Plant Vessel Vent System (listed by item number).

2. Under column 2, update and complete designations.

3. Under column 3, replace the 'Reserved' with the Operating Unit Group 10, Appendix 8.0, subsections (e.g., 9.1, 9.2, etc.) specific to systems as listed in column 1.

4. Under column 4, update and complete list of narrative description tables and figures.

III.10.G.10.e.x Permit Table III.10.G.C. will be completed for Pretreatment Plant Miscellaneous Unit System process and leak detection system monitors and instruments (to include, but not be limited to: instruments and monitors measuring and/or controlling flow, pressure, temperature, density, pH, level, humidity, and emissions) to provide the information as specified in each column heading. Process and leak detection system monitors and instruments for critical systems as specified in Operating Unit Group 10, Appendix 2.0 and as updated pursuant to Permit Condition III.10.C.9.b.and for operating parameters as required to comply with Permit Condition III.10.C.3.e.iii. will be addressed. Process monitors and instruments for non-waste management operations (e.g., utilities, raw chemical storage, non-contact cooling waters, etc.) are excluded from this permit

condition [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(v)];

III.10.G.10.e.xi Supporting documentation for operating trips and expected operating range as specified in Permit Table III.10.G.C., as approved pursuant to Permit Condition III.10.G.10.e.x. [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(B), WAC 173-303-806(4)(i)(iv), and WAC 173-303-806(4)(i)(v)];

III.10.G.10.e.xii Documentation of process and leak detection instruments and monitors (as listed in Permit Table III.10.G.C.) for the Pretreatment Plant Miscellaneous Unit Systems to include, but not be limited to, the following [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)]:

A. Procurement Specifications.

B. Location used.

C. Range, precision, and accuracy.

D. Detailed descriptions of calibration/functionality test procedures (e.g., method number [ASTM]) or provide a copy of manufacturer's recommended calibration procedures.

E. Calibration/functionality test, inspection, and routine maintenance schedules and checklists, including justification for calibration, inspection and maintenance frequencies, criteria for identifying instruments found to be significantly out of calibration, and corrective action to be taken for instruments found to be significantly out of calibration (e.g., increasing frequency of calibration, instrument replacement, etc.).

F. Equipment instrument control logic narrative description (e.g., descriptions of fail-safe conditions, etc.) [WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)].

Table III.10.G.A – Pretreatment Plant Miscellaneous Unit Systems

Miscellaneous Unit System Description[a]	Miscellaneous Unit System Designation	Description Drawings	Narrative Description, Tables, & Figures	Maximum Capacity (gallons)
Waste Feed Evaporation Process System FEP-SEP-00001A (Waste Feed Evaporator Separator Vessel) FEP-SEP-00001B (Waste Feed Evaporator Separator Vessel)	FEP	**24590-PTF** -3PS-MEVV-T0001, Rev 2 -M5-V17T-00004001, Rev 3 -M5-V17T-00004002, Rev 3 -M6-FEP-00001001, Rev 1 -M6-FEP-00001002, Rev 0 -M6-FEP-00001003, Rev 0 -M6-FEP-00002001, Rev 0 -M6-FEP-00002002, Rev 1 -M6-FEP-00002003, Rev 0 -M6-FEP-00003001, Rev 0 -M6-FEP-00003002, Rev 0 -M6-FEP-00004001, Rev 0 -M6-FEP-00004002, Rev 1 -M6-FEP-00004003, Rev 0 -M6-FEP-00005001, Rev 0 -MVD-FEP-P0001, Rev 2 -MVD-FEP-P0002, Rev 2 -MVD-FEP-P0003, Rev 1 -MVD-FEP-00006, Rev 5 -MVD-FEP-00007, Rev 5 -MV-FEP-P0001, Rev 0 -MV-FEP-P0002, Rev 0 -N1D-FEP-00002, Rev 6	Section 4.1.2.2.; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	FEP-SEP-00001A = 14,512 FEP-SEP-00001B = 14, 512

Table III.10.G.A – Pretreatment Plant Miscellaneous Unit Systems

Miscellaneous Unit System Description[a]	Miscellaneous Unit System Designation	Description Drawings	Narrative Description, Tables, & Figures	Maximum Capacity (gallons)
		-N1D-FEP-P0003, Rev 1 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7		
Waste Feed Evaporation Process System (Cont.) FEP-COND-00001A (Waste Evaporator Primary Condenser) FEP-COND-00001B (Waste Evaporator Primary Condenser) FEP-COND-00002A (Waste Evaporator Intercondenser) FEP-COND-00002B (Waste Evaporator Intercondenser) FEP-COND-00003A (Waste Evaporator Aftercondenser) FEP-COND-00003B (Waste Evaporator Aftercondenser)	FEP	**24590-PTF** -3PS-MEVV- T0001, Rev 2 -M5-V17T-00004001, Rev 3 -M5-V17T-00004002, Rev 3 -M6-FEP-00003002, Rev 0 -M6-FEP-00005001, Rev 0 -MED-FEP-P0003, Rev 0 -MED-FEP-P0004, Rev 0 -MED-FEP-P0005, Rev 0 -MED-FEP-P0006, Rev 0 -MED-FEP-P0007, Rev 0 -MED-FEP-P0008, Rev 0 -N1D-FEP-P0008, Rev 0 -N1D-FEP-00009, Rev 3 -N1D-FEP-00010, Rev 3 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7	Section 4.1.2.2.; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	N/A
Waste Feed Evaporation Process System (Cont.) FEP-RBLR-00001A (Waste Feed Evaporator Reboiler)	FEP	**24590-PTF** -3PS-MEVV-T0001, Rev 2 -M5-V17T-00004001, Rev 3 -M5-V17T-00004002, Rev 3	Section 4.1.2.2.; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit	N/A

Table III.10.G.A – Pretreatment Plant Miscellaneous Unit Systems

Miscellaneous Unit System Description[a]	Miscellaneous Unit System Designation	Description Drawings	Narrative Description, Tables, & Figures	Maximum Capacity (gallons)
FEP-RBLR-00001B (Waste Feed Evaporator Reboiler)		-MED-FEP-P0010, Rev 0 -N1D-FEP-P0008, Rev 0 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7	Group 10, Addendum C of this Permit.	
Cesium Nitric Acid Recovery Process System CNP-EVAP-00001 (Cesium Evaporator Separator Vessel)	CNP	**24590-PTF** -3PS-MEVV-T0002, Rev 4 -M5-V17T-00014, Rev 2 -M6-CNP-00001001, Rev 0 -M6-CNP-00001002, Rev. 0 -M6-CNP-00001003, Rev. 0 -M6-CNP-00002001, Rev 0 -M6-CNP-00002002, Rev 0 -M6-CNP-00002003, Rev 0 -M6-CNP-00008001, Rev 0 -M6-CNP-00008002, Rev 0 -M6-CNP-00010001, Rev 0 -M6-CNP-00010002, Rev 0 -MV-CNP-P0001, Rev 0 -MV-CNP-P0002, Rev 1 -MV-CNP-P0005, Rev 0 -MVD-CNP-P0003, Rev 1 -MVD-CNP-P0010, Rev 0 -MVD-CNP-00006, Rev 6 -N1D-CNP-P0005, Rev 1	Section 4.1.2.6.; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	CNP-EVAP-00001 = RESERVED

Table III.10.G.A – Pretreatment Plant Miscellaneous Unit Systems

Miscellaneous Unit System Description[a]	Miscellaneous Unit System Designation	Description Drawings	Narrative Description, Tables, & Figures	Maximum Capacity (gallons)
		-N1D-CNP-P0006, Rev 3 -N1D-CNP-P0009, Rev 1 -N1D-CNP-P0011, Rev 1 -P1-P01T-00001, Rev 8 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4 -P1-P01T-00004, Rev 6		
Cesium Nitric Acid Recovery Process System (Cont.) CNP-HX-00001 (Cesium Evaporator Concentrate Reboiler	CNP	**24590-PTF** -3PS-MEVV-T0002, Rev 4 -M5-V17T-P0014, Rev 2 -M6-CNP-00001001, Rev 0 -M6-CNP-00001002, Rev 0 -M6-CNP-00001003, Rev 0 -M6-CNP-00002001, Rev 0 -M6-CNP-00002002, Rev 0 -M6-CNP-00002003, Rev 0 -M6-CNP-00008, Rev 2 -MED-CNP-00003, Rev 4 -MED-CNP-00004, Rev 5 -MED-CNP-00010, Rev 3 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4 -P1-P01T-00004, Rev 6	Section 4.1.2.6.; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	N/A

Table III.10.G.A – Pretreatment Plant Miscellaneous Unit Systems

Miscellaneous Unit System Description[a]	Miscellaneous Unit System Designation	Description Drawings	Narrative Description, Tables, & Figures	Maximum Capacity (gallons)
Cesium Nitric Acid Recovery Process System (Cont.) CNP-DISTC-00001 (Cesium Evaporator Nitric Acid Rectifier Column)	CNP	**24590-PTF** -M5-V17T-00014, Rev 2 -M6-CNP-00010, Rev 2 -N1D-CNP-00001, Rev 1 -P1-P01T-00003, Rev 4 -3PS-MEVV- T0002, Rev 4	Section 4.1.2.6.; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	RESERVED
Cesium Nitric Acid Recovery Process System (Cont.) CNP-HX-00002 (Cesium Evaporator Primary Condenser) CNP-HX-00003 (Cesium Evaporator Inter-Condenser) CNP-HX-00004 (Cesium Evaporator After-Condenser)	CNP	**24590-PTF** -M5-V17T-00014, Rev 2 -M6-CNP-00001001, Rev 0 -M6-CNP-00001002, Rev 0 -M6-CNP-00001003, Rev 0 -M6-CNP-00002001, Rev 0 -M6-CNP-00002002, Rev 0 -M6-CNP-00002003, Rev 0 -M6-CNP-00008001, Rev 0 -M6-CNP-00010, Rev 2 -MED-CNP-00003, Rev 4 -MED-CNP-00004, Rev 5 -MED-CNP-00005, Rev 4 -MED-CNP-00010, Rev 3 -N1D-CNP-P0002, Rev 1 -N1D-CNP-P0003, Rev 1 -N1D-CNP-P0012, Rev 1 -P1-P01T-00001, Rev 7	Section 4.1.2.6.; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	N/A N/A N/A

Table III.10.G.A – Pretreatment Plant Miscellaneous Unit Systems

Miscellaneous Unit System Description[a]	Miscellaneous Unit System Designation	Description Drawings	Narrative Description, Tables, & Figures	Maximum Capacity (gallons)
		-P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4 -P1-P01T-00004, Rev 6 -3PS-MEVV- T0002, Rev 4		
Treated LAW Evaporation Process System TLP-SEP-00001 (Treated LAW Evaporator Separator Vessel)	TLP	**24590-PTF** -3PS-MEVV- T0001, Rev 2 -M5-V17T-00005, Rev 2 -M6-TLP-00001, Rev 3 -M6-TLP-00002001, Rev 0 -M6-TLP-00002002, Rev 0 -M6-TLP-00002003, Rev 0 -M6-TLP-00002004, Rev 0 -M6-TLP-00003001, Rev 0 -M6-TLP-00003002, Rev 0 -M6-TLP-00003003, Rev 0 -M6-TLP-00003004, Rev 0 -M6-TLP-00005001, Rev 0 -M6-TLP-00005002, Rev 0 -M6-TLP-00005003, Rev 0 -M6-TLP-00005004, Rev 0 -M6-TLP-00005005, Rev 0 -M6-TLP-00006001, Rev 0 -M6-TLP-00006002, Rev 0 -M6-TLP-00006003, Rev 0	Section 4.1.2.11; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	TLP-SEP-00001 = 13,359

Table III.10.G.A – Pretreatment Plant Miscellaneous Unit Systems

Miscellaneous Unit System Description[a]	Miscellaneous Unit System Designation	Description Drawings	Narrative Description, Tables, & Figures	Maximum Capacity (gallons)
		-M6-TLP-00006004, Rev 0 -M6-TLP-00006005, Rev 0 -MVD-TLP-P0001, Rev 2 -MVD-TLP-P0002, Rev 2 -MVD-TLP-P0004, Rev 1 -MVD-TLP-00005, Rev 7 -MV-TLP-P0001, Rev 1 -MV-TLP-P0002, Rev 1 -N1D-TLP-P0001, Rev 2 -N1D-TLP-P0005, Rev 3 -N1D-TLP-P0006, Rev 1 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4		
Treated LAW Evaporation Process System (Cont.) TLP-COND-00001 (Treated LAW Primary Condenser) TLP-COND-00002 (Treated LAW Inter-condenser) TLP-COND-00003 (Treated LAW After-condenser)	TLP	**24590-PTF** -3PS-MEVV- T0001, Rev 2 -M5-V17T-00005, Rev 2 -M6-TLP-00002001, Rev 0 -M6-TLP-00002002, Rev 0 -M6-TLP-00002003, Rev 0 -M6-TLP-00002004, Rev 0 -M6-TLP-00003001, Rev 0 -M6-TLP-00003002, Rev 0 -M6-TLP-00003003, Rev 0	Section 4.1.2.11; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.	N/A

Table III.10.G.A – Pretreatment Plant Miscellaneous Unit Systems

Miscellaneous Unit System Description[a]	Miscellaneous Unit System Designation	Description Drawings	Narrative Description, Tables, & Figures	Maximum Capacity (gallons)
		-M6-TLP-00003004, Rev 0 -M6-TLP-00005001, Rev 0 -M6-TLP-00005002, Rev 0 -M6-TLP-00005003, Rev 0 -M6-TLP-00005004, Rev 0 -M6-TLP-00005005, Rev 0 -M6-TLP-00006001, Rev 0 -M6-TLP-00006002, Rev 0 -M6-TLP-00006003, Rev 0 -M6-TLP-00006004, Rev 0 -M6-TLP-00006005, Rev 0 -MED-TLP-P0001, Rev 0 -MED-TLP-00002, Rev 4 -MED-TLP-00003, Rev 4 -MV-TLP-P0001, Rev 1 -MV-TLP-P0002, Rev 1 -N1D-TLP-P0002, Rev 0 -N1D-TLP-P0003, Rev 4 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4		
Treated LAW Evaporation Process System (Cont.) TLP-RBLR-00001 (Treated LAW Evaporator Reboiler)	TLP	**24590-PTF** -3PS-MEVV- T0001, Rev 2 -M5-V17T-00005, Rev 5	Section 4.1.2.11; Table C-8; and Figures C1-1, C1-2 and C1-02A	N/A

Table III.10.G.A – Pretreatment Plant Miscellaneous Unit Systems

Miscellaneous Unit System Description[a]	Miscellaneous Unit System Designation	Description Drawings	Narrative Description, Tables, & Figures	Maximum Capacity (gallons)
		-MV-TLP-P0001, Rev 1 -MV-TLP-P0002, Rev 1 -N1D-TLP-P0011, Rev 1 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4	of Operating Unit Group 10, Addendum C of this Permit.	
Spray Decontamination and Sizing System PIH-TTBL-00001 (Spray Decontamination Turntable) PIH-TTBL-00002 (Remote Repair Turntable PIH-BENCH-00003 (Size Reduction Table) This miscellaneous unit is exempt from the requirements of WAC-173-303-640.	PIH	RESERVED	Section 4.2.4.2.1; Table 4-8; and Figure 4A-128 of Operating Unit 10, Chapter 4 of this Permit.	N/A
Hot Cell Waste Management Unit Hot Cell Floor This miscellaneous unit is exempt from the requirements of WAC-173-303-640.	NA	RESERVED	Section 4.2.4.1; Table 4-8; and Figure 4A-128 of Operating Unit 10, Chapter 4 of this Permit.	RESERVED

Footnotes:

[a] The Pretreatment Vessel Vent Process (PVP), Process Vessel Vent Systems (PVV), Pulse Jet Mixer Exhaust System (PJV), and Pretreatment Treated LAW Evaporator Separator Vessel System (TLP) specified in Permit Table III.10.G.A.i is shared between the Pretreatment Plant Miscellaneous Unit Systems. Any references in this Permit to the individual Pretreatment Plant Miscellaneous Unit Systems are also a reference to the Pretreatment Vessel Vent Process (PVP), Process Vessel Vent Systems (PVV), Pulse Jet Mixer Exhaust System (PJV), and Pretreatment Treated LAW Evaporator Separator Vessel System (TLP) Systems. Any reference in this Permit to Permit Table III.10.G.A is also a reference to Permit Table III.10.G.A.i.

Table III.10.G.A.i – Pretreatment Plant Vessel Vent Systems Associated with Pretreatment Plant Miscellaneous Unit Systems

Description	Designation	Description Drawings	Narrative Description, Tables & Figures
Pretreatment Vessel Vent Process System PVP-SCB-00002 (Vessel Vent Caustic Scrubber)	PVP	**24590-PTF** -M5-V17T-00021001, Rev 2 -M5-V17T-00021004, Rev 2 -M6-PVP-00002, Rev 3 -M6-PVP-00017001, Rev 0 -M6-PVP-00017002, Rev 0 -M6-PVP-00017003, Rev 0 -M6-PWD-00044, Rev 3 -MKD-PVP-P0002, Rev 2 -MVD-PVP-P0001, Rev 0 -MV-PVP-P0002, Rev 0 -N1D-PVP-P0001, Rev 1 -P1-P01T-00003, Rev 4 -P1-P01T-00004, Rev 6	Section 4.1.2.16; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.
Pretreatment Vessel Vent Process System (Cont.) PVP-HEME-00001A (Vessel Vent HEME, Mist eliminator) PVP-HEME-00001B (Vessel Vent HEME, Mist Eliminator) PVP-HEME-00001C (Vessel Vent HEME, Mist Eliminator)	PVP	**24590-PTF** -M5-V17T-00021001, Rev 2 -M5-V17T-00021004, Rev 2 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4 -P1-P01T-00004, Rev 6	Section 4.1.2.16; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.
Pretreatment Vessel Vent Process System (Cont.)	PVP	**24590-PTF** -M5-V17T-00021001, Rev 2	Section 4.1.2.16; Table C-8; and Figures C1-1, C1-2 and C1-02A of

Table III.10.G.A.i – Pretreatment Plant Vessel Vent Systems Associated with Pretreatment Plant Miscellaneous Unit Systems

Description	Designation	Description Drawings	Narrative Description, Tables & Figures
PVP-HX-00002 (Vessel Vent Scrubbing Liquid Cooler)		-M6-PVP-00017001, Rev 0 -M6-PVP-00017002, Rev 0 -M6-PVP-00017003, Rev 0 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4 -P1-P01T-00004, Rev 6	Operating Unit Group 10, Addendum C of this Permit.
Pretreatment Vessel Vent Process System (Cont.) PVP-OXID-00001 (Vessel Vent VOC Oxidizer Unit)	PVP	**24590-PTF** -M5-V17T-00021001, Rev 2 -M5-V17T-00021004, Rev 2 -M6-PVP-00017001, Rev 0 -M6-PVP-00017002, Rev 0 -M6-PVP-00017003, Rev 0 -M6-PVP-000018001, Rev 1 -M6-PVP-000018002, Rev 0 -N1D-PVP-P0002, Rev 1 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4 -P1-P01T-00004, Rev 6	Section 4.1.2.16; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.
Pretreatment Vessel Vent Process System (Cont.) PVP-CLR-00001 (Vessel Vent Aftercooler)	PVP	**24590-PTF** -M5-V17T-00021001, Rev 2 -M5-V17T-00021004, Rev 2 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4	Section 4.1.2.16; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.

Table III.10.G.A.i – Pretreatment Plant Vessel Vent Systems Associated with Pretreatment Plant Miscellaneous Unit Systems

Description	Designation	Description Drawings	Narrative Description, Tables & Figures
		-P1-P01T-00004, Rev 6	
Pretreatment Vessel Vent Process System (Cont.) PVP-ADBR-00001A (Vessel Vent Carbon Bed Absorber) PVP-ADBR-00001B (Vessel Vent Carbon Bed Absorber)	PVP	**24590-PTF** -M5-V17T-00021001, Rev 2 -M5-V17T-00021004, Rev 2 -P1-P01T-00001, Rev 7 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4 -P1-P01T-00004, Rev 6	Section 4.1.2.16; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.
Pretreatment Vessel Vent Process System (Cont.) PVP-FILT-00001 (Vessel Vent Adsorber Outlet Filter)	PVP	**24590-PTF** -M5-V17T-00021001, Rev 2 -M5-V17T-00021004, Rev 2 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4 -P1-P01T-00004, Rev 6	Section 4.1.2.16; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.
Process Vessel Vent System PVV-HEPA-00001A (Vessel Vent Primary HEPA Filter) PVV-HEPA-00001B (Vessel Vent Primary HEPA Filter) PVV-HEPA-00002A (Vessel Vent Secondary HEPA Filter)	PVV	**24590-PTF** -M5-V17T-00021001, Rev 2 -P1-P01T-P0002, Rev 7	Section 4.1.2.16; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.

Table III.10.G.A.i – Pretreatment Plant Vessel Vent Systems Associated with Pretreatment Plant Miscellaneous Unit Systems

Description	Designation	Description Drawings	Narrative Description, Tables & Figures
PVV-HEPA-00002B (Vessel Vent Secondary HEPA Filter)			
Process Vessel Vent System (Cont.) PVV-FAN-00001A (Vessel Vent Exhaust Fan) PVV-FAN-00001B (Vessel Vent Exhaust Fan)	PVV	**24590-PTF** -M5-V17T-00021001, Rev 2 -M5-V17T-00021004, Rev 2 -P1-P01T-P0002, Rev 7 -P1-P01T-00003, Rev 4 -P1-P01T-00004, Rev 6	Section 4.1.2.16; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.
Pretreatment Pulse Jet Mixer Exhaust Vent System PJV-HEPA-00001A (PJV Primary Exhaust HEPA Filter) PJV-HEPA-00001B (PJV Primary Exhaust HEPA Filter) PJV-HEPA-00001C (PJV Primary Exhaust HEPA Filter) PJV-HEPA-00001D (PJV Primary Exhaust HEPA Filter) PJV-HEPA-00001E (PJV Primary Exhaust HEPA Filter)	PJV	**24590-PTF** -M5-V17T-00021002, Rev 2 -M6-PJV-00001, Rev 3 -M6-PJV-00002, Rev 3 -M6-PJV-00004001, Rev 0 -N1D-PJV-P0001, Rev 1 -P1-P01T-00001, Rev 7	Section 4.1.2.17; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.

Table III.10.G.A.i – Pretreatment Plant Vessel Vent Systems Associated with Pretreatment Plant Miscellaneous Unit Systems

Description	Designation	Description Drawings	Narrative Description, Tables & Figures
PJV-HEPA-00001F (PJV Primary Exhaust HEPA Filter) PJV-HEPA-00001G (PJV Primary Exhaust HEPA Filter) PJV-HEPA-00002A (PJV Secondary Exhaust HEPA Filter) PJV-HEPA-00002B (PJV Secondary Exhaust HEPA Filter) PJV-HEPA-00002C (PJV Secondary Exhaust HEPA Filter) PJV-HEPA-00002D (PJV Secondary Exhaust HEPA Filter) PJV-HEPA-00002E (PJV Secondary Exhaust HEPA Filter) PJV-HEPA-00002F (PJV Secondary Exhaust HEPA Filter)			
Pretreatment Pulse Jet Mixer Exhaust Vent System (Cont.) PJV-FAN-00001A (PJV Exhaust Fan)	PJV	**24590-PTF** -M5-V17T-00021002, Rev 2 -M6-PJV-00001, Rev 3 -M6-PJV-00002, Rev 3	Section 4.1.2.17; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.

Table III.10.G.A.i – Pretreatment Plant Vessel Vent Systems Associated with Pretreatment Plant Miscellaneous Unit Systems

Description	Designation	Description Drawings	Narrative Description, Tables & Figures
PJV-FAN-00001B (PJV Exhaust Fan) PJV-FAN-00001C (PJV Exhaust Fan)		-M6-PJV-00004001, Rev 0 -N1D-PJV-P0001, Rev 1 -P1-P01T-00001, Rev 7	
Pretreatment Pulse Jet Mixer Exhaust Vent System (Cont.) PJV-DMST-00002A (PJV Demister) PJV-DMST-00002B (PJV Demister) PJV-DMST-00002C (PJV Demisters)	PJV	**24590-PTF** -M5-V17T-00021002, Rev 2 -M6-PJV-00001, Rev 3 -M6-PJV-00002, Rev 3 -M6-PJV-00004001, Rev 0 -N1D-PJV-P0001, Rev 1 -P1-P01T-00003, Rev 4	Section 4.1.2.17; Table C-8; and Figures C1-1, C1-2 and C1-02A of Operating Unit Group 10, Addendum C of this Permit.

Footnotes:

[a] The Pretreatment Vessel Vent Process (PVP), Process Vessel Vent Systems (PVV), and Pulse Jet Mixer Exhaust System (PJV) specified in Permit Table III.10.G.A.i are shared between the Pretreatment Plant Miscellaneous Unit Systems. Any references in this Permit to the individual Pretreatment Plant Miscellaneous Unit Systems are also a reference to the Pretreatment Vessel Vent Process (PVP), Process Vessel Vent Systems (PVV), and Pulse Jet Mixer Exhaust System (PJV) Systems. Any reference in this Permit to Permit Table III.10.G.A is also a reference to Permit Table III.10.G.A.i.

Table III.10.G.B – Pretreatment Plant Miscellaneous Unit Secondary Containment Systems Including Sumps, Bulges, and Floor Drains

Sump, Bulge or Floor Drain I.D.# & Room Location	Maximum Sump/Bulge (gallons), or Drain Line (gallons per minute) Capacity	Sump Type/Nominal Operating Volume (gallons)	Sump, Bulge or Drain Line Dimensions[a] (inches) & Materials of Construction	Engineering Description (Drawings No.'s, Specification No.'s etc.)
PVP-ZY-00037-S11B-03, P-0105 (PVP-BULGE-00001, El. 0')			3" Stainless Steel	**24590-PTF** -M6-PVP-00017002, Rev 0
PVP-ZY-00036-S11B-03, P-0101A (PVP-BULGE-00002, El. 0')			3" Stainless Steel	**24590-PTF** -M6-PVP-00018002, Rev 0
PVP-ZY-00056-S11B-03, P-0302 (PVP-BULGE-00014, El. 56')			3" Stainless Steel	**24590-PTF** -M6-PVP-00017003, Rev 0
PWD-FD-00323P-0304 Drain, El. 56'	140	N/A	6" Dia 316L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00324 P-0304 Drain, El. 56'	140	N/A	6" Dia 316L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00325 P-0304 Drain, El. 56'	140	N/A	6" Dia 316L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00326 P-0304 Drain, El. 56'	140	N/A	6" Dia 316L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00327 P-0304 Drain, El. 56'	140	N/A	6" Dia 316L	**24590-PTF** -M6-PWD-00044, Rev 3
PWD-FD-00512 P-0320 Drain, El. 56'	140	N/A	6" Dia 316L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00513 P-0320 Drain, El. 56'	140	N/A	6" Dia 316L	**24590-PTF** -M6-PWD-00043, Rev 3

PWD-FD-00514 P-0320 Drain, El. 56'	140	N/A	6" Dia 316L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00515 P-0325 Drain, El. 56'	140	N/A	6" Dia 316L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00516 P-0325 Drain, El. 56'	140	N/A	6" Dia 316L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00517 P-0325 Drain, El. 56'	655	N/A	8" Dia 316L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00557 P-0430 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
PWD-FD-00561 P-0430 Drain, El. 77'	140	N/A	6" Dia 304L	**24590-PTF** -M6-PWD-00043, Rev 3
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Table III.10.G.C. – Pretreatment Plant Miscellaneous Unit System Process and Leak Detection Instruments and Parameters

Miscellaneous Unit System Locator and Name (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Failure State	Expected Range	Instrument Accuracy	Operating Trips (Descrip-tion & Numerical Limits)	Instrument Calibration Method No. and Range
PVP-BULGE-00001[a]	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
PVP-BULGE-00014[a]	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Sump locator (including P&ID designator) is located on Permit Table III.10.G.B – Pretreatment Plant Miscellaneous Unit Secondary Containment Systems Including Sumps, Bulges, and Floor Drains.

Table III.10.G.D. – Pretreatment Plant Miscellaneous Unit Systems Estimated Emission Rates

Chemicals	CAS Number	Emission Rates (grams /second)
RESERVED	RESERVED	RESERVED

III.10.H LAW VITRIFICATION SYSTEM – SHORT TERM MISCELLANEOUS THERMAL TREATMENT UNIT-SHAKEDOWN, DEMONSTRATION TEST, AND POST DEMONSTRATION TEST

For purposes of Permit Section III.10.H, where reference is made to WAC 173-303-640, the following substitutions apply: substituting the terms "LAW Vitrification System" for "tank system(s)," "sub-system(s)" for "tank(s)," "sub-system equipment" for "ancillary equipment," and "sub-system(s) or sub-system equipment of a LAW Vitrification System" for "component(s)" in accordance with WAC 173-303-680.

III.10.H.1 General Conditions During Shakedown, Demonstration Test, and Post-Demonstration Test for LAW Vitrification System

III.10.H.1.a Construction and Maintenance [WAC 173-303-640, in accordance with WAC 173-303-680(2) and (3), and WAC 173-303-340].

III.10.H.1.a.i The Permittees will construct the LAW Vitrification System (listed in Permit Tables III.10.H.A and B., as approved/modified pursuant to Permit Condition III.10.H.5.) as specified in Permit Condition III.10.H.1. and Operating Unit Group 10, Addendum C of this Permit, and Operating Unit Group 10, Appendices 9.1 through 9.15 and 9.17 of this Permit, as approved pursuant to Permit Conditions III.10.H.5.a. through d., and III.10.H.5.f.

III.10.H.1.a.ii The Permittees will construct all containment systems for the LAW Vitrification System as specified in Operating Unit Group 10, Addendum C of this Permit, and Operating Unit Group 10, Appendices 9.2 and 9.4 through 9.14 of this Permit, as approved pursuant to Permit Conditions III.10.H.5.a. through d.

III.10.H.1.a.iii The Permittees will ensure all certifications required by specialists (e.g., independent, qualified registered professional engineer, independent corrosion expert, independent, qualified installation inspector, etc.) use the following statement or equivalent pursuant to Permit Condition III.10.C.10.:

"I, (Insert Name) have (choose one or more of the following: overseen, supervised, reviewed, and/or certified) a portion of the design or installation of a new LAW Vitrification System or component located at (address), and owned/operated by (name(s)). My duties were: (e.g., installation inspector, testing for tightness, etc.), for the following LAW Vitrification System components (e.g., the venting piping, etc.), as required by the Dangerous Waste Regulations, namely, WAC 173-303-640(3) (applicable paragraphs (i.e., (a) through (g)) in accordance with WAC 173-303-680).

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

III.10.H.1.a.iv The Permittees must ensure that proper handling procedures are adhered to in order to prevent damage to the LAW Vitrification System during installation. Prior to covering, enclosing, or placing the new LAW Vitrification System or component in use, an independent, qualified, installation inspector or an independent, qualified, registered professional engineer, either of whom is trained and experienced in the proper installation of similar systems or components, must inspect the system for the presence of any of the following items:

A. Weld breaks.

B. Punctures.

C. Scrapes of protective coatings.

D. Cracks.

E. Corrosion.

F. Other structural damage or inadequate construction/installation.

All discrepancies must be remedied before the LAW Vitrification System is covered, enclosed, or placed in use [WAC 173-303-640(3)(c), in accordance with WAC 173-303-680(2) and (3)].

III.10.H.1.a.v For the LAW Vitrification System or components that are placed underground and that are back-filled, the Permittees must provide a backfill material that is a non-corrosive, porous, homogeneous substance. The backfill must be installed so that it is placed completely around the LAW Vitrification System and compacted to ensure that the LAW Vitrification System is fully and uniformly supported [WAC 173-303-640(3)(d), in accordance with WAC 173-303-680(2) and (3)].

III.10.H.1.a.vi The Permittees must test for tightness the LAW Vitrification System or components, prior to being covered, enclosed, or placed into use. If the LAW Vitrification System or components are found not to be tight, all repairs necessary to remedy the leak(s) in the system must be performed prior to the LAW Vitrification System being covered, enclosed, or placed in use [WAC 173-303-640(3)(e), in accordance with WAC 173-303-III.680(2) and (3)].

III.10.H.1.a.vii The Permittees must ensure the LAW Vitrification System equipment is supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction [WAC 173-303-640(3)(f), in accordance with WAC 173-303-680(2) and (3)].

III.10.H.1.a.viii The Permittees must provide the type and degree of corrosion protection recommended by an independent corrosion expert, based on the information provided in Operating Unit Group 10, Appendices 9.9 and 9.11 of this Permit, as approved pursuant to Permit Conditions III.10.H.5.b.i., III.10.H.5.b.iv., III.10.H.5.b.v., III.10.H.5.c.i., III.10.H.5.c.iv., III.10.H.5.c.v., III.10.H.5.d.i., III.10.H.5.d.iv., and III.10.H.5.d.v., or other corrosion protection if Ecology believes other corrosion protection is necessary to ensure the integrity of the LAW Vitrification System during use of the LAW Vitrification System. The installation of a corrosion protection system that is field fabricated must be supervised by an independent corrosion expert to ensure proper installation [WAC 173-303-640(3)(g), in accordance with WAC 173-303-680(2) and (3)].

III.10.H.1.a.ix Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will obtain and keep on file in the WTP Unit operating record, written statements by those persons required to certify the design of the LAW Vitrification System and supervise the installation of the LAW Vitrification System, as specified in WAC 173-303-640(3)(b), (c), (d), (e), (f), and (g), in accordance with WAC 173-303-680, attesting that the LAW Vitrification System and corresponding containment system listed in Permit Tables III.10.H.A and III.10.H.B, as approved/modified pursuant to Permit Condition III.10.H.5., were properly designed and installed, and that repairs, in accordance with WAC 173-303-640(3)(c) and (e) were

performed [WAC 173-303-640(3)(a) and WAC 173-303-640(3)(h), in accordance with WAC 173-303-680(3)].

III.10.H.1.a.x The independent LAW Vitrification System installation inspection and subsequent written statements will be certified in accordance with WAC 173-303-810(13)(a), as modified pursuant to Permit Condition III.10.H.1.a.iii., comply with all requirements of WAC 173-303-640(3)(h) in accordance with WAC 173-303-680, and will consider, but not be limited to, the following LAW Vitrification System installation documentation:

A. Field installation report with date of installation.

B. Approved welding procedures.

C. Welder qualification and certifications.

D. Hydro-test reports, as applicable, in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII, Division 1; American Petroleum Institute (API) Standard 620, or Standard 650, as applicable.

E. Tester credentials.

F. Field inspector credentials.

G. Field inspector reports.

H. Field waiver reports.

I. Non-compliance reports and corrective action (including field waiver reports) and repair reports.

III.10.H.1.a.xi The Permittees will ensure periodic integrity assessments are conducted on the LAW Vitrification System, listed in Permit Table III.10.H.A, as approved/modified pursuant to Permit Condition III.10.H.5., over the term of this Permit in accordance with WAC 173-303-680(2) and (3) as specified in WAC 173-303-640(3)(b), following the description of the integrity assessment program and schedule in Operating Unit Group 10, Addendum E of this Permit, as approved pursuant to Permit Conditions III.10.H.5.e.i. and III.10.C.5.c. Results of the integrity assessments will be included in the WTP Unit operating record until ten (10) years after post-closure, or corrective action is complete and certified, whichever is later.

III.10.H.1.a.xii The Permittees will address problems detected during the LAW Vitrification System integrity assessments specified in Permit Condition III.10.H.1.a.xi. following the integrity assessment program in Operating Unit Group 10, Addendum E of this Permit, as approved pursuant to Permit Conditions III.10.H.5.e.i. and III.10.C.5.c.

III.10.H.1.a.xiii All process monitors/instruments, as specified in Permit Table III.10.H.F, as approved/modified pursuant to Permit Condition III.10.H.5., will be equipped with operational alarms to warn of deviation, or imminent deviation from the limits specified in Permit Table III.10.H.F.

III.10.H.1.a.xiv The Permittees will install and test all process and leak detection system monitors/instrumentation as specified in Permit Tables III.10.H.C and III.10.H.F, as approved/modified pursuant to Permit Condition III.10.H.5, in accordance with Operating Unit Group 10, Appendices 9.1, 9.2, and 9.14 of this Permit, as approved pursuant to Permit Conditions III.10.H.5.d.x. and III.10.H.5.f.xvi.

III.10.H.1.a.xv Except during periods of LAW Vitrification System startup and shutdown, no dangerous and/or mixed waste will be treated in the LAW Vitrification System unless the operating conditions, specified under Permit Condition III.10.H.1.c. are complied with.

III.10.H.1.a.xvi The Permittees will not place dangerous and/or mixed waste, treatment reagents, or other materials in the LAW Vitrification System if these substances could cause the subsystem, subsystem equipment, or the containment system to rupture, leak, corrode, or otherwise fail [WAC 173-303-640(5)(a), in accordance with WAC 173-303-680(2)]. This condition is not applicable to corrosion of LAW Vitrification System sub-system or sub-system equipment that are expected to be replaced as part of normal operations (e.g., melters).

III.10.H.1.a.xvii The Permittees will operate the LAW Vitrification System to prevent spills and overflows using controls and practices as required under WAC 173-303-640(5)(b) described in Permit Condition III.10.C.5 and Operating Unit Group 10, Appendix 9.18 of this Permit, as approved pursuant to Permit Condition III.10.H.5.e. [WAC 173-303-640(5)(b), in accordance with WAC 173-303-680(2) and (3), and WAC 173-303-806(4)(c)(ix)].

III.10.H.1.a.xviii For routinely non-accessible LAW Vitrification System sub-systems, as specified in Operating Unit Group 10, Addendum C of this Permit, as updated pursuant to Permit Condition III.10.H.5.e.vi., the Permittees will mark all routinely non-accessible LAW Vitrification System sub-systems access points with labels, or signs, to identify the waste contained in each LAW Vitrification System sub-system. The label, or sign, must be legible at a distance of at least fifty (50) feet, and must bear a legend which identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the LAW Vitrification System sub-systems. For the purposes of this permit condition, "routinely non-accessible" means personnel are unable to enter these areas while waste is being managed in them [WAC 173-303-640(5)(d), in accordance with WAC 173-303-680(2)].

III.10.H.1.a.xix For all LAW Vitrification System sub-systems not addressed in Permit Condition III.10.H.1.a.xviii., the Permittees will mark all these LAW Vitrification System sub-systems holding dangerous and/or mixed waste with labels, or signs, to identify the waste contained in the LAW Vitrification System sub-systems. The labels, or signs, must be legible at a distance of at least fifty (50) feet, and must bear a legend which identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the LAW Vitrification System sub-systems [WAC 173-303-640(5)(d), in accordance with WAC 173-303-680(2)].

III.10.H.1.a.xx The Permittees will ensure that the secondary containment systems for the LAW Vitrification System sub-systems listed in Permit Tables III.10.H.A. and III.10.H.B, as approved/modified pursuant to Permit Condition III.10.H.5, are free of cracks or gaps to prevent any migration of dangerous and/or mixed waste or accumulated liquid out of the system to the soil, groundwater, or surface water at any time during use of the LAW Vitrification System sub-systems. Any indication that a crack or gap may exist in the containment systems will be investigated and repaired in accordance with Operating Unit Group 10, Appendix 9.18 of this Permit, as approved pursuant to Permit Condition III.10.H.5.e.v. [WAC 173-303–640(4)(b)(i), WAC 173-303–640(4)(e)(i)(C), and

WAC 173-303-640(6), in accordance with WAC 173-303-680(2) and (3), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-320].

III.10.H.1.a.xxi The Permittees must immediately, and safely, remove from service any LAW Vitrification System or secondary containment system which through an integrity assessment is found to be "unfit for use" as defined in WAC 173-303-040, following Permit Conditions III.10.H.1.a.xxiii.,A. through D., and F. The affected LAW Vitrification System or secondary containment system must be either repaired or closed in accordance with Permit Condition III.10.H.1.a.xxiii.E. [WAC 173-303-640(7)(e) and (f), WAC 173-303-640(8), in accordance with WAC 173-303-680(3)].

III.10.H.1.a.xxii .An impermeable coating, as specified in Operating Unit Group 10, Appendices 9.4, 9.5, 9.7, 9.9, 9.11, and 9.12 of this Permit, as approved pursuant to Permit Condition III.10.H.5.b.v. will be maintained for all concrete containment systems and concrete portions of containment systems for each LAW Vitrification System sub-systems listed in Permit Tables III.10.H.A and III.10.H.B, as approved/modified pursuant to Permit Condition III.10.H.5 (concrete containment systems that do not have a liner, pursuant to WAC 173-303-640(4)(e)(i), in accordance with WAC 173-303-680(2), and have construction joints, will meet the requirements of WAC 173-303-640(4)(e)(ii)(C), in accordance with WAC 173-303-680(2). The coating will prevent migration of any dangerous and mixed waste into the concrete. All coatings will meet the following performance standards:

A. The coating must seal the containment surface such that no cracks, seams, or other avenues through which liquid could migrate are present;

B. The coating must be of adequate thickness and strength to withstand the normal operation of equipment and personnel within the given area such that degradation or physical damage to the coating or lining can be identified and remedied before dangerous and mixed waste could migrate from the system; and

C. The coating must be compatible with the dangerous and mixed waste, treatment reagents, or other materials managed in the containment system [WAC 173-303-640(4)(e)(ii)(D), in accordance with WAC 173-303-680(2) and (3), and WAC 173-303-806(4)(i)(i)(A)].

III.10.H.1.a.xxiii The Permittees will inspect all secondary containment systems for the LAW Vitrification System sub-systems listed in Permit Tables III.10.H.A and III.10.H.B, as approved/modified pursuant to Permit Condition III.10.H.5., in accordance with the Inspection Schedule specified in Operating Unit Group 10, Addendum E1 of this Permit, as approved pursuant to Permit Conditions III.10.H.5.e.i. and III.10.C.5.c., and take the following actions if a leak or spill of dangerous and/or mixed waste is detected in these containment systems [WAC 173-303-640(5)(c) and WAC 173-303-640(6), in accordance with WAC 173-303-680(2) and (3), WAC 173-303-320, and WAC 173-303-806(4)(i)(i)(B)]:

A. Immediately, and safely, stop the flow of dangerous and/or mixed waste into the LAW Vitrification System sub-systems or secondary containment system.

B. Determine the source of the dangerous and/or mixed waste.

C. Remove the dangerous and/or mixed waste from the containment area in accordance with WAC 173-303-680(2) and (3) as specified in WAC 173-303-640(7)(b). The dangerous and/or mixed waste removed from containment areas of the LAW Vitrification System sub-systems will be, as a minimum, managed as mixed waste.

D. If the cause of the release was a spill that has not damaged the integrity of the LAW Vitrification System sub-system, the Permittees may return the LAW Vitrification System sub-system to service in accordance with WAC 173-303-680(2) and (3) as specified in WAC 173-303-640(7)(e)(ii). In such case, the Permittees will take action to insure the incident that caused the dangerous and/or mixed waste to enter the containment system will not reoccur [WAC 173-303-320(3)].

E. If the source of the dangerous and/or mixed waste is determined to be a leak from the primary LAW Vitrification System into the secondary containment system, or the system is unfit for use as determined through an integrity assessment or other inspection, the Permittees will comply with the requirements of WAC 173-303-640(7) and take the following actions:

1. Close the LAW Vitrification System sub-system following procedures in WAC 173-303-640(7)(e)(i), in accordance with WAC 173-303-680 and Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8., or

2. Repair and re-certify (in accordance with WAC 173-303-810(13)(a), as modified pursuant to Permit Condition III.10.H.1.a.iii.) the LAW Vitrification System, in accordance with Operating Unit Group 10, Appendix 9.18 of this Permit, as approved pursuant to Permit Condition III.10.H.5.e.v., before the LAW Vitrification System is placed back into service [WAC 173-303-640(7)(e)(iii) and WAC 173-303-640(7)(f), in accordance with WAC 173-303-680].

F. The Permittees will document in the operating record actions/procedures taken to comply with A. through E. above as specified in WAC 173-303-640(6)(d), in accordance with WAC 173-303-680(2) and (3).

G. In accordance with WAC 173-303-680(2) and WAC 173-303-680 (3), the Permittees will notify and report releases to the environment to Ecology as specified in WAC 173-303-640(7)(d).

III.10.H.1.a.xxiv If liquids (e.g., dangerous and/or mixed waste leaks and spills, precipitation, fire water, liquids from damaged or broken pipes) cannot be removed from the secondary containment system within twenty-four (24) hours, Ecology will be verbally notified within twenty-four (24) hours of discovery. The notification will provide the information in A, B, and C, listed below. The Permittees will provide Ecology with a written demonstration within seven (7) business days, identifying at a minimum [WAC 173-303-640(4)(c)(iv) and WAC 173-303-640(7)(b)(ii), in accordance with WAC 173-303-680(3) and WAC 173-303-806(4)(i)(i)(B)]:

A. Reasons for delayed removal.

B. Measures implemented to ensure continued protection of human health and the environment.

C Current actions being taken to remove liquids from secondary containment.

III.10.H.1.a.xxv All air pollution control devices and capture systems in the LAW Vitrification System will be maintained and operated at all times in a manner so as to minimize the emissions of air contaminants and to minimize process upsets. Procedures for ensuring that the air pollution control devices and capture systems in the LAW Vitrification System are properly operated and maintained so as to minimize the emission of air contaminants and process upsets will be established.

III.10.H.1.a.xxvi In all future narrative permit submittals, the Permittees will include LAW Vitrification sub-system names with the sub-system designation.

III.10.H.1.a.xxvii Modifications to approved design, plans, and specifications in Operating Unit Group 10 of this Permit for the LAW Vitrification System will be allowed only in accordance with Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g., III.10.C.9.d., III.10.C.9.e., and III.10.C.9.h.

III.10.H.1.a.xxviii For any portion of the LAW Vitrification System which has the potential for formation and accumulation of hydrogen gases, the Permittees will operate the portion to maintain hydrogen levels below the lower explosive limit [WAC 173-303-815(2)(b)(ii)].

III.10.H.1.a.xxix For each LAW Vitrification System sub-system holding dangerous waste which are acutely or chronically toxic by inhalation, the Permittees will operate the system to prevent escape of vapors, fumes or other emissions into the air [WAC 173-303-806(4)(i)(i)(B) and WAC 173-303-640(5)(e), in accordance with WAC 173-303-680].

III.10.H.1.b Performance Standards

III.10.H.1.b.i The LAW Vitrification System must achieve a destruction and removal efficiency (DRE) of 99.99% for the principal organic dangerous constituents (PODCs) listed below [40 CFR §63.1203(c)(1), 40 CFR §63.1203(c)(2), in accordance with WAC 173-303-680(2)]:

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DRE in this permit condition will be calculated in accordance with the formula given below:

$DRE=[1-(W_{out}/W_{in})] \times 100\%$

Where:

W_{in}=mass feed-rate of one principal organic dangerous constituent (PODC) in a waste feed stream; and

W_{out}=mass emission rate of the same PODC present in exhaust emissions prior to release to the atmosphere.

III.10.H.1.b.ii Particulate matter emissions from the LAW Vitrification System will not exceed 34 mg/dscm (0.015 grains/dscf) [40 CFR §63.1203(b)(7), in accordance with WAC 173-303-680(2)].

III.10.H.1.b.iii Hydrochloric acid and chlorine gas emissions from the LAW Vitrification System will not exceed 21 ppmv, combined [40 CFR §63.1203(b)(6), in accordance with WAC 173-303-680(2)].

III.10.H.1.b.iv Dioxin and Furan TEQ emissions from the LAW Vitrification System will not exceed 0.2 nanograms (ng)/dscm [40 CFR §63.1203(b)(1), in accordance with WAC 173-303-680(2)].

III.10.H.1.b.v Mercury emissions from the LAW Vitrification System will not exceed 45 μg/dscm [40 CFR §63.1203(b)(2), in accordance with WAC 173-303-680(2)].

III.10.H.1.b.vi Lead and cadmium emissions from the LAW Vitrification System will not exceed 120 μg/dscm, combined [40 CFR §63.1203(b)(3), in accordance with WAC 173-303-680(2)].

III.10.H.1.b.vii Arsenic, beryllium, and chromium emissions from the LAW Vitrification System will not exceed 97 µg/dscm, combined [40 CFR §63.1203(b)(4), in accordance with WAC 173-303-680(2)].

III.10.H.1.b.viii Carbon monoxide (CO) emission from the LAW Vitrification System will not exceed 100 parts per million (ppm) by volume, over an hourly rolling average (as measured and recorded by the continuous monitoring system), dry basis [40 CFR §63.1203(b)(5)(i), in accordance with WAC 173-303-680(2)].

III.10.H.1.b.ix Hydrocarbon emission from the LAW Vitrification System will not exceed 10 parts per million (ppm) by volume, over an hourly rolling average (as measured and recorded by the continuous monitoring system during demonstration testing required by this Permit), dry basis, and reported as propane [40 CFR §63.1203(b)(5)(ii), in accordance with WAC 173-303-680(2)].

III.10.H.1.b.x If the emissions from the LAW Vitrification System exceed the emission rates listed in Permit Table III.10.H.E, as approved pursuant to Permit Condition III.10.C.11.b., the Permittees will notify Ecology in accordance with Permit Condition III.10.H.3.d.vii. [WAC 173-303-680(2) and (3), and WAC 173-303-815(2)(b)(ii)].

The emission limits specified in Permit Conditions III.10.H.1.b.i. through III.10.H.1.b.ix. above, will be met for the LAW Vitrification System by limiting feed-rates as specified in Permit Tables III.10.H.D. and III.10.H.F., as approved/modified pursuant to Permit Condition III.10.H.5., compliance with operating conditions specified in Permit Condition III.10.H.1.c. (except as specified in Permit Condition III.10.H.1.b.xii.), and compliance with Permit Condition III.10.H.1.b.xi.

III.10.H.1.b.xi Treatment effectiveness, feed-rates and operating rates for dangerous and mixed waste management units contained in the LAW Building, but not included in Permit Table III.10.H.A, as approved/modified pursuant to Permit Condition III.10.H.5., will be as specified in Permit Sections III.10.D, III.10.E, III.10.F and consistent with assumptions and basis which are reflected in Operating Unit Group 10, Appendix 6.3.1 of this Permit, as approved pursuant to Permit Condition III.10.C.11.b. For the purposes of this permit condition, Operating Unit Group 10, Appendix 6.3.1 will be superseded by Appendix 6.4.1 upon its approval pursuant to either Permit Conditions III.10.C.11.c. or III.10.C.11.d. [WAC 173-303-680(2) and (3), and WAC 173-303-815(2)(b)(ii)].

III.10.H.1.b.xii Except during periods of LAW Vitrification System startup and shutdown, compliance with the operating conditions specified in Permit Condition III.10.H.1.c.,will be regarded as compliance with the required performance standards identified in Permit Conditions III.10.H.1.b.i. through x. However, if it is determined that during the effective period of this Permit that compliance with the operating conditions in Permit Condition III.10.H.1.c. is not sufficient to ensure compliance with the performance standards specified in Permit Conditions III.10.H.1.b.i. through x., the Permit may be modified, revoked, or reissued pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f., or III.10.C.2.g.

III.10.H.1.c Operating Conditions [WAC 173-303-670(6), in accordance with WAC 173-303-680(2) and (3)].

The Permittees will operate the LAW Vitrification System in accordance with Operating Unit Group 10, Addendum C of this Permit, as updated pursuant to Permit Condition III.10.H.5.e.vi., Operating Unit Group 10, Appendix 9.18 of this Permit, as approved pursuant to Permit Condition III.10.H.5.e., and Operating Unit Group 10, Appendix 9.15 of this Permit, as approved pursuant to Permit Condition III.10.H.5.f., except as modified

pursuant to Permit Conditions III.10.H.1.b.xii., III.10.H.2., III.10.H.3., III.10.H.4., and in accordance with the following:

III.10.H.1.c.i The Permittees will operate the LAW Vitrification System in order to maintain the systems and process parameters listed in Permit Tables III.10.H.C and III.10.H.F, as approved/modified pursuant to Permit Condition III.10.H.5., within the set-points specified in Permit Table III.10.H.F.

III.10.H.1.c.ii The Permittees will operate the AWFCO systems, specified in Permit Table III.10.H.F, as approved/modified pursuant to Permit Condition III.10.H.5., to automatically cut-off and/or lock-out the dangerous and mixed waste feed to the LAW Vitrification System when the monitored operating conditions deviate from the set-points specified in Permit Table III.10.H.F.

III.10.H.1.c.iii The Permittees will operate the AWFCO systems, specified in Permit Table III.10.H.F, as approved/modified pursuant to Permit Condition III.10.H.5., to automatically cut-off and/or lock-out the dangerous and mixed waste feed to the LAW Vitrification System when all instruments specified on Permit Table III.10.H.F for measuring the monitored parameter fail or exceed its span value.

III.10.H.1.c.iv The Permittees will operate the AWFCO systems, specified in Permit Table III.10.H.F, as approved/modified pursuant to Permit Condition III.10.H.5., to automatically cut-off and/or lock out the dangerous and/or mixed waste feed to the LAW Vitrification System when any portion of the LAW Vitrification System is bypassed. The terms "bypassed" and "bypass event" as used in Permit Sections III.10.H and III.10.I will mean if any portion of the LAW Vitrification System is bypassed so that gases are not treated as during the Demonstration Test.

III.10.H.1.c.v In the event of a malfunction of the AWFCO systems listed in Permit Table III.10.H.F, as approved/modified pursuant to Permit Condition III.10.H.5., the Permittees will immediately, manually cut-off the dangerous and mixed waste feed to the LAW Vitrification System. The Permittees will not restart the dangerous and/or mixed waste feed until the problem causing the malfunction has been identified and corrected.

III.10.H.1.c.vi The Permittees will manually cut-off the dangerous and mixed waste feed to the LAW Vitrification System when the operating conditions deviate from the limits specified in Permit Condition III.10.H.1.c.i., unless the deviation automatically activates the waste feed cut-off sequence specified in Permit Conditions III.10.H.1.c.ii., III.10.H.1.c.iii., and/or III.10.H.1.c.iv.

III.10.H.1.c.vii If greater than thirty (30) dangerous and mixed waste feed cut-off, combined, to the LAW Vitrification System occur due to deviations from Permit Table III.10.H.F, as approved/modified pursuant to Permit Condition III.10.H.5., within a sixty (60) day period, the Permittees will submit a written report to Ecology within five (5) calendar days of the thirty-first exceedance including the information specified below. These dangerous and mixed waste feed cut-offs to the LAW Vitrification System, whether automatically or manually activated, are counted if the specified set points are deviated from while dangerous waste, mixed waste, and waste residues continue to be processed in the LAW Vitrification System. A cascade event is counted at a frequency of one (1) towards the first waste feed cut-off parameter, specified on Permit Table III.10.H.F, from which the set-point is deviated:

A. The parameter(s) that deviated from the set-point(s) in Permit Table III.10.H.F.

B. The magnitude, dates, and duration of the deviations.

C. Results of the investigation of the cause of the deviations.

D. Corrective measures taken to minimize future occurrences of the deviations.

III.10.H.1.c.viii If any portion of the LAW Vitrification System is bypassed while treating dangerous and/or mixed waste it will be regarded as non-compliance with the operating conditions specified in Permit Condition III.10.H.1.c. and the performance standards specified in Permit Condition III.10.H.1.b. After such a bypass event, the Permittees will perform the following actions:

A. Investigate the cause of the bypass event.

B. Take appropriate corrective measures to minimize future bypasses.

C. Record the investigation findings and corrective measures in the operating record.

D. Submit a written report to Ecology within five (5) days of the bypass event documenting the result of the investigation and corrective measures.

III.10.H.1.c.ix The Permittees will control fugitive emissions from the LAW Vitrification System by maintaining the melters under negative pressure.

III.10.H.1.c.x Except during periods of vitrification system startup and shutdown, compliance with the operating conditions specified in Permit Condition III.10.H.1.c. will be regarded as compliance with the required performance standards identified in Permit Condition III.10.H.1.b. However, evidence that compliance with these operating conditions is insufficient to ensure compliance with the performance standards, will justify modification, revocation, or re-issuance of this Permit, in accordance with Permit Conditions III.10.C.2.e. and III.10.C.2.f., or III.10.C.2.g.

III.10.H.1.d Inspection Requirements [WAC 173-303-680(3)]

III.10.H.1.d.i The Permittees will inspect the LAW Vitrification System in accordance with the Inspection Schedules in Operating Unit Group 10, Addendum E1 of this Permit, as modified in accordance with Permit Condition III.10.C.5.c.

III.10.H.1.d.ii The inspection data for LAW Vitrification System will be recorded, and the records will be placed in the WTP Unit operating record for the LAW Vitrification System, in accordance with Permit Condition III.10.C.4.

III.10.H.1.d.iii The Permittees will comply with the inspection requirements specified in Operating Unit Group 10, Appendix 9.15 of this Permit, as approved pursuant to Permit Condition III.10.H.5.f., and as modified by Permit Conditions III.10.H.1.b.xii., III.10.H.2., III.10.H.3., and III.10.H.4.

III.10.H.1.e Monitoring Requirements [WAC 173-303-670(5), WAC 173-303-670(6), WAC 173-303-670(7) and WAC 173-303-807(2), in accordance with WAC 173-303-680(3)]

III.10.H.1.e.i Upon receipt of a written request from Ecology, the Permittees will perform sampling and analysis of the dangerous and mixed waste and exhaust emissions to verify that the operating requirements established in the Permit achieve the performance standards delineated in this Permit.

III.10.H.1.e.ii The Permittees will comply with the monitoring requirements specified in Operating Unit Group 10, Appendices 9.2, 9.3, 9.7, 9.13, 9.15 and 9.18 of this Permit, as approved pursuant to Permit Conditions III.10.H.5.c., III.10.H.5.d., III.10.H.5.e., and III.10.H.5.f., as modified by Permit Conditions III.10.H.1.b.xii., III.10.H.2., III.10.H.3., and III.10.H.4.

III.10.H.1.e.iii The Permittees will operate, calibrate, and maintain the carbon monoxide and hydrocarbon continuous emission monitors (CEM) specified in this Permit in accordance with Performance Specification 4B and 8A of 40 CFR Part 60, Appendix B, in accordance with Appendix to Subpart EEE of 40 CFR Part 63, and Operating Unit Group 10 Appendix 9.15 of this Permit, as approved pursuant to Permit Condition III.10.H.5.f., and as modified by Permit Conditions III.10.H.1.b.xii., III.10.H.2., III.10.H.3., and III.10.H.4.

III.10.H.1.e.iv The Permittees will operate, calibrate, and maintain the instruments specified on Permit Tables III.10.H.C, and F, as approved/modified pursuant to Permit Condition III.10.H.5., in accordance with Operating Unit Group 10, Appendix 9.15 of this Permit, as approved pursuant to Permit Condition III.10.H.5.f., and as modified by Permit Conditions III.10.H.1.b.xii., III.10.H.2., III.10.H.3., and III.10.H.4.

III.10.H.1.f Recordkeeping Requirements [WAC 173-303-380 and WAC 173-303-680(3)]

III.10.H.1.f.i The Permittees will record and maintain in the WTP Unit operating record for the LAW Vitrification System, all monitoring, calibration, maintenance, test data, and inspection data compiled under the conditions of this Permit, in accordance with Permit Conditions III.10.C.4. and III.10.C.5., as modified by Permit Conditions III.10.H.1.b.xii., III.10.H.2., III.10.H.3., and III.10.H.4.

III.10.H.1.f.ii The Permittees will record in the WTP Unit operating record the date, time, and duration of all automatic waste feed cutoffs and/or lockouts, including the triggering parameters, reason for the deviation, and recurrence of the incident. The Permittees will also record all incidents of AWFCO system function failures, including the corrective measures taken to correct the condition that caused the failure.

III.10.H.1.f.iii The Permittees will submit to Ecology a report semi-annually the first calendar year, and annually thereafter each calendar year within ninety (90) days following the end of the year. The report will include the following information:

A. Total dangerous and mixed waste feed processing time for the LAW Vitrification System;

B. Date/Time of all LAW Vitrification System startups and shutdowns;

C. Date/Time/Duration/Cause/Corrective Action taken for all LAW Vitrification System shutdowns caused by malfunction of either process or control equipment; and

D. Date/Time/Duration/Cause/Corrective Action taken for all instances of dangerous and/or mixed waste feed cut-off due to deviations from Permit Table III.10.H.F, as approved/modified pursuant to Permit Condition III.10.H.5.

III.10.H.1.f.iv The Permittees will submit an annual report to Ecology each calendar year within ninety (90) days following the end of the year of all quarterly CEM Calibration Error and Annual CEM Performance Specification Tests conducted in accordance with Permit Condition III.10.H.1.e.iii.

III.10.H.1.g Closure

The Permittees will close the LAW Vitrification System in accordance with Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8.

III.10.H.2 **Shakedown Period [WAC 173-303-670(5), WAC 173-303-670(6), WAC 173-303-670(7), and WAC 173-303-807(2), in accordance with WAC 173-303-680(2) and (3)].**

III.10.H.2.a The shakedown period for the LAW Vitrification System will be conducted in accordance with Permit Condition III.10.H.1., Operating Unit Group 10, Appendix 9.15 of this Permit, as approved pursuant to Permit Condition III.10.H.5.f., and as modified in accordance with Permit Conditions III.10.H.1.b.xii., III.10.H.2., and III.10.H.3.

III.10.H.2.b Duration of the Shakedown Period

III.10.H.2.b.i The shakedown period for the LAW Vitrification System will begin with the initial introduction of dangerous waste in the LAW Vitrification System following construction and will end with the start of the demonstration test.

III.10.H.2.b.ii The shakedown period will not exceed the following limits, as defined by hours, when the LAW Vitrification System is processing dangerous waste. The Permittees may petition Ecology for one extension of each shakedown phase for seven hundred and twenty (720) additional operating hours in accordance with Permit modification procedures specified in Permit Conditions III.10.C.2.e. and III.10.C.2.f.

Shakedown Phase 1: 720 hours

Shakedown Phase 2: 720 hours

III.10.H.2.b.iii Shakedown Phase 2 will not be commenced until documentation has been submitted to Ecology verifying that the LAW Vitrification System has operated at a minimum of 75% of the shakedown Phase 1 feed-rate limit for two (2) separate eight (8) consecutive hour periods with no AWFCOs.

III.10.H.2.c Allowable Waste Feed During the Shakedown Period

III.10.H.2.c.i The Permittees may feed the dangerous waste specified for the LAW Vitrification System on the Part A Forms (Operating Unit Group 10, Addendum A of this Permit), except for those wastes outside the waste acceptance criteria specified in the WAP, Attachment 1, Addendum B of this Permit, as approved pursuant to Permit Condition III.10.C.3., except Permit Conditions III.10.H.2.c.ii. through v. also apply.

III.10.H.2.c.ii The Permittees will not feed the following wastes to the LAW Vitrification System during Shakedown Phase 1:

A. Acutely toxic dangerous waste listed in WAC 173-303-081(a)(2)(a)(i).

B. Mixed waste

III.10.H.2.c.iii The Permittees will not feed the following waste to the LAW Vitrification System during Shakedown Phase 2:

A. Mixed waste

III.10.H.2.c.iv The feed-rates to the LAW Vitrification System will not exceed the limits in Permit Tables III.10.H.D and III.10.H.F, as approved/modified pursuant to Permit Condition III.10.H.5.

III.10.H.2.c.v The Permittees will conduct sufficient analysis of the dangerous waste treated in the LAW Vitrification System to verify that the waste feed is within the physical and chemical composition limits specified in this Permit.

III.10.H.3 **Demonstration Test Period [WAC 173-303-670(5), WAC 173-303-670(6), WAC 173-303-670(7), and WAC 173-303-807(2), in accordance with WAC 173-303-680(2) and (3)].**

III.10.H.3.a Demonstration Test Period

III.10.H.3.a.i The Permittees will operate, monitor, and maintain the LAW Vitrification System as specified in Permit Condition III.10.H.1., and Operating Unit Group 10, Appendix 9.15 of this Permit, as approved pursuant to Permit Condition III.10.H.5.f., except as modified in accordance with Permit Conditions III.10.H.1.b.xii., and III.10.H.3.

III.10.H.3.a.ii Operating Unit Group 10, Appendix 9.15 of this Permit, as approved pursuant to Permit Condition III.10.H.5.f., will be resubmitted to Ecology for approval by the Permittees as a permit modification pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f. at least one hundred and eighty (180) days prior to the start date of the demonstration test. The revised Demonstration Test Plan will include applicable EPA promulgated test methods and procedures in effect at the time of the re-submittal and projected commencement and completion dates for the Demonstration Test.

III.10.H.3.a.iii The Permittees will not commence the demonstration test period until documentation has been submitted to Ecology verifying that the LAW Vitrification System has operated at a minimum of 75% of the demonstration test period feed-rate limit for a minimum of an eight (8) consecutive hours period on two (2) consecutive days.

III.10.H.3.b Performance Standards

The Permittees will demonstrate compliance with the performance standards specified in Permit Condition III.10.H.1.b. during the Demonstration Test Period.

III.10.H.3.c Allowable Waste Feed During the Demonstration Test Period

III.10.H.3.c.i The Permittees may feed the dangerous waste specified for the LAW Vitrification System in Part A Forms (Operating Unit Group 10, Addendum A of this Permit), except for those waste outside the waste acceptance criteria specified in the WAP, Operating Unit Group 10, Addendum B of this Permit, as approved pursuant to Permit Condition III.10.C.3., except Permit Conditions III.10.H.3.c.ii. through iv. also apply.

III.10.H.3.c.ii The Permittees will not feed mixed waste to the LAW Vitrification System.

III.10.H.3.c.iii The dangerous waste feed-rates to the LAW Vitrification System will not exceed the limits in Permit Tables III.10.H.D and F, as approved/modified pursuant to Permit Condition III.10.H.5.

III.10.H.3.c.iv The Permittees will conduct sufficient analysis of the dangerous waste treated in the LAW Vitrification System to verify that the dangerous waste is within the physical and chemical composition limits specified in this Permit.

III.10.H.3.d Demonstration Data Submissions and Certifications

III.10.H.3.d.i The Permittees will submit to Ecology a complete demonstration test report within one-hundred eighty (180) calendar days of completion of the Demonstration Test including all data collected during the Demonstration Test and updated Permit Tables III.10.I.D, III.10.I.E and III.10.I.F.

III.10.H.3.d.ii The Permittees must submit the following information to Ecology prior to receiving Ecology's approval to commence feed of dangerous waste and mixed waste to the LAW Vitrification System:

A. The Permittees will submit a summary of data collected as required by the Demonstration Test Plan to Ecology upon completion of the Demonstration Test.

B. A certification that the Demonstration Test has been carried out in accordance with the approved Demonstration Test Plan and approved modifications within thirty (30) days of the completion of the Demonstration Test [WAC 173-303-807(8)].

C. Calculations and analytical data showing compliance with the performance standards specified in Permit Conditions III.10.H.1.b.i, III.10.H.1.b.iv, III.10.H.1.b.v, III.10.H.1.b.vi, and III.10.H.1.b.vii

D. Laboratory data QA/QC summary for the information provided in III.10.H.3.d.ii.C.

III.10.H.3.d.iii After successful completion of the Demonstration Test and receipt of Ecology's approval, the Permittees will be authorized to commence feed of dangerous waste and mixed waste to the LAW Vitrification System for the post-demonstration test period indicated in Permit Tables III.10.H.D and F, as approved/modified pursuant to Permit Condition III.10.H.5., in compliance with the operating requirements specified in Permit Condition III.10.H.1.c. and within the limitations specified in Permit Condition.III.10.C.14.

III.10.H.3.d.iv RESERVED

III.10.H.3.d.v After successful completion of the Demonstration Test, Permittees submittal of the following to Ecology and the Permittees receipt of approval of the following in writing, the Permittees will be authorized to feed dangerous waste and mixed waste to the LAW Vitrification System pursuant to Permit Section III.10.I.

A. A complete Demonstration Test Report for the LAW Vitrification System and updated Permit Tables III.10.I.D, III.10.I.E, and III.10.I.F, as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.C.11.c or III.10.C.11.d. The test report will be certified in accordance with WAC 173-303-807(8), in accordance with WAC 173-303-680(2) and (3).

B. A Final Risk Assessment Report completed pursuant to Permit Conditions III.10.C.11.c. or III.10.C.11.d.

III.10.H.3.d.vi If any calculations or testing results show that one or more of the performance standards listed in Permit Condition III.10.H.1.b., with the exception of Permit Condition III.10.H.1.b.x., for the LAW Vitrification System were not met during the Demonstration Test, the Permittees will perform the following actions:

A. Immediately stop dangerous and mixed waste feed to the LAW Vitrification System under the mode of operation that resulted in not meeting the performance standard(s).

B. Verbally notify Ecology within twenty-four (24) hours of discovery of not meeting the performance standard(s) as specified in Permit Condition I.E.21.

C. Investigate the cause of the failure and submit a report of the investigation findings to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s).

D. Submit to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s), documentation supporting a mode of operation where all performance standards listed in Permit Condition III.10.H.1.b., with the exception of Permit Condition III.10.H.1.b.x., for the LAW Vitrification System were met during the demonstration test, if any such mode was demonstrated.

E. Based on the information provided to Ecology by the Permittees pursuant to Permit Conditions III.10.H.3.d.vi.A through D above, and any additional information, Ecology may provide in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the LAW Vitrification System and/or amend the mode of

operation the Permittees are allowed to continue operations prior to Ecology approval of a compliance schedule and/or revised Demonstration Test Plan pursuant to Permit Conditions III.10.H.3.d.vi.F and G.

F. If the performance standard listed in Permit Condition III.10.H.1.b.i: was not met during the Demonstration Test, the Permittees will submit within one hundred and twenty (120) days of discovery of not meeting the performance standard, a revised Demonstration Test Plan (if appropriate), and a compliance schedule for Ecology approval to address this deficiency. If a revised Demonstration Test Plan is submitted, it will be accompanied by a request for approval to retest as a permit modification pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f. The revised Demonstration Test Plan (if submitted) must include substantive changes to prevent failure from reoccurring.

G. If any of the performance standards listed in Permit Condition III.10.H.1.b., with the exception of Permit Conditions III.10.H.1.b.i. or III.10.H.1.b.x., were not met during the Demonstration Test the Permittees will submit to Ecology within one hundred twenty (120) days of discovery of not meeting the performance standard(s), a revised Demonstration Test Plan requesting approval to retest as a permit modification pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring.

III.10.H.3.d.vii If any calculations or testing results show that any emission rate for any constituent listed in Permit Table III.10.H.E, as approved pursuant to Permit Condition III.10.C.11.b., is exceeded for LAW Vitrification System during the Demonstration Test, the Permittees will perform the following actions:

A. Verbally notify Ecology within twenty-four (24) hours of the discovery of exceeding the emission rate(s) as specified in Permit Condition I.E.21.

B. Submit to Ecology additional risk information to indicate that the increased emissions impact is offset by decreased emission impact from one or more constituents expected to be emitted at the same time, and/or investigate the cause and impact of the exceedance of the emission rate(s) and submit a report of the investigation findings to Ecology within fifteen (15) days of the discovery of exceeding the emission rate(s); and

C. Based on the notification and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the LAW Vitrification System and/or to submit a revised Demonstration Test Plan as a permit modification pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f., or III.10.C.2.g. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring.

III.10.H.4 Post Demonstration Test Period [WAC 173-303-670(5), WAC 173-303-670(6), and WAC 173-303-807(2), in accordance with WAC 173-303-680(2) and (3)].

III.10.H.4.a The Permittees will operate, monitor, and maintain the LAW Vitrification System as specified in Permit Condition III.10.H.1. and Operating Unit Group 10, Appendix 9.15 of this Permit, as approved pursuant to Permit Condition III.10.H.5., except as modified in accordance with Permit Conditions III.10.H.1.b.xii., III.10.H.3., and III.10.H.4.

III.10.H.4.b Allowable Waste Feed During the Post-Demonstration Test Period

III.10.H.4.b.i The Permittees may feed the dangerous and/or mixed waste specified for the LAW Vitrification System on the Part A Forms (Operating Unit Group 10, Addendum A of this Permit), except for those wastes outside the waste acceptance criteria specified in the WAP, Operating Unit Group 10, Addendum B of this Permit, as approved pursuant to Permit Condition III.10.C.3., and except Permit Conditions III.10.H.4.b.ii. and III.10.H.4.b.iii. also apply.

III.10.H.4.b.ii The dangerous waste and mixed waste feed-rates to the LAW Vitrification System will not exceed the limits in Permit Tables III.10.H.D and F, as approved/modified pursuant to Permit Condition III.10.H.5., or in Permit Condition III.10.H.3

III.10.H.4.b.iii The Permittees will conduct sufficient analysis of the dangerous waste and mixed waste treated in LAW Vitrification System to verify that the waste feed is within the physical and chemical composition limits specified in this Permit.

III.10.H.5 Compliance Schedules

III.10.H.5.a All information identified for submittal to Ecology in a. through f. of this compliance schedule must be signed and certified in accordance with requirements in WAC 173-303-810(12), as modified in accordance with Permit Condition III.10.H.1.a.iii. [WAC 173-303-806(4)].

III.10.H.5.b The Permittees will submit to Ecology, pursuant to Permit Condition III. 10.C.9.f., prior to construction of each secondary containment and leak detection system for the LAW Vitrification System (per level) as identified in Permit Tables III.10.H.A and III.10.H.B, engineering information as specified below, for incorporation into Operating Unit Group 10, Appendices 9.2 , 9.4, 9.5, 9.7, 9.8, 9.9, 9.11, and 9.12 of this Permit. At a minimum, engineering information specified below will show the following as described in WAC 173-303-640, in accordance with WAC 173-303-680 (the information specified below will include dimensioned engineering drawings and information on sumps and floor drains):

III.10.H.5.b.i IQRPE Reports (specific to foundation, secondary containment, and leak detection system) will include review of design drawings, calculations, and other information on which the certification report is based and will include as applicable, but not limited to, review of such information described below. Information (drawings, specifications, etc.) already included in Operating Unit Group 10, Appendix 9.0 of this Permit, may be included in the report by reference and should include drawing and document numbers. IQRPE Reports will be consistent with the information separately provided in ii. through ix. below [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)];

III.10.H.5.b.ii Design drawings (General Arrangement Drawings, in plan) and specifications for the foundation, secondary containment including liner installation details, and leak detection methodology. These items should show the dimensions, volume calculations, and location of the secondary containment system, and should include items such as floor/pipe slopes to sumps, tanks, floor drains [WAC 173-303-640(4)(b) through (f) and WAC 173-303-640(3)(a), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)];

III.10.H.5.b.iii The Permittees will provide the design criteria (references to codes and standards, load definitions, and load combinations, materials of construction, and analysis/design methodology) and typical design details for the support of the secondary containment system. This information will demonstrate the foundation will be capable of providing support to the secondary containment system, resistance to pressure gradients above and

below the system, and capable of preventing failure due to settlement, compression, or uplift [WAC 173-303-640(4)(c)(ii), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(B)];

III.10.H.5.b.iv A description of materials and equipment used to provide corrosion protection for external metal components in contact with soil, including factors affecting the potential for corrosion [WAC 173-303-640(3)(a)(iii)(B), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.H.5.b.v Secondary containment/foundation, and leak detection system, materials selection documentation (including, but not limited to, concrete coatings and water stops, and liner materials) as applicable [WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.H.5.b.vi Detailed description of how the secondary containment for the LAW Vitrification System will be installed in compliance with WAC 173-303-640(3)(c), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(A) through (B);

III.10.H.5.b.vii Submit Permit Tables III.10.H.B and III.10.I.B completed to provide for all secondary containment sumps and floor drains the information as specified in each column heading consistent with information to be provided in i. through vi., above;

III.10.H.5.b.viii Documentation that secondary containment and leak detection systems will not accumulate hydrogen gas levels above the lower explosive limit for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A), and WAC 173-303-806(4)(i)(v)];

III.10.H.5.b.ix A detailed description of how LAW Vitrification System design provides access for conducting future LAW Vitrification System integrity assessments [WAC 173-303-640(3)(b) and WAC 173-303-806(4)(i)(i)(B)].

III.10.H.5.c The Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f, prior to installation of each sub-system as identified in Permit Table III.10.H.A, engineering information as specified below, for incorporation into Operating Unit Group 10, Appendices 9.1 through 9.14, and 9.17 of this Permit. At a minimum, engineering information specified below will show the following, as required pursuant to WAC 173-303-640, in accordance with WAC 173-303-680 (the information specified below will include dimensioned engineering drawings):

III.10.H.5.c.i IQRPE Reports (specific to sub-system) will include review of design drawings, calculations, and other information on which the certification report is based and will include as applicable, but not limited to, review of such information described below. Information (drawings, specifications, etc.) already included in Operating Unit Group 10, Appendix 9.0 of this Permit, may be included in the report by reference and should include drawing and document numbers.
The IQRPE Reports will be consistent with the information separately provided in ii. through xii. below, and the IQRPE Report specified in Permit Condition III.10.H.5.b. [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)];

III.10.H.5.c.ii Design drawings [General Arrangement Drawings in plan and, Process Flow Diagrams, Piping and Instrumentation Diagrams (including pressure control systems), Mechanical Drawings, and specifications, and other information specific to subsystems (to show location and physical attributes of each subsystem)] [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)];

III.10.H.5.c.iii Sub-system design criteria (references to codes and standards, load definitions, and load combinations, materials of construction, and analysis/design methodology) and typical design details to support the subsystems. Structural support calculations specific to off-specification, non-standard and field fabricated subsystems will be submitted for incorporation into the Administrative Record. Documentation will include but not limited to, supporting specifications, test data, treatment effectiveness report, etc. supporting projected operational capability (e.g., WESP projected removal efficiency for individual metals, halogens, particulates, etc.) and compliance with performance standards specified in Permit Condition III.10.H.1.b [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(B)];

III.10.H.5.c.iv A description of materials and equipment used to provide corrosion protection for external metal components in contact with water, including factors affecting the potential for corrosion [WAC 173-303-640(3)(a)(iii)(B), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.H.5.c.v Sub-system materials selection documentation (e.g., physical and chemical tolerances) [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A)];

III.10.H.5.c.vi Sub-system vendor information (including, but not limited to, required performance warranties, as available), consistent with information submitted under ii. above, will be submitted for incorporation into the Administrative Record [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(v)];

III.10.H.5.c.vii System descriptions related to sub-system units will be submitted for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(v)];

III.10.H.5.c.viii Mass and energy balance for normal projected operating conditions used in developing the Piping and Instrumentation Diagrams and Process Flow Diagrams, including assumptions and formulas used to complete the mass and energy balance, so that they can be independently verified for incorporation into the Administrative Record [WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)];

III.10.H.5.c.ix Detailed description of all potential LAW Vitrification System bypass events including:

A. A report which includes an analysis of credible potential bypass events and recommendations for prevention/minimization of the potential, impact, and frequency of the bypass event to include at a minimum:

1. Operating procedures
2. Maintenance procedures
3. Redundant equipment
4. Redundant instrumentation
5. Alternate equipment
6. Alternate materials of construction

III.10.H.5.c.x A detailed description of how the sub-systems will be installed in compliance with WAC 173-303-640(3)(c), (d), and (e), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B);

III.10.H.5.c.xi Sub-system design to prevent escape of vapors and emissions of acutely or chronically toxic (upon inhalation) EHW, for incorporation into the Administrative Record

[WAC 173-303-640(5)(e), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(B)];

III.10.H.5.c.xii Documentation that sub-systems are designed to prevent the accumulation of hydrogen gases levels above the lower explosive limit for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A), and WAC 173-303-806(4)(i)(v)].

III.10.H.5.d The Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f, prior to installation of equipment for each sub-system as identified in Permit Tables III.10.H.A and III.10.H.B, not addressed in Permit Conditions III.10.H.5.b. or III.10.H.5.c., engineering information as specified below, for incorporation into Operating Unit Group 10, Appendices 9.1 through 9.14 of this Permit. At a minimum, engineering information specified below will show the following as required pursuant to WAC 173-303-640, in accordance with WAC 173-303-680 (the information specified below will include dimensioned engineering drawings):

III.10.H.5.d.i IQRPE Reports (specific to sub-system equipment) will include a review of design drawings, calculations, and other information as applicable on which the certification report is based. The reports will include, but not be limited to, review of such information described below. Information (drawings, specifications, etc.) already included in Operating Unit Group 10, Appendix 9.0 of this Permit, may be included in the report by reference and should include drawing and document numbers. The IQRPE Reports will be consistent with the information provided separately in ii. through xiii. below and the IQRPE Reports specified in Permit Conditions III.10.H.5.b. and III.10.H.5.c. [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.H.5.d.ii Design drawings [Process Flow Diagrams, Piping and Instrumentation Diagrams (including pressure control systems), specifications and other information specific to equipment (these drawings should include all equipment such as pipes, valves, fittings, pumps, instruments, etc.)] [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.H.5.d.iii Sub-system equipment design criteria (references to codes and standards, load definitions, and load combinations, materials of construction, and analysis/design methodology) and typical design details for the support of the sub-system equipment [WAC 173-303-640(3)(a) and WAC 173-303-640(3)(f), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B)];

III.10.H.5.d.iv A description of materials and equipment used to provide corrosion protection for external metal components in contact with soil and water, including factors affecting the potential for corrosion [WAC 173-303-640(3)(a)(iii)(B), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A)];

III.10.H.5.d.v Materials selection documentation for equipment for each sub-system (e.g., physical and chemical tolerances) [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A)];

III.10.H.5.d.vi Vendor information (including, but not limited to, required performance warranties, as available), consistent with information submitted under ii. above, for sub-system equipment will be submitted for incorporation into the Administrative Record. [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(iv)];

III.10.H.5.d.vii Sub-system, sub-system equipment, and leak detection system instrument control logic narrative description (e.g., descriptions of fail-safe conditions, etc.) [WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)].

III.10.H.5.d.viii System description related to sub-system equipment, and system descriptions related to leak detection systems, for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(v)];

III.10.H.5.d.ix A detailed description of how the sub-system equipment will be installed and tested [WAC 173-303-640(3)(c) through (e), WAC 173-303-640(4)(b) and (c), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B)];

III.10.H.5.d.x For process monitoring, control, and leak detection system instrumentation for the LAW Vitrification System as identified in Permit Tables III.10.H.C. and III.10.H. F., a detailed description of how the process monitoring, control, and leak detection system instrumentation, will be installed and tested [WAC 173-303-640(3)(c) through (e), WAC 173-303-640(4)(b) and (c), WAC 173-303-806(4)(c)(vi), and WAC 173-303-806(4)(i)(i)(B)];

III.10.H.5.d.xi Mass and energy balance for projected normal operating conditions used in developing the Piping and Instrumentation Diagrams and Process Flow Diagrams, including assumptions and formulas used to complete the mass and energy balance, so that they can be independently verified, for incorporation into the Administrative Record [WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)];

III.10.H.5.d.xii Documentation that sub-systems equipment are designed to prevent the accumulation of hydrogen gas levels above the lower explosive limit for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A), and WAC 173-303-806(4)(i)(v)];

III.10.H.5.d.xiii Leak detection system documentation (e.g. vendor information, etc.) consistent with information submitted under Permit Condition III.10.H.5.c.ii. and Permit Conditions III.10.H.5.d.ii., vii., viii., and x. above, will be submitted for incorporation into the Administrative Record.

III.10.H.5.e Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., the following as specified below for incorporation into Operating Unit Group 10, Appendix 9.18 of this Permit, except Permit Condition III.10.H.5.e.i., which will be incorporated into Operating Unit Group 10, Addendum E of this Permit. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions III.10.H.5.b., c., d., e., and f., III.10.C.3.e. and III.10.C.11.b., as approved by Ecology:

III.10.H.5.e.i Integrity assessment program and schedule for the LAW Vitrification System will address the conducting of periodic integrity assessments on the LAW Vitrification System over the life of the system, as specified in Permit Condition III.10.H.5.b.ix. and WAC 173-303-640(3)(b), in accordance with WAC 173-303-680, and descriptions of procedures for addressing problems detected during integrity assessments. The schedule must be based on past integrity assessments, age of the system, materials of construction, characteristics of the waste, and any other relevant factors [WAC 173-303-640(3)(b), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B)].

III.10.H.5.e.ii Detailed plans and descriptions, demonstrating the leak detection system is operated so that it will detect the failure of either the primary or secondary containment structure or

the presence of any release of dangerous and/or mixed waste or accumulated liquid in the secondary containment system within twenty-four (24) hours [WAC 173-303-640(4)(c)(iii)]. Detection of a leak of at least 0.1 gallons per hour within twenty-four (24) hours is defined as being able to detect a leak within twenty-four (24) hours. Any exceptions to this criteria must be approved by Ecology in accordance with WAC 173-303-680, WAC 173-303-640(4)(c)(iii), and WAC 173-303-806(4)(i)(i)(b).

A. Dangerous waste pipe penetrations that require a penetration seal in accordance with the International Building Code (IBC) and DOE-STD-1066, DOE Standard for Fire Protection Design Criteria, or meet ventilation sealing requirements identified in Table III.10.H.G, are not required to meet the 0.1 gallons per hour within twenty-four (24) hours leak detection rate for those sections of piping that are in contact with approved silicone or equivalent low-permeability seal material.

B. Piping on either side of the penetration seal must meet the requirements of III.10.H.5.e.ii.

C. Revisions (including additions or deletions) to Table III.10.H.G will be submitted to Ecology for review and approval pursuant to Conditions III.10.C.2.e and III.10.C.2.f. Addition of penetration seal locations to Table III.10.H.G. will be approved by Ecology prior to installation of the penetration seal.

Table III.10.H.G LAW Plant Penetration Seal Location

Row Number	Room Number	Orientation	Discipline	Sequence Number
1.	L0000112	E	PD	02097
2.	L0000123	E	PD	01823
3.	L0000123	E	PD	01834
4.	L0000123	E	PD	01828
5.	L0000123	E	PD	01837
6.	L0000123	E	PD	01822
7.	L0000123	E	PD	01824
8.	L0000123	E	PD	01826
9.	L0000123	E	PD	01821
10.	L0000123	E	PD	01825
11.	L0000123	E	PD	01827
12.	L0000123	E	PD	01836
13.	L0000123	E	PD	01820
14.	L0000123	E	PD	01832
15.	L0000123	S	PD	01797
16.	L0000124	E	PD	01843
17.	L0000124	E	PD	01844
18.	L0000124	E	PD	01845
19.	L0000124	E	PD	01842
20.	L0000124	E	PD	01847
21.	L0000124	E	PD	01841
22.	L0000124	E	PD	01846

Row Number	Room Number	Orientation	Discipline	Sequence Number
23.	L0000124	E	PD	01850
24.	L0000124	E	PD	01848
25.	L0000124	E	PD	01852
26.	L0000124	E	PD	01840
27.	L0000124	E	PD	01839
28.	L0000124	E	PD	01849
29.	L0000124	S	PD	01801
30.	L0000125	E	PD	01858
31.	L0000125	E	PD	01859
32.	L0000125	E	PD	01860
33.	L0000125	E	PD	01857
34.	L0000125	E	PD	01862
35.	L0000125	E	PD	01856
36.	L0000125	E	PD	01861
37.	L0000125	E	PD	01865
38.	L0000125	E	PD	01863
39.	L0000125	E	PD	01867
40.	L0000125	E	PD	01855
41.	L0000125	E	PD	01854
42.	L0000125	E	PD	01864
43.	L0000126	S	PD	01807
44.	L0000201	F	PD	02405
45.	L0000201	S	PD	02406
46.	L0000202	F	PD	02495
47.	L0000216	W	PD	02674
48.	L0000220	E	PD	02709
49.	L0000301	F	PD	03319
50.	L0000301	S	PD	03437
51.	L0000301	S	PD	04149
52.	L0000301	S	PD	04141
53.	L000101A	F	PD	01291
54.	L000101A	F	PD	01292
55.	L000101A	W	PD	01971
56.	L000226B	F	PD	02445
57.	L000226B	F	PD	02444
58.	L000304F	F	PD	03278
59.	L000304F	F	PD	03277
60.	LB00001B	E	EQ	80908
61.	LB00001B	S	PD	00196

Row Number	Room Number	Orientation	Discipline	Sequence Number
62.	LB00001B	S	PD	00201
63.	LC000201	F	PD	02430

III.10.H.5.e.iii Detailed operational plans and descriptions, demonstrating that spilled or leaked waste and accumulated liquids can be removed from the secondary containment system within twenty-four (24) hours [WAC 173-303-806(4)(i)(i)(B)].

III.10.H.5.e.iv Descriptions of operational procedures demonstrating appropriate controls and practices are in place to prevent spills and overflows from the LAW Vitrification System or containment systems in compliance with WAC 173-303-640(5)(b)(i) through (iii), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B);

III.10.H.5.e.v Description of procedures for investigation and repair of the LAW Vitrification System [WAC 173-303–640(6) and WAC 173-303-640(7)(e) and (f), in accordance with WAC 173-303-680, WAC 173-303-320, WAC 173-303-806(4)(a)(v), and WAC 173-303-806(4)(a)(ii)(B)].

III.10.H.5.e.vi Updated Addendum C, Narrative Description, Tables and Figures as identified in Permit Tables III.10.H.A and III.10.H.B, as modified pursuant to Permit Condition III.10.H.5.e.x. and updated to identify routinely non-accessible LAW Vitrification sub-systems.

III.10.H.5.e.vii Description of procedures for management of ignitable and reactive, and incompatible dangerous and/or mixed waste as specified in WAC 173-303-640(9) and (10), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B).

III.10.H.5.e.viii A description of the tracking system used to track dangerous and/or mixed waste generated throughout the LAW Vitrification system, pursuant to WAC 173-303-380.

III.10.H.5.e.ix Permit Tables III.10.H.C and III.10.I.C will be completed for LAW Vitrification System process and leak detection system monitors and instruments (to include, but not be limited to: instruments and monitors measuring and/or controlling flow, pressure, temperature, density, pH, level, humidity, and emissions) to provide the information as specified in each column heading. Process and leak detection system monitors and instruments for critical systems as specified in Operating Unit Group 10, Appendix 2.0 and as updated pursuant to Permit Condition III.10.C.9.b., and for operating parameters as required to comply with Permit Condition III.10.C.3.e.iii. will be addressed. Process monitors and instruments for non-waste management operations (e.g., utilities, raw chemical storage, non-contact cooling waters, etc.) are excluded from this permit condition [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(v)];

III.10.H.5.e.x Permit Tables III.10.H.A and III.10.I.A amended as follows [WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(A) through (B)]:

A. Under column 1, update and complete list of dangerous and mixed waste LAW Vitrification System sub-systems, including plant items that comprise each system (listed by item number).

B. Under column 2, update and complete system designations.

C. Under column 3, replace the 'Reserved' with Operating Unit Group 10, Appendix 9.0 subsections (e.g., 9.1, 9.2, etc.) designated in Permit Conditions III.10.H.5.b., c., and d. specific to LAW Vitrification System sub-system as listed in column 1.

D. Under column 4, update and complete list of narrative description, tables, and figures.

III.10.H.5.f One hundred and eighty (180) days prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will submit for review and receive approval for incorporation into Operating Unit Group 10, Appendix 9.15 of this Permit, a Demonstration Test Plan for the LAW Vitrification System to demonstrate that the LAW Vitrification Systems meets the performance standards specified in Permit Condition III.10.H.1.b. In order to incorporate the Demonstration Test Plan for the LAW Vitrification System into Operating Unit Group 10, Appendix 9.15, Permit Condition III.10.C.2.g. process will be followed. The Demonstration Test Plan will include, but not be limited to, the following information. The Demonstration Test Plan will also be consistent with the information provided pursuant to Permit Conditions III.10.H.5.b., c., d., and e., III.10.C.3.e., and III.10.C.11.b., as approved by Ecology and consistent with the schedule described in Operating Unit Group 10, Appendix 1.0 of this Permit. The documentation required pursuant to Permit Condition III.10.H.5.f.x., in addition to being incorporated into Operating Unit Group 10, Appendix 9.15, will be incorporated by reference in Operating Unit Group 10, Addendum E of this Permit.

Notes: (1) The following should be consulted to prepare this Demonstration Test Plan: "Guidance on Setting Permit Conditions and Reporting Trial Burn Results Volume II of the Hazardous Waste Incineration Guidance Series," (EPA/625/6-89/019) and Risk Burn Guidance For Hazardous Waste Combustion Facilities," (EPA-R-01-001, July 2001), WAC 173-303-807(2), WAC 173-303-670(5), WAC-173-303-670(6), 40 CFR §63.1207(f)(2), 40 CFR §63.1209, and Appendix to 40 CFR Part 63 EEE.

(2) Cross-referencing to the information provided pursuant to permit Conditions III.H.5.b., c., d., e., and III.10.C.3.e.v., as approved by Ecology, that are redundant to elements of the Demonstration Test Plan for the LAW Vitrification System is acceptable.

III.10.H.5.f.i Analysis of each feed-stream to be fed during the demonstration test, including dangerous waste, glass formers and reductants, process streams (e.g., volumes of air leakage including control air, process air, steam, sparge bubbler air, air in-leakage from melter cave, and gases from LAW Vitrification Vessel Ventilation System, process water, etc.) that includes:

A. Levels of ash, metals, total chlorine (organic and inorganic), other halogens and radionuclide surrogates.

B. Description of the physical form of the feed-streams.

C. An identification and quantification of organics that are present in the feed-stream, including constituents proposed for DRE demonstration.

A comparison of the proposed demonstration test feed streams to the mixed waste feed envelopes to be processed in the melters must be provided that documents that the proposed demonstration test feed streams will serve as worst case surrogates for organic destruction, formation of products of incomplete oxidation, and metals, total chlorine (organic and inorganic), other halogens, particulate formation, and radionuclides.

III.10.H.5.f.ii Specification of trial principal organic dangerous constituents (PODCs) for which destruction and removal efficiencies are proposed to be calculated during the demonstration test and for inclusion in Permit Conditions III.10.H.1.b.i. and III.10.I.1.b.i.

These trial PODCs will be specified based on destructibility, concentration or mass in the waste and the dangerous waste constituents or constituents in WAC 173-303-9905;

III.10.H.5.f.iii A description of the blending procedures, prior to introducing the feed-streams into the melter, including analysis of the materials prior to blending, and blending ratios;

III.10.H.5.f.iv A description of how the surrogate feeds are to be introduced for the demonstration. This description should clearly identify the differences and justify how any of differences would impact the surrogate feed introduction as representative of how mixed waste feeds will be introduced;

III.10.H.5.f.v A detailed engineering description of the LAW Vitrification System, including:

A. Manufacturer's name and model number for each sub-system.

B. Design capacity of each sub-system including documentation (engineering calculations, manufacturer/vendor specifications, operating data, etc.) supporting projected operational efficiencies (e.g., WESP projected removal efficiency for individual metals, halogens, particulates, etc.) and compliance with performance standards specified in Permit Condition III.10.H.1.b.

C. Detailed scaled engineering drawings, including Process Flow Diagrams, Piping and Instrumentation Diagrams, Vessel Drawings (plan, and elevation with cross sections) and General Arrangement Drawings.

D. Process Engineering Descriptions.

E. Mass and energy balance for each projected operating condition and each demonstration test condition, including assumptions and formulas used to complete the mass and energy balance, so that they can be independently verified for incorporation into the Administrative Record.

F. Engineering Specifications/data sheets (materials of construction, physical and chemical tolerances of equipment, and fan curves).

G. Detailed Description of Automatic Waste Feed Cutoff System addressing critical operating parameters for all performance standards specified in Permit Condition III.10.H.1.b.

H. Documentation to support compliance with performance standards specified in Permit Condition III.10.H.1.b., including engineering calculations, test data, and manufacturer/vendor's warranties, etc..

I. Detailed description of the design, operation, and maintenance practices for air pollution control system.

J. Detailed description of the design, operation, and maintenance practices of any stack gas monitoring and pollution control monitoring system.

III.10.H.5.f.vi Detailed description of sampling and monitoring procedures including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, and planned analytical procedures for sample analysis including, but not limited to:

A. A short summary narrative description of each stack sample method should be included within the main body of the demonstration test plan, which references an appendix to the plan that would include for each sampling train: (1) detailed sample method procedures, (2) sampling train configuration schematic, (3) sampling recovery flow sheet, (4) detailed analytical method procedures, and (5) sampling preparation and analysis flow sheet. The detailed procedures should clearly flag where the method has provided decision points (e.g., choices of equipment materials

of construction, choices of clean-up procedures or whether additional clean-up procedures will be incorporated, whether pretest surveys or laboratory validation work will be performed, enhancements to train to accommodate high moisture content in stack gas, etc.) and what is being proposed along with the basis for the decision.

B. A short summary narrative description of the feed and residue sampling methods should be included within the main body of the demonstration test plan, which references an appendix that would include for each sample type: (1) detailed sample method procedures, (2) sampling recovery/compositing procedures, and (3) detailed analytical method procedures. The detailed procedures should clearly flag where the method has provided decision points (e.g., choices of equipment materials of construction, choices of clean-up procedures or whether additional clean-up procedures will be incorporated, whether pretest surveys or laboratory validation work will be performed, etc.) and what is being proposed along with the basis for the decision.

III.10.H.5.f.vii A detailed test schedule for each condition for which the demonstration test is planned, including projected date(s), duration, quantity of dangerous waste to be fed, and other relevant factors.

III.10.H.5.f.viii A detailed test protocol including, for each test condition, the ranges of feed-rate for each feed system, and all other relevant parameters that may affect the ability of the LAW Vitrification System to meet performance standards specified in Permit Condition III.10.H.1.b.

III.10.H.5.f.ix A detailed description of planned operating conditions for each demonstration test condition, including operating conditions for shakedown, demonstration test, post-demonstration test and normal operations. This information will also include submittal of Permit Tables III.10.H.D, III.10.H.F, III.10.I.D, and III.10.I.F completed with the information as specified in each column heading for each LAW Vitrification System waste feed cutoff parameter and submittal of supporting documentation for Permit Tables III.10.H.D, III.10.H.F, III.10.I.D, and III.10.I.F set-point values.

III.10.H.5.f.x The test conditions proposed must demonstrate meeting the performance standards specified in Permit Condition III.10.H.1.b. with the simultaneous operation of both melters at capacity and input from the LAW Vitrification Vessel Ventilation System at capacity to simulate maximum loading to the LAW Vitrification System off-gas treatment system and to establish the corresponding operating parameter ranges. To the extent that operation of one (1) melter or two (2) melters cannot be sustained within the operating parameter range established at this maximum load, additional demonstration test conditions must be included in the plan and performed to establish operating parameter ranges for each proposed operating mode while demonstrating meeting the performance standards specified in Permit Condition III.10.H.1.b..

III.10.H.5.f.xi Detailed description of procedures for start-up and shutdown of waste feed and controlling emissions in the event of an equipment malfunction, including off-normal and emergency shutdown procedures.

III.10.H.5.f.xii A calculation of waste residence time.

III.10.H.5.f.xiii Any request to extrapolate metal feed-rate limits from Demonstration Test levels must include:

A. A description of the extrapolation methodology and rationale for how the approach ensures compliance with the performance standards as specified in Permit Condition III.10.H.1.b.

B. Documentation of the historical range of normal metal feed-rates for each feed stream.

C. Documentation that the level of spiking recommended during the demonstration test will mask sampling and analysis imprecision and inaccuracy to the extent that extrapolation of feed-rates and emission rates from the Demonstration Test data will be as accurate and precise as if full spiking were used.

III.10.H.5.f.xiv Documentation of the expected levels of constituents in LAW Vitrification System input streams including, but not limited to, waste feed, glass former and reactants, control air, process air, steam, sparge bubbler air, air in-Leakage from melter cave, gases from LAW Vitrification Vessel Ventilation System, and process water.

III.10.H.5.f.xv Documentation justifying the duration of the conditioning required to ensure the LAW Vitrification System had achieved steady-state operations under Demonstration Test operating conditions.

III.10.H.5.f.xvi Documentation of LAW Vitrification System process and leak detection system instruments and monitors as listed on Permit Tables III.10.H.C, III.10.H.F, III.10.I.C, and III.10.I.F to include:

A. Procurement specifications.

B. Location used.

C. Range, precision, and accuracy.

D. Detailed descriptions of calibration/functionality test procedures (either method number ASTM) or provide a copy of manufacturer's recommended calibration procedures.

E. Calibration/functionality test, inspection, and routine maintenance schedules and checklists, including justification for calibration, inspection and maintenance frequencies, criteria for identifying instruments found to be significantly out of calibration, and corrective action to be taken for instruments found to be significantly out of calibration (e.g., increasing frequency of calibration, instrument replacement, etc.).

F. Equipment instrument control logic narrative description (e.g., descriptions of failsafe conditions, etc.) [WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)].

III.10.H.5.f.xvii Outline of demonstration test report.

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Table III.10.H.A - LAW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables and Figures
LAW Melter Process System LMP-MLTR-00001 (LAW Melter 1) LMP-MLTR-00002 (LAW Melter 2)	LMP	**24590-LAW** -CM-HC4-HXYG-00240-02-00014. Rev/ - -M0D-LMP-00001, Rev. 3 -M0D-LMP-00002, Rev. 3 -M6-LMP-00001001, Rev 0 -M6-LMP-00002001, Rev 0 -M6-LMP-00002002, Rev 0 -M6-LMP-00031001, Rev 0 -M6-LMP-00032001, Rev 0 -M6-LMP-00032002, Rev 0 -MF-LMP-00001, Rev. 0 -MF-LMP-00002, Rev. 0 -MP-LMP-00003, Rev. 0 -MP-LMP-00004, Rev. 0 -3PS-AE00-T0001, Rev. 6 -3PN-LMP-00002 -N1D-LMP-00001, Rev. 1 -P1-P01T-00002, Rev 7	Section 4.1.3.2, Table C-8, and Figures C1-1, C1-3 and C1-21 in Operating Unit Group 10, Addendum C of this Permit.
LAW Primary Offgas Process System LOP-FCLR-00001 (Melter 1 Primary Film Cooler) LOP-FCLR-00002 (Melter 1Standby Film Cooler No. 2)	LOP	**24590-LAW** -P1-P01T-00002, Rev 7 -M6-LOP-00004001, Rev 0 -M6-LOP-00004002, Rev 0 -M6-LOP-00005001, Rev 0 -M6-LOP-00005002, Rev 0	Section 4.1.3.3, Table C-8, and Figures C1-1, C1-3 and C1-21 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.H.A - LAW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables and Figures
LOP-FCLR-00003 (Melter 2 Primary Film Cooler) LOP-FCLR-00004 (Melter 2 Standby Film Cooler)			
LAW Primary Offgas Process System (Cont.) LOP-SCB-00001 (Melter 1 Submerged Bed Scrubber) LOP-SCB-00002 (Melter 2 Submergered Bed Scrubber)	LOP	**24590-LAW** -M5-V17T-P0007, Rev 0 -M5-V17T-P0008, Rev 0 -M6-LOP-00001001, Rev 0 -M6-LOP-00002001, Rev 0 -MK-LOP-P0001001, Rev 0 -MK-LOP-P0001002, Rev 0 -MK-LOP-P0001003, Rev 0 -MKD-LOP-P0008, Rev 0 -NID-LOP-P0001, Rev 1 -P1-P01T-00002, Rev 7	Section 4.1.3.3, Table C-8, and Figures C1-1 and C1-3 in Operating Unit Group 10, Addendum C of this Permit.
LAW Primary Offgas Process System (Cont.) LOP-WESP-00001 (Melter 1 Wet Electrostatic Precipitator - WESP) LOP-WESP-00002 (Melter 2 Wet Electrostatic Precipitator -WESP)	LOP	**24590-LAW** -M5-V17T-P0007, Rev 0 -M5-V17T-P0008, Rev 0 -M6-LOP-00001004, Rev 0 -M6-LOP-00002004, Rev 0 -NID-LOP-00003, Rev 3 -P1-P01T-00002, Rev 7 **24590-WTP** -3PS-MKE0-T0001, Rev 5	Section 4.1.3.3, Table C-8, and Figures C1-1 and C1-3 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.H.A - LAW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables and Figures
LAW Secondary Offgas/Vessel Vent Process System LVP-HEPA-00001A (Melter Offgas HEPA Filter) LVP-HEPA-00001B (Melter Offgas HEPA Filter) LVP-HEPA-00002A (Melter Offgas HEPA Filter) LVP-HEPA-00002B (Melter Offgas HEPA Filter) LVP-HEPA-00003A (Melter Offgas HEPA Filter)	LVP	**24590-LAW** -M5-V17T-00010, Rev 4 -M6-LVP-00001003, Rev 0 -P1-P01T-00005, Rev 6	Section 4.1.3.3, Table C-8, Figures C1-1 and C1-3 in Operating Unit Group 10, Addendum C of this Permit.
LAW Secondary Offgas/Vessel Vent Process System (Cont.) LVP-SCO-00001 (Thermal Catalytic Oxidizer – located on LVP-SKID-00002)	LVP	**24590-LAW** -M6-LVP-00005002, Rev 3	Section 4.1.3.3, Table C-8, Figures C1-1 and C1-3 in Operating Unit Group 10, Addendum C of this Permit.
LAW Secondary Offgas/Vessel Vent Process System (Cont.) LVP-SCR-00001 (NOx Selective Catalytic Reduction Unit – located on LVP-SKID-00002)	LVP	**24590-LAW** -M6-LVP-00005002, Rev 3	Section 4.1.3.3, Table C-8, and Figures C1-1 and C1-3 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.H.A - LAW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables and Figures
LVP-HX-00001 (Catalytic Oxidizer Heat Exchanger – located on LVP-SKID-00002) LVP-HTR-00002 (Catalytic Oxidizer Electric Heater – located on LVP-SKID-00002)			
LAW Secondary Offgas/Vessel Vent Process System (Cont.) LVP-ADBR-00001A (Offgas Mercury Adsorber – located on LVP-SKID-00001) LVP-ADBR-00001B (Offgas Mercury Adsorber – located on LVP-SKID-00001)	LVP	**24590-LAW** -M5-V17T-00011, Rev 5 -M6-LVP-00004003, Rev 0 -P1-P01T-00005, Rev 6	Section 4.1.3.3, Table C-8, and Figures C1-1 and C1-3 in Operating Unit Group 10, Addendum C of this Permit.
LAW Secondary Offgas/Vessel Vent Process System (Cont.) LVP-SCB-00001 (Melter Offgas Caustic Scrubber)	LVP	**24590-LAW** -P1-P01T-00005, Rev 6 -M6-LVP-00002002, Rev 0	Section 4.1.3.3, Table C-8, and Figures C1-1 and C1-3 in Operating Unit Group 10, Addendum C of this Permit.
LAW Secondary Offgas/Vessel Vent Process System (Cont.) LVP-HTR-00001A (Melter Offgas HEPA Preheater)	LVP	**24590-LAW** -M5-V17T-00010, Rev 4 -M6-LVP-00001002, Rev 0 -P1-P01T-00005, Rev. 6	Section 4.1.3.3, Table C-8, and Figures C1-1 and C1-3 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.H.A - LAW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables and Figures
LVP-HTR-00001B (Melter Offgas HEPA Preheater)			
LAW Secondary Offgas/Vessel Vent Process System (Cont.) LVP-EXHR-00001A (Melter Offgas Exhauster) LVP-EXHR-00001B (Melter Offgas Exhauster) LVP-EXHR-00001C (Melter Offgas Exhauster)	LVP	**24590-LAW** -M5-V17T-00010, Rev 4 -M6-LVP-00001004, Rev 0 -M6-LVP-00001005, Rev 0 -M6-LVP-00001006, Rev 0 -P1-P01T-00005, Rev 6	Section 4.1.3.3, Table C-8, and Figures C1-1 and C1-3 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.H.B - LAW Vitrification Miscellaneous Unit System Secondary Containment Sumps and Floor Drains

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions[a] (feet) & Materials of Construction	Engineering Description (Drawing Nos., Specification Nos., etc.)
RLD-SUMP-00029 L-0123 (Process Cell, El. +3')	37	30" Dia. By 12" deep Stainless Steel (6% Mo)	**24590-LAW** -M6-RLD-00003002 -P1-P01T-00002
RLD-SUMP-00030 L-0123 (Process Cell, El. +3')	37	30" Dia. By 12" deep Stainless Steel (6% Mo)	**24590-LAW** -M6-RLD-00003002 -P1-P01T-00002
RLD-SUMP-00031 L-0124 (Process Cell Sump, El. +3')	37	30" Dia. By 12" deep Stainless Steel (6% Mo)	**24590-LAW** -M6-RLD-00003002 -P1-P01T-00002
RLD-SUMP-00032 L-0124 (Process Cell, El. +3')	37	30" Dia. By 12" deep Stainless Steel (6% Mo)	**24590-LAW** -M6-RLD-00003002 -P1-P01T-00002
LOP-FD-00001 L-0123 (LOP-BULGE-00001 Drain El. +3')	N/A	2" Dia. 6% Mo	**24590-LAW** -M6-LOP-00001003
RLD-WS-20037-S11B-01 L-0123 (Melter 1 Encasement Assembly Drain, El. +3')	N/A	1" Dia. 316L	**24590-LAW** -M6-LMP-00012001
LOP-FD-00002 L-0124 (LOP-BULGE-00002 Drain, El. +3')	N/A	2" Dia. 6% Mo	**24590-LAW** -M6-LOP-00002003
RLD-WS-20033-S11B-01 L-0124 (Melter 2 Encasement Assembly Drain, El. +3')	N/A	1" Dia. 316L	**24590-LAW** -M6-LMP-00042001

Table III.10.H.B - LAW Vitrification Miscellaneous Unit System Secondary Containment Sumps and Floor Drains

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions[a] (feet) & Materials of Construction	Engineering Description (Drawing Nos., Specification Nos., etc.)
RLD-FD-00025 L-0304F (Curb Floor Drain for Caustic Scrubber, El. 48')	N/A	4" Dia. 316L	**24590-LAW** -M6-RLD-00003001

Footnotes:
[a]Dimensions listed are based on permitted design. Actual dimensions may vary within acceptable design tolerances.

Table III.10.H.C - LAW Vitrification System Process and Leak Detection System Instruments and Parameters

Sub-system Locator and Name (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Failure State	Expected Range	Instrument Accuracy	Instrument Calibration Method No. and Range
24590-LAW-M6-LMP-00005001	Melter 1 Plenum Temperature Average	Temperature Element	TE-1267C, 1272C, 1280C	TBD	TBD	TBD	TBD	TBD
		Temperature Transmitter	TT-1267B					
		Temperature Indicator	TI-1267C, 1272C, 1280C					
24590-LAW-M6-LMP-00035001	Melter 2 Plenum Temperature Average	Temperature Element	TE-2267C, 2272C, 2280C	TBD	TBD	TBD	TBD	TBD
		Temperature Transmitter	TT-2267B					

		Temperature Indicator	TI-2267C, 2272C, 2280C					
24590-LAW-M6-LMP-00002002	Melter 1 Glass Pool Density	Density Transmitter	DT-1404	TBD	TBD	TBD	TBD	TBD
		Density Indicator	DI-1404					
24590-LAW-M6-LMP-00032002	Melter 2 Glass Pool Density	Density Transmitter	DT-2404	TBD	TBD	TBD	TBD	TBD
		Density Indicator	DI-2404					
24590-LAW-M6-LMP-00002002	Melter 1 Glass Pool Level	Level Transmitter	LT-1405	TBD	TBD	TBD	TBD	TBD
		Level Indicator	LI-1405					
24590-LAW-M6-LMP-00032002	Melter 2 Glass Pool Level	Level Transmitter	LT-2405	TBD	TBD	TBD	TBD	TBD
		Level Indicator	LI-2405					
24590-LAW-M6-LMP-00002002	Melter 1 Plenum Pressure	Pressure Differential Transmitter	PDT-1410 / PDI-1410* or	TBD	TBD	TBD	TBD	TBD
		Pressure Differential Indicator	PDT-1411 / PDI-1411*					
24590-LAW-M6-LMP-00032002	Melter 2 Plenum Pressure	Pressure Differential Transmitter	PDT-2410 / PDI-2410* or	TBD	TBD	TBD	TBD	TBD

		Pressure Differential Indicator	PDT-2411 / PDI-2411*					
24590-LAW-M6-LMP-00007002	Melter 1 West Canister Level	Level Element (IR Camera)	LE-1466	TBD	TBD	TBD	TBD	TBD
		Level Transmitter	LT-1466					
		Level Indication	LI-1466B					
24590-LAW-M6-LMP-00007001	Melter 1 East Canister Level	Level Element (IR Camera)	LE-1511	TBD	TBD	TBD	TBD	TBD
		Level Transmitter	LT-1511					
		Level Indication	LI-1511B					
24590-LAW-M6-LMP-00037002	Melter 2 West Canister Level	Level Element (IR Camera)	LE-2466	TBD	TBD	TBD	TBD	TBD
		Level Transmitter	LT-2466					
		Level Indication	LI-2466B					
24590-LAW-M6-LMP-00037001	Melter 2 East Canister Level	Level Element (IR Camera)	LE-2511	TBD	TBD	TBD	TBD	TBD
		Level Transmitter	LT-2511					
		Level Indication	LI-2511B					
24590-LAW-M6-LMP-00010001	Melter 1 West Discharge Air Lift	On/Off Plug Valve	YV-1125	TBD	TBD	TBD	TBD	TBD
		Valve Control	YC-1125					

24590-LAW-M6-LMP-00008001	Melter 1 East Discharge Air Lift	On/Off Plug Valve	YV-1047	TBD	TBD	TBD	TBD	TBD
		Valve Control	YC-1047					
24590-LAW-M6-LMP-00040001	Melter 2 West Discharge Air Lift	On/Off Plug Valve	YV-2125	TBD	TBD	TBD	TBD	TBD
		Valve Control	YC-2125					
24590-LAW-M6-LMP-00038001	Melter 2 East Discharge Air Lift	On/Off Plug Valve	YV-2047	TBD	TBD	TBD	TBD	TBD
		Valve Control	YC-2047					
24590-LAW-M6-LMP-00012001	Melter 1 Feed Encasement Assembly Leak Detection	Cable Type Conductivity Element	LE-1632	TBD	TBD	TBD	TBD	TBD
			LAH 1632					
24590-LAW-M6-LMP-00042001	Melter 2 Feed Encasement Assembly Leak Detection	Cable Type Conductivity Element	LE-2632	TBD	TBD	TBD	TBD	TBD
			LAH-2632					
24590-LAW-M6-LMP-00013002 and 24590-LAW-M6-LMP-00005	Melter 1 Lid Cooling	Temperature Element	TE-1640	TBD	TBD	TBD	TBD	TBD

		Temperature Transmitter	TT-1293					
		Temperature Indicator	TI-1640					
24590-LAW-M6-LMP-00043 and 24590-LAW-M6-LMP-00035001	Melter 2 Lid Cooling	Temperature Element	TE-2640	TBD	TBD	TBD	TBD	TBD
		Temperature Transmitter	TT-2293					
		Temperature Indicator	TI-2640					
* These instrument sets are duplicates. Only one instrument set is required to remain functioning during waste feed operations.								

Table III.10.H.D - Maximum Feed-rates to LAW Vitrification System (RESERVED)

Description of Waste	Shakedown 1 and Post Demonstration Test	Shakedown 2 and Demonstration Test
Dangerous and Mixed Waste Feed-rate	RESERVED	RESERVED
Total Chlorine/Chloride Feed-rate	RESERVED	RESERVED
Total Metal Feed-rates	RESERVED	RESERVED
Total Ash Feed-rate	RESERVED	RESERVED

Table III.10.H.E - LAW Vitrification System Estimated Emission Rates (RESERVED)

Chemicals	CAS Number	Emission Rates (grams /second)
RESERVED	RESERVED	RESERVED

TABLE III.10.H.F - LAW Vitrification System Waste Feed Cutoff Parameters* 1 (RESERVED)

Sub-system Designation	Instrument Tag Number	Parameter Description	Setpoints During Shakedown 1 and Post Demonstration Test	Setpoints During Shakedown 2 and Demonstration Test
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

* A continuous monitoring system will be used as defined in Permit Section III.10.C.1.

[1] Maximum Feed-rate will be set based on not exceeding any of the constituent (e.g., ash, metals, and chlorine/chloride) feed limits specified on Table III.10.H.D. of this Permit.

III.10.I LAW VITRIFICATION SYSTEM – LONG TERM MISCELLANEOUS THERMAL TREATMENT UNIT

For purposes of Permit Section III.10.I, where reference is made to WAC 173-303-640, the following substitutions apply: substitute the terms "LAW Vitrification System" for "tank system(s)," "sub-system(s)" for "tank(s)," "sub-system equipment" for "ancillary equipment," and "sub-system(s) or sub-system equipment of a LAW Vitrification System" for "component(s)," in accordance with WAC 173-303-680.

III.10.I.1 Requirements For LAW Vitrification System Beginning Normal Operation

Prior to commencing normal operations provided in Permit Section III.10.I, all requirements in Permit Section III.10.H will have been met by the Permittees and approved by Ecology, including the following: The LAW Vitrification System Demonstration Test results and the revised Final Risk Assessment provided for in Permit Condition III.10.C.11.c. or III.10.C.11.d. and Permit Section III.10.H, will have been evaluated and approved by Ecology, Permit Tables III.10.I.D and F, as approved/modified pursuant to Permit Condition III.10.H.5., will have been completed, submitted and approved pursuant to Permit Condition III.10.H.3.d.v. and Permit Table III.10.I.E, as approved/modified pursuant to Permit Condition III.10.H.5, will have been completed, submitted and approved pursuant to Permit Condition III.10.C.11.c. or d.

III.10.I.1.a Construction and Maintenance [WAC 173-303-640, in accordance with WAC 173-303-680(2) and (3) and WAC 173-303-340].

III.10.I.1.a.i The Permittees will maintain the design and construction of the LAW Vitrification System as specified in Permit Condition III.10.I.1., Operating Unit Group 10, Addendum C of this Permit, and Operating Unit Group 10, Appendices 9.1 through 9.17 of this Permit, as approved pursuant to Permit Conditions III.10.H.5.a. through d. and III.10.H.5.f.

III.10.I.1.a.ii The Permittees will maintain the design and construction of all containment systems for the LAW Vitrification System, as specified in Operating Unit Group 10, Addendum C of this Permit, and Operating Unit Group 10, Appendices 9.2 and 9.4 through 9.14 of this Permit, as approved pursuant to Permit Conditions III.10.H.5.a. through d.

III.10.I.1.a.iii Modifications to approved design, plans, and specifications in Operating Unit Group 10 of this Permit for the LAW Vitrification System will be allowed only in accordance with Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g., III.10.C.9.d., e., and h.

III.10.I.1.a.iv The Permittees will ensure all certifications required by specialists (e.g., independent, qualified, registered professional engineer; registered professional engineer; independent corrosion expert; independent, qualified installation inspector; installation inspector; etc.) use the following statement or equivalent pursuant to Permit Condition III.10.C.10:

"I, (Insert Name) have (choose one or more of the following: overseen, supervised, reviewed, and/or certified) a portion of the design or installation of a new LAW Vitrification system or component located at (address), and owned/operated by (name(s)). My duties were: (e.g., installation inspector, testing for tightness, etc.), for the following LAW Vitrification System components (e.g., the venting piping, etc.), as required by the Dangerous Waste Regulations, namely, WAC 173-303-640(3) (applicable paragraphs [i.e., (a) through (g)], in accordance with WAC 173-303-680.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that

the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

III.10.I.1.a.v The Permittees will ensure periodic integrity assessments are conducted on the LAW Vitrification System listed in Permit Table III.10.I.A, as approved/modified pursuant to Permit Condition III.10.H.5, over the term of this Permit in accordance with WAC 173-303-680(2) and (3) as specified in WAC 173-303-640(3)(b), following the description of the integrity assessment program and schedule in Operating Unit Group 10, Addendum E of this Permit, as approved pursuant to Permit Conditions III.10.H.5.e.i. and III.10.C.5.c. Results of the integrity assessments will be included in the WTP Unit operating record until ten (10) years after post closure, or corrective action is complete and certified, whichever is later.

III.10.I.1.a.vi The Permittees will address problems detected during the LAW Vitrification System integrity assessments specified in Permit Condition III.10.I.1.a.v. following the description of the integrity assessment program in Operating Unit Group 10, Addendum E of this Permit, as approved pursuant to Permit Conditions III.10.H.5.e.i. and III.10.C.5.c.

III.10.I.1.a.vii All process monitors/instruments as specified in Permit Table III.10.I.F, as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.H.3.d.v., will be equipped with operational alarms to warn of deviation, or imminent deviation from the limits specified in Permit Table III.10.I.F.

III.10.I.1.a.viii The Permittees will install and test all process and leak detection system monitors/instruments, as specified in Permit Tables III.10.I.C and III.10.I.F, as approved/modified pursuant to Permit Condition III.10.H.5 and III.10.H.3.d.v., in accordance with Operating Unit Group 10, Appendices 9.1, 9.2, and 9.14 of this Permit, as approved pursuant to Permit Conditions III.10.H.5.d.x. and III.10.H.5.f..xvi.

III.10.I.1.a.ix No dangerous and/or mixed waste will be treated in the LAW Vitrification System unless the operating conditions, specified under Permit Condition III.10.I.1.c. are complied with.

III.10.I.1.a.x The Permittees will not place dangerous and/or mixed waste, treatment reagents, or other materials in the LAW Vitrification System if these substances could cause the sub-system, sub-system equipment, or the containment system to rupture, leak, corrode, or otherwise fail [WAC 173-303-640(5)(a), in accordance with WAC 173-303-680(2)]. This condition is not applicable to corrosion of LAW Vitrification System sub-system or sub-system equipment that are expected to be replaced as part of normal operations (e.g., melters).

III.10.I.1.a.xi The Permittees will operate the LAW Vitrification System to prevent spills and overflows using description of controls and practices as required under WAC 173-303-640(5)(b), described in Permit Condition III.10.C.5 and Operating Unit Group 10, Appendix 9.18 of this Permit, as approved pursuant to Permit Condition III.10.H.5.e. [WAC 173-303-640(5)(b), in accordance with WAC 173-303-680(2) and (3), and WAC 173-303-806(4)(c)(ix)].

III.10.I.1.a.xii For routinely non-accessible LAW Vitrification System sub-systems, as specified in Operating Unit Group 10, Addendum C of this Permit, as updated pursuant to Permit Condition III.10.H.5.e.vi., the Permittees will mark all routinely non-accessible LAW Vitrification System sub-systems access points with labels or signs to identify the waste contained in each LAW Vitrification System sub-system. The label, or sign, must be legible at a distance of at least fifty (50) feet and must bear a legend which identifies the

waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the LAW Vitrification System sub-systems. For the purposes of this permit condition, "routinely non-accessible" means personnel are unable to enter these areas while waste is being managed in them [WAC 173-303-640(5)(d), in accordance with WAC 173-303-680(2)].

III.10.I.1.a.xiii For the LAW Vitrification System sub-systems not addressed in Permit Condition III.10.I.1.a.xii., the Permittees will mark these LAW Vitrification System sub-systems holding dangerous and/or mixed waste with labels or signs to identify the waste contained in the LAW Vitrification System sub-systems. The labels, or signs, must be legible at a distance of at least fifty (50) feet and must bear a legend which identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the LAW Vitrification System sub-systems [WAC 173-303-640(5)(d), in accordance with WAC 173-303-680(2)].

III.10.I.1.a.xiv The Permittees will ensure that the secondary containment systems for the LAW Vitrification System sub-systems listed in Permit Tables III.10.I.A and III.10.I.B, as approved/modified pursuant to Permit Condition III.10.H.5, are free of cracks or gaps to prevent any migration of dangerous and/or mixed waste or accumulated liquid out of the system to the soil, groundwater, or surface water at any time during use of the LAW Vitrification System sub-systems. Any indication that a crack or gap may exist in the containment systems will be investigated and repaired in accordance with Operating Unit Group 10, Appendix 9.18 of this Permit, as approved pursuant to Permit Condition III.10.H.5.e.v. [WAC 173-303–640(4)(b)(i), WAC 173-303-640(4)(e)(i)(C), and WAC 173-303-640(6), in accordance with WAC 173-303-680(2) and (3), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-320].

III.10.I.1.a.xv The Permittees must immediately, and safely, remove from service any LAW Vitrification System or secondary containment system which through an integrity assessment is found to be "unfit for use" as defined in WAC 173-303-040, following Permit Condition III.10.I.1.a.xvii. A through D, and F. The affected LAW Vitrification System or secondary containment system must be either repaired or closed in accordance with Permit Condition III.10.I.1.a.xvii.E [WAC 173-303-640(7)(e) and (f) and WAC 173-303-640(8), in accordance with WAC 173-303-680(3)].

III.10.I.1.a.xvi An impermeable coating, as specified in Operating Unit Group 10, Appendices 9.4, 9.5, 9.7, 9.9, 9.11, and 9.12 of this Permit, as approved pursuant to Permit Condition III.10.H.5.b.v., will be maintained for all concrete containment systems and concrete portions of containment systems for the LAW Vitrification System sub-systems listed in Permit Tables III.10.I.A and III.10.I.B, as approved/modified pursuant to Permit Condition III.10.H.5 (concrete containment systems that do not have a liner, pursuant to WAC 173-303-640(4)(e)(i), in accordance with WAC 173-303-680(2), and have construction joints, will meet the requirements of WAC 173-303-640(4)(e)(ii)(C), in accordance with WAC 173-303-680(2). The coating will prevent migration of any dangerous and/or mixed waste into the concrete. All coatings will meet the following performance standards:

A. The coating must seal the containment surface such that no cracks, seams, or other avenues through which liquid could migrate are present.

B. The coating must be of adequate thickness and strength to withstand the normal operation of equipment and personnel within the given area such that degradation or

physical damage to the coating or lining can be identified and remedied before dangerous and mixed waste could migrate from the system.

C. The coating must be compatible with the dangerous and/or mixed waste, treatment reagents, or other materials managed in the containment system [WAC 173-303-640(4)(e)(ii)(D), in accordance with WAC 173-303-680(2) and (3) and WAC 173-303-806(4)(i)(i)(A)].

III.10.I.1.a.xvii The Permittees inspect all secondary containment systems for the LAW Vitrification System sub-systems listed in Permit Tables III.10.I.A and III.10.I.B, as approved/modified pursuant to Permit Condition III.10.H.5, in accordance with the Inspection Schedule specified in Operating Unit Group 10, Addendum E1 of this Permit, as approved pursuant to Permit Conditions III.10.H.5.e.i. and III.10.C.5.c., and take the following actions if a leak or spill of dangerous and/or mixed waste is detected in these containment systems [WAC 173-303-640(5)(c) and WAC 173-303-640(6), in accordance with WAC 173-303-680(2) and (3), WAC 173-303-320, and WAC 173-303-806(4)(i)(i)(B)].

A. Immediately, and safely, stop the flow of dangerous and/or mixed waste into the LAW Vitrification System sub-systems or secondary containment system.

B. Determine the source of the dangerous and/or mixed waste.

C. Remove the waste from the containment area in accordance with WAC 173-303-680(2) and (3) as specified in WAC 173-303-640(7)(b). The waste removed from containment areas of the LAW Vitrification System sub-systems will be, as a minimum, managed as dangerous and/or mixed waste.

D. If the cause of the release was a spill that has not damaged the integrity of the LAW Vitrification System sub-system, the Permittees may return the LAW Vitrification System sub-system to service in accordance with WAC 173-303-680(2) and (3) as specified in WAC 173-303-640(7)(e)(ii). In such case, the Permittees will take action to ensure the incident that caused the dangerous and/or mixed waste to enter the containment system will not reoccur.

E. If the source of the dangerous and/or mixed waste is determined to be a leak from the primary LAW Vitrification System into the secondary containment system, or the system is unfit for use as determined through an integrity assessment or other inspection, the Permittees will comply with the requirements of WAC 173-303-640(7) and take the following actions:

1. Close the LAW Vitrification System sub-system following procedures in WAC 173-303-640(7)(e)(i), in accordance with WAC 173-303-680 and Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8.

2. Repair and re-certify (in accordance with WAC 173-303-810(13)(a), as modified pursuant to Permit Condition III.10.I.1.a.iii.) the LAW Vitrification System in accordance with Operating Unit Group 10, Appendix 9.18 of this Permit, as approved pursuant to Permit Condition III.10.H.5.e.v., before the LAW Vitrification System is placed back into service [WAC 173-303-640(7)(e)(iii) and WAC 173-303-640(7)(f), in accordance with WAC 173-303-680].

F. The Permittees will document in the WTP Unit operating record actions/procedures taken to comply with A through E above, as specified in WAC 173-303-640(6)(d), in accordance with WAC 173-303-680(2) and (3).

G. In accordance with WAC 173-303-680(2) and (3), the Permittees will notify and report releases to the environment to Ecology, as specified in WAC 173-303-640(7)(d).

III.10.I.1.a.xviii If liquids (e.g., dangerous and/or mixed waste, leaks and spills, precipitation, fire water, liquids from damaged or broken pipes) cannot be removed from the secondary containment system within twenty-four (24) hours, Ecology will be verbally notified within twenty-four (24) hours of discovery. The notification will provide the information in A, B, and C, listed below. The Permittees will provide Ecology with a written demonstration within seven (7) business days, identifying at a minimum [WAC 173-303-640(4)(c)(iv) and WAC 173-303-640(7)(b)(ii), in accordance with WAC 173-303-680(3) and WAC 173-303-806(4)(i)(i)(B)]:

A. Reasons for delayed removal.

B. Measures implemented to ensure continued protection of human health and the environment.

C. Current actions being taken to remove liquids from secondary containment.

III.10.I.1.a.xix All air pollution control devices and capture systems in the LAW Vitrification System will be maintained and operated at all times in a manner so as to minimize the emissions of air contaminants and to minimize process upsets. Procedures for ensuring that the air pollution control devices and capture systems in the LAW Vitrification System are properly operated and maintained so as to minimize the emission of air contaminants and process upsets will be established.

III.10.I.1.a.xx In all future narrative permit submittals, the Permittees will include LAW Vitrification sub-system names with the sub-system designation.

III.10.I.1.a.xxi For any portion of the LAW Vitrification System that has the potential for formation and accumulation of hydrogen gases, the Permittees will operate the portion to maintain hydrogen levels below the lower explosive limit [WAC 173-303-815(2)(b)(ii)].

III.10.I.1.a.xxii For each LAW Vitrification System sub-system holding dangerous and/or mixed waste that are acutely or chronically toxic by inhalation, the Permittees will operate the system to prevent escape of vapors, fumes, or other emissions into the air [WAC 173-303-806(4)(i)(i)(B) and WAC 173-303-640(5)(e), in accordance with WAC 173-303-680].

III.10.I.1.a.xxiii The existing LAW building will retain capability to install the third melter before or after hot start-up. No permanent systems, structures, or components shall be installed in the melter cell, pour cave or wet process cell for the third melter that would preclude future installation of the third melter.

III.10.I.1.b Performance Standards

III.10.I.1.b.i The LAW Vitrification System must achieve a destruction and removal efficiency (DRE) of 99.99% for the principal organic dangerous constituents (PODCs) listed below [40 CFR §63.1203(c)(1) and 40CFR §63.1203(c)(2), in accordance with WAC 173-303-680(2)]:

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DRE in this permit condition will be calculated in accordance with the formula given below:

DRE=[1-(Wout/Win)] x 100%

Where:

Win=mass feed rate of one principal organic dangerous constituent (PODC) in a waste feed stream; and

Wout=mass emission rate of the same PODC present in exhaust emissions prior to release to the atmosphere.

III.10.I.1.b.ii Particulate matter emissions from the LAW Vitrification System will not exceed 34 mg/dscm (0.015 grains/dscf) [40 CFR §63.1203(b)(7), in accordance with WAC 173-303-680(2)];

III.10.I.1.b.iii Hydrochloric acid and chlorine gas emissions from the LAW Vitrification System will not exceed 21 ppmv, combined [40 CFR §63.1203(b)(6), in accordance with WAC 173-303-680(2)];

III.10.I.1.b.iv Dioxin and Furan TEQ emissions from the LAW Vitrification System will not exceed 0.2 nanograms (ng)/dscm, [40 CFR §63.1203(b)(1), in accordance with WAC 173-303-680(2)];

III.10.I.1.b.v Mercury emissions from the LAW Vitrification System will not exceed 45 µg/dscm [40 CFR §63.1203(b)(2), in accordance with WAC 173-303-680(2)];

III.10.I.1.b.vi Lead and cadmium emissions from the LAW Vitrification System will not exceed 120 µg/dscm, combined [40 CFR §63.1203(b)(3), in accordance with WAC 173-303-680(2)];

III.10.I.1.b.vii Arsenic, beryllium, and chromium emissions from the LAW Vitrification System will not exceed 97 µg/dscm, combined [40 CFR §63.1203(b)(4), in accordance with WAC 173-303-680(2)];

III.10.I.1.b.viii Carbon monoxide (CO) emission from the LAW Vitrification System will not exceed 100 parts per million (ppm) by volume, over an hourly rolling average (as measured and recorded by the continuous monitoring system), dry basis [40 CFR §63.1203(b)(5)(i), in accordance with WAC 173-303-680(2) and (3)];

III.10.I.1.b.ix Hydrocarbon emission from the LAW Vitrification System will not exceed 10 parts per million (ppm) by volume, over an hourly rolling average (as measured and recorded by the continuous monitoring system during demonstration testing required by this Permit), dry basis and reported as propane [40 CFR §63.1203(b)(5)(ii), in accordance with WAC 173-303-680(2) and (3)];

III.10.I.1.b.x If the emissions from the LAW Vitrification System exceed the emission rates listed in Permit Table III.10.I.E, as approved pursuant to Permit Condition III.10.C.11.c. or d., the Permittees will perform the following actions [WAC 173-303-680(2) and (3), and WAC 173-303-815(2)(b)(ii)]:

A. Verbally notify Ecology within twenty-four (24) hours of the discovery of exceeding the emission rate(s) as specified in Permit Condition I.E.21.

B. Submit to Ecology additional risk information to indicate that the increased emissions impact is offset by decreased emission impact from one or more constituents expected to be emitted at the same time, and/or investigate the cause and impact of the exceedance of the emission rate(s) and submit a report of the investigation

findings to Ecology within fifteen (15) days of the discovery of exceeding the emission rate(s).

C. Based on the notification and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the LAW Vitrification System and/or to submit a revised Demonstration Test Plan as a permit modification pursuant to Permit Conditions III.10.C.2.e. through g. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring.

The emission limits specified in Permit Conditions III.10.I.1.b.i. through III.10.I.1.b.ix. above, will be met for the LAW Vitrification System by limiting feed rates as specified in Permit Tables III.10.I.D and III.10.I.F, as approved/modified pursuant to Permit Conditions III.10.H.5. and III.10.H.3.d.v., compliance with operating conditions specified in Permit Condition III.10.I.1.c. (except as specified in Permit Condition III.10.I.1.b.xii.), and compliance with Permit Condition III.10.I.1.b.xi.;

III.10.I.1.b.xi Treatment effectiveness, feed-rates and operating rates for dangerous and/or mixed waste management units contained in the LAW Building, but not included in Permit Table III.10.I.A, as approved/modified pursuant to Permit Condition III.10.H.5, will be as specified in Permit Sections III.10.D through F and consistent with assumptions and basis which are reflected in Operating Unit Group 10, Appendix 6.3.1 of this Permit, as approved pursuant to Permit Condition III.10.C.11.b. For the purposes of this permit condition, Operating Unit Group 10, Appendix 6.3.1 will be superseded by Appendix 6.4.1 upon its approval pursuant to either Permit Condition III.10.C.11.c or III.10.C.11.d. [WAC 173-303-680(2) and (3), and WAC 173-303-815(2)(b)(ii)];

III.10.I.1.b.xii Except during periods of LAW Vitrification System startup and shutdown, compliance with the operating conditions specified in Permit Condition III.10.I.1.c., will be regarded as compliance with the required performance standards identified in Permit Conditions III.10.I.1.b.i. through x. However, if it is determined that during the effective period of this Permit that compliance with the operating conditions in Permit Condition III.10.I.1.c. is not sufficient to ensure compliance with the performance standards specified in Permit Conditions III.10.I.1.b.i. through x., the Permit may be modified, revoked, or reissued pursuant to Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g.

III.10.I.1.c Operating Conditions [WAC 173-303-670(6), in accordance with WAC 173-303-680(2) and (3)]

The Permittees will operate the LAW Vitrification System in accordance with Operating Unit Group 10, Addendum C of this Permit, as updated pursuant to Permit Condition III.10.H.5.e.vi. and Operating Unit Group 10, Appendix 9.18 of this Permit, as approved pursuant to Permit Condition III.10.H.5.e., and Operating Unit Group 10, Appendix 9.15 of this Permit, as approved pursuant to Permit Condition III.10.H.5.f., except as modified pursuant to Permit Conditions III.10.H.3, III.10.I.1.b.x., III.10.I.1.b.xii., III.10.I.1.h., and in accordance with and the following:

III.10.I.1.c.i The Permittees will operate the LAW Vitrification System in order to maintain the systems and process parameters listed in Permit Tables III.10.I.C and III.10.I.F, as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.H.3.d.v., within the set-points specified in Permit Table III.10.I.F.

III.10.I.1.c.ii The Permittees will operate the AWFCO systems, specified in Permit Table III.10.I.F, as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.H.3.d.v., to automatically cut-off and/or lock-out the dangerous and/or mixed waste feed to LAW

Vitrification System when the monitored operating conditions deviate from the set-points specified in Permit Table III.10.I.F.

III.10.I.1.c.iii The Permittees will operate the AWFCO systems, specified in Permit Table III.10.I.F, as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.H.3.d.v., to automatically cut-off and/or lock-out the dangerous and/or mixed waste feed to LAW Vitrification System when all instruments specified in Permit Table III.10.H.F for measuring the monitored parameters fails or exceeds its span value.

III.10.I.1.c.iv The Permittees will operate the AWFCO systems, specified in Permit Table III.10.I.F, as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.H.3.d.v., to automatically cut-off and/or lock out the dangerous waste and/or mixed waste feed to the LAW Vitrification System when any portion of the LAW Vitrification System is bypassed. The terms "bypassed" and "bypass event," as used in Permit Sections III.10.H and III.10.I, will mean if any portion of the LAW Vitrification System is bypassed so that gases are not treated as during the Demonstration Test.

III.10.I.1.c.v In the event of a malfunction of the AWFCO systems listed in Permit Table III.10.I.F, as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.H.3.d.v., the Permittees will immediately, manually cut-off the dangerous and/or mixed waste feed to the LAW Vitrification System. The Permittees will not restart the dangerous and/or mixed waste feed until the problem causing the malfunction has been identified and corrected.

III.10.I.1.c.vi The Permittees will manually cut-off the dangerous and/or mixed waste feed to the LAW Vitrification System when the operating conditions deviate from the limits specified in Permit Condition III.10.I.1.c.i., unless the deviation automatically activates the waste feed cut-off sequence specified in Permit Conditions III.10.I.1.c.ii., iii., and/or iv.

III.10.I.1.c.vii If greater than thirty (30) dangerous and/or mixed waste feed cut-off, combined, to the LAW Vitrification System occur due to deviations from Permit Table III.10.I.F, as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.H.3.d.v., within a sixty (60) day period, the Permittees will submit a written report to Ecology within five (5) calendar days of the thirty-first exceedance, including the information specified below. These dangerous and/or mixed waste feed cut-offs to the LAW Vitrification System, whether automatically or manually activated, are counted if the specified set-points are deviated from while dangerous and/or mixed waste and waste residues continue to be processed in the LAW Vitrification System. A cascade event is counted at a frequency of one (1) towards the first waste feed cut-off parameter, specified in Permit Table III.10.I.F, from which the set-point is deviated:

A. The parameter(s) that deviated from the set-point(s) in Permit Table III.10.I.F.

B. The magnitude, dates, and duration of the deviations.

C. Results of the investigation of the cause of the deviations.

D. Corrective measures taken to minimize future occurrences of the deviations.

III.10.I.1.c.viii If greater than thirty (30) dangerous and/or mixed waste feed cut-off, combined, to the LAW Vitrification System occur due to deviations from Permit Table III.10.I.F, as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.H.3.d.v., within a thirty (30) day period, the Permittees will submit the written report required to be submitted pursuant to Permit Condition III.10.I.1.c.vii. to Ecology on the first business day following the thirty-first exceedance. These dangerous and/or mixed waste feed cut-offs to the LAW Vitrification System, whether automatically or manually activated, are

counted if the specified set-points are deviated from while dangerous and/or mixed waste and waste residues continue to be processed in the LAW Vitrification System. A cascade event is counted at a frequency of one (1) towards the first waste feed cut-off parameter, specified on Permit Table III.10.I.F, from which the set-point is deviated:

In accordance with WAC 173-303-680(2) and (3), the Permittees may not resume dangerous and/or mixed waste feed to the LAW Vitrification System until this written report has been submitted, and

A. Ecology has authorized the Permittees, in writing, to resume dangerous and/or mixed waste feed, or

B. Ecology has not, within seven (7) days, notified the Permittees in writing of the following:

1. The Permittees written report does not document that the corrective measures taken will minimize future exceedances.

2. The Permittees must take further corrective measures and document that these further corrective measures will minimize future exceedances.

III.10.I.1.c.ix If any portion of the LAW Vitrification System is bypassed while treating dangerous and/or mixed waste, it will be regarded as non-compliance with the operating conditions specified in Permit Condition III.10.I.1.c. and the performance standards specified in Permit Condition III.10.I.1.b. After such a bypass event, the Permittees will perform the following actions:

A. Investigate the cause of the bypass event.

B. Take appropriate corrective measures to minimize future bypasses.

C. Record the investigation findings and corrective measures in the WTP Unit operating record.

D. Submit a written report to Ecology within five (5) days of the bypass event documenting the result of the investigation and corrective measures.

III.10.I.1.c.x The Permittees will control fugitive emissions from the LAW Vitrification System by maintaining the melters under negative pressure.

III.10.I.1.c.xi Except during periods of vitrification system startup and shutdown, compliance with the operating conditions specified in Permit Condition III.10.I.1.c. will be regarded as compliance with the required performance standards identified in Permit Condition III.10.I.1.b. However, evidence that compliance with these operating conditions is insufficient to ensure compliance with the performance standards, will justify modification, revocation, or re-issuance of this Permit, in accordance with Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g.

III.10.I.1.d Inspection Requirements [WAC 173-303-680(3)]

III.10.I.1.d.i The Permittees will inspect the LAW Vitrification System in accordance with the Inspection Schedules in Operating Unit Group 10, Addendum E1 of this Permit, as modified in accordance with Permit Condition III.10.C.5.c.

III.10.I.1.d.ii The inspection data for LAW Vitrification System will be recorded, and the records will be placed in the WTP Unit operating record for LAW Vitrification System, in accordance with Permit Condition III.10.C.4.

III.10.I.1.d.iii The Permittees will comply with the inspection requirements specified in Operating Unit Group 10, Appendix 9.15 of this Permit, as approved pursuant to Permit Condition

III.10.H.5.f. and as modified by Permit Conditions III.10.H.3, III.10.I.1.b.x., III.10.I.1.b.xii., and III.10.I.1.h.

III.10.I.1.e Monitoring Requirements [WAC 173-303-670(5), WAC 173-303-670(6), WAC 173-303-670(7), and WAC 173-303-807(2), in accordance with WAC 173-303-680(3)]

III.10.I.1.e.i Upon receipt of a written request from Ecology, the Permittees will perform sampling and analysis of the dangerous and/or mixed waste and exhaust emissions to verify that the operating requirements established in the Permit achieve the performance standards delineated in this Permit.

III.10.I.1.e.ii The Permittees will comply with the monitoring requirements specified in the Operating Unit Group 10, Appendices 9.2, 9.3, 9.7, 9.13, 9.15 and 9.18 of this Permit, as approved pursuant to Permit Condition III.10.H.5, and as modified by Permit Conditions III.10.H.3, III.10.I.1.h., III.10.I.1.b.x., and III.10.I.1.b.xii.

III.10.I.1.e.iii The Permittees will operate, calibrate, and maintain the carbon monoxide and hydrocarbon continuous emission monitors (CEM) specified in this Permit in accordance with Performance Specifications 4B and 8A of 40 CFR Part 60, Appendix B, in accordance with Appendix to Subpart EEE of 40 CFR Part 63, and Operating Unit Group 10 Appendix 9.15 of this Permit, as approved pursuant to Permit Condition III.10.H.5.f., and as modified by Permit Conditions III.10. H.3, III.10.I.1.h., III.10.I.1.b.x., and III.10.I.1.b.xii.

III.10.I.1.e.iv The Permittees will operate, calibrate, and maintain the instruments specified in Permit Tables III.10.I.C and F, as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.H.3.d.v., in accordance with Operating Unit Group 10, Appendix 9.15 of this Permit, as approved pursuant to Permit Condition III.10.H.5.f., and as modified by Permit Conditions III.10.H.3, III.10.I.1.h., III.10.I.1.b.x., and III.10.I.1.b.xii.

III.10.I.1.e.v The Permittees shall calibrate, inspect, and maintain or replace the following Melter 1 and Melter 2 cooling water flow and temperature instruments in accordance with manufacturer's recommendations, or as specified in this permit, or otherwise agreed to by Ecology (Melter 1: FT/TI&FI-1206, FT/TI&FI-1209, FT/TI&FI-1215, FT/TI&FI-1218, FT/TI&FI-1221, FT/TI&FI-1224, FT/TI&FI-1227, FT/TI&FI-1233, FT/TI&FI-1236, FT/TI&FI-1536, FT/TI&FI-1539; Melter 2: FT/TI&FI-2206, FT/TI&FI-2209, FT/TI&FI-2215, FT/TI&FI-2218, FT/TI&FI-2221, FT/TI&FI-2224, FT/TI&FI-2227, FT/TI&FI-2233, FT/TI&FI-2236, FT/TI&FI-2536, FT/TI&FI-2539).

III.10.I.1.f Recordkeeping Requirements [WAC 173-303-380 and WAC 173-303-680(3)]

III.10.I.1.f.i The Permittees will record and maintain in the WTP Unit operating record for the LAW Vitrification System, all monitoring, calibration, maintenance, test data, and inspection data compiled under the conditions of this Permit, in accordance with Permit Conditions III.10.C.4 and 5, as modified by Permit Conditions III.10.H.3, III.10.I.1.h., III.10.I.1.b.x., and III.10.I.1.b.xii.

III.10.I.1.f.ii The Permittees will record in the WTP Unit operating record the date, time, and duration of all automatic waste feed cutoffs and/or lockouts, including the triggering parameters, reason for the deviation, and recurrence of the incident.

The Permittees will also record all incidents of AWFCO system function failures, including the corrective measures taken to correct the condition that caused the failure.

III.10.I.1.f.iii The Permittees will submit to Ecology an annual report each calendar year within ninety (90) days following the end of the year. The report will include the following information:

A. Total dangerous and/or mixed waste feed processing time for the LAW Vitrification System.

B. Date/Time of all LAW Vitrification System startups and shutdowns.

C. Date/Time/Duration/Cause/Corrective Action taken for all LAW Vitrification System shutdowns caused by malfunction of either process or control equipment.

D. Date/Time/Duration/Cause/Corrective Action taken for all instances of dangerous and/or mixed waste feed cut-off due to deviations from Permit Table III.10.I.F, as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.H.3.d.v.

III.10.I.1.f.iv The Permittees will submit an annual report to Ecology each calendar year within ninety (90) days following the end of the year of all quarterly CEM Calibration Error and Annual CEM Performance Specification Tests conducted, in accordance with Permit Condition III.10.I.1.e.iii.

III.10.I.1.f.v The Permittees shall maintain operating and calibration/maintenance records for Ecology's inspection for the following Melter 1 and Melter 2 cooling water flow and temperature instruments (Melter 1: FT/TI&FI-1206, FT/TI&FI-1209, FT/TI&FI-1215, FT/TI&FI-1218, FT/TI&FI-1221, FT/TI&FI-1224, FT/TI&FI-1227, FT/TI&FI-1233, FT/TI&FI-1236, FT/TI&FI-1536, FT/TI&FI-1539; Melter 2: FT/TI&FI-2206, FT/TI&FI-2209, FT/TI&FI-2215, FT/TI&FI-2218, FT/TI&FI-2221, FT/TI&FI-2224, FT/TI&FI-2227, FT/TI&FI-2233, FT/TI&FI-2236, FT/TI&FI-2536, FT/TI&FI-2539).

III.10.I.1.f.vi The Permittees shall maintain refractory thermocouple temperature data for Ecology inspection.

III.10.I.1.g Closure

The Permittees will close the LAW Vitrification System in accordance with Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8.

III.10.I.1.h Periodic Emission Re-testing Requirements [WAC 173-303-670(5), WAC 173-303-670(7), and WAC 173-303-807(2), in accordance with WAC 173-303-680(2) and (3)]

III.10.I.1.h.i Dioxin and Furan Emission Testing

A. Within eighteen (18) months of commencing operation pursuant to Permit Section III.10.I, the Permittees will submit to Ecology for approval, a Dioxin and Furan Emission Test Plan (DFETP) for the performance of emission testing of the LAW Vitrification System gases for dioxin and furans during "Normal Operating Conditions" as a permit modification in accordance with Permit Conditions III.10.C.2.e. and III.10.C.2.f. The DFETP will include all elements applicable to dioxin and furan emission testing included in the "Previously Approved Demonstration Test Plan," applicable EPA promulgated test methods and procedures in effect at the time of the submittal, and projected commencement and completion dates for dioxin and furan emission test. "Normal Operating Conditions" will be defined for the purposes of this permit condition as follows:

1. Carbon monoxide emissions, dangerous and/or mixed waste feed-rate, and automatic waste feed cut-off parameters specified in Permit Table III.10.I.F (as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.H.3.d.v.), that were established to maintain compliance with Permit Condition III.10.I.1.b.iv. as specified in Operating Unit Group 10, Appendix 9.15 of this Permit (as approved pursuant to Permit Condition III.10.H.3.d., and in accordance with III.10.I.1.b.xii. and III.10.I.1.c.xi.), are held within the range of the average value over the previous twelve (12) months and the set-point value specified in Permit Table III.10.I.F. The average value is defined as the sum of the rolling average values recorded over the previous twelve (12) months divided by the number of rolling averages recorded during that time. The average value will not include calibration data, malfunction data, and data obtained when not processing dangerous and/or mixed waste.

2. Feed-rate of metals, ash; and chlorine/chloride are held within the range of the average value over the previous twelve (12) months and the set-point value specified on Permit Table III.10.I.D (as approved/modified pursuant to Permit Conditions III.10.H.5 and III.10.H.3.d.v.). Feed-rate of organics as measured by TOC are held within the range of the average value over the previous twelve (12) months. The average value is defined as the sum of the rolling average values recorded over the previous twelve (12) months divided by the number of rolling averages recorded during that time. The average value will not include data obtained when not processing dangerous and/or mixed waste.

For purposes of this permit condition, the "Previously Approved Demonstration Test Plan" is defined to include the Demonstration Test Plan approved pursuant to Permit Condition III.10.H.5.f.

B. Within sixty (60) days of Ecology's approval of the DFETP, or within thirty-one (31) months of commencing operation pursuant to Permit Section III.10.I, whichever is later, the Permittees will implement the DFETP approved pursuant to Permit Condition III.10.I.1.h.i.A.

C. The Permittees will resubmit the DFETP, approved pursuant to Permit Condition III.10.I.1.h.i.A, revised to include applicable EPA promulgated test methods and procedures in effect at the time of the submittal, and projected commencement and completion dates for dioxin and furan emission test as a permit modification in accordance with Permit Conditions III.10.C.2.e. and III.10.C.2.f. at twenty-four (24) months from the implementation date of the testing required pursuant to Permit Condition III.10.I.1.h.i.A and at reoccurring eighteen (18) month intervals from the implementation date of the previously approved DFETP. The Permittees will implement these newly approved revised DFETPs, every thirty-one (31) months from the previous approved DFETP implementation date or within sixty (60) days of the newly Ecology approved revised DFETP, whichever is later, for the duration of this Permit.

D. The Permittees will submit a summary of operating data collected pursuant to the DFETPs in accordance with Permit Conditions III.10.I.1.h.i.A and C to Ecology upon completion of the tests. The Permittees will submit to Ecology the complete test report within ninety (90) calendar days of completion of the testing. The test reports

will be certified as specified in WAC 173-303-807(8), in accordance with WAC 173-303-680(2) and (3).

E. If any calculations or testing results collected pursuant to the DFETPs in accordance with Permit Conditions III.10.I.1.h.i.A and C. show that one or more of the performance standards listed in Permit Condition III.10.I.1.b., with the exception of Permit Condition III.10.I.1.b.x., for the LAW Vitrification System were not met during the emission test, the Permittees will perform the following actions:

1. Immediately stop dangerous and/or mixed waste feed to the LAW Vitrification System under the mode of operation that resulted in not meeting the performance standard(s).

2. Verbally notify Ecology within twenty-four (24) hours of discovery of not meeting the performance standard(s), as specified in Permit Condition I.E.21.

3. Investigate the cause of the failure and submit a report of the investigation findings to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s).

4. Submit to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s) documentation supporting a mode of operation where all performance standards listed in Permit Condition III.I.1.b., with the exception of Permit Condition III.10.I.1.b.x., for the LAW Vitrification System were met during the demonstration test, if any such mode was demonstrated.

5. Based on the information provided to Ecology by the Permittees pursuant to Permit Conditions III.10.I.1.h.i.E.1 through 4 above, and any additional information, Ecology may provide in writing, direction to the Permittees to stop dangerous waste and mixed waste feed to the LAW Vitrification System and/or amend the mode of operation the Permittees are allowed to continue operations prior to Ecology approval of the revised Demonstration Test Plan pursuant to Permit Condition III.10. I.1.h.i.E.6.

6. Submit to Ecology within one hundred and twenty (120) days of discovery of not meeting the performance standard(s) a revised Demonstration Test Plan requesting approval to retest as a permit modification pursuant to Permit Conditions III.10.C.2.e.and III.10.C.2.f. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring reflecting performance under operating conditions representative of the extreme range of normal conditions, and include revisions to Permit Tables III.10.I.D and F.

F. If any calculations or testing results collected pursuant to the DFETPs in accordance with Permit Conditions III.10.I.1.h.i.A and C show that any emission rate for any constituent listed in Permit Table III.10.I.E, as approved/modified pursuant to Permit Conditions III.10.C.11.c. or d. is exceeded for LAW Vitrification System during the emission test, the Permittees will perform the following actions:

1. Verbally notify Ecology within twenty-four (24) hours of the discovery of exceeding the emission rate(s), as specified in Permit Condition I.E.21.

2. Submit to Ecology additional risk information to indicate that the increased emissions impact is off-set by decreased emission impact from one or more constituents expected to be emitted at the same time, and/or investigate the

cause and impact of the exceedance and submit a report of the investigation findings to Ecology within fifteen (15) days of this discovery of exceeding the emission rate(s).

3. Based on the notification and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the LAW Vitrification System and/or to submit a revised Demonstration Test Plan as a permit modification pursuant to Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring reflecting performance under operating conditions representative of the extreme range of normal conditions, and include revisions to Permit Tables III.10.I.D and III.10.I.F.

III.10.I.1.h.ii Non-organic Emission Testing

A. Within forty-eight (48) months of commencing operation pursuant to Permit Section III.10.I, the Permittees will resubmit to Ecology for approval the "Previously Approved Demonstration Test Plan" revised as a permit modification in accordance with Permit Conditions III.10.C.2.e. and III.10.C.2f. The revised Demonstration Test Plan (RDTP) will include applicable EPA promulgated test methods and procedures in effect at the time of the submittal, projected commencement and completion dates for emission testing to demonstrate performance standards specified in Permit Conditions III.10.I.1.b.ii., iii., v., vi., and vii., and non-organic emissions as specified in Permit Table III.10.I.E, as approved/modified pursuant to Permit Conditions III.10.H.3.d. and III.10.C.11.c. or d., under "Normal Operating Conditions." "Normal Operating Conditions" will be defined for the purposes of this permit condition as follows:

1. Carbon monoxide emissions, dangerous and/or mixed waste feed-rate, and automatic waste feed cut-off parameters specified in Permit Table III.10.I.F, as approved/modified pursuant to Permit Conditions III.10.H.3.d. and III.10.C.11.c. or d., that were established to maintain compliance with Permit Conditions III.10.I.1.b.ii., iii., v., vi., and vii., and non-organic emissions, as specified in Permit Table III.10.I.E, as specified in Operating Unit Group 10, Appendix 9.15 of this Permit (as approved pursuant to Permit Conditions III.10.H.3.d. and III.10.C.11.c. or d.), are held within the range of the average value over the previous twelve (12) months and the set-point value specified in Permit Table III.10.I.F. The average value is defined as the sum of the rolling average values recorded over the previous twelve (12) months divided by the number of rolling averages recorded during that time. The average value will not include calibration data, malfunction data, and data obtained when not processing dangerous or mixed waste.

2. Feed-rate of metals, ash, and chlorine/chloride are held within the range of the average value over the previous twelve (12) months and the set-point value specified in Permit Table III.10.I.D, as approved/modified pursuant to Permit Conditions III.10.H.3.d. and III.10.C.11.c. or d. The average value is defined as the sum of all rolling average values recorded over the previous twelve (12) months divided by the number of rolling averages recorded during that time. The average value will not include data obtained when not processing dangerous or mixed waste.

For purposes of this permit condition, the "Previously Approved Demonstration Test Plan" is defined to include the Demonstration Test Plan approved pursuant to Permit Condition III.10.H.5.f.

B. Within sixty (60) days of Ecology's approval of the RDTP, or within sixty (60) months of commencing operation pursuant to Permit Section III.10.I, whichever is later, the Permittees will implement the RDTP approved pursuant to Permit Condition III.10.I.1.h.ii.A.

C. The Permittees will resubmit the RDTP, approved pursuant to Permit Condition III.10.I.1.h.ii.A, revised to include applicable EPA promulgated test methods and procedures in effect at the time of the submittal, and projected commencement and completion dates for emission test as a permit modification in accordance with Permit Conditions III.10.C.2.e. and f. at forty-eight (48) months from the implementation date of the testing required pursuant to Permit Condition III.10.I.1.h.ii.A and at reoccurring forty-eight (48) month intervals from the implementation date of the previously approved RDTP. The Permittees will implement these newly approved revised RDTP, every sixty (60) months from the previous approved RDTP implementation date or within sixty (60) days of the newly Ecology approved revised RDTP, whichever is later, for the duration of this Permit.

D. The Permittees will submit a summary of operating data collected pursuant to the RDTPs in accordance with Permit Conditions III.10.I.1.h.ii.A and C to Ecology upon completion of the tests. The Permittees will submit to Ecology the complete test report within ninety (90) calendar days of completion of the testing. The test reports will be certified pursuant to WAC 173-303-807(8), in accordance with WAC 173-303-680(2) and (3).

E. If any calculations or testing results collected pursuant to the RDTPs in accordance with Permit Conditions III.10.I.1.h.ii.A and C show that any emission rate for any constituent listed in Permit Table III.10.I.E, as approved/modified pursuant to Permit Conditions III.10.H.3.d. and III.10.C.11.c. or d., is exceeded for LAW Vitrification System during the emission test, the Permittees will perform the following actions:

1. Verbally notify Ecology within twenty-four (24) hours of the discovery of exceeding the emission rate(s), as specified in Permit condition I.E.21;

2. Submit to Ecology additional risk information to indicate that the increased emissions impact is off-set by decreased emission impact from one or more constituents expected to be emitted at the same time, and/or investigate the cause and impact of the exceedance and submit a report of the investigation findings to Ecology within fifteen (15) days of this discovery of exceeding the emission rate(s); and

3. Based on the notification and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the LAW Vitrification System and/or to submit a revised Demonstration Test Plan as a permit modification pursuant to Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring reflecting performance under operating conditions representative of the extreme range of normal conditions, and include revisions to Permit Tables III.10.I.D and III.10.I.F.

F. If any calculations or testing results collected pursuant to the RDTPs in accordance with Permit Conditions III.10.I.1.h.ii.A and C show that one or more of the performance standards listed in Permit Condition III.10.I.1.b., with the exception of Permit Condition III.10.I.1.b.x., for the LAW Vitrification System were not met during the emission test, the Permittees will perform the following actions:

1. Immediately stop dangerous and/or mixed waste feed to the LAW Vitrification System under the mode of operation that resulted in not meeting the performance standard(s);

2. Verbally notify Ecology within twenty-four (24) hours of discovery of not meeting the performance standard(s), as specified in Permit condition I.E.21;

3. Investigate the cause of the failure and submit a report of the investigation findings to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s);

4. Submit to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s) documentation supporting a mode of operation where all performance standards listed in Permit Condition III.I.1.b., with the exception of Permit Condition III.10.I.1.b.x., for the LAW Vitrification System were met during the demonstration test, if any such mode was demonstrated;

5. Based on the information provided to Ecology by the Permittees pursuant to Permit Conditions III.10.I.1.h.ii.F.1 through 4 above, and any additional information, Ecology may provide in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the LAW Vitrification System and/or amend the mode of operation the Permittees are allowed to continue operations prior to Ecology approval of the revised Demonstration Test Plan pursuant to Permit Condition III.10.I.1.h.ii.F.6; and

6. Submit to Ecology within one hundred and twenty (120) days of discovery of not meeting the performance standard(s) a revised Demonstration Test Plan requesting approval to retest as a permit modification pursuant to Permit Conditions III.10.C.2.e. and f. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring reflecting performance under operating conditions representative of the extreme range of normal conditions, and include revisions to Permit Tables III.10.I.D and F.

III.10.I.1.h.iii Other Emission Testing

A. Within seventy-eight (78) months of commencing operation pursuant to Permit Section III.10.I, the Permittees will resubmit to Ecology for approval the "Previously Approved Demonstration Test Plan" revised as a permit modification in accordance with Permit Conditions III.10.C.2.e. and f. The Revised Demonstration Test Plan (RDTP) will include applicable EPA promulgated test methods and procedures in effect at the time of the submittal, projected commencement and completion dates for emission testing to demonstrate performance standards as specified in Permit Conditions III.10.I.1.b.viii. and ix., and emissions as specified in Permit Table III.10.I.E, as approved/modified pursuant to Permit Conditions III.10.H.3.d. and III.10.C.11.c. or d., not addressed under Permit Conditions III.10.I.1.h.i. or ii. under "Normal Operating Conditions." "Normal Operating Conditions" will be defined for the purposes of this permit condition as follows:

1. Carbon monoxide emissions, dangerous and/or mixed waste feed-rate, and automatic waste feed cut-off parameters specified in Permit Table III.10.I.F, as approved/modified pursuant to Permit Condition III.10.H.3.d. and III.10.C.11.c. or d., that were established to maintain compliance with Permit Conditions III.10.I.1.b.viii. and ix., and emissions as specified in Permit Table III.10.I.E, not addressed under Permit Conditions III.10.I.1.h.i. or ii. as specified in Operating Unit Group 10, Appendix 9.15 of this Permit, as approved pursuant to Permit Condition III.10.H.3.d., and in accordance with Permit Conditions III.10.I.1.b.xii. and III.10.I.1.c.xi. are held within the range of the average value over the previous twelve (12) months and the set-point value specified on Permit Table III.10.I.F. The average value is defined as the sum of all rolling average values recorded over the previous twelve (12) months divided by the number of rolling averages recorded during that time. The average value will not include calibration data, malfunction data, and data obtained when not processing dangerous and/or mixed waste.

2. Feed-rate of metals, ash, and chlorine/chloride are held within the range of the average value over the previous twelve (12) months and the set-point value specified in Permit Table III.10.I.D, as approved/modified pursuant to Permit Conditions III.10.H.3.d. and III.10.C.11.c. or d. Feed-rate of organics as measured by TOC are held within the range of the average value over the previous twelve (12) months. The average value is defined as the sum of the rolling average values recorded over the previous twelve (12) months divided by the number of rolling averages recorded during that time. The average value will not include data obtained when not processing dangerous and/or mixed waste.

For purposes of this permit condition, the "Previously Approved Demonstration Test Plan" is defined to include the Demonstration Test Plan approved pursuant to Permit Condition III.10.H.5.f.

B. Within sixty (60) days of Ecology's approval of the RDTP, or within ninety-one (91) months of commencing operation pursuant to Permit Section III.10.I, whichever is later, the Permittees will implement the RDTP approved pursuant to Permit Condition III.10.I.1.h.iii.A.

C. The Permittees will submit a summary of operating data collected pursuant to the RDTPs in accordance with Permit Condition III.10.I.1.h.iii.A to Ecology upon completion of the tests. The Permittees will submit to Ecology the complete test report within ninety (90) calendar days of completion of the testing. The test reports will be certified as specified in WAC 173-303-807(8), in accordance with Permit Condition WAC 173-303-680(2) and (3).

D. If any calculations or testing results show that one or more of the performance standards listed in Permit Condition III.10.I.1.b., with the exception of Permit Condition III.10.I.1.b.x., for the LAW Vitrification System were not met during the emission test, the Permittees will perform the following actions:

1. Immediately stop dangerous and/or mixed waste feed to the LAW Vitrification System under the mode of operation that resulted in not meeting the performance standard(s);

2. Verbally notify Ecology within twenty-four (24) hours of discovery of not meeting the performance standard(s), as specified in Permit Condition I.E.21.

3. Investigate the cause of the failure and submit a report of the investigation findings to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s).

4. Submit to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s) documentation supporting a mode of operation where all performance standards listed in Permit Condition III.I.1.b., with the exception of Permit Condition III.10.I.1.b.x., for the LAW Vitrification System were met during the demonstration test, if any such mode was demonstrated.

5. Based on the information provided to Ecology by the Permittees pursuant to Permit Conditions III.10.I.1.h.iii.D.1 through 4 above, and any additional information, Ecology may provide in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the LAW Vitrification System and/or amend the mode of operation the Permittees are allowed to continue operations prior to Ecology approval of the revised Demonstration Test Plan, pursuant to Permit Condition III.10. I.h.1.iii.D.6.

6. Submit to Ecology within one hundred and twenty (120) days of discovery of not meeting the performance standard(s) a revised Demonstration Test Plan requesting approval to retest as a permit modification pursuant to Permit Conditions III.10.C.2.e. and f. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring reflecting performance under operating conditions representative of the extreme range of normal conditions, and include revisions to Permit Tables III.10.I.D and III.10.I.F.

E. If any calculations or testing results show that any emission rate for any constituent listed in Permit Table III.10.I.E, as approved/modified pursuant to Permit Conditions III.10.C.11.c. or d., is exceeded for LAW Vitrification System during the emission test, the Permittees will perform the following actions:

1. Verbally notify Ecology within twenty-four (24) hours of the discovery of exceeding the emission rate(s), as specified in Permit Condition I.E.21.

2. Submit to Ecology additional risk information to indicate that the increased emissions impact is off-set by decreased emission impact from one or more constituents expected to be emitted at the same time, and/or investigate the cause and impact of the exceedance of the emission rate(s) and submit a report of the investigation findings to Ecology within fifteen (15) days of the discovery of the exceedance of the emission rate(s).

3. Based on the notification and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the LAW Vitrification System and/or to submit a revised Demonstration Test Plan as a permit modification pursuant to Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring reflecting performance under operating conditions representative of the extreme range of normal conditions, and include revisions to Permit Tables III.10.I.D and F.

Table III.10.I.A - LAW Vitrification System Description[a]

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos, Specification Nos, etc.)	Narrative Description, Tables and Figures
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Permit Table III.10.I.A will be completed in accordance with Permit Condition III.10.H.5.e x., prior to initiating Permit Condition III.10.I.1. See Permit Table III.10.H.A for the current LAW Vitrification System Description.

Table III.10.I.B - LAW Vitrification System Secondary Containment Systems Including Sumps and Floor Drains

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions[b] (feet) & Materials of Construction	Engineering Description (Drawing Nos, Specification Nos, etc.)
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Permit Table III.10.I.B will be completed in accordance with Permit Condition III.10.H.5.b.vii., prior to initiating Permit Condition III.10.I.1. See Permit Table III.10.H.B for the current LAW Vitrification System Secondary Containment Systems Including Sumps and Floor Drains.

[b]Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Table III.10.I.C - LAW Vitrification Systems Process and Leak Detection System Instruments and Parameters

Sub-system Locator and Name (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Failure State	Expected Range	Instrument Accuracy	Instrument Calibration Method No. and Range
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Permit Table III.10.I.C will be completed in accordance with Permit Condition III.10.H.5.e.ix., prior to initiating Permit Condition III.10.I.1. See Permit Table III.10.H.C for the current LAW Vitrification Systems Process and Leak Detection System Instruments and Parameters.

Table III.10.I.D - Maximum Feed-rates to LAW Vitrification System (RESERVED)

Description of Waste	Normal Operation
Dangerous and/or Mixed Waste Feed Rate	RESERVED
Ash Feed Rate	RESERVED
Total Chlorine/Chloride Feed Rate	RESERVED
Total Metal Feedrates	RESERVED

Table III.10.I.E - LAW Vitrification System Estimated Emission Rates (RESERVED)

Chemicals	CAS Number	Emission Rates (grams /second)
RESERVED	RESERVED	RESERVED

**TABLE III.10.I.F - LAW Vitrification System Waste Feed Cut-off Parameters*
[1](RESERVED)**

Sub-system Designation	Instrument Tag Number	Parameter Description	Set-points During Normal Operation
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

*A continuous monitoring system will be used as defined in Permit Section III.10.C.1.

[1]Maximum Feed-rate will be set based on not exceeding any of the constituent (e.g., metals, ash, and chlorine/chloride) feed limits specified on Table III.10.I.D. of this Permit

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III.10.J HLW VITRIFICATION SYSTEM – SHORT TERM MISCELLANEOUS THERMAL TREATMENT UNIT-SHAKEDOWN, DEMONSTRATION TEST, AND POST DEMONSTRATION TEST

For purposes of Permit Section III.10.J, where reference is made to WAC 173-303-640, the following substitutions apply: substituting the terms "HLW Vitrification System" for "tank system(s)," "sub-system(s)" for "tank(s)," "sub-system equipment" for "ancillary equipment," and "sub-system(s) or sub-system equipment of a HLW Vitrification System" for "component(s)," in accordance with WAC 173-303-680.

III.10.J.1 III.10.I.1.h.General Conditions During Shakedown, Demonstration Test, and Post-Demonstration Test for HLW Vitrification System

III.10.J.1.a Construction and Maintenance [WAC 173-303-640, in accordance with WAC 173-303-680(2) and (3), and WAC 173-303-340].

III.10.J.1.a.i The Permittees will construct the HLW Vitrification System (listed in Permit Tables III.10.J.A and III.10.J.B, as approved/modified pursuant to Permit Condition III.10.J.5.) as specified in Permit Condition III.10.J.1. and Operating Unit Group 10, Addendum C of this Permit, and Operating Unit Group 10, Appendices 10.1 through 10.15 and 10.17 of this Permit, as approved pursuant to Permit Conditions III.10.J.5.a. through d., and III.10.J.5.f.

III.10.J.1.a.ii The Permittees will construct all containment systems for the HLW Vitrification System as specified in Operating Unit Group 10, Addendum C of this Permit, and Operating Unit Group 10, Appendices 10.2, 10.4, through 10.14 of this Permit, as approved pursuant to Permit Conditions III.10.J.5.a. through d.

III.10.J.1.a.iii The Permittees will ensure all certifications required by specialists (e.g., independent, qualified, registered professional engineer, independent corrosion expert, independent qualified installation inspector, etc.) use the following statement or equivalent pursuant to Permit Condition III.10.C.10.:

"I, (Insert Name) have (choose one or more of the following: overseen, supervised, reviewed, and/or certified) a portion of the design or installation of a new HLW Vitrification system or component located at (address), and owned/operated by (name(s)). My duties were: (e.g., installation inspector, testing for tightness, etc.), for the following HLW Vitrification system components (e.g., the venting piping, etc.), as required by the Dangerous Waste Regulations, namely, WAC 173-303-640(3) (applicable paragraphs (i.e., (a) through (g)) in accordance with WAC 173-303-680).

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

III.10.J.1.a.iv The Permittees must ensure that proper handling procedures are adhered to in order to prevent damage to the HLW Vitrification System during installation. Prior to covering, enclosing, or placing the new HLW Vitrification System or component in use, an independent, qualified, installation inspector or an independent, qualified, registered professional engineer, either of whom is trained and experienced in the proper installation

of similar systems or components, must inspect the system for the presence of any of the following items:

A. Weld breaks
B. Punctures
C. Scrapes of protective coatings
D. Cracks
E. Corrosion
F. Other structural damage or inadequate construction/installation

All discrepancies must be remedied before the HLW Vitrification system is covered, enclosed, or placed in use [WAC 173-303-640(3)(c), in accordance with WAC 173-303-680(2) and (3)].

III.10.J.1.a.v For the HLW Vitrification System or components that are placed underground and that are back-filled, the Permittees must provide a backfill material that is a non-corrosive, porous, homogeneous substance. The backfill must be installed so that it is placed completely around the HLW Vitrification System and compacted to ensure that the HLW Vitrification System is fully and uniformly supported [WAC 173-303-640(3)(d), in accordance with WAC 173-303-680(2) and (3)].

III.10.J.1.a.vi The Permittees must test for tightness the HLW Vitrification System or components, prior to being covered, enclosed, or placed into use. If the HLW Vitrification System or components are found not to be tight, all repairs necessary to remedy the leak(s) in the system must be performed prior to the HLW Vitrification System being covered, enclosed, or placed in use [WAC 173-303-640(3)(e), in accordance with WAC 173-303-680(2) and (3)].

III.10.J.1.a.vii The Permittees must ensure the HLW Vitrification System equipment is supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction [WAC 173-303-640(3)(f), in accordance with WAC 173-303-680(2) and (3)].

III.10.J.1.a.viii The Permittees must provide the type and degree of corrosion protection recommended by an independent corrosion expert, based on the information provided in Operating Unit Group 10, Appendices 10.9 and 10.11 of this Permit, as approved pursuant to Permit Conditions III.10.J.5.b.i., III.10.J.5.b.iv., III.10.J.5.b.v., III.10.J.5.c.i., III.10.J.5.c.iv., III.10.J.5.c.v., III.10.J.5.d.i., III.10.J.5.d.iv., and III.10.J.5.d.v., or other corrosion protection if Ecology believes other corrosion protection is necessary to ensure the integrity of the HLW Vitrification System during use of the HLW Vitrification System. The installation of a corrosion protection system that is field fabricated must be supervised by an independent corrosion expert to ensure proper installation [WAC 173-303-640(3)(g), in accordance with WAC 173-303-680(2) and (3)].

III.10.J.1.a.ix Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will obtain and keep on file in the WTP Unit operating record, written statements by those persons required to certify the design of the HLW Vitrification System and supervise the installation of the HLW Vitrification System, as specified in WAC 173-303-640(3)(b), (c), (d), (e), (f), and (g), in accordance with WAC 173-303-680, attesting that the HLW Vitrification system and corresponding containment system listed in Permit Tables III.10.J.A and III.10.J.B, as approved/modified pursuant to Permit Condition III.10.J.5., were properly designed and installed, and that repairs, in accordance with WAC 173-303-640(3)(c) and (e), were

performed [WAC 173-303-640(3)(a) and WAC 173-303-640(3)(h), in accordance with WAC 173-303-680(3)].

III.10.J.1.a.x The independent HLW Vitrification System installation inspection and subsequent written statements will be certified in accordance with WAC 173-303-810(13)(a), as modified pursuant to Permit Condition III.10.J.1.a.iii., comply with all requirements of WAC 173-303-640(3)(h) in accordance with WAC 173-303-680, and will consider, but not be limited to, the following LAW Vitrification System installation documentation:

A. Field installation report with date of installation.

B. Approved welding procedures.

C. Welder qualification and certifications.

D. Hydro-test reports, as applicable, in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII, Division 1; American Petroleum Institute (API) Standard 620, or Standard 650, as applicable;

E. Tester credentials.

F. Field inspector credentials.

G. Field inspector reports.

H. Field waiver reports.

I. Non-compliance reports and corrective action (including field waiver reports) and repair reports.

III.10.J.1.a.xi The Permittees will ensure periodic integrity assessments are conducted on the HLW Vitrification System, listed in Permit Table III.10.J.A, as approved/modified pursuant to Permit Condition III.10.J.5., over the term of this Permit, in accordance with WAC 173-303-680(2) and (3) as specified in WAC 173-303-640(3)(b), following the description of the integrity assessment program and schedule in Operating Unit Group 10, Addendum E of this Permit, as approved pursuant to Permit Conditions III.10.J.5.e.i. and III.10.C.5.c. Results of the integrity assessments will be included in the WTP Unit operating record until ten (10) years after post-closure, or corrective action is complete and certified, whichever is later.

III.10.J.1.a.xii The Permittees will address problems detected during the HLW Vitrification System integrity assessments specified in Permit Condition III.10.J.1.a.xi. following the integrity assessment program in Operating Unit Group 10, Addendum E of this Permit, as approved pursuant to Permit Conditions III.10.J.5.e.i. and III.10.C.5.c.

III.10.J.1.a.xiii All process monitors/instruments as specified in Permit Table III.10.J.F, as approved/modified pursuant to Permit Condition III.10.J.5., will be equipped with operational alarms to warn of deviation, or imminent deviation from the limits specified in Permit Table III.10.J.F.

III.10.J.1.a.xiv The Permittees will install and test all process and leak detection system monitors/instrumentation as specified in Permit Tables III.10.J.C and III.10.J.F, as approved/modified pursuant to Permit Condition III.10.J.5, in accordance with Operating Unit Group 10, Appendices 10.1, 10.2, and 10.14 of this Permit, as approved pursuant to Permit Conditions III.10.J.5.d.x. and III.10.J.5.f.xvi.

III.10.J.1.a.xv Except during periods of HLW Vitrification System start up and shut down, no dangerous and/or mixed waste will be treated in the HLW Vitrification System unless the operating conditions specified under Permit Condition III.10.J.1.c. are complied with.

III.10.J.1.a.xvi The Permittees will not place dangerous and/or mixed waste, treatment reagents, or other materials in the HLW Vitrification System if these substances could cause the subsystem, subsystem equipment, or the containment system to rupture, leak, corrode, or otherwise fail [WAC 173-303-640(5)(a), in accordance with WAC 173-303-680(2)]. This condition is not applicable to corrosion of HLW Vitrification System sub-system and sub-system equipment that are expected to be replaced as part of normal operations (e.g., melters).

III.10.J.1.a.xvii The Permittees will operate the HLW Vitrification System to prevent spills and overflows using description of controls and practices as required under WAC 173-303-640(5)(b) described in Permit Condition III.10.C.5, and Operating Unit Group 10, Appendix 10.18 of this Permit, as approved pursuant to Permit Condition III.10.J.5.e. [WAC 173-303-640(5)(b), in accordance with WAC 173-303-680(2) and (3), and WAC 173-303-806(4)(c)(ix)].

III.10.J.1.a.xviii For routinely non-accessible HLW Vitrification System sub-systems, as specified in Operating Unit Group 10, Addendum C of this Permit, as updated pursuant to Permit Condition III.10.J.5.e.vi., the Permittees will mark all routinely non-accessible HLW Vitrification System sub-systems access points with labels or signs to identify the waste contained in each HLW Vitrification System sub-system. The label, or sign, must be legible at a distance of at least fifty (50) feet, and must bear a legend which identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the HLW Vitrification System sub-systems. For the purposes of this permit condition, "routinely non-accessible" means personnel are unable to enter these areas while waste is being managed in them [WAC 173-303-640(5)(d), in accordance with WAC 173-303-680(2)].

III.10.J.1.a.xix For all HLW Vitrification System sub-systems not addressed in Permit Condition III.10.J.1.a.xviii., the Permittees will mark all these HLW Vitrification System sub-systems holding dangerous and/or mixed waste with labels or signs to identify the waste contained in the HLW Vitrification System sub-systems. The labels, or signs, must be legible at a distance of at least fifty (50) feet, and must bear a legend which identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the HLW Vitrification System sub-systems [WAC 173-303-640(5)(d), in accordance with WAC 173-303-680(2)].

III.10.J.1.a.xx The Permittees will ensure that the containment systems for the HLW Vitrification System sub-systems listed in Permit Tables III.10.J.A. and III.10.J.B, as approved/modified pursuant to Permit Condition III.10.J.5, are free of cracks or gaps to prevent any migration of dangerous and/or mixed waste or accumulated liquid out of the system to the soil, groundwater, or surface water at any time during use of the HLW Vitrification System sub-systems. Any indication that a crack or gap may exist in the containment systems will be investigated and repaired in accordance with Operating Unit Group 10, Appendix 10.18 of this Permit, as approved pursuant to Permit Condition III.10.J.5.e.v. [WAC 173-303–640(4)(b)(i), WAC 173-303–640(4)(e)(i)(C), and

WAC 173-303-640(6), in accordance with WAC 173-303-680(2) and (3), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-320].

III.10.J.1.a.xxi The Permittees must immediately, and safely, remove from service any HLW Vitrification System or secondary containment system which, through an integrity assessment, is found to be "unfit for use" as defined in WAC 173-303-040, following Permit Conditions III.10.J.1.a.xxiii.A. through D., and F. The affected HLW Vitrification System, or secondary containment system, must be either repaired or closed in accordance with Permit Condition III.10.J.1.a.xxiii.E. [WAC 173-303-640(7)(e) and (f), and WAC 173-303-640(8), in accordance with WAC 173-303-680(3)].

III.10.J.1.a.xxii An impermeable coating, as specified in Operating Unit Group 10, Appendices 10.4, 10.5, 10.7, 10.9, 10.11, and 10.12 of this Permit, as approved pursuant to Permit Condition III.10.J.5.b.v., will be maintained for all concrete containment systems and concrete portions of containment systems for each HLW Vitrification System sub-systems listed in Permit Tables III.10.J.A and III.10.J.B as approved/modified pursuant to Permit Condition III.10.J.5 (concrete containment systems that do not have a liner, pursuant to WAC 173-303-640(4)(e)(i), in accordance with WAC 173-303-680(2), and have construction joints, will meet the requirements of WAC 173-303-640(4)(e)(ii)(C), in accordance with WAC 173-303-680(2). The coating will prevent migration of any dangerous and mixed waste into the concrete. All coatings will meet the following performance standards:

A. The coating must seal the containment surface such that no cracks, seams, or other avenues through which liquid could migrate, are present;

B. The coating must be of adequate thickness and strength to withstand the normal operation of equipment and personnel within the given area such that degradation or physical damage to the coating or lining can be identified and remedied before dangerous and mixed waste could migrate from the system; and

C. The coating must be compatible with the dangerous and mixed waste, treatment reagents, or other materials managed in the containment system [WAC 173-303-640(4)(e)(ii)(D), in accordance with WAC 173-303-680(2) and (3), and WAC 173-303-806(4)(i)(i)(A)].

III.10.J.1.a.xxiii The Permittees will inspect all containment systems for the HLW Vitrification System sub-systems listed in Permit Tables III.10.J.A and III.10.J.B, as approved/modified pursuant to Permit Condition III.10.J.5., in accordance with the Inspection Schedule specified in Operating Unit Group 10, Addendum E1 of this Permit, as approved pursuant to Permit Conditions III.10.J.5.e.i. and III.10.C.5.c., and take the following actions if a leak or spill of dangerous and/or mixed waste is detected in these containment systems [WAC 173-303-640(5)(c) and WAC 173-303-640(6), in accordance with WAC 173-303-680(2) and (3), WAC 173-303-320, and WAC 173-303-806(4)(i)(i)(B)]:

A. Immediately, and safely, stop the flow of dangerous and/or mixed waste into the HLW Vitrification System sub-systems or secondary containment system.

B. Determine the source of the dangerous and/or mixed waste.

C. Remove the dangerous and/or mixed waste from the containment area in accordance with WAC 173-303-680(2) and (3), as specified in WAC 173-303-640(7)(b). The dangerous and/or mixed waste removed from containment areas of the HLW Vitrification System sub-systems will be, as a minimum, managed as mixed waste.

D. If the cause of the release was a spill has not damaged the integrity of the HLW Vitrification System sub-system, the Permittees may return the HLW Vitrification System sub-system to service in accordance with WAC 173-303-680(2) and (3), as specified in WAC 173-303-640(7)(e)(ii). In such case, the Permittees will take action to ensure the incident that caused the dangerous and/or mixed waste to enter the containment system will not re-occur [WAC 173-303-320(3)].

E. If the source of the dangerous and/or mixed waste is determined to be a leak from the primary HLW Vitrification System into the secondary containment system, or the system is unfit for use as determined through an integrity assessment or other inspection, the Permittees will comply with the requirements of WAC 173-303-640(7) and take the following actions:

1. Close the HLW Vitrification System Sub-system following procedures in WAC 173-303-640(7)(e)(i), in accordance with WAC 173-303-680 and Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8., or

2. Repair and re-certify (in accordance with WAC 173-303-810(13)(a), as modified pursuant to Permit Condition III.10.J.1.a.iii.) the HLW Vitrification System in accordance with Operating Unit Group 10, Appendix 10.18 of this Permit, as approved pursuant to Permit Condition III.10.J.5.e.v., before the HLW Vitrification System is placed back into service [WAC 173-303-640(7)(e)(iii) and WAC 173-303-640(7)(f), in accordance with WAC 173-303-680].

F. The Permittees will document, in the WTP Unit operating record, actions/procedures taken to comply with A. through E. above, as specified in WAC 173-303-640(6)(d), in accordance with WAC 173-303-680(2) and (3).

G. In accordance with WAC 173-303-680(2) and WAC 173-303-680 (3), the Permittees will notify and report releases to the environment to Ecology, as specified in WAC 173-303-640(7)(d).

III.10.J.1.a.xxiv If liquids (e.g., dangerous and/or mixed waste leaks and spills, precipitation, fire water, liquids from damaged or broken pipes) cannot be removed from the secondary containment system within twenty-four (24) hours, Ecology will be verbally notified within twenty-four (24) hours of discovery. The notification will provide the information in A, B, and C, listed below. The Permittees will provide Ecology with a written demonstration within seven (7) business days, identifying at a minimum [WAC 173-303-640(4)(c)(iv) and WAC 173-303-640(7)(b)(ii), in accordance with WAC 173-303-680(3) and WAC 173-303-806(4)(i)(i)(B)]:

A. Reasons for delayed removal;

B. Measures implemented to ensure continued protection of human health and the environment;

C. Current actions being taken to remove liquids from secondary containment.

III.10.J.1.a.xxv All air pollution control devices and capture systems in the HLW Vitrification System will be maintained and operated at all times in a manner so as to minimize the emissions of air contaminants and to minimize process upsets. Procedures for ensuring that the air pollution control devices and capture systems in the HLW Vitrification

System are properly operated and maintained so as to minimize the emission of air contaminants and process upsets will be established.

III.10.J.1.a.xxvi In all future narrative permit submittals, the Permittees will include HLW Vitrification sub-system names with the sub-system designation.

III.10.J.1.a.xxvii Modifications to approved design, plans, and specifications in Operating Unit Group 10 of this Permit for the HLW Vitrification System will be allowed only in accordance with Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g., III.10.C.9.d., e., and h.

III.10.J.1.a.xxviii For any portion of the HLW Vitrification System that has the potential for formation and accumulation of hydrogen gases, the Permittees will operate the portion to maintain hydrogen levels below the lower explosive limit [WAC 173-303-815(2)(b)(ii)].

III.10.J.1.a.xxix For each HLW Vitrification System sub-system holding dangerous waste which are acutely or chronically toxic by inhalation, the Permittees will operate the system to prevent escape of vapors, fumes or other emissions into the air [WAC 173-303-806(4)(i)(i)(B) and WAC 173-303-640(5)(e) in accordance with WAC 173-303-680].

III.10.J.1.b Performance Standards

III.10.J.1.b.i The HLW Vitrification System must achieve a destruction and removal efficiency (DRE) of 99.99% for the principal organic dangerous constituents (PODCs) listed below [40 CFR §63.1203(c)(1) and 40-CFR 63.1203(c)(2), in accordance with WAC 173-303-680(2)].

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DRE in this Permit condition will be calculated in accordance with the formula given below:

DRE=[1-(Wout/Win)] x 100%

Where:

Win=mass feed rate of one principal organic dangerous constituent (PODC) in a waste feed stream; and

Wout=mass emission rate of the same PODC present in exhaust emissions prior to release to the atmosphere.

III.10.J.1.b.ii Particulate matter emissions from the HLW Vitrification System will not exceed 34 mg/dscm (0.015 grains/dscf) [40 CFR §63.1203(b)(7), in accordance with WAC 173-303-680(2)]:

III.10.J.1.b.iii Hydrochloric acid and chlorine gas emissions from the HLW Vitrification System will not exceed 21 ppmv, combined [40 CFR §63.1203(b)(6), in accordance with WAC 173-303-680(2)]:

III.10.J.1.b.iv Dioxin and Furan TEQ emissions from the HLW Vitrification System will not exceed 0.2 nanograms (ng)/dscm [40 CFR §63.1203(b)(1), in accordance with WAC 173-303-680(2)]:

III.10.J.1.b.v Mercury emissions from the HLW Vitrification System will not exceed 45 µg/dscm, [40 CFR §63.1203(b)(2), in accordance with WAC 173-303-680(2)].

III.10.J.1.b.vi Lead and cadmium emissions from the HLW Vitrification System will not exceed 120 µg/dscm, combined [40 CFR §63.1203(b)(3), in accordance with WAC 173-303-680(2)].

III.10.J.1.b.vii Arsenic, beryllium, and chromium emissions from the HLW Vitrification System will not exceed 97 µg/dscm, combined [40 CFR §63.1203(b)(4), in accordance with WAC 173-303-680(2)].

III.10.J.1.b.viii Carbon monoxide (CO) emission from the HLW Vitrification System will not exceed 100 parts per million (ppm) by volume, over an hourly rolling average (as measured and recorded by the continuous monitoring system), dry [40 CFR §63.1203(b)(5)(i), in accordance with WAC 173-303-680(2)].

III.10.J.1.b.ix Hydrocarbon emission from the HLW Vitrification System will not exceed 10 parts per million (ppm) by volume, over an hourly rolling average (as measured and recorded by the continuous monitoring system during demonstration testing required by this Permit), dry basis, and reported as propane [40 CFR §63.1203(b)(5)(ii), in accordance with WAC 173-303-680(2)]:

III.10.J.1.b.x If the emissions from the HLW Vitrification System exceed the emission rates listed in Permit Table III.10.J.E, as approved pursuant to Permit Condition III.10.C.11.b., the Permittees will notify Ecology, in accordance with Permit Condition III.10.J.3.d.vii. [WAC 173-303-680(2) and (3), and WAC 173-303-815(2)(b)(ii)].

The emission limits specified in Permit Conditions III.10.J.1.b.i. through III.10.J.1.b.ix. above, will be met for the HLW Vitrification System by limiting feed rates as specified in Permit Tables III.10.J.D and III.10.J.F, as approved/modified pursuant to Permit Condition III.10.J.5., compliance with operating conditions specified in Permit Condition III.10.J.1.c. (except as specified in Permit Condition III.10.J.1.b.xii.), and compliance with Permit Condition III.10.J.1.b.xi.

III.10.J.1.b.xi Treatment effectiveness, feed-rates and operating rates for dangerous and mixed waste management units contained in the HLW Building, but not included in Permit Table III.10.J.A, as approved/modified pursuant to Permit Condition III.10.J.5., will be as specified in Permit Sections III.10.D, III.10.E, III.10.F and consistent with assumptions and basis which are reflected in Operating Unit Group 10, Appendix 6.3.1 of this Permit, as approved pursuant to Permit Condition III.10.C.11.b. For the purposes of this permit condition, Operating Unit Group 10, Appendix 6.3.1 will be superseded by Appendix 6.4.1 upon its approval pursuant to either Permit Conditions III.10.C.11.c. or III.10.C.11.d. [WAC 173-303-680(2) and (3), and WAC 173-303-815(2)(b)(ii)].

III.10.J.1.b.xii Except during periods of HLW Vitrification System startup and shutdown, compliance with the operating conditions specified in Permit Condition III.10.J.1.c., will be regarded as compliance with the required performance standards identified in Permit Conditions III.10.J.1.b.i. through x. However, if it is determined that during the effective period of this Permit that compliance with the operating conditions in Permit Condition III.10.J.1.c. is not sufficient to ensure compliance with the performance standards specified in Permit Conditions III.10.J.1.b.i. through x., the Permit may be modified, revoked, or reissued pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f., or III.10.C.2.g.

III.10.J.1.c Operating Conditions [WAC 173-303-670(6), in accordance with WAC 173-303-680(2) and (3)].

The Permittees will operate the HLW Vitrification System in accordance with Operating Unit Group 10, Addendum C of this Permit, as updated pursuant to Permit Condition III.10.J.5.e.vi., and Operating Unit Group 10, Appendix 10.18 of this Permit, as approved

pursuant to Permit Condition III.10.J.5.e., and Operating Unit Group 10, Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.5.f., except as modified pursuant to Permit Conditions III.10.J.1.b.xii., III.10.J.2., III.10.J.3., III.10.J.4., and in accordance with the following:

III.10.J.1.c.i The Permittees will operate the HLW Vitrification System in order to maintain the systems and process parameters listed in Permit Tables III.10.J.C and III.10.J.F, as approved/modified pursuant to Permit Condition III.10.J.5., within the set-points specified in Permit Table III.10.J.F.

III.10.J.1.c.ii The Permittees will operate the AWFCO systems, specified in Permit Table III.10.J.F, as approved/modified pursuant to Permit Condition III.10.J.5., to automatically cut-off and/or lock-out the dangerous and mixed waste feed to the HLW Vitrification System when the monitored operating conditions deviate from the set-points specified in Permit Table III.10.J.F.

III.10.J.1.c.iii The Permittees will operate the AWFCO systems, specified in Permit Table III.10.J.F, as approved/modified pursuant to Permit Condition III.10.J.5., to automatically cut-off and/or lock-out the dangerous and mixed waste feed to the HLW Vitrification System when all instruments specified on Permit Table III.10.H.F for measuring the monitored parameters fails or exceeds its span value

III.10.J.1.c.iv The Permittees will operate the AWFCO systems, specified in Permit Table III.10.J.F, as approved/modified pursuant to Permit Condition III.10.J.5., to automatically cut-off and/or lock out the dangerous and/or mixed waste feed to the HLW Vitrification System when any portion of the HLW Vitrification System is bypassed. The terms "bypassed" and "bypass event" as used in Permit Sections III.10.J and III.10.K will mean if any portion of the HLW Vitrification System is bypassed so that gases are not treated as during the Demonstration Test.

III.10.J.1.c.v In the event of a malfunction of the AWFCO systems listed in Permit Table III.10.J.F, as approved/modified pursuant to Permit Condition III.10.J.5., the Permittees will immediately, manually cut-off the dangerous and mixed waste feed to the HLW Vitrification System. The Permittees will not restart the dangerous and/or mixed waste feed until the problem causing the malfunction has been identified and corrected.

III.10.J.1.c.vi The Permittees will manually cut-off the dangerous and mixed waste feed to the HLW Vitrification System when the operating conditions deviate from the limits specified in Permit Condition III.10.J.1.c.i., unless the deviation automatically activates the waste feed cut-off sequence specified in Permit Conditions III.10.J.1.c.ii., III.10.J.1.c.iii., and/or III.10.J.1.c.iv.

III.10.J.1.c.vii If greater than thirty (30) dangerous and mixed waste feed cut-offs, combined, to the HLW Vitrification System occur due to deviations from Permit Table III.10.J.F, as approved/modified pursuant to Permit Condition III.10.J.5., within a sixty (60) day period, the Permittees will submit a written report to Ecology within five (5) calendar days of the thirty-first exceedance including the information specified below. These dangerous and mixed waste feed cut-offs to the HLW Vitrification System, whether automatically or manually activated, are counted if the specified set-points are deviated from while dangerous waste, mixed waste, and waste residues continue to be processed in the HLW Vitrification System. A cascade event is counted at a frequency of one (1) towards the first waste feed cut-off parameter, specified on Permit Table III.10.J.F, from which the set-point is deviated:

A. The parameter(s) that deviated from the set-point(s) in Permit Table III.10.J.F.

B. The magnitude, dates, and duration of the deviations.

C. Results of the investigation of the cause of the deviations.

D. Corrective measures taken to minimize future occurrences of the deviations.

III.10.J.1.c.viii If any portion of the HLW Vitrification System is bypassed while treating dangerous and/or mixed waste, it will be regarded as non-compliance with the operating conditions specified in Permit Condition III.10.J.1.c. and the performance standards specified in Permit Condition III.10.J.1.b. After such a bypass event, the Permittees will perform the following actions:

A. Investigate the cause of the bypass event.

B. Take appropriate corrective measures to minimize future bypasses.

C. Record the investigation findings and corrective measures in the operating record.

D. Submit a written report to Ecology within five (5) days of the bypass event documenting the result of the investigation and corrective measures.

III.10.J.1.c.ix The Permittees will control fugitive emissions from the HLW Vitrification System by maintaining the melter under negative pressure.

III.10.J.1.c.x Except during periods of HLW Vitrification System startup and shutdown, compliance with the operating conditions specified in Permit Condition III.10.J.1.c. will be regarded as compliance with the required performance standards identified in Permit Condition III.10.J.1.b. However, evidence that compliance with these operating conditions is insufficient to ensure compliance with the performance standards, will justify modification, revocation, or re-issuance of this Permit, in accordance with Permit Conditions III.10.C.2.e. and III.10.C.2.f., or III.10.C.2.g.

III.10.J.1.d Inspection Requirements [WAC 173-303-680(3)].

III.10.J.1.d.i The Permittees will inspect the HLW Vitrification System in accordance with the Inspection Schedules in Operating Unit Group 10, Addendum E1 of this Permit, as modified in accordance with Permit Condition III.10.C.5.c.

III.10.J.1.d.ii The inspection data for HLW Vitrification System will be recorded, and the records will be placed in the WTP Unit operating record for the HLW Vitrification System, in accordance with Permit Condition III.10.C.4.

III.10.J.1.d.iii The Permittees will comply with the inspection requirements specified in Operating Unit Group 10, Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.5.f., and as modified by Permit Conditions III.10.J.1.b.xii., III.10.J.2., III.10.J.3., and III.10.J.4.

III.10.J.1.e Monitoring Requirements [WAC 173-303-670(5), WAC 173-303-670(6), WAC 173-303-670(7), and WAC 173-303-807(2), in accordance with WAC 173-303-680(3)]

III.10.J.1.e.i Upon receipt of a written request from Ecology, the Permittees will perform sampling and analysis of the dangerous and mixed waste and exhaust emissions to verify that the operating requirements established in the Permit achieve the performance standards delineated in this Permit.

III.10.J.1.e.ii The Permittees will comply with the monitoring requirements specified in Operating Unit Group 10, Appendices 10.2, 10.3, 10.7, 10.13, 10.15, and 10.18 of this Permit, as approved pursuant to Permit Conditions III.10.J.5.c., III.10.J.5.d., III.10.J.5.e., and

III.10.J.5.f., as modified by Permit Conditions III.10.J.1.b.xii., III.10.J.2., III.10.J.3., and III.10.J.4.

III.10.J.1.e.iii The Permittees will operate, calibrate, and maintain the carbon monoxide and hydrocarbon continuous emission monitors (CEM) specified in this Permit in accordance with Performance Specification 4B and 8A of 40 CFR Part 60, Appendix B, in accordance with Appendix to Subpart EEE of 40 CFR Part 63, and Operating Unit Group 10 Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.5.f., and as modified by Permit Conditions III.10.J.1.b.xii., III.10.J.2., III.10.J.3., and III.10.J.4.

III.10.J.1.e.iv The Permittees will operate, calibrate, and maintain the instruments specified on Permit Tables III.10.J.C and F, as approved/modified pursuant to Permit Condition III.10.J.5., in accordance with Operating Unit Group 10, Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.5.f., and as modified by Permit Conditions III.10.J.1.b.xii., III.10.J.2., III.10.J.3., and III.10.J.4.

III.10.J.1.f Recordkeeping Requirements [WAC 173-303-380 and WAC 173-303-680(3)]

III.10.J.1.f.i The Permittees will record and maintain in the WTP Unit operating record for the HLW Vitrification System, all monitoring, calibration, maintenance, test data, and inspection data compiled under the conditions of this Permit, in accordance with Permit Conditions III.10.C.4. and III.10.C.5., as modified by Permit Conditions III.10.J.1.b.xii., III.10.J.2., III.10.J.3., and III.10.J.4.

III.10.J.1.f.ii The Permittees will record in the WTP Unit operating record the date, time, and duration of all automatic waste feed cut-offs and/or lockouts, including the triggering parameters, reason for the deviation, and recurrence of the incident. The Permittees will also record all incidents of AWFCO system function failures, including the corrective measures taken to correct the condition that caused the failure.

III.10.J.1.f.iii The Permittees will submit to Ecology a report semi-annually the first calendar year, and annually thereafter each calendar year within ninety (90) days following the end of the year. The report will include the following information:

A. Total dangerous and mixed waste feed processing time for the HLW Vitrification System.

B. Date/Time of all HLW Vitrification System startups and shutdown.

C. Date/Time/Duration/Cause/Corrective Action taken for all HLW Vitrification System shutdowns caused by malfunction of either process or control equipment.

D. Date/Time/Duration/Cause/Corrective Action taken for all instances of dangerous and/or mixed waste feed cut-off due to deviations from Permit Table III.10.J.F, as approved/modified pursuant to Permit Condition III.10.J.5.

III.10.J.1.f.iv The Permittees will submit an annual report to Ecology each calendar year within ninety (90) days following the end of the year of all quarterly CEM Calibration Error and Annual CEM Performance Specification Tests conducted in accordance with Permit Condition III.10.J.1.e.iii.

III.10.J.1.g Closure

The Permittees will close the HLW Vitrification System in accordance with Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8.

III.10.J.2 **Shakedown Period [WAC 173-303-670(5), WAC 173-303-670(6), WAC 173-303-670(7), and WAC 173-303-807(2), in accordance with WAC 173-303-680(2) and (3)].**

III.10.J.2.a The shakedown period for the HLW Vitrification System will be conducted in accordance with Permit Condition III.10.J.1., Operating Unit Group 10, Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.5.f., and as modified in accordance with Permit Conditions III.10.J.1.b.xii., III.10.J.2., and III.10.J.3.

III.10.J.2.b Duration of the Shakedown Period

III.10.J.2.b.i The shakedown period for the HLW Vitrification System will begin with the initial introduction of dangerous waste in the HLW Vitrification System following construction and will end with the start of the demonstration test.

III.10.J.2.b.ii The shakedown period will not exceed the following limits, as defined by hours of operation, when the HLW Vitrification System is processing dangerous waste. The Permittees may petition Ecology for one (1) extension of each shakedown phase for seven hundred and twenty (720) additional operating hours in accordance with permit modification procedures specified in Permit Conditions III.10.C.2.e. and III.10.C.2.f.

Shakedown Phase 1: 720 hours

Shakedown Phase 2: 720 hours

III.10.J.2.b.iii Shakedown Phase 2 will not be commenced until documentation has been submitted to Ecology verifying that the HLW Vitrification System has operated at a minimum of 75% of the shakedown Phase 1 feed-rate limit for two (2) separate eight (8) consecutive hour periods with no AWFCOs.

III.10.J.2.c Allowable Waste Feed During the Shakedown Period

III.10.J.2.c.i The Permittees may feed the dangerous waste specified for the HLW Vitrification System on the Part A Forms (Operating Unit Group 10, Addendum A of this Permit), except for those waste outside the waste acceptance criteria specified in the WAP, Operating Unit Group 10, Addendum B of this Permit, as approved pursuant to Permit Condition III.10.C.3., except Permit Conditions III.10.J.2.c.ii. through v. also apply.

III.10.J.2.c.ii The Permittees will not feed the following waste to the HLW Vitrification System during Shakedown Phase 1:

A. Acutely toxic dangerous waste listed in WAC 173-303-081(a)(2)(a)(i).
B. Mixed waste

III.10.J.2.c.iii The Permittees will not feed the following waste to the HLW Vitrification System during Shakedown Phase 2:

A. Mixed waste

III.10.J.2.c.iv The feed-rates to the HLW Vitrification System will not exceed the limits in Permit Tables III.10.J.D and III.10.J.F, as approved/modified pursuant to Permit Condition III.10.J.5.

III.10.J.2.c.v The Permittees will conduct sufficient analysis of the dangerous waste treated in the HLW Vitrification System to verify that the waste feed is within the physical and chemical composition limits specified in this Permit.

III.10.J.3 **Demonstration Test Period [WAC 173-303-670(5), WAC 173-303-670(6), WAC 173-303-670(7), and WAC 173-303-807(2), in accordance with WAC 173-303-680(2) and (3)]**

III.10.J.3.a Demonstration Test Period

III.10.J.3.a.i The Permittees will operate, monitor, and maintain the HLW Vitrification System as specified in Permit Condition III.10.J.1., and Operating Unit Group 10, Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.5.f., except as modified in accordance with Permit Conditions III.10.J.1.b.xii. and III.10.J.3.

III.10.J.3.a.ii Operating Unit Group 10, Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.5.f., will be re-submitted to Ecology for approval by the Permittees as a permit modification pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f. at least one hundred and eighty (180) days prior to the start date of the demonstration test. The revised Demonstration Test Plan will include applicable EPA promulgated test methods and procedures in effect at the time of the re-submittal and projected commencement and completion dates for the Demonstration Test.

III.10.J.3.a.iii The Permittees will not commence the demonstration test period until documentation has been submitted to Ecology verifying that the HLW Vitrification System has operated at a minimum of 75% of the demonstration test period feed-rate limit for a minimum of an eight (8) consecutive hours period on two (2) consecutive days.

III.10.J.3.b Performance Standards

The Permittees will demonstrate compliance with the performance standards specified in Permit Condition III.10.J.1.b. during the Demonstration Test Period.

III.10.J.3.c Allowable Waste Feed During the Demonstration Test Period

III.10.J.3.c.i The Permittees may feed the dangerous waste specified for the HLW Vitrification System in Part A Forms (Operating Unit Group 10, Addendum A of this Permit), except for those waste outside the waste acceptance criteria specified in the WAP, Operating Unit Group 10, Addendum B of this Permit, as approved pursuant to Permit Condition III.10.C.3., except Permit Conditions III.10.J.3.c.ii. through iv. also apply.

III.10.J.3.c.ii The Permittees will not feed mixed waste to the HLW Vitrification System.

III.10.J.3.c.iv. The dangerous waste feed-rates to the HLW Vitrification System will not exceed the limits in Permit Tables III.10.J.D and F, as approved/modified pursuant to Permit Condition III.10.J.5.

III.10.J.3.c.v. The Permittees will conduct sufficient analysis of the dangerous waste treated in the HLW Vitrification System to verify that the dangerous waste is within the physical and chemical composition limits specified in this Permit.

III.10.J.3.d Demonstration Data Submissions and Certifications

III.10.J.3.d.i The Permittees will submit to Ecology a complete demonstration test report within one hundred and eighty (180) calendar days of completion of the Demonstration Test

including all data collected during the Demonstration Test and updated Permit Tables III.10.K.D, III.10.K.E, and III.10.K.F.

III.10.J.3.d.ii The Permittees must submit the following information to Ecology prior to receiving Ecology's approval to commence feed of dangerous waste and mixed waste to the HLW Vitrification System:

A. The Permittees will submit a summary of data collected as required during the Demonstration Test to Ecology upon completion of the Demonstration Test.

B. A certification that the Demonstration Test has been carried out in accordance with the approved Demonstration Test Plan and approved modifications within thirty (30) days of the completion of the Demonstration Test [WAC 173-303-807(8)].

C. Calculations and analytical data showing compliance with the performance standards specified in Permit Conditions III.10.J.1.b.i, III.10.J.1.b.iv, III.10.J.1.b.v, III.10.J.1.b.vi, and III.10.J.1.b.vii

D. Laboratory data QA/QC summary for the information provided in III.10.J.3.d.ii.C.

III.10.J.3.d.iii After successful completion of the Demonstration Test and receipt of Ecology's approval, the Permittees will be authorized to commence feed of dangerous waste and mixed waste to the HLW Vitrification System for the post-demonstration test period indicated in Permit Tables III.10.J.D and F, as approved/modified pursuant to Permit Condition III.10.J.5., in compliance with the operating requirements specified in Permit Condition III.10.J.1.c. and within the limitations specified in Permit Condition.III.10.C.14.

III.10.J.3.d.iv RESERVED

III.10.J.3.d.v After successful completion of the Demonstration Test, Permittees submittal of the following to Ecology, and Permittees receipt of Ecology approval of the following in writing, the Permittees will be authorized to feed dangerous waste and mixed waste to the HLW Vitrification System pursuant to Permit Section III.10.K.

A. A complete Demonstration Test Report for the HLW Vitrification System and updated Permit Tables III.10.K.D, III.10.K.E, and III.10.K.F, as approved/modified pursuant to Permit Conditions III.10.J.5 and III.10.C.11.c. or III.10.C.11.d., the test report will be certified in accordance with WAC 173-303-807(8), in accordance with WAC 173-303-680(2) and (3).

B. A Final Risk Assessment Report completed pursuant to Permit Conditions III.10.C.11.c. or III.10.C.11.d.

III.10.J.3.d.vi If any calculations or testing results show that one or more of the performance standards listed in Permit Condition III.10.J.1.b., with the exception of Permit Condition III.10.J.1.b.x., for the HLW Vitrification System were not met during the Demonstration Test, the Permittees will perform the following actions:

A. Immediately stop dangerous and mixed waste feed to the HLW Vitrification System under the mode of operation that resulted in not meeting the performance standard(s).

B. Verbally notify Ecology within twenty-four (24) hours of discovery of not meeting the performance standard(s) as specified in Permit Condition I.E.21.

C. Investigate the cause of the failure and submit a report of the investigation findings to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s).

D. Submit to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s), documentation supporting a mode of operation where all performance standards listed in Permit Condition III.10.J.1.b., with the exception of Permit Condition III.10.J.1.b.x., for the HLW Vitrification System were met during the demonstration test, if any such mode was demonstrated.

E. Based on the information provided to Ecology by the Permittees, pursuant to Permit Conditions III.10.J.3.d.vi.A through D above, and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the LAW Vitrification System and/or amend the mode of operation the Permittees are allowed to continue operations prior to Ecology approval of a compliance schedule and/or revised Demonstration Test Plan, pursuant to Permit Conditions III.10.J.3.d.vi.F and G.

F. If the performance standard listed in Permit Condition III.10.J.1.b.i. was not met during the Demonstration Test, the Permittees will submit within one hundred and twenty (120) days of discovery of not meeting the performance standard, a revised Demonstration Test Plan (if appropriate) and a compliance schedule for Ecology approval to address this deficiency. If a revised Demonstration Test Plan is submitted, it will be accompanied by a request for approval to retest as a permit modification pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f. The revised Demonstration Test Plan (if submitted) must include substantive changes to prevent failure from reoccurring.

G. If any of the performance standards listed in Permit Condition III.10.J.1.b., with the exception of Permit Conditions III.10.J.1.b.i. or III.10.J.1.b.x., were not met during the Demonstration Test, the Permittees will submit to Ecology within one hundred and twenty (120) days of discovery of not meeting the performance standard(s), a revised Demonstration Test Plan requesting approval to retest as a permit modification pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring.

III.10.J.3.d.vii If any calculations or testing results show that any emission rate for any constituent listed in Permit Table III.10.J.E, as approved pursuant to Permit Condition III.10.C.11.b., is exceeded for HLW Vitrification System during the Demonstration Test, the Permittees will perform the following actions:

A. Verbally notify Ecology within twenty-four (24) hours of the discovery of exceeding the emission rate(s) as specified in Permit Condition I.E.21.

B. Submit to Ecology additional risk information to indicate that the increased emissions impact is offset by decreased emission impact from one or more constituents expected to be emitted at the same time, and/or investigate the cause and impact of the exceedance of the emission rate(s) and submit a report of the investigation findings to Ecology within fifteen (15) days of the discovery of exceeding the emission rate(s).

C. Based on the notification and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the HLW Vitrification System and/or to submit a revised Demonstration Test Plan as a permit modification pursuant to Permit Conditions III.10.C.2.e. and III.10.C.2.f., or

III.10.C.2.g. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring.

III.10.J.4 Post-Demonstration Test Period [WAC 173-303-670(5), WAC 173-303-670(6), and WAC 173-303-807(2), in accordance with WAC 173-303-680(2) and (3)].

III.10.J.4.a The Permittees will operate, monitor, and maintain the HLW Vitrification System as specified in Permit Condition III.10.J.1. and Operating Unit Group 10, Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.5., except as modified in accordance with Permit Conditions III.10.J.1.b.xii., III.10.J.3., and III.10.J.4.

III.10.J.4.b Allowable Waste Feed During the Post-Demonstration Test Period

III.10.J.4.b.i The Permittees may feed the dangerous and/or mixed waste specified for the HLW Vitrification System on the Part A Forms (Operating Unit Group 10, Addendum A of this Permit), except for those waste outside the waste acceptance criteria specified in the WAP, Operating Unit Group 10, Addendum B of this Permit, as approved pursuant to Permit Condition III.10.C.3., and except Permit Conditions III.10.J.4.b.ii. and III.10.J.4.b.iii. also apply.

III.10.J.4.b.ii The dangerous waste and mixed waste feed rates to the HLW Vitrification System will not exceed the limits in Permit Tables III.10.J.D and F, as approved/modified pursuant to Permit Condition III.10.J.5., or in Permit Condition III.10.J.3.

III.10.J.4.b.iii The Permittees will conduct sufficient analysis of the dangerous waste and mixed waste treated in HLW Vitrification System to verify that the waste feed is within the physical and chemical composition limits specified in this Permit.

III.10.J.5 Compliance Schedules

III.10.J.5.a All information identified for submittal to Ecology in a. through f. of this compliance schedule must be signed and certified in accordance with requirements in WAC 173-303-810(12), as modified in accordance with Permit Condition III.10.J.1.a.iii. [WAC 173-303-806(4)].

III.10.J.5.b The Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., prior to construction of each secondary containment and leak detection system for the HLW Vitrification System (per level) as identified in Permit Tables III.10.J.A and III.10.J.B, engineering information as specified below, for incorporation into Operating Unit Group 10, Appendices 10.2, 10.4, 10.5, 10.7, 10.8, 10.9, 10.11, and 10.12 of this Permit. At a minimum, engineering information specified below will show the following as described in WAC 173-303-640, in accordance with WAC 173-303-680 (the information specified below will include dimensioned engineering drawings and information on sumps and floor drains):

III.10.J.5.b.i IQRPE Reports (specific to foundation, secondary containment, and leak detection system) will include review of design drawings, calculations, and other information on which the certification report is based and will include, but not limited to, review of such information described below. Information (drawings, specifications, etc.) already included in Operating Unit Group 10, Appendix 10.0 of this Permit, may be included in the report by reference and should include drawing and document numbers. IQRPE Reports will be consistent with the information separately provided in ii. through ix.

below [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)];

III.10.J.5.b.ii Design drawings (General Arrangement Drawings, plan) and specifications for the foundation, secondary containment including liner installation details, and leak detection methodology. These items should show the dimensions, volume calculations, and location of the secondary containment system, and should include items such as floor/pipe slopes to sumps, tanks, floor drains [WAC 173-303-640(4)(b) through (f) and WAC 173-303-640(3)(a), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)];

III.10.J.5.b.iii The Permittees will provide the design criteria (references to codes and standards, load definitions, and load combinations, materials of construction, and analysis/design methodology) and typical design details for the support of the secondary containment system. This information will demonstrate the foundation will be capable of providing support to the secondary containment system, resistance to pressure gradients above and below the system, and capable of preventing failure due to settlement, compression, or uplift [WAC 173-303-640(4)(c)(ii), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(B)];

III.10.J.5.b.iv A description of materials and equipment used to provide corrosion protection for external metal components in contact with soil, including factors affecting the potential for corrosion [WAC 173-303-640(3)(a)(iii)(B), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.J.5.b.v Secondary containment/foundation, and leak detection system, materials selection documentation (including, but not limited to, concrete coatings and water stops, and liner materials), as applicable [WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.J.5.b.vi Detailed description of how the secondary containment for the HLW Vitrification System will be installed in compliance with WAC 173-303-640(3)(c), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(A) through (B);

III.10.J.5.b.vii Submit Permit Tables III.10.J.B and III.10.K.B completed to provide for all secondary containment sumps and floor drains the information, as specified in each column heading consistent with information to be provided in i. through vi., above;

III.10.J.5.b.viii Documentation that secondary containment and leak detection systems will not accumulate hydrogen gas levels above the lower explosive limit for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A), and WAC 173-303-806(4)(i)(v)];

III.10.J.5.b.ix A detailed description of how HLW Vitrification System design provides access for conducting future HLW Vitrification System integrity assessments [WAC 173-303-640(3)(b) and WAC 173-303-806(4)(i)(i)(B)].

III.10.J.5.c The Permittees will submit to Ecology pursuant to Permit Condition III.10.C.9.f., prior to installation of each sub-system as identified in Permit Table III.10.J.A, engineering information as specified below, for incorporation into Operating Unit Group 10, Appendices 10.1 through 10.14 and 10.17 of this Permit. At a minimum, engineering information specified below will show the following, as required pursuant to WAC 173-303-640, in accordance with WAC 173-303-680 (the information specified below will include dimensioned engineering drawings):

III.10.J.5.c.i IQRPE Reports (specific to sub-system) will include review of design drawings, calculations, and other information on which the certification report is based and will

include as applicable, but not limited to, review of such information described below. Information (drawings, specifications, etc.) already included in Operating Unit Group 10, Appendix 10.0 of this Permit, may be included in the report by reference and should include drawing and document numbers. The IQRPE Reports will be consistent with the information separately provided in ii. through xii. below and the IQRPE Report specified in Permit Condition III.10.J.5.b. [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)];

III.10.J.5.c.ii Design drawings [General Arrangement Drawings in plan, Process Flow Diagrams, Piping and Instrumentation Diagrams, (including pressure control systems), Mechanical Drawings, and specifications, and other information specific to subsystems (to show location and physical attributes of each subsystem specific to miscellaneous units)] [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)];

III.10.J.5.c.iii Sub-system design criteria (references to codes and, standards, load definitions, and load combinations, materials of construction, and analysis/design methodology) and typical design details to support the sub-systems. Structural support calculations specific to off-specification, non-standard, and field-fabricated subsystems will be submitted for incorporation into the Administrative Record. Documentation will include, but not be limited to, supporting specifications (test data, treatment effectiveness report, etc.), supporting projected operational capability (e.g., WESP projected removal efficiency for individual metals, halogens, particulates, etc.), and compliance with performance standards specified in Permit Condition III.10.J.1.b [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(B)];

III.10.J.5.c.iv A description of materials and equipment used to provide corrosion protection for external metal components in contact with water, including factors affecting the potential for corrosion [WAC 173-303-640(3)(a)(iii)(B), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.J.5.c.v Sub-system materials selection documentation (e.g., physical and chemical tolerances) [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A)];

III.10.J.5.c.vi Sub-system vendor information (including, but not limited to, required performance warranties, as available), consistent with information submitted under ii. above, will be submitted for incorporation into the Administrative Record [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(v)];

III.10.J.5.c.vii System descriptions related to sub-system units will be submitted for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(v)];

III.10.J.5.c.viii Mass and energy balance for normal projected operating conditions used in developing the Piping and Instrumentation Diagrams and Process Flow Diagrams, including assumptions and formulas used to complete the mass and energy balance, so that they can

be independently verified for incorporation into the Administrative Record [WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)];

III.10.J.5.c.ix Detailed description of all potential HLW Vitrification System bypass events including:

A. A report which includes an analysis of credible potential bypass events and recommendations for prevention/minimization of the potential, impact, and frequency of the bypass event to include at a minimum:

1. Operating procedures
2. Maintenance procedures
3. Redundant equipment
4. Redundant instrumentation
5. Alternate equipment
6. Alternate materials of construction

III.10.J.5.c.x A detailed description of how the sub-systems will be installed in compliance with WAC 173-303-640(3)(b), (c), (d), and (e), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B);

III.10.J.5.c.xi Sub-system design to prevent escape of vapors and emissions of acutely or chronically toxic (upon inhalation) EHW, for incorporation into the Administrative Record [WAC 173-303-640(5)(e), in accordance with WAC 173-303-680, (2), and WAC 173-303-806(4)(i)(i)(B)];

III.10.J.5.c.xii Documentation that sub-systems are designed to prevent the accumulation of hydrogen gases levels above the lower explosive limit for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A), and WAC 173-303-806(4)(i)(v)];

III.10.J.5.d The Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., prior to installation of equipment for each sub-system as identified in Permit Tables III.10.J.A and III.10.J.B, not addressed in Permit Conditions III.10.J.5.b. or III.10.J.5.c., engineering information as specified below, for incorporation into Operating Unit Group 10, Appendices 10.1 through 10.14 of this Permit. At a minimum, engineering information specified below will show the following as required pursuant to in WAC 173-303-640, in accordance with WAC 173-303-680 (the information specified below will include dimensioned engineering drawings):

III.10.J.5.d.i IQRPE Reports (specific to sub-system equipment) will include a review of design drawings, calculations, and other information as applicable on which the certification report is based. The reports will include, but not be limited to, review of such information described below. Information (drawings, specifications, etc.) already included in Operating Unit Group 10, Appendix 10.0 of this Permit, may be included in the report by reference and should include drawing and document numbers. The IQRPE Reports will be consistent with the information provided separately in ii. through xiii. below and the IQRPE Reports specified in Permit Conditions III.10.J.5.b. and III.10.J.5.c. [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(I)(I)(A) through (B)];

III.10.J.5.d.ii Design drawings [Process Flow Diagrams, Piping and Instrumentation Diagrams (including pressure control systems), and specifications, and other information specific to equipment (these drawings should include all equipment such as pipes, valves, fittings,

pumps, instruments, etc.)] [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A) through (B)];

III.10.J.5.d.iii Sub-system equipment design criteria (references to codes and standards, load definitions and load combinations, materials of construction, and analysis/design methodology) and typical design details for the support of the sub-system equipment. [WAC 173-303-640(3)(a) and WAC 173-303-640(3)(f), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B)];

III.10.J.5.d.iv A description of materials and equipment used to provide corrosion protection for external metal components in contact with soil and water, including factors affecting the potential for corrosion [WAC 173-303-640(3)(a)(iii)(B), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A)];

III.10.J.5.d.v Materials selection documentation for equipment for each sub-system (e.g., physical and chemical tolerances) [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2) and WAC 173-303-806(4)(i)(i)(A)];

III.10.J.5.d.vi Vendor information (including, but not limited to, required performance warranties, as available), consistent with information submitted under ii. above, for sub-system equipment will be submitted for incorporation into the Administrative Record [WAC 173-303-640(3)(a), in accordance with WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(iv)];

III.10.J.5.d.vii Sub-system, sub-system equipment, and leak detection system instrument control logic narrative description (e.g., descriptions of fail-safe conditions, etc.) [WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)];

III.10.J.5.d.viii System description related to sub-system equipment, and system descriptions related to leak detection systems, for incorporation into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(v)];

III.10.J.5.d.ix A detailed description of how the sub-system equipment will be installed and tested [WAC 173-303-640(3)(c) through (e) and WAC 173-303-640(4)(b) and (c), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B)];

III.10.J.5.d.x For process monitoring, control, and leak detection system instrumentation for the HLW Vitrification System as identified in Permit Tables III.10.J.C. and III.10.J. F., a detailed description of how the process monitoring, control, and leak detection system instrumentation will be installed and tested [WAC 173-303-640(3)(c) through (e), WAC 173-303-640(4)(b) and (c), WAC 173-303-806(4)(c)(vi), and WAC 173-303-806(4)(i)(i)(B)];

III.10.J.5.d.xi Mass and energy balance for projected normal operating conditions used in developing the Piping and Instrumentation Diagrams and Process Flow Diagrams, including assumptions and formulas used to complete the mass and energy balance, so that they can be independently verified, for incorporation into the Administrative Record [WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)];

III.10.J.5.d.xii Documentation that sub-systems equipment are designed to prevent the accumulation of hydrogen gas levels above the lower explosive limit into the Administrative Record [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A), and WAC 173-303-806(4)(i)(v)] [WAC 173-303-815(2)(b)(ii)];

III.10.J.5.d.xiii Leak Detection system documentation (e.g. vendor information etc.) consistent with information submitted under Permit Condition III.10.J.5.c.ii. and Permit Conditions III.10.J.5.d.ii., vii., viii., and x. above, will be submitted for incorporation into the Administrative Record.

III.10.J.5.e Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., the following as specified below for incorporation into Operating Unit Group 10, Appendix 10.18 of this Permit, except Permit Condition III.10.J.5.e.i., which will be incorporated into Operating Unit Group 10, Addendum E of this Permit. All information provided under this permit condition must be consistent with information provided pursuant to Permit Conditions III.10.J.5.b., c., d., e., and f., III.10.C.3.e.v., and III.10.C.11.b., as approved by Ecology:

III.10.J.5.e.i Integrity assessment program and schedule for the HLW Vitrification System will address the conducting of periodic integrity assessments on the HLW Vitrification System over the life of the system, as specified in Permit Condition III.10.J.5.b.ix. and as specified in WAC 173-303-640(3)(b), in accordance with WAC 173-303-680, and descriptions of procedures for addressing problems detected during integrity assessments. The schedule must be based on past integrity assessments, age of the system, materials of construction, characteristics of the waste, and any other relevant factors [WAC 173-303-640(3)(b), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B)];

III.10.J.5.e.ii Detailed plans and descriptions, demonstrating the leak detection system is operated so that it will detect the failure of either the primary or secondary containment structure or the presence of any release of dangerous and/or mixed waste or accumulated liquid in the secondary containment system within twenty-four (24) hours [WAC 173-303-640(4)(c)(iii)]. Detection of a leak of at least 0.1 gallons per hour within twenty-four (24) hours is defined as being able to detect a leak within twenty-four (24) hours. Any exceptions to this criteria must be approved by Ecology in accordance with WAC 173-303-680, WAC 173-303-640(4)(c)(iii), and WAC 173-303-806(4)(i)(i)(b);

III.10.J.5.e.iii Detailed operational plans and descriptions, demonstrating that spilled or leaked waste and accumulated precipitation liquids can be removed from the secondary containment system within twenty-four (24) hours [WAC 173-303-806(4)(i)(i)(B)];

III.10.J.5.e.iv Descriptions of operational procedures demonstrating appropriate controls and practices are in place to prevent spills and overflows from the HLW Vitrification System or containment systems in compliance with WAC 173-303-640(5)(b)(i) through (iii), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B);

III.10.J.5.e.v Description of procedures for investigation and repair of the HLW Vitrification System [WAC 173-303–640(6) and WAC 173-303-640(7)(e) and (f), in accordance with WAC 173-303-680, WAC 173-303-320, WAC 173-303-806(4)(ia)(iv), and WAC 173-303-806(4)(a)(ii)(B)];

III.10.J.5.e.vi Updated Addendum C, Narrative Description, Tables and Figures as identified in Permit Tables III.10.J.A and III.10.J.B, as modified pursuant to Permit Condition III.10.H.5.e.x. and updated to identify routinely non-accessible LAW Vitrification sub-systems.

III.10.J.5.e.vii Description of procedures for management of ignitable and reactive, and incompatible dangerous and/or mixed waste as specified in accordance with WAC 173-303-640(9) and (10), in accordance with WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(B).

III.10.J.5.e.viii A description of the tracking system used to track dangerous and/or mixed waste generated throughout the HLW Vitrification System, pursuant to WAC 173-303-380.

III.10.J.5.e.ix Permit Table III.10.J.C and III.10.K.C will be revised and/or completed for HLW Vitrification System process and leak detection system monitors and instruments (to include, but not be limited to: instruments and monitors measuring and/or controlling flow, pressure, temperature, density, pH, level, humidity, and emissions) to provide the information as specified in each column heading. Process and leak detection system monitors and instruments for critical systems, as specified in Operating Unit Group 10, Appendix 2.0 and as updated pursuant to Permit Condition III.10.C.9.b.and for operating parameters as required to comply with Permit Condition III.10.C.3.e.iii., will be addressed. Process monitors and instruments for non-waste management operations (e.g., utilities, raw chemical storage, non-contact cooling waters, etc.) are excluded from this permit condition [WAC 173-303-680, WAC 173-303-806(4)(i)(i)(A) through (B), and WAC 173-303-806(4)(i)(v)];

III.10.J.5.e.x Permit Tables III.10.J.A and III.10.K.A amended as follows [WAC 173-303-680 and WAC 173-303-806(4)(i)(i)(A) through (B)]:

A. Under column 1, update and complete list of dangerous and mixed waste HLW Vitrification System sub-systems, including plant items that comprise each system (listed by item number).

B. Under column 2, update and complete system designations.

C. Under column 3, replace the 'Reserved' with Operating Unit Group 10, Appendix 10.0 sub-sections (e.g., 10.1, 10.2, etc.) designated in Permit Conditions III.10.J.5.b., c., and d. specific to HLW Vitrification System sub-system, as listed in column 1.

D. Under column 4, update and complete list of narrative description, tables, and figures.

III.10.J.5.f One hundred and eighty (180) days prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittees will submit for review and receive approval for incorporation into Operating Unit Group 10, Appendix 10.15 of this Permit, a Demonstration Test Plan for the HLW Vitrification System to demonstrate that the HLW Vitrification Systems meets the performance standards specified in Permit Condition III.10.J.1.b. In order to incorporate the Demonstration Test Plan for the HLW Vitrification System into Operating Unit Group 10, Appendix 10.15, Permit Condition III.10.C.2.g. process will be followed. The Demonstration Test Plan will include, but not be limited to, the following information. The Demonstration Test Plan will also be consistent with the information provided pursuant to Permit Conditions III.10.J.5.b., c., d. and e., III.10.C.3.e.v. and III.10.C.11.b., as approved by Ecology and consistent with the schedule described in Operating Unit Group 10, Appendix 1.0 of this Permit. The documentation required pursuant to Permit Condition III.10.J.5.f.xvi., in addition to being incorporated into Operating Unit Group 10, Appendix 10.15, will be incorporated by reference in Operating Unit Group 10, Addendum E of this Permit.

Notes: (1) The following should be consulted to prepare this Demonstration Test Plan: "Guidance on Setting Permit Conditions and Reporting Trial Burn Results Volume II of the Hazardous Waste Incineration Guidance Series", and EPA/625/6-89/019 and Risk Burn Guidance For Hazardous Waste Combustion Facilities", EPA-R-01-001, July 2001, WAC 173-303-807(2), WAC 173-303-670(5), WAC-173-303-670(6), 40 CFR §63.1207(f)(2), 40 CFR §63.1209 and Appendix to 40 CFR Part 63 EEE.

(2) Cross-referencing to the information provided pursuant to permit Conditions III.H.5.b., c., d., e. and III.10.C.3.e.v., as approved by Ecology, that are redundant to elements of the Demonstration Test Plan for the HLW Vitrification System is acceptable.

III.10.J.5.f.i Analysis of each feed-stream to be fed during the demonstration test, including dangerous waste, glass formers and reductants, process streams (e.g., control air, process air, steam, sparge bubbler air, air in-leakage from melter cave, and gases from HLW Vitrification Vessel Ventilation System, process water, etc.) that includes:

A. Levels of ash, levels of metals, total chlorine (organic and inorganic), other halogens and radionuclide surrogates.

B. Description of the physical form of the feed-streams;

C. An identification and quantification of organics that are present in the feed-stream, including constituents proposed for DRE demonstration;

A comparison of the proposed demonstration test feed streams to the mixed waste feed envelopes to be processed in the melter must be provided that documents that the proposed demonstration test feed streams will serve as worst case surrogates for organic destruction, formation of products of incomplete oxidation, and metals, total chlorine (organic and inorganic), other halogens, particulate formation, and radionuclides;

III.10.J.5.f.ii Specification of trial principal organic dangerous constituents (PODCs) for which destruction and removal efficiencies are proposed to be calculated during the demonstration test and for inclusion in Permit Conditions III.10.J.1.b.i. and III.10.K.1.b.i. These trial PODCs will be specified based on destructibility, concentration or mass in the waste and the dangerous waste constituents or constituents in WAC 173-303-9905;

III.10.J.5.f.iii A description of the blending procedures, prior to introducing the feed-streams into the melter, including analysis of the materials prior to blending, and blending ratios;

III.10.J.5.f.iv A description of how the surrogate feeds are to be introduced for the demonstration. This description should clearly identify the differences and justify how any of differences would impact the surrogate feed introduction as representative of how mixed waste feeds will be introduced;

III.10.J.5.f.v A detailed engineering description of the HLW Vitrification System, including:

A. Manufacturer's name and model number for each sub-system.

B. Design capacity of each sub-system including documentation (engineering calculations, manufacturer/vendor specifications, operating data, etc.) supporting projected operational efficiencies (e.g., WESP projected removal efficiency for individual metals, halogens, particulates, etc.) and compliance with performance standards specified in Permit Condition III.10.J.1.b.

C. Detailed scaled engineering drawings, including Process Flow Diagrams, Piping and Instrumentation Diagrams, Vessel Drawings (plan, and elevation with cross sections) and General Arrangement Drawings.

D. Process Engineering Descriptions.

E. Mass and energy balances for each projected operating condition and each demonstration test condition, including assumptions and formulas used to complete mass and energy balances so that they can be independently verified for incorporation into the Administrative Record.

F. Engineering Specifications/data sheets (materials of construction, physical and chemical tolerances of equipment, equipment performance warranties, and fan curves).

G. Detailed Description of Automatic Waste Feed Cut-off System addressing critical operating parameters for all performance standards specified in Permit Condition III.10.J.1.b.

H. Documentation to support compliance with performance standards specified in Permit Condition III.10.J.1.b., including engineering calculations, test data, and manufacturer/vendor's warranties, etc.

I. Detailed description of the design, operation and maintenance practices for air pollution control system.

J. Detailed description of the design, operation, and maintenance practices of any stack gas monitoring and pollution control monitoring system.

III.10.J.5.f.vi Detailed description of sampling and monitoring procedures including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, and planned analytical procedures for sample analysis including, but not limited to:

A. A short summary narrative description of each stack sample method should be included within the main body of the demonstration test plan, which references an appendix to the plan that would include for each sampling train: (1) detailed sample method procedures, (2) sampling train configuration schematic, (3) sampling recovery flow sheet, (4) detailed analytical method procedures, and (5) sampling preparation and analysis flow sheet. The detailed procedures should clearly flag where the method has provided decision points (e.g., choices of equipment materials of construction, choices of clean-up procedures or whether additional clean-up procedures will be incorporated, whether pretest surveys or laboratory validation work will be performed, enhancements to train to accommodate high moisture content in stack gas, etc.) and what is being proposed along with the basis for the decision.

B. A short summary narrative description of the feed and residue sampling methods should be included within the main body of the demonstration test plan, which references an appendix that would include for each sample type: (1) detailed sample method procedures, (2) sampling recovery/compositing procedures, and (3) detailed analytical method procedures. The detailed procedures should clearly flag where the method has provided decision points (e.g., choices of equipment materials of construction, choices of clean-up procedures or whether additional clean-up procedures will be incorporated, whether pretest surveys or laboratory validation work will be performed, etc.) and what is being proposed along with the basis for the decision.

III.10.J.5.f.vii A detailed test schedule for each condition for which the demonstration test is planned, including projected date(s), duration, quantity of dangerous waste to be fed, and other relevant factors;

III.10.J.5.f.viii A detailed test protocol including, for each test condition, the ranges of feed-rate for each feed system, and all other relevant parameters that may affect the ability of the HLW

Vitrification System to meet performance standards specified in Permit Condition III.10.J.1.b.;

III.10.J.5.f.ix A detailed description of planned operating conditions for each demonstration test condition, including operating conditions for shakedown, demonstration test, post-demonstration test and normal operations. This information will also include submittal of Permit Tables III.10.J.D, III.10.J.F, III.10.K.D, and III.10.K.F completed with the information as specified in each column heading for each HLW Vitrification System waste feed cut-off parameter and submittal of supporting documentation for Permit Tables III.10.J.D, III.10.J.F, III.10.K.D, and III.10.K.F set-point values.

III.10.J.5.f.x The test conditions proposed must demonstrate meeting the performance standards specified in Permit Condition III.10.J.1.b. with the simultaneous operation of the melter at capacity and input from the HLW Vitrification Vessel Ventilation System at capacity to simulate maximum loading to the HLW Vitrification System off-gas treatment system and to establish the corresponding operating parameter ranges.

III.10.J.5.f.xi A detailed description of procedures for start-up and shutdown of waste feed and controlling emissions in the event of an equipment malfunction, including off-normal and emergency shutdown procedures;

III.10.J.5.f.xii A calculation of waste residence time;

III.10.J.5.f.xiii . Any request to extrapolate metal feed-rate limits from Demonstration Test levels must include:

A. A description of the extrapolation methodology and rationale for how the approach ensures compliance with the performance standards, as specified in Permit Condition III.10.J.1.b.

B. Documentation of the historical range of normal metal feed-rates for each feed stream.

C. Documentation that the level of spiking recommended during the demonstration test will mask sampling and analysis imprecision and inaccuracy to the extent that extrapolation of feed-rates and emission rates from the Demonstration Test data will be as accurate and precise as if full spiking were used.

III.10.J.5.f.xiv Documentation of the expected levels of constituents in HLW Vitrification System input streams, including, but not limited to, waste feed, glass former and reactants, control air, process air, steam, sparge bubbler air, air in-leakage from melter cave, gases from HLW Vitrification Vessel Ventilation System, and process water.

III.10.J.5.f.xv Documentation justifying the duration of the conditioning required to ensure the HLW Vitrification System had achieved steady-state operations under Demonstration Test operating conditions.

III.10.J.5.f.xvi Documentation of HLW Vitrification System process and leak detection system instruments and monitors as listed on Permit Tables III.10.J.C, III.10.J.F, III.10.K.C, and III.10.K.F to include:

A. Procurement specifications

B. Location used

C. Range, precision, and accuracy

D. Calibration/functionality test procedures (either method number ASTM) or provide a copy of manufacturer's recommended calibration procedures

E. Calibration/functionality test, inspection, and routine maintenance schedules and checklists, including justification for calibration, inspection and maintenance frequencies, criteria for identifying instruments found to be significantly out of calibration, and corrective action to be taken for instruments found to be significantly out of calibration (e.g., increasing frequency of calibration, instrument replacement, etc.).

F. Equipment instrument control logic narrative description (e.g., descriptions of failsafe conditions, etc.) [WAC 173-303-680(2), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-806(4)(i)(v)]

III.10.J.5.f.xvii Outline of demonstration test report.

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
HLW Melter Process System HMP-MLTR-00001 (HLW Melter 1) HMP-MLTR-00002 (HLW Melter 2)	HMP	-M6-HMP-00001001, Rev 0 -M6-HMP-00001002, Rev 1 -M6-HMP-00003001, Rev 0 -M6-HMP-00004001, Rev 1 -M6-HMP-00006001, Rev 1 -M6-HMP-00006002, Rev 0 -M6-HMP-00007001, Rev 0 -M6-HMP-00008001, Rev 0 -M6-HMP-00013002, Rev 1 -M6-HMP-00013003, Rev 0 -M6-HMP-20001001, Rev 0 -M6-HMP-20001002, Rev 0 -M6-HMP-20003001, Rev 0 -M6-HMP-20004001, Rev 0 -M6-HMP-20006001, Rev 0 -M6-HMP-20008001, Rev 0 -M6-HMP-20013002, Rev 0 -M6-HMP-20013003, Rev 0 -M5-V17T-P0002, Rev 1 -M5-V17T-P20002, Rev 1 -M0D-HMP-00001, Rev 2 -M0D-HMP-00002, Rev 2 -MF-HMP-00001, Rev 0 -MF-HMP-00002, Rev 0 -MF-HMP-00003, Rev 0 -N1D-HMP-P0001, Rev 0 -P1-P01T-00002, Rev 7 -3PS-AE00-T0001, Rev 5	Section 4.1.4.2; Table C-8; and Figures C1-1, C1-4, C1-27 and C1-54 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System HOP-FCLR-00001 (Melter 1 Offgas Film Cooler) HOP-FCLR-00002 (Melter 2 Offgas Film Cooler)	HOP	**24590-HLW** -M5-V17T-P0002, Rev1 -M5-V17T-P20002, Rev 1 -M6-HMP-00002001, Rev 0 -M6-HMP-00002002, Rev 0 -M6-HMP-20002001, Rev 0 -M6-HMP-20002001, Rev 0	Section 4.1.4.3; Table C-8; and Figures C1-1, C1-4 and C1-27-in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
HOP-FCLR-00003 (Melter 1 Standby Offgas Insert) HOP-FCLR-00004 (Melter 2 Standby Offgas Insert)		-3YD-HOP-00001[a]	
Melter Offgas Treatment Process System (Cont.) HOP-SCB-00001 (Melter 1 Submerged Bed Scrubber, SBS) HOP-SCB-00002 (Melter 2 Submerged Bed Scrubber, SBS)	HOP	**24590-HLW** -M5-V17T-P0003, Rev 1 -M5-V17T-P20003, Rev 1 -M6-HOP-00001001, Rev 0 -M6-HOP-00001002, Rev 0 -M6-HOP-00001003, Rev 0 -M6-HOP-20001001, Rev 0 -M6-HOP-20001002, Rev 0 -M6-HOP-20001003, Rev 0 -MKD-HOP-P0016, Rev 0 -MK-HOP-P0001001, Rev 0 -MK-HOP-P0001002, Rev 0 -MK-HOP-P0001003, Rev 0 -MK-HOP-P0001004, Rev 0 -N1D-HOP-P0010, Rev 0 -P1-P01T-00002, Rev 7 -3YD-HOP-00001[a] **24590-WTP** -3PS-MV00-T0001, Rev 5 -3PS-MV00-T0002, Rev 3 -3PS-MV00-T0003, Rev 3	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-WESP-00001 (Melter 1 Wet Electrostatic Precipitator, WESP) HOP-WESP-00002 (Melter 2 Wet Electrostatic Precipitator, WESP)	HOP	**24590-HLW** -M5-V17T-P0003, Rev 1 -M5-V17T-P20003, Rev 1 -M6-HOP-00002, Rev 5 -M6-HOP-20002, Rev 6 -N1D-HOP-P0002, Rev 0 -P1-P01T-00004, Rev 7 -P1-P01T-00005, Rev 6	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
		-3YD-HOP-00001[a] **24590-WTP** -3PS-MKE0-T0001, Rev 5	
Melter Offgas Treatment Process System (Cont.) HOP-HEPA-00001A (Melter 1 Primary Offgas HEPA Filter) HOP-HEPA-00001B (Melter 1 Primary Offgas HEPA Filter) HOP-HEPA-00002A (Melter 1 Secondary Offgas HEPA Filter) HOP-HEPA-00002B (Melter 1 Secondary Offgas HEPA Filter) HOP-HEPA-00007A (Melter 2 Primary Offgas HEPA Filter) HOP-HEPA-00007B (Melter 2 Primary Offgas HEPA Filter) HOP-HEPA-00008A (Melter 2 Secondary Offgas HEPA Filter) HOP-HEPA-00008B (Melter 2 Secondary Offgas HEPA Filter)	HOP	**24590-HLW** -M5-V17T-P0003, Rev 1 -M5-V17T-P20003, Rev 1 -M6-HOP-00010, Rev 3 -M6-HOP-20010, Rev 4 -MAD-HOP-00010, Rev 5 -MAD-HOP-00011, Rev 5 -MAD-HOP-00012, Rev 5 -MAD-HOP-00013, Rev 5 -MAD-HOP-00014, Rev 5 -MAD-HOP-00015, Rev 5 -MAD-HOP-00016, Rev 5 -MAD-HOP-00017, Rev 5 -P1-P01T-00002, Rev 7 -3YD-HOP-00001[a] **24590-WTP** -3PS-MKH0-T0002, Rev 4	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-ADBR-00001A (Melter 1Activated Carbon Adsorber – located on Activated Carbon Adsorber Skid HOP-ADBR-00001)	HOP	**24590-HLW** -M5-V17T-00004, Rev 5 -M5-V17T-20004, Rev 1 -M6-HOP-00003001, Rev 0 -M6-HOP-00003002, Rev 0 -M6-HOP-20003001, Rev 0 -M6-HOP-20003002, Rev 0 -MVD-HOP-00015, Rev 3	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
HOP-ADBR-00001B (Melter 1 Activated Carbon Adsorber – located on Activated Carbon Adsorber Skid HOP-ADBR-00001) HOP-ADBR-00002A (Melter 2 Activated Carbon Adsorber – located on Activated Carbon Adsorber Skid HOP-ADBR-00002) HOP-ADBR-00002B (Melter 2 Activated Carbon Adsorber – located on Activated Carbon Adsorber Skid HOP-ADBR-00002)		-MVD-HOP-00016, Rev 3 -N1D-HOP-00003, Rev 1 -P1-P01T-00002, Rev 7 **24590-WTP** -3PS-MWK0-T0001, Rev 5	
Melter Offgas Treatment Process System (Cont.) HOP-HEME-00001A (Melter 1 High Efficiency Mist Eliminator, HEME) HOP-HEME-00001B (Melter 1 High Efficiency Mist Eliminator, HEME) HOP-HEME-00002A (Melter 2 High Efficiency Mist Eliminator, HEME) HOP-HEME-00002B (Melter 2 High Efficiency Mist Eliminator, HEME)	HOP	**24590-HLW** -M5-V17T-P0003, Rev 1 -M5-V17T-P20003, Rev 1 -M6-HOP-00009001, Rev 0 -M6-HOP-00009002, Rev 0 -M6-HOP-20009001, Rev 0 -M6-HOP-20009002, Rev 0 -MVD-HOP-00007, Rev 5 -MV-HOP-P0002001, Rev 0 -MV-HOP-P0002002, Rev 0 -MV-HOP-P0002003, Rev 0 -N1D-HOP-P0001, Rev 0 -P1-P01T-00002, Rev 7 -3YD-HOP-00001[a]	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-SCO-00001 (Thermal Catalytic Oxidizer – located on Catalyst SkidHOP-SKID-00005) HOP-SCO-00004 (Thermal Catalytic Oxidizer – located on Catalyst Skid HOP-SKID-00007)	HOP	**24590-HLW** -M5-V17T-00004, Rev 5 -M5-V17T-20004, Rev 1 -M6-HOP-00008001,Rev 0 -M6-HOP-00008002,Rev 0 -M6-HOP-00008003,Rev 0 -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0 -MKD-HOP-P0019, Rev 0	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
		-MKD-HOP-P0020, Rev 0 -N1D-HOP-00004, Rev 5 -NID-HOP-00005, Rev 5 -P1-PO1T-00002, Rev 7 -3PS-MBTV-T0002, Rev 1 **24590-LAW** -3PS-MBTV-T0001, Rev 5	
Melter Offgas Treatment Process System (Cont.) HOP-SCR-00001 (NOx Selective Catalytic Reducer – located on Catalyst Skid HOP-SKID-00005) HOP-SCR-00002 (NOx Selective Catalytic Reducer – located on Catalyst Skid HOP-SKID-00007)	HOP	**24590-HLW** -M5-V17T-00004, Rev 5 -M5-V17T-20004, Rev 1 -M6-HOP-00008001, Rev 0 -M6-HOP-00008002, Rev 0 -M6-HOP-00008003, Rev 0 -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0 -MKD-HOP-P0019, Rev 0 -MKD-HOP-P0020, Rev 0 -N1D-HOP-00004, Rev 5 -N1D-HOP-00005, Rev 5 -P1-PO1T-00002, Rev 7 -3PS-MBTV-T0002, Rev 1 **24590-LAW** -3PS-MBTV-T0001, Rev 5	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-HX-00001 (Catalyst Skid Preheater – located on Catalyst Skid HOP-SKID-00005) HOP-HX-00003 (Catalyst Skid Preheater – located on Catalyst Skid HOP-SKID-00007)	HOP	**24590-HLW** -M5-V17T-00004, Rev 5 -M5-V17T-20004, Rev 1 -M6-HOP-00008001, Rev 0 -M6-HOP-00008002, Rev 0 -M6-HOP-00008003, Rev 0 -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0 -MKD-HOP-P0019, Rev 0 -MKD-HOP-P0020, Rev 0 -N1D-HOP-00008, Rev 2	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
		-P1-PO1T-P0002, Rev 7 -3PS-MBTV-T0002, Rev 1 **24590-LAW** -3PS-MBTV-T0001, Rev 5	
Melter Offgas Treatment Process System (Cont.) HOP-HTR-00001 (Catalyst Skid Electric Heater – located on Catalyst Skid HOP-SKID-00005) HOP-HTR-00007 (Catalyst Skid Electric Heaters – located on Catalyst Skid HOP-SKID-00007)	HOP	**24590-HLW** -M5-V17T-00004, Rev 5 -M5-V17T-20004, Rev 1 -M6-HOP-00008001, Rev 0 -M6-HOP-00008002, Rev 0 -M6-HOP-00008003, Rev 0 -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0 -MKD-HOP-P0019, Rev 0 -MKD-HOP-P0020, Rev 0 -P1-PO1T-00002, Rev 7 -3PS-MBTV-T0002, Rev 1 -N1D-HOP-00011, Rev 0 **24590-LAW** -3PS-MBTV-T0001, Rev 5	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-ABS-00002 (Silver Mordenite Column) HOP-ABS-00003 (Silver Mordenite Column)	HOP	**24590-HLW** -M5-V17T-00004, Rev 5 -M5-V17T-20004, Rev 1 -M6-HOP-00008001, Rev 0 -M6-HOP-00008002, Rev 0 -M6-HOP-00008003, Rev 0 -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0 -MKD-HOP-00014, Rev 5 -MKD-HOP-00017, Rev 7 -NID-HOP-P0006, Rev 1 -P1-P01T-00001, Rev 9 -3PS-MBT0-TP001, Rev 2	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.)	HOP	**24590-HLW** -M5-V17T-P0003, Rev 1	Section 4.1.4.3; Table C-8; and

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
HOP-HTR-00001B (HEPA Preheater) HOP-HTR-00002A (HEPA Preheater) HOP-HTR-00005A (HEPA Preheater) HOP-HTR-00005B (HEPA Preheater)		-M5-V17T-P20003, Rev 1 -M6-HOP-00010, Rev 3 -M6-HOP-20010, Rev 4 -MED-HOP-00013, Rev 4 -3PS-MEE0-T0001, Rev 1	Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-HX-00002 (Silver Mordenite Preheater) HOP-HX-00004 (Silver Mordenite Preheater)	HOP	**24590-HLW** -M5-V17T-00004, Rev 5 -M5-V17T-20004, Rev 1 -M6-HOP-00003001, Rev 0 -M6-HOP-00003002, Rev 0 -M6-HOP-20003001, Rev 0 -M6-HOP-20003002, Rev 0 -N1D-HOP-00007, Rev 1 -P1-P01T-00002, Rev 7	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HOP-FAN-00001A (Booster Extraction Fan) HOP-FAN-00001B (Booster Extraction Fan) HOP-FAN-00001C (Booster Extraction Fan) HOP-FAN-00009A (Booster Extraction Fan) HOP-FAN-00009B (Booster Extraction Fan)	HOP	**24590-HLW** -M5-V17T-00004, Rev 5 -M5-V17T-20004, Rev 1 -M6-HOP-00003001, Rev 0 -M6-HOP-00003002, Rev 0 -M6-HOP-20003001, Rev 0 -M6-HOP-20003002, Rev 0 -MAD-HOP-P0018, Rev 2 -P1-P01T-00001, Rev 9 **24590-WTP** -3PS-MACS-TP004, Rev 0	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
HOP-FAN-00009C (Booster Extraction Fan)			
Melter Offgas Treatment Process System (Cont.) HOP-FAN-00008A (Stack Extraction Fan) HOP-FAN-00008B (Stack Extraction Fan) HOP-FAN-00008C (Stack Extraction Fan) HOP-FAN-000010A (Stack Extraction Fan) HOP-FAN-000010B (Stack Extraction Fan) HOP-FAN-000010C (Stack Extraction Fan)	HOP	**24590-HLW** -M5-V17T-00004, Rev 5 -M5-V17T-20004, Rev 1 -M6-HOP-00008001, Rev 0 -M6-HOP-00008002, Rev 0 -M6-HOP-00008003, Rev 0 -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0 -MAD-HOP-00038, Rev 5 -P1-P01T-00005, Rev 6 **24590-WTP** -3PS-MACS-TP004, Rev 0	Section 4.1.4.3; Table C-8; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Melter Offgas Treatment Process System (Cont.) HLW Stack	HOP	**24590-HLW** -M5-V17T-00004, Rev 5 -M5-V17T-20004, Rev 1 -M6-HOP-00008001, Rev 0 -M6-HOP-00008002, Rev 0 -M6-HOP-00008003, Rev 0 -M6-HOP-20008001, Rev 0 -M6-HOP-20008002, Rev 0 -M6-HOP-20008003, Rev 0	Section 4.1.4.3; and Figures C1-1 and C1-4 in Operating Unit Group 10, Addendum C of this Permit.
Pulse Jet Ventilation System PJV-HTR-00002 (Pulse Jet Ventilation HEPA Electric Preheater)	PJV	**24590-HLW** -M6-PJV-00001001, Rev 0 -M6-PJV-00002001, Rev 0	

Table III.10.J.A – HLW Plant Miscellaneous Unit System Description

Sub-system Description	Sub-system Designation	Engineering Description (Drawing Nos., Specification Nos., etc.)	Narrative Description, Tables, and Figures
PJV-HEPA-00004B (PJV System HEPA Filter (Standby Primary)) PJV-HEPA-00005B (PJV System HEPA Filter (Standby Secondary)) PJV-HEPA-00004A (PJV System HEPA Filter (Primary)) PJV-HEPA-00005A (PJV System HEPA Filter (Secondary)) PJV-FAN-00002A (Pulse Jet Vent Extraction Fan) PJV-FAN-00002B (Pulse Jet Vent Extraction Fan)			
Process Vessel Vent Extraction System PVV system contains ancillary equipment only.	PVV	**24590-HLW** -M6-PVV-00001, Rev 4 -M6-PVV-20001, Rev 2	
Footnotes: [a]System Descriptions are maintained in the Administrative Record, and are listed here for information only.			

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Table III.10.J.B – HLW Vitrification Systems Secondary Containment Systems Including Sumps and Floor Drains

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions[a] (feet) & Materials of Construction	Maximum Allowable Liquid Height (inches)	Secondary Containment Volume (gallons)	Engineering Description (Drawing Nos., Specification Nos., etc.)
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Table III.10.J.C – HLW Vitrification System Process and Leak Detection System Instruments and Parameters

P&ID	Monitoring or Control Parameter	Type of Instrument or Control Device	Instrument or Control Device Tag No.	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Instrument Calibration Method No. and Range
24590-HLW-M6-HMP-00004001, Rev 1	Melter 1 plenum temperature, 62"	TBD	(TE-0920A + TT-0920A + TI-0920A)* Or (TE-0920C + TT-0921A + TI-0921F)*	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-00004001, Rev 1	Melter 1 plenum temperature, 59"	TBD	(TE-0920B + TT-920A + TI-0920B)* Or	TBD	TBD	TBD	TBD	TBD

Table III.10.J.C – HLW Vitrification System Process and Leak Detection System Instruments and Parameters

P&ID	Monitoring or Control Parameter	Type of Instrument or Control Device	Instrument or Control Device Tag No.	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Instrument Calibration Method No. and Range
			(TE-920D + TT-0921A+ TI-0921E)*					
24590-HLW-M6-HMP-20004001, Rev 0	Melter 2 plenum temperature, 62"	TBD	(TE-2920A + TT-2920A + TI-2920A)* Or (TE-2920C + TT-2921A + TI-2920C)*	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-20004001, Rev 0	Melter 2 plenum temperature, 59"	TBD	(TE-2920B + TT-2920A + TI-2920B)* Or (TE-2920D + TT-2921A + TI-2920D)*	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-00013002, Rev 1 24590-HLW-M6-HMP-00013003, Rev 0	Melter 1 glass pool density	TBD	DT-0132 DI-0132	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-00013002, Rev 1	Melter 1 glass pool level	TBD	LT-0131 LI-0131	TBD	TBD	TBD	TBD	TBD

Table III.10.J.C – HLW Vitrification System Process and Leak Detection System Instruments and Parameters

P&ID	Monitoring or Control Parameter	Type of Instrument or Control Device	Instrument or Control Device Tag No.	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Instrument Calibration Method No. and Range
24590-HLW-M6-HMP-00013003, Rev 0								
24590-HLW-M6-HMP-20013002, Rev 0 24590-HLW-M6-HMP-20013003, Rev 0	Melter 2 glass pool density	TBD	DT-2132 DI-2132	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-20013002, Rev 0 24590-HLW-M6-HMP-20013003, Rev 0	Melter 2 glass pool level	TBD	LT-2131 LI-2131	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-00013002, Rev 1 24590-HLW-M6-HMP-00013003, Rev 0	Melter 1 plenum pressure	TBD	(PDT-0139A + PDI-0139A)* Or (PDT-0139B + PDI-0139B)*	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-20013002, Rev 0 24590-HLW-M6-HMP-20013003, Rev 0	Melter 2 plenum pressure	TBD	(PDT-2139A + PDI-2139A)* Or	TBD	TBD	TBD	TBD	TBD

Table III.10.J.C – HLW Vitrification System Process and Leak Detection System Instruments and Parameters

P&ID	Monitoring or Control Parameter	Type of Instrument or Control Device	Instrument or Control Device Tag No.	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Instrument Calibration Method No. and Range
			(PDT-2139B + PDI-2139B)*					
24590-HLW-M6-HMP-00008001, Rev 0 24590-HLW-M6-HMP-00008002, Rev 0	Melter 1 West canister level	TBD	LT-0816 (LI-0816A Or LI-0816B)**	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-00007001, Rev 0	Melter 1 West Discharge Air Lift	TBD	YC-0761 YV-0761	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-00008001, Rev 0 24590-HLW-M6-HMP-00008002, Rev 0	Melter 1 East canister level	TBD	LT-0820 (LI-0820A Or LI-0820B)**	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-00006001, Rev 1 24590-HLW-M6-HMP-00006002, Rev 0	Melter 1 East Discharge Air Lift	TBD	YC-0664 YV-0664	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-20008001, Rev 0	Melter 2 West	TBD	LT-2816	TBD	TBD	TBD	TBD	TBD

Table III.10.J.C – HLW Vitrification System Process and Leak Detection System Instruments and Parameters

P&ID	Monitoring or Control Parameter	Type of Instrument or Control Device	Instrument or Control Device Tag No.	Instrument Range	Expected Range	Fail States	Instrument Accuracy	Instrument Calibration Method No. and Range
24590-HLW-M6-HMP-20008002, Rev 0	canister level		(LI-2816A Or LI-2816B)**					
24590-HLW-M6-HMP-20007001, Rev 0	Melter 2 West Discharge Air Lift	TBD	YC-2761 YV-2761	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-20008001, Rev 0 24590-HLW-M6-HMP-20008002, Rev 0	Melter 2 East canister level	TBD	LT-2820 (LI-2820A Or LI-2820B)**	TBD	TBD	TBD	TBD	TBD
24590-HLW-M6-HMP-20006001, Rev 0	Melter 2 East Discharge Air Lift	TBD	YC-2664 YV-2664	TBD	TBD	TBD	TBD	TBD
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

*These instrument sets are duplicates. Only one instrument set is required to remain functioning during waste feed operations.

**These instruments are duplicates. Only one instrument is required to remain functioning during waste feed operations.

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Table III.10.J.D – Maximum Feed-Rates to HLW Vitrification System (RESERVED)

Description of Waste	Shakedown 1	Shakedown 2, Demonstration Test and Post Demonstration Test
Dangerous and Mixed Waste Feed Rate	RESERVED	RESERVED
Ash Feed Rate	RESERVED	RESERVED
Total Chlorine/Chloride Feed Rate	RESERVED	RESERVED
Total Metal Feedrates	RESERVED	RESERVED

Table III.10.J.E – HLW Vitrification System Estimated Emission Rates (RESERVED)

Chemicals	CAS Number	Emission Rates (grams /second)
RESERVED	RESERVED	RESERVED

Table III.10.J.F. - HLW Vitrification System Waste Feed Cut-off Parameters* (RESERVED)

Subsystem Designation	Instrument Tag Number	Parameter Description	Setpoints During Shakedown 1 and Post Demonstration Test	Setpoints During Shakedown 2 and Demonstration Test
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

*A continuous monitoring system will be used as defined in Permit Section III.10.C.1.

[1]Maximum Feed-rate will be set based on not exceeding any of the constituent (e.g., metals, ash, and chlorine/chloride) feed limits specified on Table III.10.J.D. of this Permit

III.10.K HLW VITRIFICATION SYSTEM – LONG TERM MISCELLANEOUS THERMAL TREATMENT UNIT

For purposes of Permit Section III.10.K, where reference is made to WAC 173-303-640, the following substitutions apply: substitute the terms "HLW Vitrification System" for "tank system(s)," "sub-system(s)" for "tank(s)," "sub-system equipment" for "ancillary equipment," and "sub-system(s) or sub-system equipment of a HLW Vitrification System" for "component(s)," in accordance with WAC 173-303-680.

III.10.K.1 Requirements For HLW Vitrification System Beginning Normal Operation

Prior to commencing normal operations provided in Permit Section III.10.K, all requirements in Permit Section III.10.J will have been met by the Permittees and approved by Ecology, including the following: The HLW Vitrification System Demonstration Test results and the revised Final Risk Assessment provided for in Permit Conditions III.10.C.11.c. or d. and Permit Section III.10.J, will have been evaluated and approved by Ecology, Permit Tables III.10.K.D and F, as approved/modified pursuant to Permit Condition III.10.J.5, will have been completed, submitted and approved pursuant to Permit Condition III.10.J.3.d.v. and Permit Table III.10.K.E, as approved/modified pursuant to Permit Condition III.10.J.5, will have been completed, submitted and approved pursuant to Permit Conditions III.10.C.11.c. or d.

III.10.K.1.a Construction and Maintenance [WAC 173-303-640, in accordance with WAC 173-303-680(2) and (3), and WAC 173-303-340]

III.10.K.1.a.i The Permittees will maintain the design and construction of the HLW Vitrification System as specified in Permit Condition III.10.K.1, Operating Unit Group 10, Addendum C of this Permit, and Operating Unit Group 10, Appendices 10.1 through 10.17 of this Permit, as approved pursuant to Permit Conditions III.10.J.5.a. through d. and III.10.J.5.f.

III.10.K.1.a.ii The Permittees will maintain the design and construction of all containment systems for the HLW Vitrification System as specified in Operating Unit Group 10, Addendum C of this Permit, and Operating Unit Group 10, Appendices 10.2 and 10.4 through 10.14 of this Permit, as approved pursuant to Permit Conditions III.10.J.5.a. through d.

III.10.K.1.a.iii Modifications to approved design, plans, and specifications in Operating Unit Group 10, of this Permit, for the HLW Vitrification System will be allowed only in accordance with Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g., III.10.C.9.d., e., and h.

III.10.K.1.a.iv The Permittees will ensure all certifications required by specialists (e.g., independent, qualified, registered professional engineer; registered, professional engineer; independent corrosion expert; independent, qualified installation inspector; installation inspector; etc.) use the following statement or equivalent pursuant to Permit Condition III.10.C.10:

"I, (Insert Name) have (choose one or more of the following: overseen, supervised, reviewed, and/or certified) a portion of the design or installation of a new HLW Vitrification system or component located at (address), and owned/operated by (name(s)). My duties were: (e.g., installation inspector, testing for tightness, etc.), for the following HLW Vitrification system components (e.g., the venting piping, etc.), as required by the Dangerous Waste Regulations, namely, WAC 173-303-640(3) (applicable paragraphs [i.e., (a) through (g)]), in accordance with WAC 173-303-680.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant

penalties for submitting false information, including the possibility of fine and imprisonment."

III.10.K.1.a.v The Permittees will ensure periodic integrity assessments are conducted on the HLW Vitrification System listed in Permit Table III.10.I.A, as approved/modified pursuant to Permit Condition III.10.J.5, over the term of this Permit, in accordance with WAC 173-303-680(2) and (3), as specified in WAC 173-303-640(3)(b) following the description of the integrity assessment program and schedule in Operating Unit Group 10, Addendum E of this Permit, as approved pursuant to Permit Conditions III.10.J.5.e.i. and III.10.C.5.c. Results of the integrity assessments will be included in the WTP Unit operating record until ten (10) years after post-closure, or corrective action is complete and certified, whichever is later.

III.10.K.1.a.vi The Permittees will address problems detected during the HLW Vitrification System integrity assessments specified in Permit Condition III.10.K.1.a.v. following the description of the integrity assessment program in Operating Unit Group 10, Addendum E of this Permit, as approved pursuant to Permit Conditions III.10.J.5.e.i. and III.10.C.5.c.

III.10.K.1.a.vii All process monitors/instruments as specified in Permit Table III.10.K.F, as approved/modified pursuant to Permit Condition III.10.J.5 and III.10.J.3.d.v., will be equipped with operational alarms to warn of deviation, or imminent deviation from the limits specified in Permit Table III.10.K.F.

III.10.K.1.a.viii The Permittees will install and test all process and leak detection system monitors/instruments, as specified in Permit Tables III.10.K.C and III.10.K.F, as approved/modified pursuant to Permit Conditions III.10.J.5 and III.10.J.3.d.v., in accordance with Operating Unit Group 10, Appendices 10.1, 10.2, and 10.14 of this Permit, as approved pursuant to Permit Conditions III.10.J.5.d.x. and III.10.J.5.f.xvi.

III.10.K.1.a.ix No dangerous and/or mixed waste will be treated in the HLW Vitrification System unless the operating conditions, specified under Permit Condition III.10.K.1.c. are complied with.

III.10.K.1.a.x The Permittees will not place dangerous and/or mixed waste, treatment reagents, or other materials in the HLW Vitrification System if these substances could cause the sub-system, sub-system equipment, or the containment system to rupture, leak, corrode, or otherwise fail [WAC 173-303-640(5)(a), in accordance with WAC 173-303-680(2)]. This condition is not applicable to corrosion of HLW Vitrification System sub-system or sub-system equipment that are expected to be replaced as part of normal operations (e.g., melter).

III.10.K.1.a.xi The Permittees will operate the HLW Vitrification System to prevent spills and overflows using the description of controls and practices as required under WAC 173-303-640(5)(b), described in Permit Condition III.10.C.5, and Operating Unit Group 10, Appendix 10.18 of this Permit, as approved pursuant to Permit Condition III.10.J.5.e. [WAC 173-303-640(5)(b), in accordance with WAC 173-303-680(2) and (3), WAC-173-303-806(4)(c)(ix)].

III.10.K.1.a.xii For routinely non-accessible HLW Vitrification System sub-systems, as specified in Operating Unit Group 10, Addendum C of this Permit, as updated pursuant to Permit Condition III.10.J.5.e.vi., the Permittees will mark all routinely non-accessible HLW Vitrification System sub-systems access points with labels or signs to identify the waste contained in each HLW Vitrification System sub-system. The label, or sign, must be legible at a distance of at least fifty (50) feet, and must bear a legend which identifies the

waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the HLW Vitrification System sub-systems. For the purposes of this permit condition, "routinely non-accessible" means personnel are unable to enter these areas while waste is being managed in them [WAC 173-303-640(5)(d), in accordance with WAC 173-303-680(2)].

III.10.K.1.a.xiii For all the HLW Vitrification System sub-systems not addressed in Permit Condition III.10.K.1.a.xii., the Permittees will mark all these HLW Vitrification System sub-systems holding dangerous and/or mixed waste with labels or signs to identify the waste contained in the HLW Vitrification System sub-systems. The labels, or signs, must be legible at a distance of at least fifty (50) feet, and must bear a legend which identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public of the major risk(s) associated with the waste being stored or treated in the HLW Vitrification System sub-systems [WAC 173-303-640(5)(d), in accordance with WAC 173-303-680(2)].

III.10.K.1.a.xiv The Permittees will ensure that the secondary containment systems for the HLW Vitrification System sub-systems listed in Permit Tables III.10.K.A and III.10.K.B, as approved/modified pursuant to Permit Condition III.10.J.5, are free of cracks or gaps to prevent any migration of dangerous and/or mixed waste or accumulated liquid out of the system to the soil, groundwater, or surface water at any time during the use of the HLW Vitrification System sub-systems. Any indication that a crack or gap may exist in the containment systems will be investigated and repaired in accordance with Operating Unit Group 10, Appendix 10.18 of this Permit, as approved pursuant to Permit Condition III.10.J.5.e.v. [WAC 173-303–640(4)(b)(i), WAC 173-303-640(4)(e)(i)(C), and WAC 173-303-640(6), in accordance with WAC 173-303-680(2) and (3), WAC 173-303-806(4)(i)(i)(B), and WAC 173-303-320].

III.10.K.1.a.xv The Permittees must immediately and safely remove from service any HLW Vitrification System or secondary containment system which through an integrity assessment is found to be "unfit for use" as defined in WAC 173-303-040, following Permit Condition III.10.K.1.a.xvii.A through D, and F. The affected HLW Vitrification System or secondary containment system must be either repaired or closed in accordance with Permit Condition III.10.K.1.a.xvii.E [WAC 173-303-640(7)(e) and (f) and WAC 173-303-640(8), in accordance with WAC 173-303-680(3)].

III.10.K.1.a.xvi An impermeable coating, as specified in Operating Unit Group 10, Appendices 10.4, 10.5, 10.7, 10.9, 10.11, and 10.12 of this Permit, as approved pursuant to Permit Condition III.10.J.5.b.v., will be maintained for all concrete containment systems and concrete portions of containment systems for the HLW Vitrification System sub-systems listed in Permit Tables III.10. K.A and III.10.K.B, as approved/modified pursuant to Permit Condition III.10.J.5 (concrete containment systems that do not have a liner, pursuant to WAC 173-303-640(4)(e)(i), in accordance with WAC 173-303-680(2), and have construction joints, will meet the requirements of WAC 173-303-640(4)(e)(ii)(C), in accordance with WAC 173-303-680(2). The coating will prevent migration of any dangerous and/or mixed waste into the concrete. All coatings will meet the following performance standards:

A. The coating must seal the containment surface such that no cracks, seams, or other avenues through which liquid could migrate are present;

B. The coating must be of adequate thickness and strength to withstand the normal operation of equipment and personnel within the given area such that degradation or

physical damage to the coating or lining can be identified and remedied before dangerous and/or mixed waste could migrate from the system; and

C. The coating must be compatible with the dangerous and/or mixed waste, treatment reagents, or other materials managed in the containment system [WAC 173-303-640(4)(e)(ii)(D), in accordance with WAC 173-303-680(2) and (3), and WAC 173-303-806(4)(i)(i)(A)].

III.10.K.1.a.xvii The Permittees will inspect all secondary containment systems for the HLW Vitrification System sub-systems listed in Permit Tables III.10.K.A and III.10.K.B, as approved/modified pursuant to Permit Condition III.10.J.5., in accordance with the Inspection Schedule specified in Operating Unit Group 10, Addendum E1 of this Permit, as approved pursuant to Permit Conditions III.10.J.5.e.i. and III.10.C.5.c., and take the following actions if a leak or spill of dangerous and/or mixed waste is detected in these containment systems [WAC 173-303-640(5)(c), WAC 173-303-640(6) in accordance with WAC 173-303-680(2) and (3), WAC 173-303-320, and WAC 173-303-806(4)(i)(i)(B)]:

A. Immediately, and safely, stop the flow of dangerous and/or mixed waste into the HLW Vitrification System sub-systems or secondary containment system.

B. Determine the source of the dangerous and/or mixed waste.

C. Remove the dangerous and/or mixed waste from the containment area in accordance with WAC 173-303-680(2) and (3), as specified in WAC 173-303-640(7)(b). The dangerous and/or mixed waste removed from containment areas of the HLW Vitrification System will be, at a minimum, managed as mixed waste.

D. If the cause of the release was a spill that has not damaged the integrity of the HLW Vitrification System sub-system, the Permittees may return the HLW Vitrification System sub-system to service in accordance with WAC 173-303-680(2) and (3), as specified in WAC 173-303-640(7)(e)(ii). In such case, the Permittees will take action to ensure the incident that caused the dangerous and/or mixed waste to enter the containment system will not reoccur.

E. If the source of the dangerous and/or mixed waste is determined to be a leak in from the primary HLW Vitrification System into the secondary containment system, or the system is unfit for use as determined through an integrity assessment or other inspection, the Permittees will comply with the requirements of WAC 173-303-640(7) and take the following actions:

1. Close the HLW Vitrification System sub-system following procedures in WAC 173-303-640(7)(e)(i), in accordance with WAC 173-303-680, and Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8.

2. Repair and re-certify (in accordance with WAC 173-303-810(13)(a), as modified pursuant to Permit Condition III.10.K.1.a.iii.) the HLW Vitrification System, in accordance with Operating Unit Group 10, Appendix 10.18 of this Permit, as approved pursuant to Permit Condition III.10.J.5.e.v., before the HLW Vitrification System is placed back into service [WAC 173-303-640(7)(e)(iii) and WAC 173-303-640(7)(f), in accordance with WAC 173-303-680].

F. The Permittees will document in the operating record actions/procedures taken to comply with A through E above, as specified in WAC 173-303-640(6)(d), in accordance with WAC 173-303-680(2) and (3).

G. In accordance with WAC 173-303-680(2) and (3), the Permittees will notify and report releases to the environment to Ecology as specified in WAC 173-303-640(7)(d).

III.10.K.1.a.xviii If liquids (e.g., dangerous and/or mixed waste, leaks and spills, precipitation, fire water, liquids from damaged or broken pipes) cannot be removed from the secondary containment system within twenty-four (24) hours; Ecology will be verbally notified within twenty-four (24) hours of discovery. The notification will provide the information in A, B, and C, listed below. The Permittees will provide Ecology with a written demonstration within seven (7) business days, identifying at a minimum [WAC 173-303-640(4)(c)(iv) and WAC 173-303-640(7)(b)(ii), in accordance with WAC 173-303-680(3) and WAC 173-303-806(4)(i)(i)(B)]:

A. Reasons for delayed removal.

B. Measures implemented to ensure continued protection of human health and the environment.

C. Current actions being taken to remove liquids from secondary containment.

III.10.K.1.a.xix All air pollution control devices and capture systems in the HLW Vitrification System will be maintained and operated at all times in a manner so as to minimize the emissions of air contaminants and to minimize process upsets. Procedures for ensuring that the air pollution control devices and capture systems in the HLW Vitrification System are properly operated and maintained so as to minimize the emission of air contaminants and process upsets will be established.

III.10.K.1.a.xx In all future narrative permit submittals, the Permittees will include HLW Vitrification sub-system names with the sub-system designation.

III.10.K.1.a.xxi For any portion of the HLW Vitrification System which has the potential for formation and accumulation of hydrogen gases, the Permittees will operate the portion to maintain hydrogen levels below the lower explosive limit [WAC 173-303-815(2)(b)(ii)].

III.10.K.1.a.xxii For each HLW Vitrification System sub-system holding dangerous waste which are acutely or chronically toxic by inhalation, the Permittees will operate the system to prevent escape of vapors, fumes, or other emissions into the air [WAC 173-303-806(4)(i)(i)(B) and WAC 173-303-640(5)(e), in accordance with WAC 173-303-680].

III.10.K.1.b Performance Standards

III.10.K.1.b.i The HLW Vitrification System must achieve a destruction and removal efficiency (DRE) of 99.99% for the principal organic dangerous constituents (PODCs) listed below [40 CFR §63.1203(c)(1) and 40CFR §63.1203(c)(2), in accordance with WAC 173-303-680(2)]:

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DRE in this Permit Condition will be calculated in accordance with the formula given below:

$DRE=[1-(W_{out}/W_{in})] \times 100\%$

Where:

W_{in}=mass feed-rate of one principal organic dangerous constituent (PODC) in a waste feed stream; and

W_{out}=mass emission rate of the same PODC present in exhaust emissions prior to release to the atmosphere.

III.10.K.1.b.ii Particulate matter emissions from the HLW Vitrification System will not exceed 34 mg/dscm (0.015 grains/dscf) [40 CFR §63.1203(b)(7), in accordance with WAC 173-303-680(2)];

III.10.K.1.b.iii Hydrochloric acid and chlorine gas emissions from the HLW Vitrification System will not exceed 21 ppmv, combined [40 CFR §63.1203(b)(6), in accordance with WAC 173-303-680(2)];

III.10.K.1.b.iv Dioxin and Furan TEQ emissions from the HLW Vitrification System will not exceed 0.2 nanograms (ng)/dscm [40 CFR §63.1203(b)(1), in accordance with WAC 173-303-680(2)];

III.10.K.1.b.v Mercury emissions from the HLW Vitrification System will not exceed 45 µg/dscm [40 CFR §63.1203(b)(2), in accordance with WAC 173-303-680(2)];

III.10.K.1.b.vi Lead and cadmium emissions from the HLW Vitrification System will not exceed 120 µg/dscm, combined [40 CFR §63.1203(b)(3), in accordance with WAC 173-303-680(2)];

III.10.K.1.b.vii Arsenic, beryllium, and chromium emissions from the HLW Vitrification System will not exceed 97 µg/dscm, combined [40 CFR §63.1203(b)(4), in accordance with WAC 173-303-680(2)];

III.10.K.1.b.viii Carbon monoxide (CO) emission from the HLW Vitrification System will not exceed 100 parts per million (ppm) by volume, over an hourly rolling average (as measured and recorded by the continuous monitoring system), dry basis [40 CFR §63.1203(b)(5)(i), in accordance with WAC 173-303-680(2) and (3)];

III.10.K.1.b.ix Hydrocarbon emission from the HLW Vitrification System will not exceed 10 parts per million (ppm) by volume, over an hourly rolling average (as measured and recorded by the continuous monitoring system during demonstration testing required by this Permit), dry basis and reported as propane [40 CFR §63.1203(b)(5)(ii), in accordance with WAC 173-303-680(2) and (3)];

III.10.K.1.b.x If the emissions from the HLW Vitrification System exceed the emission rates listed in Permit Table III.10.K.E, as approved pursuant to Permit Condition III.10.C.11.c. or d., the Permittees will perform the following actions [WAC 173-303-680(2) and (3), and WAC 173-303-815(2)(b)(ii)]:

A. Verbally notify Ecology within twenty-four (24) hours of the discovery of exceeding the emission rate(s) as specified in Permit Condition I.E.21.

B. Submit to Ecology additional risk information to indicate that the increased emissions impact is off-set by decreased emission impact from one or more constituents expected to be emitted at the same time, and/or investigate the cause and impact of the exceedance of the emission rate(s) and submit a report of the investigation findings to Ecology within fifteen (15) days of the discovery of exceeding the emission rate(s).

C. Based on the notification and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the HLW Vitrification System and/or to submit a revised Demonstration Test Plan as a permit modification pursuant to Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring.

The emission limits specified in Permit Conditions III.10.K.1.b.i. through III.10.K.1.b.ix. above, will be met for the HLW Vitrification System by limiting feed rates as specified in Permit Tables III.10.K.D and III.10.K.F, as approved/modified pursuant to Permit Condition III.10.J.5 and III.10.J.3.d.v., compliance with operating conditions specified in Permit Condition III.10.K.1.c. (except as specified in Permit Condition III.10.K.1.b.xii.), and compliance with Permit Condition III.10.K.1.b.xi.

III.10.K.1.b.xi Treatment effectiveness, feed-rates, and operating rates for dangerous and/or mixed waste management units contained in the HLW Building, but not included in Permit Table III.10.K.A, as approved/modified pursuant to Permit Condition III.10.J.5, will be as specified in Permit Sections III.10.D, III.10.E, III.10.F and consistent with the assumptions and basis which are reflected in Operating Unit Group 10, Appendix 6.3.1 of this Permit, as approved pursuant to Permit Condition III.10.C.11.b. For the purposes of this permit condition, Operating Unit Group 10, Appendix 6.3.1 will be superseded by Appendix 6.4.1 upon its approval pursuant to either Permit Conditions III.10.C.11.c. or d. [WAC 173-303-680(2) and (3), and WAC 173-303-815(2)(b)(ii)].

III.10.K.1.b.xii Compliance with the operating conditions specified in Permit Condition III.10.K.1.c., will be regarded as compliance with the required performance standards identified in Permit Conditions III.10.K.1.b.i. through x. However, if it is determined that during the effective period of this Permit that compliance with the operating conditions in Permit Condition III.10.K.1.c. is not sufficient to ensure compliance with the performance standards specified in Permit Conditions III.10.K.1.b.i. through x., the Permit may be modified, revoked, or reissued pursuant to Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g.

III.10.K.1.c Operating Conditions [WAC 173-303-670(6), in accordance with WAC 173-303-680(2)and (3)]

The Permittees will operate the HLW Vitrification System in accordance with Operating Unit Group 10, Addendum C of this Permit, as updated pursuant to Permit Condition III.10.J.5.e.vi., Operating Unit Group 10, Appendix 10.18 of this Permit, as approved pursuant to Permit Conditions III.10.J.5.e. and f., and Operating Unit Group 10, Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.5.f., except as modified pursuant to Permit Conditions III.10.J.3, III.10.K.1.b.x., III.10.K.1.b.xii., III.10.K.1.h., and in accordance with and the following:

III.10.K.1.c.i The Permittees will operate the HLW Vitrification System in order to maintain the systems and process parameters listed in Permit Tables III.10.K.C and III.10.K.F, as approved/modified pursuant to Permit Conditions III.10.J.5 and III.J.3.d.v., within the set-points specified in Permit Table III.10.K.F.

III.10.K.1.c.ii The Permittees will operate the AWFCO systems, specified in Permit Table III.10.K.F, as approved/modified pursuant to Permit Conditions III.10.J.5 and III.J.3.d.v., to automatically cut-off and/or lock-out the dangerous and/or mixed waste feed to HLW Vitrification System when the monitored operating conditions deviate from the set-points specified in Permit Table III.10.K.F.

III.10.K.1.c.iii The Permittees will operate the AWFCO systems, specified in Permit Table III.10.K.F, as approved/modified pursuant to Permit Conditions III.10.J.5 and III.J.3.d.v., to automatically cut-off and/or lock-out the dangerous and/or mixed waste feed to HLW Vitrification System when all instruments specified on Permit Table III.10.I.F for measuring the monitored parameters fails or exceeds its span value.

III.10.K.1.c.iv The Permittees will operate the AWFCO systems, specified in Permit Table III.10.K.F, as approved/modified pursuant to Permit Conditions III.10.J.5 and III.J.3.d.v., to automatically cut-off and/or lock out the dangerous and/or mixed waste feed to the HLW Vitrification System when any portion of the HLW Vitrification System is bypassed. The terms "bypassed" and "bypass event" as used in Permit Sections III.10.J and K will mean if any portion of the HLW Vitrification System is bypassed so that gases are not treated as during the Demonstration Test.

III.10.K.1.c.v In the event of a malfunction of the AWFCO systems listed in Permit Table III.10.K.F, as approved/modified pursuant to Permit Conditions III.10.J.5 and III.J.3.d.v., the Permittees will immediately, manually, cut-off the dangerous and/or mixed waste feed to the HLW Vitrification System. The Permittees will not restart the dangerous and/or mixed waste feed until the problem causing the malfunction has been identified and corrected.

III.10.K.1.c.vi The Permittees will manually cut-off the dangerous and/or mixed waste feed to the HLW Vitrification System when the operating conditions deviate from the limits specified in Permit Condition III.10.K.1.c.i., unless the deviation automatically activates the waste feed cut-off sequence specified in Permit Conditions III.10.K.1.c.ii., iii., and/or iv.

III.10.K.1.c.vii If greater than thirty (30) dangerous and/or mixed waste feed cut-off, combined, to the HLW Vitrification System occur due to deviations from Permit Table III.10.K.F, as approved/modified pursuant to Permit Conditions III.10.J.5 and III.J.3.d.v., within a sixty (60) day period, the Permittees will submit a written report to Ecology within five (5) calendar days of the thirty-first (31) exceedance including the information specified below. These dangerous and/or mixed waste feed cut-offs to the HLW Vitrification System, whether automatically or manually activated, are counted if the specified set-points are deviated from while dangerous and/or mixed waste and waste residues continue to be processed in the HLW Vitrification System. A cascade event is counted at a frequency of one (1) towards the first waste feed cut-off parameter, specified on Permit Table III.10.K.F, from which the set-point is deviated:

A. The parameter(s) that deviated from the set-point(s) in Permit Table III.10.K.F;
B. The magnitude, dates, and duration of the deviations;
C. Results of the investigation of the cause of the deviations; and
D. Corrective measures taken to minimize future occurrences of the deviations.

III.10.K.1.c.viii If greater than thirty (30) dangerous and/or mixed waste feed cut-offs, combined, to the HLW Vitrification System occur due to deviations from Permit Table III.10.K.F, as approved/modified pursuant to Permit Conditions III.10.J.5 and III.J.3.d.v., within a thirty (30) day period, the Permittees will submit the written report required to be submitted pursuant to Permit Condition III.10.K.1.c.vii. to Ecology, on the first business day following the thirty-first exceedance. These dangerous and/or mixed waste feed cut-offs to the HLW Vitrification System, whether automatically or manually activated, are counted if the specified set-points are deviated from while dangerous and/or mixed waste and waste residues continue to be processed in the HLW Vitrification System.
A cascade event is counted at a frequency of one (1) towards the first waste feed cut-off parameter, specified on Permit Table III.10.K.F, from which the set-point is deviated:

In accordance with WAC 173-303-680(2) and (3), the Permittees may not resume dangerous and/or mixed waste feed to the HLW Vitrification System until this written report has been submitted; and

A. Ecology has authorized the Permittees, in writing, to resume dangerous and/or mixed waste feed, or

B. Ecology has not, within seven (7) days, notified the Permittees in writing of the following:

1. The Permittees written report does not document that the corrective measures taken will minimize future exceedances.

2. The Permittees must take further corrective measures and document that these further corrective measures will minimize future exceedances.

III.10.K.1.c.ix If any portion of the HLW Vitrification System is bypassed while treating dangerous and/or mixed waste, it will be regarded as non-compliance with the operating conditions specified in Permit Condition III.10.K.1.c. and the performance standards specified in Permit Condition III.10.K.1.b. After such a bypass event, the Permittees will perform the following actions:

A. Investigate the cause of the bypass event.

B. Take appropriate corrective measures to minimize future bypasses.

C. Record the investigation findings and corrective measures in the operating record.

D. Submit a written report to Ecology within five (5) days of the bypass event documenting the result of the investigation and corrective measures.

III.10.K.1.c.x The Permittees will control fugitive emissions from the HLW Vitrification System by maintaining the melter under negative pressure.

III.10.K.1.c.xi Compliance with the operating conditions specified in Permit Condition III.10.K.1.c. will be regarded as compliance with the required performance standards identified in Permit Condition III.10.K.1.b. However, evidence that compliance with these operating conditions is insufficient to ensure compliance with the performance standards, will justify modification, revocation, or re-issuance of this Permit, in accordance with Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g.

III.10.K.1.d Inspection Requirements [WAC 173-303-680(3)]

III.10.K.1.d.i The Permittees will inspect the HLW Vitrification System in accordance with the Inspection Schedules in Operating Unit Group 10, Addendum E1 of this Permit, as modified in accordance with Permit Condition III.10.C.5.c.

III.10.K.1.d.ii The inspection data for HLW Vitrification System will be recorded, and the records will be placed in the WTP Unit operating record for HLW Vitrification System, in accordance with Permit Condition III.10.C.4.

III.10.K.1.d.iii The Permittees will comply with the inspection requirements specified in Operating Unit Group 10, Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.5.f., and as modified by Permit Conditions III.10.J.3, III.10.K.1.b.x., III.10.K.1.b.xii., and III.10.K.1.h.

III.10.K.1.e Monitoring Requirements [WAC 173-303-670(5), WAC 173-303-670(6), WAC 173-303-670(7), and WAC 173-303-807(2), in accordance with WAC 173-303-680(3)]

III.10.K.1.e.i Upon receipt of a written request from Ecology, the Permittees will perform sampling and analysis of the dangerous and/or mixed waste and exhaust emissions to verify that the

operating requirements established in the permit achieve the performance standards delineated in this Permit.

III.10.K.1.e.ii The Permittees will comply with the monitoring requirements specified in the Operating Unit Group 10, Appendices 10.2, 10.3, 10.7, 10.13, 10.15, and 10.18 of this Permit, as approved pursuant to Permit Condition III.10.J.5, and as modified by Permit Conditions III.10.J.3, III.10.K.1.h., and III.10.K.1.b.x. and xii.

III.10.K.1.e.iii The Permittees will operate, calibrate, and maintain the carbon monoxide and hydrocarbon continuous emission monitors (CEM) specified in this Permit in accordance with Performance Specifications 4B and 8A of 40 CFR Part 60, Appendix B, in accordance with Appendix to Subpart EEE of 40 CFR Part 63, and Operating Unit Group 10 Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.5.f., and as modified by Permit ConditionsIII.10.J.3, III.10.K.1.h., and III.10.K.1.b.x. and xii.

III.10.K.1.e.iv The Permittees will operate, calibrate, and maintain the instruments specified on Permit Tables III.10.K.C and F, as approved/modified pursuant to Permit Conditions III.10.J.5 and III.J.3.d.v., in accordance with Operating Unit Group 10, Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.5.f., and as modified by Permit Conditions III.10.J.3, III.10.K.1.h., and III.10.K.1.b.x. and xii.

III.10.K.1.e.v The Permittees shall calibrate, inspect, and maintain or replace the following cooling water flow and temperature instruments: (Melter 1: FT/FI-0306, FT/FI-0316, FT/FI-0321, FT/FI-0326, FT/FI-0336, TE/TT/TI-0352; Melter 2: FT/FI-2306, FT/FI-2316, FT/FI-2321, FT/FI-2326, FT/FI-2336, TE/TT/TI-2352) in accordance with manufacturer's recommendations.

III.10.K.1.f Recordkeeping Requirements [WAC 173-303-380 and WAC 173-303-680(3)]

III.10.K.1.f.i The Permittees will record and maintain in the WTP Unit operating record for the HLW Vitrification System, all monitoring, calibration, maintenance, test data, and inspection data compiled under the conditions of this Permit, in accordance with Permit Conditions III.10.C.4 and 5 as modified by Permit Conditions III.10.J.3, III.10.K.1.h., and III.10.K.1.b.x. and xii.

III.10.K.1.f.ii The Permittees will record in the WTP Unit operating record the date, time, and duration of all automatic waste feed cut-offs and/or lockouts, including the triggering parameters, reason for the deviation, and recurrence of the incident. The Permittees will also record all incidents of AWFCO system function failures, including the corrective measures taken to correct the condition that caused the failure.

III.10.K.1.f.iii The Permittees will submit to Ecology an annual report each calendar year within ninety (90) days following the end of the year. The report will include the following information:

A. Total dangerous and/or mixed waste feed processing time for the HLW Vitrification System.

B. Date/Time of all HLW Vitrification System startups and shutdowns.

C. Date/Time/Duration/Cause/Corrective Action taken for all HLW Vitrification System shutdowns caused by malfunction of either process or control equipment.

D. Date/Time/Duration/Cause/Corrective Action taken for all instances of dangerous and/or mixed waste feed cut-off due to deviations from Permit Table III.10.K.F, as approved/modified pursuant to Permit Conditions III.10.J.5 and III.10J.3.d.v.

III.10.K.1.f.iv The Permittees will submit an annual report to Ecology each calendar year within ninety (90) days following the end of the year of all quarterly CEM Calibration Error and Annual CEM Performance Specification Tests conducted in accordance with Permit Condition III.10.K.1.e.iii.

III.10.K.1.f.v The Permittees shall maintain operating and calibration/maintenance records for Ecology's inspection for the following cooling water flow and temperature instruments (Melter 1: FT/FI-0306, FT/FI-0316, FT/FI-0321, FT/FI-0326, FT/FI-0336, TE/TT/TI-0352; Melter 2: FT/FI-2306, FT/FI-2316, FT/FI-2321, FT/FI-2326, FT/FI-2336, TE/TT/TI-2352).

III.10.K.1.f.vi The Permittees shall maintain refractory thermocouple temperature data for Ecology inspection.

III.10.K.1.g Closure

The Permittees will close the HLW Vitrification System in accordance with Operating Unit Group 10, Addendum H of this Permit, as approved pursuant to Permit Condition III.10.C.8.

III.10.K.1.h Periodic Emission Re-testing Requirements [WAC 173-303-670(5), WAC 173-303-670(7), and WAC 173-303-807(2), in accordance with WAC 173-303-680(2) and (3)].

III.10.K.1.h.i Dioxin and Furan Emission Testing

A. Within eighteen (18) months of commencing operation pursuant to Permit Section III.10.K, the Permittees will submit to Ecology for approval, a Dioxin and Furan Emission Test Plan (DFETP) for the performance of emission testing of the HLW Vitrification System gases for dioxin and furans during "Normal Operating Conditions" as a permit modification in accordance with Permit Conditions III.10.C.2.e. and f. The DFETP will include all elements applicable to dioxin and furan emission testing included in the "Previously Approved Demonstration Test Plan," applicable EPA promulgated test methods and procedures in effect at the time of the submittal, and projected commencement and completion dates for dioxin and furan emission test. "Normal Operating Conditions" will be defined for the purposes of this permit condition as follows:

1. Carbon monoxide emissions, dangerous and/or mixed waste feed-rate, and automatic waste feed cut-off parameters specified on Permit Table III.10.K.F (as approved/modified pursuant to Permit Conditions III.10.J.5 and III.10.J.3.d.v), that were established to maintain compliance with Permit Condition III.10.K.1.b.iv., as specified in Operating Unit Group 10, Appendix 10.15 of this Permit (as approved pursuant to Permit Condition III.10.J.3.d. and in accordance with III.10.K.1.b.xii. and III.10.K.1.c.xi.), are held within the range of the average value over the previous twelve (12) months and the set-point value specified on Permit Table III.10.K.F. The average value is defined as the sum of the rolling average values recorded over the previous twelve (12) months divided by the number of rolling averages recorded during that time. The average value will not include calibration data, malfunction data, and data obtained when not processing dangerous and/or mixed waste.
2. Feed-rate of metals, ash, and chlorine/chloride are held within the range of the average value over the previous twelve (12) months and the set-point value specified on Permit Table III.10.K.D (as approved/modified pursuant

to Permit Conditions III.10.J.5 and III.10.J.3.d.v). Feed-rate of organics as measured by TOC are held within the range of the average value over the previous twelve (12) months. The average value is defined as the sum of the rolling average values recorded over the previous twelve (12) months divided by the number of rolling averages recorded during that time. The average value will not include data obtained when not processing dangerous and/or mixed waste.

For purposes of this permit Condition, the "Previously Approved Demonstration Test Plan" is defined to include the Demonstration Test Plan approved pursuant to Permit Condition III.10.J.5.f.

B. Within sixty (60) days of Ecology's approval of the DFETP, or within thirty-one (31) months of commencing operation pursuant to Permit Section III.10.K, whichever is later, the Permittees will implement the DFETP approved, pursuant to Permit Condition III.10.K.1.h.i.A.

C. The Permittees will resubmit the DFETP, approved pursuant to Permit Condition III.10.K.1.h.i.A, revised to include applicable EPA promulgated test methods and procedures in effect at the time of the submittal, and projected commencement and completion dates for dioxin and furan emission test as a permit modification in accordance with Permit Conditions III.10.C.2.e. and f. at twenty-four (24) months from the implementation date of the testing required pursuant to Permit Condition III.10.K.1.h.i.A and at reoccurring eighteen (18) month intervals from the implementation date of the previously approved DFETP. The Permittees will implement these newly approved revised DFETPs every thirty-one (31) months from the previous approved DFETP implementation date or within sixty (60) days of the newly Ecology approved revised DFETP, whichever is later, for the duration of this Permit.

D. The Permittees will submit a summary of operating data collected pursuant to the DFETPs in accordance with Permit Conditions III.10.K.1.h.i.A and C to Ecology upon completion of the tests. The Permittees will submit to Ecology the complete test report within ninety (90) calendar days of completion of the testing. The test reports will be certified as specified in WAC 173-303-807(8), in accordance with WAC 173-303-680(2) and (3).

E. If any calculations or testing results collected pursuant to the DFETPs in accordance with Permit Conditions III.10.K.1.h.i.A and C show that one or more of the performance standards listed in Permit Condition III.10.K.1.b., with the exception of Permit Condition III.10.K.1.b.x., for the HLW Vitrification System were not met during the emission test, the Permittees will perform the following actions:

1. Immediately stop dangerous and/or mixed waste feed to the HLW Vitrification System under the mode of operation that resulted in not meeting the performance standard(s).
2. Verbally notify Ecology within twenty-four (24) hours of discovery of not meeting the performance standard(s) as specified in Permit Condition I.E.21.
3. Investigate the cause of the failure and submit a report of the investigation findings to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s).
4. Submit to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s) documentation supporting a mode of operation where all performance standards listed in Permit Condition III.K.1.b., with

the exception of Permit Condition III.10.K.1.b.x., for the HLW Vitrification System were met during the demonstration test, if any such mode was demonstrated.

5. Based on the information provided to Ecology by the Permittees, pursuant to Permit Conditions III.10.K.1.h.i.E.1 through 4 above, and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the HLW Vitrification System and/or amend the mode of operation the Permittees are allowed to continue operations prior to Ecology approval of the revised Demonstration Test Plan pursuant to Permit Condition III.10. K.1.h.i.E.6.

6. Submit to Ecology within one hundred and twenty (120) days of discovery of not meeting the performance standard(s) a revised Demonstration Test Plan requesting approval to retest as a permit modification pursuant to Permit Conditions III.10.C.2.e. and f. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring reflecting performance under operating conditions representative of the extreme range of normal conditions, and include revisions to Permit Tables III.10.K.D and F.

F. If any calculations or testing results collected pursuant to the DFETPs in accordance with Permit Conditions III.10.K.1.h.i.A and C show that any emission rate for any constituent listed in Permit Table III.10.K.E, as approved/modified pursuant to Permit Conditions III.10.C.11.c. or d., is exceeded for HLW Vitrification System during the emission test, the Permittees will perform the following actions:

1. Verbally notify Ecology within twenty-four (24) hours of the discovery of exceeding the emission rate(s) as specified in Permit Condition I.E.21;

2. Submit to Ecology additional risk information to indicate that the increased emissions impact is off-set by decreased emission impact from one or more constituents expected to be emitted at the same time, and/or investigate the cause and impact of the exceedance and submit a report of the investigation findings to Ecology within fifteen (15) days of this discovery of exceeding the emission rate(s); and

3. Based on the notification and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the HLW Vitrification System and/or to submit a revised Demonstration Test Plan as a permit modification pursuant to Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring reflecting performance under operating conditions representative of the extreme range of normal conditions, and include revisions to Permit Tables III.10.K.D and F.

III.10.K.1.h.ii Non-organic Emission Testing

A. Within forty-eight (48) months of commencing operation pursuant to Permit Section III.10.K, the Permittees will resubmit to Ecology for approval the "Previously Approved Demonstration Test Plan" revised as a permit modification in accordance with Permit Conditions III.10.C.2.e. and f. The revised Demonstration Test Plan (RDTP) will include applicable EPA promulgated test methods and procedures in effect at the time of the submittal, projected commencement and completion dates for emission testing to demonstrate performance standards specified in Permit

Conditions III.10.K.1.b.ii., iii., v., vi., and vii., and non-organic emissions as specified in Permit Table III.10.K.E, as approved/modified pursuant to Permit Conditions III.10.J.3.d. and III.10.C.11.c. or d., under "Normal Operating Conditions." "Normal Operating Conditions" will be defined for the purposes of this permit condition as follows:

1. Carbon monoxide emissions, dangerous and/or mixed waste feed-rate, and automatic waste feed cut-off parameters specified in Permit Table III.10.K.F, as approved/modified pursuant to Permit Conditions III.10.J.3.d. and III.10.C.11.c. or d., that were established to maintain compliance with Permit Conditions III.10.K.1.b.ii., iii., v., vi., and vii., and non-organic emissions, as specified in Permit Table III.10.K.E, as specified in Operating Unit Group 10, Appendix 10.15 of this Permit (as approved pursuant to Permit Conditions III.10.J.3.d. and III.10.C.11.c. or d.), are held within the range of the average value over the previous twelve (12) months and the set-point value specified on Permit Table III.10.K.F. The average value is defined as the sum of the rolling average values recorded over the previous twelve (12) months divided by the number of rolling averages recorded during that time. The average value will not include calibration data, malfunction data, and data obtained when not processing dangerous and/or mixed waste; and
2. Feed-rate of metals, ash, and chlorine/chloride are held within the range of the average value over the previous twelve (12) months and the set-point value specified on Permit Table III.10.K.D, as approved/modified pursuant to Permit Conditions III.10.J.3.d. and III.10.C.11.c. or d. The average value is defined as the sum of all rolling average values recorded over the previous twelve (12) months divided by the number of rolling averages recorded during that time. The average value will not include data obtained when not processing dangerous and/or mixed waste.

For purposes of this permit Condition, the "Previously Approved Demonstration Test Plan" is defined to include the Demonstration Test Plan approved pursuant to Permit Condition III.10.J.5.f.

B. Within sixty (60) days of Ecology's approval of the RDTP, or within sixty (60) months of commencing operation pursuant to Permit Section III.10.K, whichever is later, the Permittees will implement the RDTP approved pursuant to Permit Condition III.10.K.1.h.ii.A.

C. The Permittees will resubmit the RDTP, approved pursuant to Permit Condition III.10.K.1.h.ii.A, revised to include applicable EPA promulgated test methods and procedures in effect at the time of the submittal, and projected commencement and completion dates for emission test as a permit modification in accordance with Permit Conditions III.10.C.2.e. and f. at forty-eight (48) months from the implementation date of the testing required pursuant to Permit Condition III.10.K.1.h.ii.A and at reoccurring forty-eight (48) month intervals from the implementation date of the previously approved RDTP. The Permittees will implement these newly approved revised RDTP, every sixty (60) months from the previous approved RDTP implementation date or within sixty (60) days of the newly Ecology approved revised RDTP, whichever is later, for the duration of this Permit.

D. The Permittees will submit a summary of operating data collected pursuant to the RDTPs in accordance with Permit Conditions III.10.K.1.h.ii.A and C to Ecology upon completion of the tests. The Permittees will submit to Ecology the complete test report within ninety (90) calendar days of completion of the testing. The test

reports will be certified pursuant to WAC 173-303-807(8), in accordance with WAC 173-303-680(2) and (3).

E. If any calculations or testing results collected pursuant to the DFETPs in accordance with Permit Conditions III.10.K.1.h.ii.A and C show that any emission rate for any constituent listed in Permit Table III.10.K.E, as approved/modified pursuant to Permit Conditions III.10.J.3.d. and III.10.C.11.c. or d., is exceeded for HLW Vitrification System during the emission test, the Permittees will perform the following actions:

1. Verbally notify Ecology within twenty-four (24) hours of the discovery of exceeding the emission rate(s) as specified in Permit Condition I.E.21.
2. Submit to Ecology additional risk information to indicate that the increased emissions impact is off-set by decreased emission impact from one or more constituents expected to be emitted at the same time, and/or investigate the cause and impact of the exceedance and submit a report of the investigation findings to Ecology within fifteen (15) days of this discovery of exceeding the emission rate(s).
3. Based on the notification and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the HLW Vitrification System and/or to submit a revised Demonstration Test Plan as a permit modification pursuant to Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring reflecting performance under operating conditions representative of the extreme range of normal conditions, and include revisions to Permit Tables III.10.K.D and III.10.K.F.

F. If any calculations or testing results collected pursuant to the DFETPs in accordance with Permit Conditions III.10.K.1.h.ii.A and C show that one or more of the performance standards listed in Permit Condition III.10.K.1.b., with the exception of Permit Condition III.10.K.1.b.x., for the HLW Vitrification System were not met during the emission test, the Permittees will perform the following actions:

1. Immediately stop dangerous and/or mixed waste feed to the HLW Vitrification System under the mode of operation that resulted in not meeting the performance standard(s).
2. Verbally notify Ecology within twenty-four (24) hours of discovery of not meeting the performance standard(s), as specified in Permit Condition I.E.21.
3. Investigate the cause of the failure and submit a report of the investigation findings to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s).
4. Submit to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s) documentation supporting a mode of operation where all performance standards listed in Permit Condition III.K.1.b., with the exception of Permit Condition III.10.K.1.b.x., for the HLW Vitrification System were met during the demonstration test, if any such mode was demonstrated.
5. Based on the information provided to Ecology by the Permittees pursuant to Permit Conditions III.10.K.1.h.ii.F.1 through 4 above, and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the HLW Vitrification System

and/or amend the mode of operation the Permittees are allowed to continue operations prior to Ecology approval of the revised Demonstration Test Plan pursuant to Permit Condition III.10.K.1.h.ii.F.6.

6. Submit to Ecology within one hundred and twenty (120) days of discovery of not meeting the performance standard(s) a revised Demonstration Test Plan requesting approval to retest as a permit modification pursuant to Permit Conditions III.10.C.2.e. and f. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring reflecting performance under operating conditions representative of the extreme range of normal conditions, and include revisions to Permit Tables III.10.K.D and F.

III.10.K.1.h.iii Other Emission Testing

A. Within seventy-eight (78) months of commencing operation pursuant to Permit Section III.10.K, the Permittees will resubmit to Ecology for approval the "Previously Approved Demonstration Test Plan" revised as a permit modification in accordance with Permit Conditions III.10.C.2.e. and f. The revised Demonstration Test Plan (RDTP) will include applicable EPA promulgated test methods and procedures in effect at the time of the submittal, projected commencement and completion dates for emission testing to demonstrate performance standards as specified in Permit Conditions III.10.K.1.b.viii. and ix., and emissions as specified on Permit Table III.10.K.E, as approved/modified pursuant to Permit Conditions III.10.J.3.d. and III.10.C.11.c. or d., not addressed under Permit Conditions III.10.K.1.h.i. or ii. under "Normal Operating Conditions." "Normal Operating Conditions" will be defined for the purposes of this permit Condition as follows:

1. Carbon monoxide emissions, dangerous and/or mixed waste feed-rate, and automatic waste feed cut-off parameters specified on Permit Table III.10.K.F, as approved/modified pursuant to Permit Condition III.10.J.3.d. and III.10.C.11.c. or d., that were established to maintain compliance with Permit Conditions III.10.K.1.b.viii. and ix., and emissions as specified on Permit Table III.10.K.E, not addressed under Permit Conditions III.10.K.1.h.i. or ii. as specified in Operating Unit Group 10, Appendix 10.15 of this Permit, as approved pursuant to Permit Condition III.10.J.3.d., and in accordance with Permit Conditions III.10.K.1.b.xii. and III.10.K.1.c.xi. are held within the range of the average value over the previous twelve (12) months and the set-point value specified on Permit Table III.10.K.F. The average value is defined as the sum of all rolling average values recorded over the previous twelve (12) months divided by the number of rolling averages recorded during that time. The average value will not include calibration data, malfunction data, and data obtained when not processing dangerous and/or mixed waste; and

2. Feed-rate of metals, ash, and chlorine/chloride are held within the range of the average value over the previous twelve (12) months and the set-point value specified on Permit Table III.10.K.D, as approved/modified pursuant to Permit Conditions III.10.J.3.d. and III.10.C.11.c. or d. Feed-rate of organics as measured by TOC are held within the range of the average value over the previous twelve (12) months. The average value is defined as the sum of the rolling average values recorded over the previous twelve (12) months divided by the number of rolling averages recorded during that time.

The average value will not include data obtained when not processing dangerous and/or mixed waste.

For purposes of this permit Condition, the "Previously Approved Demonstration Test Plan" is defined to include the Demonstration Test Plan approved pursuant to Permit Condition III.10.J.5.f.

B. Within sixty (60) days of Ecology's approval of the RDTP, or within ninety-one (91) months of commencing operation pursuant to Permit Section III.10.K, whichever is later, the Permittees will implement the RDTP approved pursuant to Permit Condition III.10.K.1.h.iii.A.

C. The Permittees will submit a summary of operating data collected pursuant to the RDTPs in accordance with Permit Condition III.10.K.1.h.iii.A to Ecology upon completion of the tests. The Permittees will submit to Ecology the complete test report within ninety (90) calendar days of completion of the testing. The test reports will be certified as specified in WAC 173-303-807(8), in accordance with Permit Condition WAC 173-303-680(2) and (3).

D. If any calculations or testing results show that one or more of the performance standards listed in Permit Condition III.10.K.1.b., with the exception of Permit Condition III.10.K.1.b.x., for the HLW Vitrification System were not met during the emission test, the Permittees will perform the following actions:

1. Immediately stop dangerous and/or mixed waste feed to the HLW Vitrification System under the mode of operation that resulted in not meeting the performance standard(s).
2. Verbally notify Ecology within twenty-four (24) hours of discovery of not meeting the performance standard(s), as specified Permit Condition I.E.21.
3. Investigate the cause of the failure and submit a report of the investigation findings to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s).
4. Submit to Ecology within fifteen (15) days of discovery of not meeting the performance standard(s) documentation supporting a mode of operation where all performance standards listed in Permit Condition III.10.K.1.b., with the exception of Permit Condition III.10.K.1.b.x., for the HLW Vitrification System were met during the demonstration test, if any such mode was demonstrated.
5. Based on the information provided to Ecology by the Permittees pursuant to Permit Conditions III.10.K.1.h.iii.D.1 through 4 above, and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the HLW Vitrification System and/or amend the mode of operation the Permittees are allowed to continue operations prior to Ecology approval of the revised Demonstration Test Plan, pursuant to Permit Condition III.10.K.1.h.iii.D.6.
6. Submit to Ecology within one hundred and twenty (120) days of discovery of not meeting the performance standard(s) a revised Demonstration Test Plan requesting approval to retest as a permit modification pursuant to Permit Conditions II.10.C.2.e. and f. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring reflecting performance under operating conditions representative of the extreme range of normal conditions, and include revisions to Permit Tables III.10.K.D and F.

E. If any calculations or testing results show that any emission rate for any constituent listed in Permit Table III.10.K.E, as approved/modified pursuant to Permit Condition III.10.C.11.c. or d., is exceeded for HLW Vitrification System during the emission test, the Permittees will perform the following actions:

1. Verbally notify Ecology within twenty-four (24) hours of the discovery of exceeding the emission rate(s) as specified in Permit Condition I.E.21;
2. Submit to Ecology additional risk information to indicate that the increased emissions impact is off-set by decreased emission impact from one or more constituents expected to be emitted at the same time, and/or investigate the cause and impact of the exceedance of the emission rate(s) and submit a report of the investigation findings to Ecology within fifteen (15) days of the discovery of the exceedance of the emission rate(s); and
3. Based on the notification and any additional information, Ecology may provide, in writing, direction to the Permittees to stop dangerous and/or mixed waste feed to the HLW Vitrification System and/or to submit a revised Demonstration Test Plan as a permit modification pursuant to Permit Conditions III.10.C.2.e. and f., or III.10.C.2.g. The revised Demonstration Test Plan must include substantive changes to prevent failure from reoccurring reflecting performance under operating conditions representative of the extreme range of normal conditions, and include revisions to Permit Tables III.10.K.D and F.

Table III.10.K.A - HLW Vitrification System Description

Sub-system Description	Sub-System Designation	Engineering Description (Drawing Nos., etc.)	Narrative Description, Tables, and Figures
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Permit Table III.10.K.A will be completed in accordance with Permit Condition III.10.J.5.e x., prior to initiating Permit Condition III.10.K.1. See Permit Table III.10.J.A for the current HLW Vitrification System Description.

Table III.10.K.B - HLW Vitrification System Secondary Containment Systems Including Sumps and Floor Drains

Sump/Floor Drain I.D.# & Room Location	Maximum Sump Capacity (gallons)	Sump Dimensions[b] (feet) & Materials of Construction	Engineering Description (Drawing Nos., Specification Nos., etc.)
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

[a]Permit Table III.10.K.B will be completed in accordance with Permit Condition III.10.J.5.b.vii., prior to initiating Permit Condition III.10.K.1. See Permit Table III.10.J.B for the current HLW Vitrification System Secondary Containment Systems Including Sumps and Floor Drains.

[b]Dimensions listed are based on permitted design. Actual dimensions may vary within plus or minus (TBD).

Table III.10.K.C - HLW Vitrification System Process and Leak Detection System Instruments and Parameters

Sub-system Locator and Name (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Failure State	Expected Range	Instrument Accuracy	Instrument Calibration Method No. and Range
RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

Table III.10.K.C - HLW Vitrification System Process and Leak Detection System Instruments and Parameters

Sub-system Locator and Name (including P&ID)	Control Parameter	Type of Measuring or Leak Detection Instrument	Location of Measuring Instrument (Tag No.)	Instrument Range	Failure State	Expected Range	Instrument Accuracy	Instrument Calibration Method No. and Range
[a]Permit Table III.10.K.C will be completed in accordance with Permit Condition III.10.J.5.e.ix., prior to initiating Permit Condition III.10.K.1. See Permit Table III.10.J.C for the current HLW Vitrification System Process and Leak Detection System Instruments and Parameters.								

Table III.10.K.D – Maximum Feed-rates to HLW Vitrification System (RESERVED)

Description of Waste	Normal Operation
Dangerous and/or mixed waste Feed Rate	RESERVED
Ash Feed Rate	RESERVED
Total Chlorine/Chloride Feed Rate	RESERVED
Total Metal Feed Rates	RESERVED

Table III.10.K.E – HLW Vitrification System Estimated Emission Rates (RESERVED)

Chemicals	CAS Number	Emission Rates (grams /second)
RESERVED	RESERVED	RESERVED

TABLE III.10.K.F - HLW Vitrification System Waste Feed Cut-off Parameters* [1](RESERVED)

Sub-system Designation	Instrument Tag Number	Parameter Description	Set-points During Normal Operation
RESERVED	RESERVED	RESERVED	RESERVED

Footnotes:

*A continuous monitoring system will be used as defined in Permit Section III.10.C.1.

[1]Maximum Feed-rate will be set based on not exceeding any of the constituent (e.g., metals, ash, and chlorine/chloride) feed limits specified on Table III.10.K.D. of this Permit

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Permit Package LAW-016 Description

LAW-016, Rev. 0, "Miscellaneous Treatment Unit Subsystem for LAW Facility LMP System at El. 3 ft"

The Low-Activity Waste (LAW) Facility permit package LAW-016 addresses installation of the two LAW melters at the 3 ft elevation of the LAW Facility.

In the LMP system, LAW melter feed, consisting of LAW waste concentrate mixed with glass former chemicals, is transferred as a slurry by air displacement pumps from the Melter 1 Feed Vessel (LFP-VSL-00002) to LAW melter 1 (LMP-MLTR-00001) through feed nozzles in the melter lid. The process is the same for slurry transferred from the Melter 2 Feed Vessel (LFP-VSL-00004) to LAW melter 2 (LMP-MLTR-00002). In the melter, water and waste feed volatile constituents evaporate, leaving behind a layer of material known as the "cold cap". New slurry is added at about the same rate as the cold cap dissolves in the glass melt pool maintaining the quantity of cold cap material at a steady level. Waste feed components that remain in the cold cap undergo chemical reactions, are converted to their respective oxides, and dissolve in the melt pool. Bubblers inject air into the molten glass for agitation. As the slurry is fed, molten glass is formed that accumulates in the glass tank. When the melt level rises to a predetermined upper limit, an air lift mechanism is actuated and glass is discharged to a container. The evaporated water and waste feed volatile constituents are treated by the primary and secondary offgas treatment systems, monitored, and released to the atmosphere.

Permit package LAW-016, Rev. 0, includes:

- An assessment report signed by an independent qualified registered professional engineer (IQRPE) certifying certain portions of the permit package
- Melter assembly mechanical drawings
- An engineering specification for the LAW melters
- A specification change notice – update seismic clamp installation
- A mechanical data sheet for each LAW melter
- A corrosion evaluation for the LAW melters

The following components of this package are already included in the Dangerous Waste Permit and in the Administrative Record, or they are provided with other permit packages, as listed in the Table of Contents:

- A general arrangement plan for the 3-ft elevation of the LAW Facility
- Two process flow diagrams for the LMP system
- Twenty-seven piping and instrumentation diagrams
- Engineering specifications for:
  - Pressure vessel design and fabrication
  - Seismic qualification criteria for pressure vessels
  - Pressure vessel fatigue analysis
  - Positive material identification for shop fabrication
- A document describing secondary containment design
- A document describing the LAW offgas system bypass analysis
- A document describing the installation of tank systems and miscellaneous treatment unit systems
- A system design description for the LAW melter
- A material and energy balance (Flowsheet Bases and Assumptions)
- A document describing the control of toxic vapors and emissions from WTP tank systems and miscellaneous treatment unit systems
- A document describing the control of hydrogen accumulation in tank systems and miscellaneous treatment unit systems

Permit Design Package No. LAW-016, Rev 0
Miscellaneous Treatment Unit Subsystem for LAW Facility LMP System at El. 3 ft
Table of Contents

For Incorporation into the Permit

Engineering Document Title	Document Number	Revision	Permit Condition	Included	Remarks
IQRPE Independent Assessment Report	24590-CM-HC4-HXYG-00240-02-00014		III.10.H.5.c.i	Y	To be included in Appendix 9.11
Permit Package Drawings					
General Arrangement Plans	24590-LAW-P1-P01T-00002	7	III.10.H.5.c.ii	N	In Appendix 9.4
Process Flow Diagrams	24590-LAW-M5-V17T-00004	4	III.10.H.5.c.ii	N	In Appendix 9.1
	24590-LAW-M5-V17T-00005	4			
Piping and Instrument Diagrams	24590-LAW-M6-LMP-00001001 CBI	0	III.10.H.5.c.ii	N	In Appendix 9.2
	24590-LAW-M6-LMP-00002001 CBI, 00002002 CBI	0			
	24590-LAW-M6-LMP-00003001	0			
	24590-LAW-M6-LMP-00040001	0			
	24590-LAW-M6-LMP-00005001 CBI	0			
	24590-LAW-M6-LMP-00007001, 00007002	0			
	24590-LAW-M6-LMP-00008001	0			
	24590-LAW-M6-LMP-00010001	0			
	24590-LAW-M6-LMP-00012001	0			
	24590-LAW-M6-LMP-00031001 CBI	0			
	24590-LAW-M6-LMP-00032001 CBI, 00032002 CBI	0			
	24590-LAW-M6-LMP-00033001	0			
	24590-LAW-M6-LMP-00035001 CBI	0			

Permit Design Package No. LAW-016, Rev 0
Miscellaneous Treatment Unit Subsystem for LAW Facility LMP System at El. 3 ft
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For Incorporation into the Permit

Engineering Document Title	Document Number	Revision	Permit Condition	Included	Remarks
	24590-LAW-M6-LMP-00037001, 00037002	0			
	24590-LAW-M6-LMP-00038001	0			
	24590-LAW-M6-LMP-00042001	0			
	24590-LAW-M6-LMP-00013001, 00013002, 00043001	0			
	24590-LAW-M6-LOP-00004001, 00004002	0			
	24590-LAW-M6-LOP-00005001, 00005002	0			
Mechanical Drawing					
LAW Melter Assembly - Isometric View	24590-LAW-MF-LMP-00001 CBI	0	III.10.H.5.c.ii III.10.H.5.c.vi	Y	To be included in Appendix 9.6
LAW Melter Assembly - Plan View	24590-LAW-MF-LMP-00002 CBI	0		Y	To be included in Appendix 9.6
LAW Melter Assembly – East, West and North Elevation	24590-LAW-MF-LMP-00003 CBI	0		Y	To be included in Appendix 9.6
LAW Melter Assembly – Section A-A	24590-LAW-MF-LMP-00004 CBI	0		Y	To be included in Appendix 9.6
Engineering Specifications:					
Pressure Vessel Design and Fabrication	24590-WTP-3PS-MV00-T0001	5	III.10.H.5.c.ii III.10.H.5.c.iii III.10.H.5.c.vi	N	In Appendix 7.7. Rev 5 is going in LAW-025
Seismic Qualification Criteria for Pressure Vessels	24590-WTP-3PS-MV00-T0002	3		N	In Appendix 7.7
Pressure Vessel Fatigue Analysis	24590-WTP-3PS-MV00-T0003	3		N	In Appendix 7.7
Positive Material Identification (PMI) for Shop Fabrication	24590-WTP-3PS-G000-T0002	9		N	In Appendix 7.7. Rev 9 is going in LAW-028
Low Activity Waste Melters	24590-LAW-3PS-AE00-T0001	6		Y	To be included in Appendix 9.7
Specification Change Notice - Update Seismic Clamp Installation	24590-LAW-3PN-LMP-00002	N/A		Y	To be included in Appendix 9.7
Mechanical Data Sheets:					
Low-Activity Waste Melter 1	24590-LAW-M0D-LMP-00001	3	III.10.H.5.c.ii III.10.H.5.c.vi	Y	To be included in Appendix 9.6
Low-Activity Waste Melter 2	24590-LAW-M0D-LMP-00002	3		Y	To be included in Appendix 9.6

Permit Design Package No. LAW-016, Rev 0
Miscellaneous Treatment Unit Subsystem for LAW Facility LMP System at El. 3 ft
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For Incorporation into the Permit

Engineering Document Title	Document Number	Revision	Permit Condition	Included	Remarks
Secondary Containment Design	24590-WTP-PER-CSA-02-001	10	III.10.H.5.c.ii III.10.H.5.c.iii	N	In Appendix 7.5
Corrosion Protection for Buried Components	N/A	-	III.10.H.5.c.iv	N	There are no buried components in contact with soil or water in the LAW facility El. 3 ft.
Corrosion Evaluation: LAW Melter 1 and Melter 2 Gas-barrier and Cooling Panels	24590-LAW-N1D-LMP-00001	1	III.10.H.5.c.iii III.10.H.5.c.v	Y	To be incorporated into Appendix 9.9
LAW Vitrification Offgas System Bypass Analysis	24590-LAW-PER-PR-03-001	2	III.10.H.5.c.ix	N	In Appendix 9.18
Installation of Tank Systems and Miscellaneous Unit Systems	24590-WTP-PER-CON-02-001	6	III.10.H.5.c.x	N	In Appendix 7.12.
Completed Permit Tables for Primary Containment Sumps and Floor Drains	Not Applicable	-	III.10.H.5.c.vii	N	There are no primary containment sumps or floor drains in the LAW facility El. 3 ft.

Permit Design Package No. LAW-016, Rev 0
Miscellaneous Treatment Unit Subsystem for LAW Facility LMP System at El. 3 ft
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For Incorporation into the Administrative Record

Engineering Document Title	Document Number	Revision	Permit Condition	Included	Remarks
Structural Support Calculations Specific to Off-Specification, Non-Standard and Field Fabricated Subsystems	Not Applicable	-	III.10.H.5.c.iii	N	There are no off-specification, non-standard and field fabricated subsystems in the LAW facility El. +3 ft
Low-Activity Waste Melter Process System Design Description	24590-LAW-3ZD-LMP-00001	0	III.10.H.5.c.vii	Y	For incorporation into Administrative Record
Flowsheet Bases, Assumptions, and Requirements	24590-WTP-RPT-PT-02-005	7	III.10.H.5.c.viii	N	In Administrative Record (CCN 282694)
2010 WTP Material Balance and Steady State Flowsheet Assessment, Deliverable 2.7	24590-WTP-RPT-PET-10-022	0	III.10.H.5.c.viii	N	In Administrative Record (CCN 241137)
Steady-State (AES) Model Run Report for 2010 Material Balance and Process Flowsheet Analysis Assessment Report	24590-WTP-MRR-PET-10-010	0	III.10.H.5.c.viii	N	In Administrative Record (CCN 241137)
Control of Toxic Vapors and Emissions from WTP Tank Systems and Miscellaneous Treatment Unit Systems	24590-WTP-PER-PR-03-002	3	III.10.H.5.c.xi	N	In Administrative Record (CCN 178564)
Prevention of Hydrogen Accumulation	LAW Miscellaneous Treatment Unit Hydrogen Accumulation Document for the DWP Administrative Record (CCN 280210)	N/A	III.10.H.5.c.xii	N	Incorporate into Administrative Record. Submitted with LAW-025.

R11714781

ISSUED BY
RPP-WTP PDC
DWT DATE

RIVER PROTECTION PROJECT – WASTE TREATMENT PLANT

ENGINEERING SPECIFICATION
FOR
Low Activity Waste Melters

Content applicable to ALARA? ☒ Yes ☐ No

ADR No.
24590-LAW-ADR-ML-05-0001

Rev
1

Specification changes retroactive? ☐ Yes ☒ No
☐ N/A (alpha revision or revision 0)

Note: Contents of this document are Dangerous Waste Permit affecting.

Quality Level
Q
DOE Contract No. DE-AC27-01RV14136

6	5/1/15	Originator By: Rich Peters - rpeters1 Org Name: LAW Melter Lead Placed: Apr 14, 2015, 11:26 am	Checked By: Matt Meyer - mfmeyer1 Org Name: LAW - Mechanical Systems Placed: Apr 16, 2015, 2:56 pm	N/A	N/A	~~S. Kretzschmar Sr.~~ P. RAJAGOPALAN 5/1/15
5	12-6-09	L. Curtis	R. Figley	N/A	N/A	T. Hughes
0	11-2-01	K. Clarke	L. Donovan	N/A	N/A	C. Winkler
REV	DATE	BY	CHECK	AUTHORIZATION	AUTHORIZATION	APPROVER

SPECIFICATION No.
24590-LAW-3PS-AE00-T0001

Rev
6

Please note that source, special nuclear, and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA) are regulated at the U. S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

Revision History

Revision	Reason for Revision	Q Specification Revision Only Margin Reduced?		CM Only
		YES	NO	N/A
A		N/A	N/A	N/A
0	Initial Issue - Supercedes SP0W375LV-M00001, Rev D	☐	☒	☐
1	Reissued with technical requirement changes and clarifications	☐	☒	☐
2	Reissued with general editing, minor requirement changes to reflect current design, and design interface details	☐	☒	☐
3	Reissued to update references in Section 2, incorporate SCNs 24590-LAW-3PN-AE00-00001, 24590-LAW-3PN-AE00-00002 and 24590-LAW-3PN-AE00-00003, and update Appendices A and B to reflect P&IDs.	☐	☒	☐
4	Reissued to incorporate 24590-LAW-3PN-AE00-00004, 24590-LAW-3PN-AE00-00005, 24590-LAW-3PN-AE00-00006, 24590-LAW-3PN-AE00-00007, and 24590-WTP-SDDR-ML-07-00117. Appendix A: Added Celsius temperatures and removed part number from connection style	☐	☒	☐
5	Updated to align with the Basis of Design, Section 1.2: Edited/added definitions.	☐	☒	☐
6	Updated to align with current project specifications and state of the design. Clarified wording at the front of Appendices. Incorporates 24590-LAW-3PN-AE00-00009. Complete revision, change bars not required.	☐	☒	☐

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Appendix A - Melter Services and Connections Interface Details ..... A-i
Appendix B - Melter Design Interface Details ..... B-i
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1 General

1.1 Scope

A This Specification provides performance requirements for the design of Low Activity Waste (LAW) vitrification melters for the River Protection Project - Waste Treatment Plant (RPP-WTP) at the Hanford, Washington Site of the Department of Energy (DOE).

B Deleted.

C The melters include, but are not limited to, the following major structures, systems and components (SSCs): glass containment, radiation shielding, glass and glass discharge heating, refractory cooling, radiation shield cooling, instrumentation, offgas cooling and collection, waste and glass feed, glass frit addition for startup, agitation, and glass discharge.

D Deleted.

E Not Used.

F The unit tested during the LAW pilot melter program (see description in Ref 2.2Q) provides the technological basis for the LAW melter design.

1.2 Definitions

A Annular Space – In the melter and the discharge chambers, the void space between enclosure and gas barrier walls. Does not include the void space within the melter lid itself.

B Base – Structural platform that supports the melter during transport and operation. Base includes structural steel and bracing, and cooling water panel structures. Base also includes plates that provide a portion of the gas barrier. The base has transport and restraint interface points.

C Contractor – Bechtel National, Inc.

D Design Life – The baseline time, based on calculation, analysis, experience or testing, over which the SSC will safely maintain its original function.

E Enclosure – Consists of the outermost steel plate of the containment system that includes the walls, lid covers of the melter and discharge chamber lids, and removable panels for accessing melter components. The enclosure also includes the lid portion of the structural bracing and guide tubes for components penetrating the melter lid. The enclosure serves as radiation shielding and structurally supports the shell function to provide bulk confinement of glass and offgas.

F Transportation System – Melter components that aid in the transport and positioning of the melter during transportation, installation and operation, decommissioning, and disposal.

G Lid – Structural cover over the top of the melter plenum space that supports lid plenum refractory and all components mounted through it. Lid also includes plates that provide a portion of the gas barrier.

H Normal Operation – Constitutes all regular and scheduled melter activities geared towards production of glass product at or near design throughput, i.e., feeding, pouring, idling, and scheduled SSC change-out.

I Structure – Melter and discharge chamber structural steel, including bracing that support the gas barrier walls, wall cooling water panel structures and enclosure. Melter structure also supports the melter lid.

J Subcontractor – Duratek, Inc. Note: BNI and EnergySolutions continue to support design modifications after the melter design was initially provided by Duratek (bought out by EnergySolutions).

K Vendor – A manufacturer or supplier providing materials and/or services to the subcontractor.

L Gas Barrier – Comprised of the internal surfaces of the melter walls, lid and base, supporting the offgas-related functions of the shell.

M Frit – Glass particulate of a size and geometry suitable for direct feed into the melter.

N Shell - System of structural elements that performs the credited safety functions of the melter shell. These are to provide a bulk confinement boundary for both the glass and offgas and to direct the offgas into the melter offgas system when the melter is operating. The shell is comprised of the base, external walls, lid, and lid covers, (gas barrier plates) which are to be structurally supported by the enclosure.

O Walls - The vertical plate assemblages that support the lid and lid portion of the enclosure. The exterior surfaces form part of the enclosure, the interior surfaces form part of the gas barrier.

P Containment System - The containment system provides bulk confinement of glass during normal and abnormal conditions. The containment system includes the melter shell, refractory, cooling panels, and jackbolts. Of these components, the shell is quality level Q and the refractory, cooling panels, and jackbolts are quality level CM.

1.3 Acronyms

CCTV	Closed Circuit Television
DOE	Department of Energy
ICD	Interface Control Document
LAW	Low Activity Waste
SC	Seismic Category
SSC	Systems, Structures, and Components
RPP-WTP	River Protection Project - Waste Treatment Plant
w.g.	Water Gage (pressure measurement)

2 Applicable Documents

2.1 Referenced Codes and Industry Standards

Unless otherwise noted, all codes and standards referenced herein, and in the documents referenced in Section 2.2, shall be to the latest editions, addenda, and supplements at the time of award.

A Not Used.

B American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE)

1 IEEE Std 141, *Recommended Practice for Electric Power Distribution for Industrial Plants* (1986)

2 IEEE Std 260.1, *American National Standard Letter Symbols for Units of Measurement* (1993)

3 IEEE Std 315, *Graphic Symbols for Electrical and Electronics Diagrams* (reaffirmed 1993)

4 IEEE Std 399, *Recommended Practice for Industrial and Commercial Power Systems Analysis* (1997)

5 IEEE Std 1202, *Standard for Flame Testing of Cables for Use in Cable Tray in Industrial and Commercial Occupancies* (1991)

6 IEEE Std 384, *Standard Criteria for Independence Class 1E Equipment and Circuits, Table 2 "Enclosed to open Configuration"*, (1992)

C American Society of Civil Engineers (ASCE)— ASCE-7, *Minimum Design Loads in Building and Other Structures* (1998)

D American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME)

1 ASME B31.3, *Process Piping, Normal Service* (1996)

2 Not Used.

3 ASME Section VIII, Division 1, *Rules for Construction of Pressure Vessels*, 2001 Edition, (2002 Addenda)

4 ASME NQA-1, *Quality Assurance Requirements for Nuclear Facility Facilities* (1989)

5 Deleted.

6 ASME Section VIII, Division 2, *Rules for Construction of Pressure Vessels*, 2001 Edition, 2002 Addenda)

7 ASME, Section VIII. 2001. *Boiler and Pressure Vessel Code.*

8 ANSI/AISC N690-1994, Specification for the Design, Fabrication, and Erection of Steel Safety-Related Structures for Nuclear Facilities.

E Code of Federal Regulations (CFR)

1 29 CFR 1910, Subpart D, *Occupational Safety and Health Administration, 1970, Walking – Working Surfaces* (most current revision)

2 29 CFR 1910, Subpart S, *Occupational Safety and Health Administration, 1970, Electrical* (most current revision)

F International Conference of Building Officials (ICBO)— *Uniform Building Code* (UBC), (1997)

G National Electrical Manufacturers Association (NEMA)

1 NEMA WC, *Wire and Cable Standards* (1999)

2 NEMA/ICEA (Insulated Cable Engineers Association), *Power Cable Ampacities* (1999)

H National Fire Protection Association (NFPA)

1 NFPA 70, *National Electrical Code* (1999)

2 NFPA 497, *Recommended Practice for Classification of Hazardous Locations for Electrical Installations in Chemical Process Areas* (1997)

I Underwriters Laboratories Inc. (UL)— UL 508, *Standard for Safety Electrical Industrial Control Equipment* (1999)

J American Institute of Steel Construction (AISC) - AISC M016-89, Manual of Steel Construction - Allowable Stress Design, Ninth Edition

K American Welding Society (AWS)

1. AWS D1.1:2000, Structural Welding Code – Steel
2. AWS D1.6: 1999, Structural Welding Code – Stainless Steel

2.2 Other Reference Documents/Drawings

References listed below show revisions in effect at the time melter design was completed. Review of subsequent revisions indicate no impact to the LAW melter design.

A Not Used.

B Document No. 24590-WTP-3PS-J000-T0001, Rev 1, *Engineering Specification for Melter Systems C&I Work Specification*

C Not Used.

D Not Used.

E Deleted.

F Document No. 24590-WTP-DC-ST-01-001, Rev 13, *Structural Design Criteria*

G Document No.24590-WTP-DC-PS-01-001, Rev 8, *Pipe Stress Design Criteria*

H Document No. 24590-WTP-DC-ST-04-001, Rev 4A, *Seismic Analysis and Design Criteria*

I Document No. 24590-WTP-3PS-FB01-T0001, Rev 6, *Engineering Specification for Structural Design Loads for Seismic Category III and IV Equipment and Tanks*

J 24590-WTP-PSAR-ESH-01-002-03, Rev 05H, Preliminary Documented Safety Analysis to Support Construction Authorization; LAW Facility Specific Information.

K 24590-LAW-M0Q-LMP-00003, Rev 0, Equipment Qualification Datasheet for Low Activity Waste (LAW) Melters

L 24590-WTP-RPT-OP-01-001, Rev 4, Operations Requirements Document

M 24590-WTP-3PS-MQR0-T0004, Rev 1, ENGINEERING SPECIFICATION FOR LAW FACILITY MELTER RAILS

N 24590-101-TSA-W000-0010-409-1137, Rev 00A, LAW MELTER LIFE REPORT

O 24590-WTP-3PS-MEEM-T0001, Rev 0, ENGINEERING SPECIFICATION FOR MELTER START-UP FRIT

P 24590-101-TSA-W000-0009-172-00001, Rev 00A, FINAL REPORT - REVIEW OF PROPERTIES OF SIMULATED FEEDS USED FOR MELTER TESTING

Q 24590-QL-HC4-W000-00094-03-00020, Rev 00A, RPP-WTP LAW PILOT MELTER DISASSEMBLY REPORT

R 24590-LAW-N1D-LMP-00001, Rev 0., LAW Melter 1 and Melter 2 Gas Barrier and Cooling Panels

3 Design Requirements

The body of this specification identifies the functional design requirements for the LAW melter. Appendices A and B, "Melter Services and Connections Interface Details" and "Melter Design Interface Details" respectively, provide requirements and interfaces that were used in the initial development of the melter design.

3.1 General Functional Requirements

A Deleted.

B Containment System: The containment shall incorporate the following design features.

1 Enclosure: Design shall incorporate the following:

a Penetrations and removable panels to facilitate removal and replacement of consumable melter components. Provide guide tubes around penetrations (through to the melter) and coordinate with contractor to optimize in-leakage to the annular space.

b Means to prevent leakage of offgas into the surrounding melter gallery, and be glass-tight up to the maximum operating level of glass in the melter.

c External surfaces configured to limit contamination buildup.

d Routing and containment of feed and service lines, both radioactive and nonradioactive.

e Ability to contain the full melter volume of spilled glass.

f Lid portion of the enclosure shall be strong enough to prevent loss of confinement or operational integrity in the event of dropped loads as specified in section 3.5.D.2.b.

2 Jack bolts: Design jack bolt system to prevent formation of significant gaps between refractory bricks during startup and operation. Bolt self-adjustment shall allow for:

a Compression of refractory during melter assembly and installation.

b Adjustment of the compressive force on the refractory to correct for uneven movement.

c Re-compression of refractory.

3 Melter Lid: Design shall include, but not be limited to, the following functions:

a Support all melter components mounted on and through it.

b Support refractory overhanging melter plenum, and allow thermal expansion of refractory during operation.

c Provide a continuous gas barrier in conjunction with wall and base gas barrier plates.

d Provide refractory and lid surface cooling through the incorporation of a cooling cavity.

e The lid cooling cavity shall confine the cooling water to prevent it from entering the melter plenum and shall ensure adequate cooling of the of the inconel plate that forms the top of the Gas Barrier.

f The water inlet and outlet penetrations into and out of the Melter Lid Cooling Cavity shall be elevated near the top of the cavity to limit the loss of water mass should a leak develop in the cooling water circuit (Ref 2.2J).

g The melter lid design shall allow for placement of four (4 Ea.) resistance temperature detectors (RTDs), two (2Ea.) of which will be considered Safety Significant (SS) as they will be supporting the credited safety function of monitoring the melter lid cooling cavity temperatures as defined 2.2J. The placement of the RTDs and cabling shall be per ref. 2.1B6.

h The melter lid design shall allow for periodic replacement of the RTDs.

4 Not Used.

5 Melter Base: Base will perform the following functions:

a Support melter during transport, operation and maintenance, decommissioning and disposal phases.

b Accommodate integrated transportation system.

c Provide structurally sound interfaces with facility and seismic transporter restraints.

d Provide refractory cooling.

e Provide support for refractory during melter assembly, transport, installation, and operation.

f House melter services including drains, refractory cooling panels and electrode bus connectors.

g Provide flatness tolerances for refractory installation.

6 Shell: The design of the elements of the melter Shell shall meet the following requirements:

a. The shell must remain intact when exposed to its environmental and operating loadings.

b. The shell must be designed to withstand the effects of maximum credible offgas exhauster suction at the melter and pressurization upsets. (see 3.5D4a)

c. The shell shall function as the offgas and glass confinement boundary.

C Heating System

1 Heating system includes the electrodes (including extensions), electrode buses, power supplies, startup heaters, discharge chamber heaters, and thermocouples.

2 After initial melter heating with startup heaters, glass is direct joule-heated.

3 Thermocouples shall be designed to provide continuous temperature monitoring while the melter is in service.

D Feed System

1 Feed system includes temporary configuration for frit addition at startup, feed nozzles and associated feed lines (internal to shielding only) for operation, and plenum thermocouples.

2 Subcontractor shall use the best available information for locating feed nozzles over the glass pool to optimize processing rates.

E Glass Pour System

1 Glass pour system includes glass pool level detectors, risers and airlift lances, troughs, dams, and discharge chamber structures.

2 Metallic Membrane (dam): Dam between the glass pool and discharge chamber is designed to prevent leakage of glass from the melt pool to the discharge chamber. Dam shall also limit leakage of air directly into the melter plenum through refractory seams over the melter lifetime.

3 Discharge Trough: Optimize trough slope and cross section for pouring and reduction of glass fiber formation.

F Agitation System

1 Bubblers provide agitation.

2 Arrangement and configuration of bubblers is for achieving optimized throughput while limiting refractory wear.

3 Each bubbler assembly, in coordination with the contractor, shall be designed for individual removal and replacement.

G Melter Disposal and Decommissioning: Specific design requirements for melter disposal and decommissioning are not defined.

H Melter Controls and Instrumentation: See Ref 2.2B for specific melter-related functional requirements for controls and instrumentation.

I Transportation System:

1 Support roller/wheel bogies for melter transport on facility rails.

2 Guide and position melters on facility rails.

3 Deleted

4 Provide interfaces with contractor-supplied drive systems that conform to subcontractor-defined melter movement tolerances for import and export of melter.

5 Deleted

J General Melter Component Design

1 Components requiring replacement during the design life of the melter shall be designed for ease of replacement and disposal. Where required, provide installed spare capacity.

2 Use of commercially available components and equipment, without modifications, will be optimized to the extent possible, except for components requiring optimization/value engineering studies per the contract.

3 Subcontractor shall coordinate with contractor to determine applicability of modular design to minimize assembly and replacement times.

4 Modular components and equipment requiring removal and replacement during startup and operation shall not weigh more than the safe working load of the largest overhead maintenance crane (10 tons).

5 Conductive individual components and equipment in contact with molten glass shall be electrically isolated from the melter structure, base, lid, enclosure, and from SSCs physically connecting the melter to the rest of the facility.

6 All components shall be designed to withstand thermal expansion during normal operations and function within established design parameters (such as, interface locations and positioning features).

7 Components and/or utility and service connections specified by the subcontractor that protrude from the enclosure shall be subject to review and approval by the contractor.

8 Design of the melter must prevent accumulation of water between the cooling panels and the melter shell or refractory. No sealed cavities shall exist between the cooling panels and the melter shell or refractory.

9 A water-sulfate steam explosion could cause a modest localized pressure pulse within the melter. The melter, including the feed nozzle cooling jacket components below the melter lid, will maintain its confinement boundary following a steam explosion from a water sulfate layer interaction.

K Restraint System

1 Melter assembly shall be restrained to prevent motion during a seismic event.

2 In coordination with the contractor, subcontractor shall be responsible for the design of the restraint components integral to or attached to the melter structure, including clamps and brackets interfacing with the facility rail system.

3.2 Performance Requirements

A Design Life

1 The facility is expected to operate for approximately 40 years.

2 The melters, excluding consumable SSCs specified by the subcontractor, shall have a minimum 5-year design life.

3 Design life of subcomponents shall be per Ref 2.2 N.

4 Not Used.

5 Deleted.

B Melter Throughput and Availability

1 Baseline throughput shall be 15 metric tons of glass per day, per melter. This is based on the conditions in section B 2.

2 Melter shall transform a slurry mixture of pretreated low activity waste and blended glass formers into a homogeneous glass melt. The glass and feed properties are as follows:

Glass properties: conductivity = 0.1 S/cm @ 1100 C to 0.7 S/cm @ 1200 C; viscosity = 10 to 150 Poise @ 1100 C with 30 to 50 Poise @ 1150 C optimal.

Glass melt pool operating temperature: 1100 to 1200 C with set point at 1150 C

Glass start-up frit: In accordance with Ref 2.2 O.

Feed Properties: Refer to 2.2 P

3 Target baseline availability for the melters is 83% (working number – will be confirmed when the operational research model is released). Subcontractor shall interface with contractor to ensure that melter design supports goal.

3.3 Design Conditions

A Deleted

B Facility Data

1 Guidance for melter and subcomponent dimensional envelope allowances are shown in Appendix B. Note that this data was used as the initial interface between the melter and the facility (see note at front of Appendix B).

2 Melter Ventilation:

a Melter will be operated as part of a cascaded ventilation system.

b Melter gallery will be a tertiary confinement zone, held at a nominal 0.4-in. w.g. negative pressure with respect to surrounding facility confinement zones.

c Contractor will provide melter annular space ventilation and exhaust. The melter annular space will be held at a nominal 2-in. w.g. negative pressure relative to the melter gallery.

d The pressure in the melter plenum, the confinement zone for offgas, will be maintained at a nominal 5-in. w.g. negative pressure with respect to the melter annular spaces.

e For design plenum pressures, see 3.5 D 4 a below.

3 Deleted

4 Indoor Temperatures: Maximum melter gallery temperature will be 95°F (80°F for personnel occupancy).

5 Radiation Dosages: Enclosure plate thicknesses for permitting personnel access are defined in Section 3.5.B1.

6 Melter Utility Services:

a Contractor is currently providing the following services to the melters: electrical power, steam, cooling water, process water, ventilation air (annular space ventilation and controlled melter-in-leakage), demineralized water, purge air, instrument air, and argon.

b Pressure, flow, conditioning, and other control requirements will be adjusted by contractor to suit application at the delivery point.

c Subcontractor shall identify any other liquids or gases required over the melter lifetime.

d Subcontractor shall coordinate with contractor to define utilities that require normal service or backup services.

e Deleted.

f Subcontractor shall specify required service operating parameters at contract boundary, with contractor input on selected design operating criteria.

7 Deleted.

3.4 Mechanical Requirements

A Discharge Chamber and Glass Pour Spout

1 For baseline discharge chamber operation, glass discharge will alternate between the two chambers for every other canister. The switch between chambers will not occur until a canister has been filled.

2 Each discharge chamber shall be designed for a throughput of 15 metric tons per day.

3 Each melter discharge chamber can be enclosed in refractory.

4 Discharge chamber is designed to accommodate a pour spout assembly which is an enclosure that provides transition between melter and ILAW container.

5 Pour spout housing is designed to accommodate a viewing CCTV for monitoring glass pour stream and with an infrared camera to monitor glass fill level in the container.

B Feed Nozzles

1 Location and capacity of paired nozzles over each designated glass pool zone shall permit continued baseline throughput with only one of each pair of nozzles in operation, until scheduled maintenance is performed.

2 Contractor will provide the following for each feed nozzle:

a A dedicated feed line and pump.

b Cooling water.

c Air and water purge through the feed line.

3 Subcontractor shall coordinate with contractor to design glass frit addition system, for use during melter startup. Subcontractor shall be responsible for design of frit discharge "nozzle" that will penetrate enclosure and lid.

C Bubblers

1 Bubbler assemblies shall be isolated from the melter lid and lid jumpers to prevent electrical short-circuiting.

2 Coordinate with Contractor to define air/gas supply requirements.

D Plenum Viewing (Note: Plenum CCTVs are future components, not installed in melter at startup.)

1 Design four (4) closed circuit televisions (CCTVs) and associated systems for viewing plenum area and cold cap during operation.

2 CCTVs will be used on an intermittent basis, as operation and maintenance requirements dictate. Design CCTVs to be removable and replaceable using standard maintenance equipment with manual interface.

3 Viewing ports shall be purged to prevent buildup of solids and other contaminants.

4 Cool CCTV ports as required.

E Refractory Expansion Control System

1 Design jack bolts to actively control refractory expansion without operator intervention. Manual operation of, and safe access to, the bolts shall be maintained.

2 Coordinate with Contractor to provide a means of locally monitoring bolt movement.

F Melter Cooling Water System

1 A cooling system will be used to meet enclosure surface temperature limit of 140 F. Contractor will be responsible for water supply to the panels.

2 Cooling panels shall be designed and fabricated in accordance with Ref 2.1 D3 and 2.1 D7.

3 Cooling panel design shall be such that internal pressure and/or temperature induced distortions will not place undue stress on the melter refractory.

4 Design cooling panels to be emptied at melter change-out or decommissioning.

5 Coordinate with contractor for overall cooling water system design, including instrumentation and controls, external to the melter enclosure.

G Melter Ventilation Systems

1 The overall design objective for the ventilation and associated cooling system is to maintain melter enclosure surface temperature at or below 140 F. Discharge chamber lid design objective is to be at or below 210 F.

2 Subcontractor may take credit for ventilation cooling in achieving enclosure surface temperature requirements.

3 Provide melter air in-leakage requirements and total supply air flow rates to the melter annular spaces.

4 Coordinate melter design with contractor achieve adequate ventilation of discharge chambers during operation.

5 In coordination with contractor, optimize air in-leakage requirements:

a From the melter operating gallery (C3) to the melter and discharge chamber annular spaces (C5), accounting for access panel removal requirements.

b Account for "non-design" leakage paths into the melter plenum.

6 Provide a means for introducing passive air purges between the melter annular spaces and the melter plenum to lower concentration of corrosive plenum gases adjacent to metallic lid components.

H Melter Offgas System

1 Main and standby offgas lines are nominal 10-inch diameter.

2 Deleted.

3 Offgas pipe routing from the melter enclosure to the submerged bed scrubber will be defined by the contractor.

4 The film cooler design and configuration will reduce the offgas temperature and minimize solids deposition during the various modes of operation to support downstream offgas system operation.

5 Film cooler design shall incorporate a means for internal cleaning. This operation may be assisted with handling equipment in the melter gallery.

6 Discharge chambers shall be vented back to the melter plenum.

7 Provide means for measuring pressure in melter plenum and melter discharge chambers. Redundant pressure measurement shall be provided for the plenum.

8 Standby Film Cooler:

a Design standby film cooler for alternate ventilation path of melter exhaust during upset conditions.

b Provision shall be made for addition of up to 150 scfm of quench air to standby film cooler.

c Design standby film cooler to prevent solids buildup during slurry feeding (when melter exhaust flows through the primary film cooler).

d Standby film cooler shall endure radiant shine from the glass pool during melter idling.

I Piping

1 All cooling water piping, feed piping, pour flanges and offgas pipe downstream of film cooler shall be per Ref 2.1D1. Piping seismic design shall be in accordance with Ref 2.2G. Subcontractor shall provide documentation for justification of service class selected where different from what is shown.

2 To the extent practical, all joints shall be butt-welded.

3 Pipe Routing: Minimize abrupt changes in direction for pipe routed through the annular spaces of the melter, particularly feed lines.

4 Piping Slopes: Offgas piping within melter enclosure shall be sloped away from film cooler.

5 Deleted

6 Drains: Provide low-point "floor" drains between the gas barrier and enclosure and between the gas barrier and refractory to accommodate leaks from cooling water piping. Coordinate with contractor to provide leak detection equipment at the drains.

J Material Requirements

1 Subcontractor shall define all melter SSC material requirements in accordance with this Specification and applicable codes and standards. Where deviations are required, subcontractor shall notify contractor before proceeding with design.

2 Materials of construction shall be able to withstand the radioactive, thermal, and corrosive environment caused by the melter feed, glass, and offgases to ensure adequate performance and lifetime. Corrosion allowances for major structural components exposed to corrosive environments are as follows (2.2R):

Gas barrier Lid bottom plate, hot side (against refractory), 1/8"

Gas barrier Walls, 1/8"

Base plate, 1/8"

Cooling panels inside gas barrier, 1/32"

3 Subcontractor shall consider environmental, durability, corrosion and erosion factors during material selection with consideration of the following characteristics:

a Surface finish

b Chemical resistance

c Radiation resistance

d Pressure effects (cyclical)

e Temperature effects

f Hardness (possibility of galling and fretting)

g Fatigue (cyclic stresses both with and without the presence of aggressive chemicals).

4 Refractories shall be selected to meet melter design life based on experience from pilot melters and other operating units.

5 Deleted

3.5 Structural Requirements

A. General

1 Structural design of the melter shall be per 2.1D8, 2.1J, 2.2H and 2.2I.

2 The values of the parameters in *Seismic Analysis and Design Criteria* (2.2H) not specified therein shall be as follows:

a $R_p = 3.0$

b $h_x = 3.0$ ft

c $h_r = 68$ ft

d w_p = weight of SSC being analyzed

3 Deleted

4 Deleted

5 Deleted

6 Deleted

7 The design of the electrodes and the melter dam shall address creep over the life of the component.

B. Melter Enclosure

1 Enclosure Plate:

a Enclosure plate thickness over the top of film cooler and discharge chambers is 2 inch. On all other areas of melter, enclosure plate thickness is 1 inch.

b Not Used.

c Deleted.

d Provide suitable shielding barriers where no continuous structural weld is required.

e Top surface plates shall support all maintenance activities staged from the enclosure surface. See Ref 2.1E1.

2 Enclosure Penetrations:

a Where possible, design access panels to reach multiple components.

b Seat panels on lap joints for flush exterior surfaces.

c Coordinate with contractor for designing means for panel removal.

d Where possible, standardize penetration sizes to simplify operations and increase operating flexibility.

e Removable access panels have gaskets to minimize air in-leakage and shall include a means of lifting via crane of other lifting device. Coordinate with contractor for design and operation of access panels positioned below glass containment level.

f Install steel guide tubes between enclosure and melter structure for component positioning and air flow control.

C. Transportation System

1 Rollers/Wheels:

a Deleted

b Provide vertical adjustment capability (passive and/or active) to accommodate slight differences in transport rail elevation. The combined deflection and surface discontinuities are 0.0625 inch.

2 Fasteners, Anchors, and Positioning Devices: Coordinate with contractor to establish design and interface requirements for all phases of melter life.

3 Lifting Lugs: Subcontractor shall design and locate lifting lugs. Contractor will assume spreader bars will be used to carry out the lifts.

4 Refer to 2.2 M for interface details with rails.

D. Loadings

1 Dead Loads: Design shall consider the combined weight of all melter SSCs. Other static loads to be considered include:

a Temporary rigging equipment during transport.

b Weight corresponding to maximum glass volume during operations.

c Circulated cooling fluids during operations.

d Deleted.

2 Live Loads:

a Design top surface of melter enclosure for two localized loads of 6000 pounds each (representing two bubbler change-out arrangements or other comparably sized equipment) being placed on the melter adjacent to each other and in addition, a distributed load of 50 pounds per square foot, per Ref 2.1C.

b Analyze effects of drop loads on melter enclosure using a worst-case scenario of a loaded consumable change-out box corner impacting the lid after being dropped from a height of three (3) feet (total weight of 3,500 pounds). Enclosure shall retain confinement and operational integrity for this and lesser drop loads (Ref 2.2J).

c Subcontractor shall coordinate with contractor to develop loading requirements and limits related to transport, maintenance, decommissioning, and jumper attachment.

d Design the top enclosure surface of each discharge chamber to support a uniformly distributed load of 5,000 pounds.

3 Seismic loads: Melter seismic loads shall be determined as described in Section A2 above.

4 Pressure Gradients:

a The gas barrier walls, lid and base shall be designed to withstand a plenum pressure range of -40 inch w.g to +40 inch w.g.

b Deleted.

5 Other Loads:

a Thermal induced loads to be experienced during startup, normal operations, and idling.

b Piping reaction loads during normal operation.

c Lifting attachment locations for disposal and resulting load paths shall be designed with a minimum safety factor of 3, based on yield strength, or a safety factor of 5 based on ultimate strength.

d Not Used.

e Deleted.

f Loads imposed by contractor-supplied access platforms. The line loads for the east and west sides of the melter will be 300 lb/ft. The line load for the south side of the melter will be 320 lb/ft. No loads for the north side of the melter.

6 Not Used.

E. Load Combinations shall be per Section 5 of 2.2 I.

F. Deleted.

G. Deleted

H. Deleted.

I. Gas Barrier Lid

1 Section VIII, Divisions 1 and 2 of the ASME boiler and pressure vessel code shall be used as a guide for fabrication.

2 The lid water reservoir enclosure shall be rated for a maximum pressure of 14.5 psig.

3 Under normal operating conditions, cooling water expected flow is 25 gpm and 100°F at inlet. For thermal analysis of lid under flowing conditions, 15 gpm at 115°F inlet shall be used as a conservative basis.

4 The lid shall be designed to maintain structural integrity for a minimum of 2 hours after a loss of cooling upset event.

5 The inlet and outlet of the melter lid cooling cavity must be elevated near the top of the cavity, to limit loss of water mass in the lid cooling cavity should a leak develop in the cooling water circuit

3.6 Electrical Requirements

See Appendix A for melter service and connection details and Appendix B for the balance of melter design interface details.

NOTE: The electrical-related information in these appendices were used initially as a basis for design. Refer to melter electrical drawings for final design configuration and component details. These drawings may be found under the following general document numbering systems:

24590-101-TSA-W000-0010-409-[3 and 4 digit indexing]
24590-QL-HC4-W000-00011-03-[2, 3, and 5 digit indexing]

24590-LAW-MX-LMP-[8 digit indexing]

A General

1 The following code references apply to this section: Refs 2.1B1 through 2.1B6, 2.1E2, 2.1G1, 2.1G2, 2.1H1, 2.1H2, and 2.1I.

2 Subcontractor shall specify the following:

a Wave form, frequency and current density for electrical power supplied at electrodes.

b Deleted.

c Electrode firing configuration.

d Instrumentation and control requirements for the power source to the electrodes, discharge heaters, and startup heaters.

B Electrode Power

1 Electrodes, extension buses, and bus jumpers shall be capable of carrying the current at the voltage required for all modes of melter operation.

2 Minimize connection resistance between extension bus and bus jumper, as well as between the extension bus and electrode if they are two separate components.

3 Connections between extension buses and bus jumpers shall allow for expansion and contraction of the extension bus.

4 Bus jumpers shall be designed with provisions for installing a connector on the end passing through the melter shielding.

5 Extension buses shall be electrically isolated from the melter enclosure and structure.

6 Bus jumpers shall be insulated over their entire length and shall be electrically isolated from the melter enclosure and structure.

7 Electromagnetic Coupling: Coupling between extension buses, bus jumpers and the materials they pass through shall be limited to prevent negative effects on melter life or performance.

8 Electromagnetic Interference: To the extent practical, bus jumpers shall be routed to maximize magnetic field cancellation.

9 Cooling:

a Electrode extensions shall be air cooled

b Deleted.

C Discharge Heater Power

1 Maximum discharge heater operating voltage is 480 VAC.

2 Discharge heaters shall be matched to the extent practical with respect to resistance, operating current, and voltage.

3 Each discharge heater assembly shall be designed with a plug-type connector integral to the heater assembly.

4 Discharge heaters shall be electrically isolated from each other and from the melter enclosure and structure.

5 The discharge heater jumpers shall have plug-type connectors on each end.

6 Connectors on the heater side of the discharge heater jumpers shall mate with the connector integral to the heater.

7 The junction box design shall include a metal bracket suitable for rigid mounting of discharge heater jumper connectors.

8 The junction box shall be sized to contain the required number of incoming and outgoing cables with their associated connectors.

9 Penetration through the melter shielding shall be sized to contain all the discharge heater jumpers, and sealed for contamination and radiation containment.

D Startup Heater Power

1 Startup heaters shall be matched to the extent practical with respect to resistance, operating current, and voltage.

2 Each startup heater shall be designed with a plug-type connector with a three foot flying lead integral to the heater assembly.

3 Startup heaters shall be electrically isolated from each other and from the melter enclosure and structure.

4 Startup heater jumpers shall have plug-type connectors on each end.

5 Connectors on the heater side of the startup heater jumpers shall mate with connectors integral to the heater.

6 Connectors on the shielding side of the startup heater jumpers shall be suitable for mounting to metal inserts in shielding penetrations. The integral connector and insert design shall seal the penetration. for contamination and radiation containment.

E Cable

1 Refer to Ref 2.1G1 for general cable design standards.

2 Cables routed within the melter enclosure and structure shall be rated for the maximum ambient temperature encountered.

3 Cable insulation and jacket material shall be of the low-flammability type, per Ref 2.1B5.

4 Cable insulation and jacket material shall be resistant to heat, moisture, impact, radiation, and ozone, as required for the expected operating environment.

5 Cables shall be supported or routed in raceway within the melter enclosure.

6 Power cables of size # 2/0 and larger will be single conductor or triplexed.

7 Instrument cables shall be single pair, triad-twisted and shielded, or multi pair with shielded pair and overall shield and drain wire.

8 Control cables shall be multi-conductor and color coded in accordance with Ref 2.1G2, Standard Method. Coordinate with contractor to determine requirements for spare conductors in multi-conductor control and instrumentation cables.

9 Instrument and thermocouple cables shall be single pair twisted, shielded, or multi-pair cable with individual pair shielded and overall shield.

10 Minimum Conductor Sizes:

a #12 AWG for power circuits.

b #14 AWG for control circuits (120 VAC, 125 VDC) and instrument power circuits.

c #18 AWG for instrumentation – single pair cable.

d #20 AWG for instrumentation – multi pair cable.

Note: Instrumentation conductors include low-level voltage, current, or digital electrical signal connections to sensing and actuating devices.

11 Cables shall be physically separated in accordance with the function and voltage class as follows:

a Low-voltage power AC and DC cables.

b High-level signal and control or discrete on/off control cables (120 V AC, 125 V DC).

c Controls with critical safety requirements as determined by contractor.

d Cables for general instrumentation (i.e., low-level analog and digital signals and data communication).

F Raceway Within Melter Envelope

1 To the extent practical, cable trains for different power source groups shall be routed in separate raceways. Raceways shall be physically separated in accordance with the function and voltage class of the cables contained within, as follows:

a Low-voltage power AC and DC-600 V cables.

b High-level signal and control or discrete on/off control cables (120 V AC, 125 V DC).

c Controls with critical safety requirements as determined by contractor.

d Cables for general instrumentation (i.e., low-level analog and digital signals, building evacuation, data communication, environmental surveillance system fiber for digital data communication)

2 Raceways shall be rigid metallic conduit and shall be a minimum of 1/2 inch in size. Wire trough or other approved wiring methods may be used where necessary.

3 Raceways shall be supported as required, per Ref 2.1H1.

4 Raceway designated for a single class of cables shall contain only cables of the same class.

G Junction Boxes

1 Junction boxes are used to connect jumpers from the instrumentation and discharge heaters within the enclosure to cabling external to the melters.

2 Boxes shall be supported as required, and sized and bonded to the shielding in accordance with Ref 2.1H1.

H Grounding

1 Metal sections of the melter enclosure and structure shall be electrically interconnected.

2 Provisions at four (4) locations on the melter shall be made to allow connection to the facility ground system.

3 Ground connections shall be made with pressure-type connectors.

3.7 Controls and Instrumentation Requirements

A Controls Requirements

For melter design requirements related to control logic, sequence of operations, and control software and hardware, see Ref 2.2B. Controls system design is in contractor's scope unless stated otherwise in Ref 2.2B.

B Instrumentation Requirements.

For melter design requirements related to instrumentation, see Ref 2.2B.

3.8 Maintenance Requirements

A General

1 All nonstructural SSCs are designed for safe and effective maintenance per 24590-WTP-RPT-OP-01-001, *Operations Requirements Document*. To the extent practical, the design of the melter and its ancillary components will utilize techniques for minimizing maintenance labor to reduce the time, number and type of crafts required to perform work:

a Minimize downtime, and impacts to overall operation of the facility.

b Keep maintenance activities simple and straightforward.

c Minimize requirement for special tools and equipment for maintenance.

d Modularize SSCs for maintenance, access, and replacement.

e Demonstrate best possible access to controls, protective interlocks, and SSCs for maintenance.

f Minimize impact on interfacing SSCs while performing maintenance on targeted SSCs.

g Allow for the gathering of diagnostic information where possible to determine melter life.

h Incorporate features to aid in replacement of SSCs that do not meet the melter design life of 5 years. Contractor will be providing a consumable changeout box for replacement of most consumables mounted in the melter lid.

2 Subcontractor shall perform failure modes and effects analyses on the critical SSCs identified in the contract:

a Specify what critical SSCs need to be maintained and inspected, specify maintenance and inspection requirements, and provide data on predicted availability.

b Identify potential failures for critical SSCs, and recovery sequences.

c Identify and implement sufficient redundancy requirements to minimize impact on glass production.

3 Melter maintenance operations, planned or unplanned, shall not compromise enclosure containment (assuming ventilation system is functioning normally) and will allow for access to equipment for maintenance operations where hands-on operations do not compromise worker safety. Subcontractor shall interface with contractor to ensure that access around melters is sufficient for daily visual inspection of all melter enclosure surfaces.

4 Subcontractor shall identify all special tools and equipment for maintenance.

5 Components and equipment exceeding 42 pounds, or a temperature of 110 °F, or having excessive sharp edges shall have lifting bails designed to interface with overhead maintenance crane/manipulator.

6 Subcontractor shall coordinate with contractor to optimize melter maintenance access, taking into account facility layout and maintenance support equipment and services outside of the subcontractor's scope of work.

B Baseline Component Design Lives

Refer to 2.2N

4 Quality Assurance Requirements

4.1 General

A Subcontractor and sub-tier vendors shall perform all design work in accordance with a contractor-approved quality assurance plan which meets the applicable requirements of Ref 2.1D4.

B Subcontractor shall be responsible for all sub-tier vendor quality assurance requirements during design.

C Refer to the contract for quality assurance requirements pertaining to specific melter SSCs (24590-QL-1IC4-W000-00011).

D The contractor reserves the right to review design work in progress to assess the effectiveness of the subcontractor's quality system at any time during the design process. Assessments performed by the contractor shall in no way relieve the subcontractor of any contractual responsibilities.

5 Documentation and Submittals

5.1 General Documentation Requirements

A. Refer to the contract for submittal format, transmission, and review requirements.

5.2 Submittals

A. Refer to the contract for specific melter system submittal requirements.

Appendix A- Melter Services and Connections Interface Details

Melter Engineering Specification Appendix Note:

The data in this appendix are based on experience from pilot melters and other operating units. This data was gathered early in the project and used as a guide for design of surrounding utilities. The values should not be used directly as input since in many cases the design has continued to evolve and there may be inconsistencies between issued design documents and values in these tables. Instead, refer to the appropriate design media, e.g. P&IDs, melter design drawings, melter design calculations, or other system calculations. These data may be used as an assumption for performing calculations but the assumption will require verification by the calculation where it was used or other design media.

Tag	Description	Temp Conn ID	Melter Nozzle Tag	Line/ Wire Size (in)	Ops Mode (13)	Service Type (12)	Nominal Flow/Amp	Nom F/A Unit	Nominal Pres/Volt	Nom P/V Unit	Nom Temp F (C)	Design Flow/Amp	Des F/A Unit	Design Pres/Volt	Des P/V Unit	Des Temp F (C)	Critical Srvc	Connect Box Number	External Style (10)	Internal Style	Notes
agi19	air supply - bubbler #01	WB1	WB1	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi20	air supply - bubbler #02	WB2	WB2	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi21	air supply - bubbler #03	WB3	WB3	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi22	air supply - bubbler #04	WB4	WB4	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi23	air supply - bubbler #05	WB5	WB5	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi24	air supply - bubbler #06	CB6	CB6	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi25	air supply - bubbler #07	CB7	CB7	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi26	air supply - bubbler #08	CB8	CB8	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi27	air supply - bubbler #09	CB9	CB9	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi28	air supply - bubbler #10	CB10	CB10	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi29	air supply - bubbler #11	CB11	CB11	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi30	air supply - bubbler #12	CB12	CB12	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi31	air supply - bubbler #13	CB13	CB13	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi32	air supply - bubbler #14	EB14	EB14	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi33	air supply - bubbler #15	EB15	EB15	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi34	air supply - bubbler #16	EB16	EB16	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi35	air supply - bubbler #17	EB17	EB17	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
agi36	air supply - bubbler #18	EB18	EB18	1/2	C	IA-2	0.75	scfm	4	psig	113 (45)	0.1-3	scfm	10	psig	150 (66)	TRUE	LWA	Staubli	Custom Pitless Fitting	45
cig01	water return - cooling, base	NEB-1	NEB-1	2	C	CW-1	40	gpm	100	psig	99 (37)	40	gpm	150	psig	360 (182)	TRUE	NEB-1	Hiltap	N/A	12 48
cig02	water supply - cooling, base	NWB-1	NWB-1	2	C	CW-1	40	gpm	100	psig	84 (29)	40	gpm	150	psig	360 (182)	TRUE	NWB-1	Hiltap	N/A	1 48
cig03	water return - cooling, east discharge	N/A	cig03	2	C	CW-1	15	gpm	100	psig	95 (35)	15	gpm	150	psig	360 (182)	TRUE	SE-1	Hiltap	N/A	12 48
cig04	water supply - cooling, east discharge	N/A	cig04	2	C	CW-1	15	gpm	100	psig	84 (29)	15	gpm	150	psig	360 (182)	TRUE	SE-1	Hiltap	N/A	1 48
cig05	water return - cooling, east wall	N/A	cig05	1	C	CW-1	10	gpm	100	psig	105 (41)	10	gpm	150	psig	360 (182)	TRUE	EN-1	Hiltap	N/A	12 48
cig06	water supply - cooling, east wall	N/A	cig06	1	C	CW-1	10	gpm	100	psig	84 (29)	10	gpm	150	psig	360 (182)	TRUE	EN-1	Hiltap	N/A	1 48
cig07	water return - cooling, northeast wall	N/A	cig07	1	C	CW-1	10	gpm	100	psig	99 (37)	10	gpm	150	psig	360 (182)	TRUE	NE-1	Hiltap	N/A	12 48
cig08	water supply - cooling, northeast wall	N/A	cig08	1	C	CW-1	10	gpm	100	psig	84 (29)	10	gpm	150	psig	360 (182)	TRUE	NE-1	Hiltap	N/A	1 48
cig09	water return - cooling, northwest wall	NW-1	cig09	1	C	CW-1	10	gpm	100	psig	99 (37)	10	gpm	150	psig	360 (182)	TRUE	NW-1	Hiltap	N/A	12 48
cig10	water supply - cooling, northwest wall	NW-1	cig10	1	C	CW-1	10	gpm	100	psig	84 (29)	10	gpm	150	psig	360 (182)	TRUE	NW-1	Hiltap	N/A	1 48
cig11	water return - cooling, southeast wall	N/A	cig11	1	C	CW-1	10	gpm	100	psig	93 (34)	10	gpm	150	psig	360 (182)	TRUE	SE-1	Hiltap	N/A	12 48

Tag	Description	Temp Conn ID	Melter Nozzle Tag	Line/ Wire Size (in)	Ops Mode (13)	Service Type (12)	Nominal Flow/Amp	Nom F/A Unit	Nominal Pres/Volt	Nom P/V Unit	Nom Temp F (C)	Design Flow/Amp	Des F/A Unit	Design Pres/Volt	Des P/V Unit	Des Temp F (C)	Critical Srvc	Connect Box Number	External Style (10)	Internal Style	Notes
clg12	water supply - cooling south-east wall	N/A	clg12	1	C	CW-1	10	gpm	100	psig	84 (29)	10	gpm	150	psig	360 (182)	TRUE	SE-1	Hiltap	N/A	1 48
clg13	water return - cooling southwest wall	N/A	clg13	1	C	CW-1	10	gpm	100	psig	93 (34)	10	gpm	150	psig	360 (182)	TRUE	SW-1	Hiltap	N/A	12 48
clg14	water supply - cooling southwest wall	N/A	clg14	1	C	CW-1	10	gpm	100	psig	84 (29)	10	gpm	150	psig	360 (182)	TRUE	SW-1	Hiltap	N/A	1 48
clg17	water return - cooling west discharge	N/A	clg17	2	C	CW-1	15	gpm	100	psig	95 (35)	15	gpm	150	psig	360 (182)	TRUE	SW-1	Hiltap	N/A	12 48
clg18	water supply - cooling west discharge	N/A	clg18	2	C	CW-1	15	gpm	100	psig	84 (29)	15	gpm	150	psig	360 (182)	TRUE	SW-1	Hiltap	N/A	1 48
clg19	water return - cooling west wall	N/A	clg19	1	C	CW-1	10	gpm	100	psig	105 (41)	10	gpm	150	psig	360 (182)	TRUE	WN-1	Hiltap	N/A	12 48
clg20	water supply - cooling west wall	N/A	clg20	1	C	CW-1	10	gpm	100	psig	84 (29)	10	gpm	150	psig	360 (182)	TRUE	WN-1	Hiltap	N/A	1 48
clg21	water supply - cooling lid	N/A	clg21	1-1/2	C	CW-1	25	gpm	14.5	psig	84 (29)	25	gpm	14.5	psig	140 (60)	TRUE	NW-2	Hiltap	N/A	1 48
clg22	water return - cooling lid	N/A	clg22	1.5	C	CW-1	25	gpm	14.5	psig	90 (32)	25	gpm	14.5	psig	140 (60)	TRUE	NE-2	Hiltap	N/A	12 48
clg23	water supply - cooling plenum	N/A	clg23	2	C	CW-1	70	gpm	100	psig	84 (29)	70	gpm	150	psig	360 (182)	TRUE	WS-1	Hiltap	N/A	1 48
clg24	water return - cooling plenum	N/A	clg24	2	C	CW-1	70	gpm	100	psig	85 (29)	70	gpm	150	psig	360 (182)	TRUE	ES-1	Hiltap	N/A	12 48
clg26	water supply - cooling west offgas shielded lid panel	NW-2	clg26	3/4	C	CW-1	10	gpm	100	psig	84 (29)	10	gpm	150	psig	360 (182)	FALSE	NW-2	Hiltap	N/A	1 48
clg27	water return - cooling west offgas shielded lid panel	NW-2	clg27	3/4	C	CW-1	10	gpm	100	psig	90 (32)	10	gpm	150	psig	360 (182)	TRUE	NW-2	Hiltap	N/A	12 48
clg28	water return - cooling panel total return based on B&F supply	N/A	clg28	N/A	N/A	CW-1	245	gpm	N/A		105.4 (41)	245	gpm	N/A		N/A	TRUE	N/A	N/A	N/A	
clg29	water supply - cooling east offgas shielded lid panel	NE-2	clg29	3/4	C	CW-1	10	gpm	100	psig	84 (29)	10	gpm	150	psig	360 (182)	FALSE	NE-2	Hiltap	N/A	1 48
clg30	water return - cooling east offgas shielded lid panel	NE-2	clg30	3/4	C	CW-1	10	gpm	100	psig	90 (32)	10	gpm	150	psig	360 (182)	TRUE	NE-2	Hiltap	N/A	12 48
clg31	water supply - cooling west film cooler cover panel	NE-2	clg31	3/4	C	CW-1	2	gpm	100	psig	84 (29)	10	gpm	150	psig	360 (182)	TRUE	NE-2	Hiltap	Staubli	
clg32	water return - cooling west film cooler cover panel	NE-2	clg32	3/4	C	CW-1	2	gpm	100	psig	84 (29)	10	gpm	150	psig	360 (182)	TRUE	NE-2	Hiltap	Staubli	
clg33	water supply - cooling east film cooler cover panel	NW-2	clg33	3/4	C	CW-1	2	gpm	100	psig	84 (29)	10	gpm	150	psig	360 (182)	TRUE	NW-2	Hiltap	Staubli	
clg34	water return - cooling east film cooler cover panel	NW-2	clg34	3/4	C	CW-1	2	gpm	100	psig	84 (29)	10	gpm	150	psig	360 (182)	TRUE	NW-2	Hiltap	Staubli	
clg35	water return, cooling, west seal head panel	Lower	clg35	1	C	CW-1												N/A	Hiltap		38
clg36	water supply, cooling, west seal head panel	Upper	clg36	1	C	CW-1												N/A	Hiltap		38
clg37	water supply, cooling, east seal head panel	Upper	clg37	1	C	CW-1												N/A	Hiltap		38
clg38	water return, cooling, east seal head panel	Lower	clg38	1	C	CW-1												N/A	Hiltap		38
drn01	drain - gas barrier annulus	N/A	drn01	2	Rare	DR	N/A		N/A		N/A	N/A		+10/-40	in wc	113 (45)	FALSE	N/A	B16.5 150#	N/A	
drn02	drain - melter shielding	N/A	drn02	2	Rare	DR	N/A		N/A		N/A	N/A		+10/-40	in wc	113 (45)	FALSE	N/A	B16.5 150#	N/A	
fed01	water return - feed nozzle #1 cooling	WF1-B	WF1-B	3/4	C	CW-1	5.5	gpm	100	psig	86 (30)	7.5	gpm	150	psig	360 (182)	TRUE	LWW	Hiltap	Swagelok	13 48
fed02	water supply - feed nozzle #1 cooling	WF1-A	WF1-A	3/4	C	CW-1	5.5	gpm	100	psig	84 (29)	7.5	gpm	150	psig	360 (182)	TRUE	LWW	Hiltap	Swagelok	1 48
fed03	feed supply - feed nozzle #1	WF1	WF1	3/4	I	Normal	1	gpm	30	psig	113 (45)	1	gpm	100	psig	150 (66)	FALSE	FEED	Hiltap	Swagelok	
fed05	water return - feed nozzle #2 cooling	WF2-B	WF2-B	3/4	C	CW-1	5.5	gpm	100	psig	86 (30)	7.5	gpm	150	psig	360 (182)	TRUE	LWW	Hiltap	Swagelok	13 48
fed06	water supply - feed nozzle #2 cooling	WF2-A	WF2-A	3/4	C	CW-1	5.5	gpm	100	psig	84 (29)	7.5	gpm	150	psig	360 (182)	TRUE	LWW	Hiltap	Swagelok	1 48
fed07	feed supply - feed nozzle #2	WF2	WF2	3/4	I	Normal	1	gpm	30	psig	113 (45)	1	gpm	100	psig	150 (66)	FALSE	FEED	Hiltap	Swagelok	
fed08	water return - feed nozzle #3 cooling	CF3-B	CF3-B	3/4	C	CW-1	5.5	gpm	100	psig	86 (30)	7.5	gpm	150	psig	360 (182)	TRUE	LWW	Hiltap	Swagelok	13 48

Tag	Description	Temp Conn ID	Melter Nozzle Tag	Line/ Wire Size (in)	Ops Mode (13)	Service Type (12)	Nominal Flow/Amp	Nom F/A Unit	Nominal Pres/Volt	Nom P/V Unit	Nom Temp F (C)	Design Flow/Amp	Des F/A Unit	Design Pres/Volt	Des P/V Unit	Des Temp F (C)	Critical Srvc	Connect Box Number	Externl Style (10)	Internal Style	Notes
fed09	water supply - feed nozzle #3 cooling	CF3-A	CF3-A	3/4	C	CW-1	5.5	gpm	100	psig	84 (29)	7.5	gpm	150	psig	360 (182)	TRUE	LWW	Hiltap	Swagelok	1 48
fed10	feed supply - feed nozzle #3	CF3	CF3	3/4	I	Normal	1	gpm	30	psig	113 (45)	1	gpm	100	psig	150 (66)	FALSE	FEED	Hiltap	Swagelok	
fed12	water return - feed nozzle #4 cooling	CF4-B	CF4-B	3/4	C	CW-1	5.5	gpm	100	psig	86 (30)	7.5	gpm	150	psig	360 (182)	TRUE	LWW	Hiltap	Swagelok	13 48
fed13	water supply - feed nozzle #4 cooling	CF4-A	CF4-A	3/4	C	CW-1	5.5	gpm	100	psig	84 (29)	7.5	gpm	150	psig	360 (182)	TRUE	LWW	Hiltap	Swagelok	1 48
fed14	feed supply - feed nozzle #4	CF4	CF4	3/4	I	Normal	1	gpm	30	psig	113 (45)	1	gpm	100	psig	150 (66)	FALSE	FEED	Hiltap	Swagelok	
fed15	water return - feed nozzle #5 cooling	EF5-B	EF5-B	3/4	C	CW-1	5.5	gpm	100	psig	86 (30)	7.5	gpm	150	psig	360 (182)	TRUE	LWW	Hiltap	Swagelok	13 48
fed16	water supply - feed nozzle #5 cooling	EF5-A	EF5-A	3/4	C	CW-1	5.5	gpm	100	psig	84 (29)	7.5	gpm	150	psig	360 (182)	TRUE	LWW	Hiltap	Swagelok	1 48
fed17	feed supply - feed nozzle #5	EF5	EF5	3/4	I	Normal	1	gpm	30	psig	113 (45)	1	gpm	100	psig	150 (66)	FALSE	FEED	Hiltap	Swagelok	
fed19	water return - feed nozzle #6 cooling	EF6-B	EF6-B	3/4	C	CW-1	5.5	gpm	100	psig	86 (30)	7.5	gpm	150	psig	360 (182)	TRUE	LWW	Hiltap	Swagelok	13 48
fed20	water supply - feed nozzle #6 cooling	EF6-A	EF6-A	3/4	C	CW-1	5.5	gpm	100	psig	84 (29)	7.5	gpm	150	psig	360 (182)	TRUE	LWW	Hiltap	Swagelok	1 48
fed21	feed supply - feed nozzle #6	EF6	EF6	3/4	I	Normal	1	gpm	30	psig	113 (45)	1	gpm	100	psig	150 (66)	FALSE	FEED	Hiltap	Swagelok	
fed22	frit addition funnel #1	N/A	fed22	custom	Rare	M	N/A		-5	in wc	113 (45)	N/A		+10/-40	in wc	113 (45)	FALSE	N/A	Custom	Custom	6 30
fed23	frit addition funnel #2	N/A	fed23	custom	Rare	M	N/A		-5	in wc	113 (45)	N/A		+10/-40	in wc	113 (45)	FALSE	N/A	Custom	Custom	6 30
fed48	water supply - feed nozzle flush (each nozzle)	N/A	fed48	N/A	I	PW	1/4	gph	30	psig	84 (29)	1/4	gph	150	psig	360 (182)	FALSE	N/A	N/A	N/A	50
fed49	water supply - feed nozzle start up from idle (each nozzle)	N/A	fed49	N/A	I	PW	1	gpm	30	psig	84 (29)	1	gpm	150	psig	360 (182)	FALSE	N/A	N/A	N/A	51
grd01	melter ground (4 locations)	N/A	grd01	N/A	C	E	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	N/A	cable lug	N/A	
htd01	heater - east discharge auxiliary	N/A	htd01	#10	Rare	E	0	A	0	V	N/A	17.5	A	240	V	N/A	FALSE	EDH	Lemo	N/A	11
htd02	heater - east discharge #01	N/A	htd02	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	EDH	Vantage	Vantage	
htd03	heater - east discharge #02	N/A	htd03	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	EDH	Vantage	Vantage	
htd04	heater - east discharge #03	N/A	htd04	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	EDH	Vantage	Vantage	
htd05	heater - east discharge #04	N/A	htd05	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	EDH	Vantage	Vantage	
htd06	heater - east discharge #05	N/A	htd06	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	EDH	Vantage	Vantage	
htd07	heater - east discharge #06	N/A	htd07	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	EDH	Vantage	Vantage	
htd08	heater - east discharge #07	N/A	htd08	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	EDH	Vantage	Vantage	
htd09	heater - east discharge #08	N/A	htd09	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	EDH	Vantage	Vantage	
htd10	heater - east discharge #09	N/A	htd10	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	EDH	Vantage	Vantage	
htd11	heater - east discharge #10	N/A	htd11	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	EDH	Vantage	Vantage	
htd12	heater - east discharge #11	N/A	htd12	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	EDH	Vantage	Vantage	
htd13	heater - east discharge #12	N/A	htd13	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	EDH	Vantage	Vantage	
htd14	heater - west discharge auxiliary	N/A	htd14	#10	Rare	E	0	A	0	V	N/A	17.5	A	240	V	N/A	FALSE	WDH	Lemo	N/A	11

Tag	Description	Temp Conn ID	Melter Nozzle Tag	Line/ Wire Size (in)	Ops Mode (13)	Service Type (12)	Nominal Flow/Amp	Nom F/A Unit	Nominal Pres/Volt	Nom P/V Unit	Nom Temp F (C)	Design Flow/Amp	Des F/A Unit	Design Pres/Volt	Des P/V Unit	Des Temp F (C)	Critical Srvc	Connect Box Number	Externl Style (10)	Internal Style	Notes
htd15	heater - west discharge #01	N/A	htd15	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	WDH	Vantage	Vantage	
htd16	heater - west discharge #02	N/A	htd16	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	WDH	Vantage	Vantage	
htd17	heater - west discharge #03	N/A	htd17	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	WDH	Vantage	Vantage	
htd18	heater - west discharge #04	N/A	htd18	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	WDH	Vantage	Vantage	
htd19	heater - west discharge #05	N/A	htd19	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	WDH	Vantage	Vantage	
htd20	heater - west discharge #06	N/A	htd20	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	WDH	Vantage	Vantage	
htd21	heater - west discharge #07	N/A	htd21	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	WDH	Vantage	Vantage	
htd22	heater - west discharge #08	N/A	htd22	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	WDH	Vantage	Vantage	
htd23	heater - west discharge #09	N/A	htd23	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	WDH	Vantage	Vantage	
htd24	heater - west discharge #10	N/A	htd24	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	WDH	Vantage	Vantage	
htd25	heater - west discharge #11	N/A	htd25	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	WDH	Vantage	Vantage	
htd26	heater - west discharge #12	N/A	htd26	#2	C	E	25-30	A	70-85	V	N/A	59	A	480	V	N/A	FALSE	WDH	Vantage	Vantage	
htm01	power - electrode bus, northcenter	N/A	htm01	2" bus	C	E	989-5761	A	103-440	V	N/A	6500	A	480	V	N/A	TRUE	N/A	Custom	Custom	67
htm04	TC - northcenter electrode extension cooling air exhaust	N/A	htm04	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	NCE	Lemo	Lemo	
htm05	air supply - electrode extension cooling, northcenter	CE-1	CE1	3/4	C	IA-2	10	scfm	10	psig	113 (45)	10	scfm	15	psig	150 (66)	FALSE	NE-1	Staubli	Staubli	
htm06	TC - northcenter electrode extension	N/A	htm06	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	NCE	Lemo	Lemo	
htm07	power - electrode bus, northwest	N/A	htm07	2" bus	C	E	989-5761	A	103-440	V	N/A	6500	A	480	V	N/A	TRUE	N/A	Custom	Custom	67
htm10	TC - northeast electrode extension cooling air exhaust	N/A	htm10	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	ENE	Lemo	Lemo	
htm11	air supply - electrode extension cooling, northeast	EE-1	EE1	3/4	C	IA-2	10	scfm	10	psig	113 (45)	10	scfm	15	psig	150 (66)	FALSE	EN-2	Staubli	Staubli	
htm12	TC - northeast electrode extension	N/A	htm12	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	ENE	Lemo	Lemo	
htm13	power - electrode bus, northwest	N/A	htm13	2" bus	C	E	989-5761	A	103-440	V	N/A	6500	A	480	V	N/A	TRUE	N/A	Custom	Custom	67
htm16	TC - northwest electrode extension cooling air exhaust	N/A	htm16	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	WNE	Lemo	Lemo	
htm17	air supply - electrode extension cooling, northwest electrode	WE-1	WE1	3/4	C	IA-2	10	scfm	10	psig	113 (45)	10	scfm	15	psig	150 (66)	FALSE	WN-2	Staubli	Staubli	
htm18	TC - northwest electrode extension	N/A	htm18	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	WNE	Lemo	Lemo	
htm19	power - electrode bus, southcenter	N/A	htm19	2" bus	C	E	989-5761	A	103-440	V	N/A	6500	A	480	V	N/A	TRUE	N/A	Custom	Custom	67
htm22	TC - southcenter electrode extension cooling air exhaust	N/A	htm22	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	SCE	Lemo	Lemo	
htm23	air supply - electrode extension cooling, southcenter electrode	CE-2	CE2	3/4	C	IA-2	10	scfm	10	psig	113 (45)	10	scfm	15	psig	150 (66)	FALSE	SW-1	Staubli	Staubli	

Tag	Description	Temp Conn ID	Melter Nozzle Tag	Line/ Wire Size (in)	Ops Mode (13)	Service Type (12)	Nominal Flow/Amp	Nom F/A Unit	Nominal Pres/Volt	Nom P/V Unit	Nom Temp F (C)	Design Flow/Amp	Des F/A Unit	Design Pres/Volt	Des P/V Unit	Des Temp F (C)	Critical Srvc	Connect Box Number	External Style (10)	Internal Style	Notes
htm24	TC - southcenter electrode extension	N/A	htm24	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	SCE	Lemo	Lemo	
htm25	power - electrode bus, southeast	N/A	htm25	2" bus	C	E	989-5761	A	103-440	V	N/A	6500	A	480	V	N/A	TRUE	N/A	Custom	Custom	67
htm28	TC - southeast electrode extension cooling air exhaust	N/A	htm28	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	ESE	Lemo	Lemo	
htm29	air supply - electrode extension cooling, southeast electrode	EE-2	EE-2	3/4	C	IA-2	10	scfm	10	psig	113 (45)	10	scfm	15	psig	150 (66)	FALSE	ES-2	Staubli	Staubli	
htm30	TC - southeast electrode extension	N/A	htm30	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	ESE	Lemo	Lemo	
htm31	power - electrode bus, southwest	N/A	htm31	2" bus	C	E	989-5761	A	103-440	V	N/A	6500	A	480	V	N/A	TRUE	N/A	Custom	Custom	67
htm34	TC - southwest electrode extension cooling air exhaust	N/A	htm34	N/A	C	TC	N/A		N/A	in wc	N/A	N/A		N/A		N/A	FALSE	WSE	Lemo	Lemo	
htm35	air supply - electrode extension cooling, southwest electrode	WE-2	WE-2	3/4	C	IA-2	10	scfm	10	psig	113 (45)	10	scfm	15	psig	150 (66)	FALSE	WS-2	Staubli	Staubli	
htm36	TC - southwest electrode extension	N/A	htm36	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	WSE	Lemo	Lemo	
hts01	heater - startup #01	WB-1	hts01	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts02	heater - startup #02	WB-2	hts02	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts03	heater - startup #03	WB-3	hts03	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts04	heater - startup #04	WB-4	hts04	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts05	heater - startup #05	WB-5	hts05	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts06	heater - startup #06	CB-6	hts06	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts07	heater - startup #07	CB-7	hts07	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts08	heater - startup #08	CB-8	hts08	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts09	heater - startup #09	CB-9	hts09	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts10	heater - startup #10	CB-10	hts10	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts11	heater - startup #11	CB-11	hts11	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts12	heater - startup #12	CB-12	hts12	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts13	heater - startup #13	CB-13	hts13	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts14	heater - startup #14	EB-14	hts14	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts15	heater - startup #15	EB-15	hts15	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts16	heater - startup #16	EB-16	hts16	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts17	heater - startup #17	EB-17	hts17	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
hts18	heater - startup #18	EB-18	hts18	#1	Rare	E	99-124	A	94-117	V	N/A	142	A	480	V	N/A	FALSE	N/A	Cooper Crouse Hinds	N/A	6 29
lkd08	leak detector - gas barrier annulus	N/A	lkd08	#16	C	E	0	A	12	V	N/A	1	A	120	V	N/A	FALSE	NE	Lemo	N/A	
lkd11	leak detector - shielding annulus	N/A	lkd11	#16	C	E	0	A	12	V	N/A	1	A	120	V	N/A	FALSE	NE	Lemo	N/A	
lvl01	argon supply - level detector, density leg	WL1-B	WL1-B	3/8	C	Ar	1.8	scfh	2	psig	113 (45)	1.8	scfh	5	psig	150 (66)	TRUE	LWA	Staubli	Staubli	66
lvl02	argon supply - level detector, level leg	WL1-C	WL1-C	3/8	C	Ar	1.8	scfh	3	psig	113 (45)	1.8	scfh	5	psig	150 (66)	TRUE	LWA	Staubli	Staubli	66

Tag	Description	Temp Conn ID	Melter Nozzle Tag	Line/ Wire Size (in)	Ops Mode (13)	Service Type (12)	Nominal Flow/Amp	Nom F/A Unit	Nominal Pres/Volt	Nom P/V Unit	Nom Temp F (C)	Design Flow/Amp	Des F/A Unit	Design Pres/Volt	Des P/V Unit	Des Temp F (C)	Critical Srvc	Connect Box Number	Externl Style (10)	Internal Style	Notes
lvl03	air supply - level detector, reference leg (R1)	WL1-A	WL1-A	3/8	C	IA-1	0.2	scfm	1	psig	113 (45)	0.2	scfm	15	psig	150 (66)	FALSE	LWA	Staubli	Staubli	
lvl04	spare - level detector, density leg	ES8-B	ES8-B	3/8	Rare	Ar	1.8	scfh	2	psig	113 (45)	1.8	scfh	5	psig	150 (66)	TRUE	LWA	Staubli	Staubli	66
lvl05	spare - level detector, level leg	ES8-C	ES8-C	3/8	Rare	Ar	1.8	scfh	3	psig	113 (45)	1.8	scfh	5	psig	150 (66)	TRUE	LWA	Staubli	Staubli	66
lvl06	spare - level detector, reference leg	ES8-A	ES8-A	3/8	Rare	IA-1	0.2	scfm	1	psig	113 (45)	0.2	scfm	15	psig	150 (66)	FALSE	LWA	Staubli	Staubli	
ogp01	air supply - primary offgas film cooler, see ogp09, ogp14	EO-2	ogp01	3																	
ogp02	water supply - primary offgas film cooler wash, same connection as ogp11, ogp12	EO-2	ogp02	3/4	I	PW	3-4	gpm	50	psig	84 (29)	10	gpm	150	psig	360 (182)	FALSE	NE-2	Staubli	Staubli	
ogp05	water supply - primary offgas line wash, same connection as ogp10, ogp15	EO-2	ogp05	3/4	I	PW	3-4	gpm	50	psig	84 (29)	10	gpm	150	psig	360 (182)	FALSE	NE-2	Staubli	Staubli	
ogp06	power - primary offgas film cooler cleaner	EO-2	ogp06	N/A	Rare	E	5	A	480	V	N/A	N/A		N/A		N/A	FALSE	N/A	Lemo	N/A	
ogp08	offgas - primary line/film cooler	EO-2	ogp08	10 sch 80	C	OG	10/56	scfm	-5	in wc	572 (300)	5154	scfm	+10/-40	in wc	1112(600)	FALSE	N/A	Hiltap	Hiltap	
ogp09	air supply - primary offgas melter pressure control, same connection as ogp01, ogp14	EO-2	ogp09	3	C	PA	300	scfm	5	psig	113 (45)	400	scfm	150	psig	150 (66)	FALSE	NE-2	Hiltap	Graylok	
ogp10	air supply - primary offgas line wash nozzle blowdown, same connection as ogp05, ogp15	EO-2	ogp10	3/4	I	PA	10	scfm	100	psig	113 (45)	10	scfm	150	psig	150 (66)	FALSE	NE-2	N/A	N/A	
ogp11	air supply - primary film cooler wash nozzle purge, same connector as ogp02, ogp12	EO-2	ogp11	3/4	I	PA	4	scfm	20	psig	113 (45)	10	scfm	150	psig	150 (66)	FALSE	NE-2	N/A	N/A	
ogp12	air supply - primary film cooler wash nozzle blowdown, same connection as ogp02, ogp11	EO-2	ogp12	3/4	I	PA	10	scfm	100	psig	113 (45)	10	scfm	150	psig	150 (66)	FALSE	NE-2	N/A	N/A	
ogp14	air supply - primary film cooler, same connection as ogp01, ogp09	EO-2	ogp14	3	C	PA	155	scfm	100	psig	302 (150)	600	scfm	150	psig	302 (150)	FALSE	NE-2	Hiltap	Graylok	68
ogp15	air supply - primary offgas line wash nozzle purge, same connection as ogp05, and ogp10	EO-2	ogp15	3/4	I	PA	4	scfm	20	psig	113 (45)	10	scfm	150	psig	150 (66)	FALSE	NE-2	N/A	N/A	
ogs01	air supply - standby film cooler	WO-1	ogs01	3	C	PA	30/150	scfm	5	psig	113 (45)	150	scfm	150	psig	150 (66)	FALSE	NW-2	Hiltap	Graylok	
ogs02	water supply - standby film cooler wash nozzle, same connection as ogs08 ogs12	WO-1	ogs02	3/4	I	PW	3-4	gpm	50	psig	84 (29)	10	gpm	150	psig	360 (182)	FALSE	NW-2	Staubli	Staubli	
ogs03	air supply - standby offgas melter pressure measurement (R2)	WO-1	R2	3/8	C	IA-1	0.2	scfm	1	psig	113 (45)	0.2	scfm	150	psig	150 (66)	FALSE	NW-2	Staubli	Staubli	27
ogs06	water supply - standby offgas line wash, same connection as ogs11, ogs13	WO-1	ogs06	3/4	I	PW	3-4	gpm	50	psig	84 (29)	10	gpm	150	psig	360 (182)	FALSE	NW-2	Staubli	Staubli	
ogs07	power - standby offgas film cooler cleaner	WO-1	ogs07	N/A	Rare	E	5	A	480	V	N/A	N/A		N/A		N/A	FALSE	N/A	Lemo	N/A	
ogs08	air supply - standby film cooler wash nozzle blowdown, same connection as ogs02, ogs12	WO-1	ogs08	3/4	I	PA	10	scfm	100	psig	113 (45)	10	scfm	150	psig	150 (66)	FALSE	NW-2	N/A	N/A	
ogs09	offgas - standby line/film cooler	WO-1	ogs09	10 sch 80	C/U	OG	0	scfm	-5	in wc	113 (45)	4860	scfm	+10/-40	in wc	1112	FALSE	N/A	Hiltap	Hiltap	
ogs11	air supply - standby offgas line wash nozzle blowdown, same connection as ogs06, ogs13	WO-1	ogs11	3/4	C	PA	32	scfm	5	psig	113 (45)	50	scfm	150	psig	150 (66)	FALSE	NW-2	N/A	N/A	
ogs12	air supply - standby film cooler wash nozzle purge, same connection as ogs02, ogs08	WO-1	ogs12	3/4	I	PA	4	scfm	20	psig	113 (45)	10	scfm	150	psig	150 (66)	FALSE	NW-2	N/A	N/A	
ogs13	air supply - standby offgas line wash nozzle purge, same connection as ogs06, ogs11	WO-1	ogs13	3/4	I	PA	4	scfm	20	psig	113 (45)	4	scfm	150	psig	150 (66)	FALSE	NW-2	N/A	Staubli	
ogs15	air supply - melter ITS plenum pressure (R5)	WS-1	WS1	3/8	C	IA-1	0.2	scfm	1	psig	113 (45)	0.2	scfm	15	psig	113 (45)	FALSE	LWA	Staubli	Staubli	
ogs16	air supply - melter ITS shielding pressure reference (R6)	RB-6	RB6	3/8	C	IA-1	0.2	scfm	1	psig	113 (45)	0.2	scfm	15	psig	113 (45)	FALSE	LWA	Staubli	N/A	
por01	air supply - air lift/inlet purge gas, east	EA-2	EA2	1/2	I	IA-2	3	scfm	2	psig	113 (45)	3	scfm	5	psig	150 (66)	FALSE	LWA	Staubli	Staubli	14 52
por02	port - east discharge lid	N/A	por02	N/A	N/A	M	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	N/A	N/A	N/A	

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por04	port - east discharge kd cleanout/inspection plug	N/A	por04	N/A	Rare	M	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	N/A	N/A	N/A	
por05	port - west discharge kd cleanout/inspection plug	N/A	por05	N/A	Rare	M	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	N/A	N/A	N/A	
por06	port - east discharge kd spare plug	N/A	por06	N/A	Rare	M	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	N/A	N/A	N/A	
por07	port - west discharge kd spare plug	N/A	por07	N/A	Rare	M	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	N/A	N/A	N/A	
por08	vent - east discharge kd return to plenum	EO4	EO4	2	C	OG	58	acfm	-5	in wc	932 (500)	58	acfm	+10/-40	in wc	1112(600)	FALSE	N/A	N/A	Grayock	
por09	air supply - air lift/riser purge gas, west	WA-1	WA1	1/2	I	IA-2	3	scfm	2	psig	113 (45)	3	scfm	5	psig	150 (66)	FALSE	LWA	Staubli	Staubli	14 52
por10	port - west discharge kd	N/A	por10	N/A	N/A	M	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	N/A	N/A	N/A	
por14	argon supply - air lift/riser purge gas, east, same connection as por01	EA-2	por14	3/8	I	Ar	0.2	scfh	2	psig	113 (45)	0.2	scfh	5	psig	150 (66)	TRUE	LWA	N/A	N/A	14 66
por15	argon supply - air lift/riser purge gas, west, same connection as por09	WA-1	por15	3/8	I	Ar	0.2	scfh	2	psig	113 (45)	0.2	scfh	5	psig	150 (66)	TRUE	LWA	N/A	N/A	14 66
prm01	air supply - pressure measurement, east discharge chamber	ED-1	ED1	3/8	C	IA-2	0.2	scfh	1	psig	113 (45)	1	scfh	150	psig	150 (66)	FALSE	SE-1	Staubli	Staubli	
prm02	air supply - pressure reference, east discharge chamber	ED-2	ED2	3/8	C	IA-2	0.2	scfm	1	psig	113 (45)	0.2	scfm	150	psig	150 (66)	FALSE	SE-1	Staubli	N/A	
prm03	air supply - shielding annulus reference leg (R3)	R3	R3	3/8	C	IA-1	0.2	scfm	1	psig	113 (45)	0.2	scfm	1	psig	150 (66)	FALSE	LWA	Staubli	Staubli	
prm04	air supply - shielding annulus reference leg (R4)	R4	R4	3/8	C	IA-1	0.2	scfm	1	psig	113 (45)	0.2	scfm	1	psig	150 (66)	FALSE	LWA	Staubli	N/A	
prm05	air supply - pressure measurement, west discharge chamber	WD-1	WD1	3/8	C	IA-2	0.2	scfh	1	psig	113 (45)	1	scfh	150	psig	150 (66)	FALSE	SW-1	Staubli	Staubli	
prm06	air supply - pressure reference, west discharge chamber	WD-2	WD2	3/8	C	IA-2	0.2	scfh	1	psig	113 (45)	1	scfh	150	psig	150 (66)	FALSE	SW-1	Staubli	N/A	
tmp01	TC - east discharge assembly #1	N/A	tmp01	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	EDT	Lemo	Lemo	
tmp02	TC - east discharge assembly #2	N/A	tmp02	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	EDT	Lemo	Lemo	
tmp03	TC - glass pool/plenum assembly #01	WB-1	tmp03	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LWT	Lemo	Lemo	
tmp04	TC - glass pool/plenum assembly #10	CB-10	tmp04	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LWT	Lemo	Lemo	
tmp05	TC - glass pool/plenum assembly #11	CB-11	tmp05	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LET	Lemo	Lemo	
tmp06	TC - glass pool/plenum assembly #12	CB-12	tmp06	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LET	Lemo	Lemo	
tmp07	TC - glass pool/plenum assembly #13	CB 13	tmp07	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LET	Lemo	Lemo	
tmp08	TC - glass pool/plenum assembly #14	EB-14	tmp08	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LET	Lemo	Lemo	
tmp09	TC - glass pool/plenum assembly #16	EB-16	tmp09	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LET	Lemo	Lemo	
tmp10	TC - glass pool/plenum assembly #17	EB-17	tmp10	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LET	Lemo	Lemo	
tmp11	TC - glass pool/plenum assembly #18	EB-18	tmp11	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LET	Lemo	Lemo	
tmp12	TC - glass pool/plenum assembly #02	WB-2	tmp12	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LWT	Lemo	Lemo	
tmp13	TC - glass pool/plenum assembly #03	WB-3	tmp13	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LWT	Lemo	Lemo	
tmp14	TC - glass pool/plenum assembly #04	WB-4	tmp14	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LWT	Lemo	Lemo	

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tmp15	TC - glass pool/plenum assembly #05	WB-5	tmp15	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LWT	Lemo	Lemo	
tmp16	TC - glass pool/plenum assembly #06	CB-6	tmp16	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LWT	Lemo	Lemo	
tmp17	TC - glass pool/plenum assembly #07	CB-7	tmp17	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LWT	Lemo	Lemo	
tmp18	TC - glass pool/plenum assembly #08	CB-8	tmp18	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LWT	Lemo	Lemo	
tmp19	TC - glass pool/plenum assembly #09	CB-9	tmp19	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LET	Lemo	Lemo	
tmp20	TC - refractory	CT-1	CT-1	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LET	Lemo	Lemo	
tmp21	TC - startup #1	CS-3	CS3	N/A	CIU	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LWT	Lemo	Lemo	6
tmp22	TC - startup #2	CS-6	CS6	N/A	CIU	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LWT	Lemo	Lemo	6
tmp23	TC - west discharge #1	N/A	tmp23	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	WDT	Lemo	Lemo	
tmp24	TC - west discharge #2	N/A	tmp24	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	WDT	Lemo	Lemo	
tmp25	TC - glass pool/plenum assembly #15	EB-15	tmp25	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	LET	Lemo	Lemo	
tmp26	T/C - east discharge auxiliary heater	N/A	tmp26	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	EDT	Lemo	N/A	
tmp27	T/C - west discharge auxiliary heater	N/A	tmp27	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	WDT	Lemo	N/A	
vew01	air supply - cctv cooling, northwest plenum	WV-2	WV2	3/8	C	IA-2	10	scfm	5	psig	113 (45)	20	scfm	5	psig	150 (66)	TRUE	WN-2	Staubli	Staubli	
vew02	power - cctv, northwest plenum	N/A	vew02	N/A	C	E	1	A	24	V	N/A	1	A	120	V	N/A	FALSE	WNE	Lemo	Lemo	
vew03	air supply - cctv purge, northwest plenum	WV-1	WV1	3/4	C	IA-2	17	scfm	5	psig	113 (45)	20	scfm	15	psig	150 (66)	FALSE	WN-2	Staubli	Staubli	
vew04	signal - cctv, northwest plenum	N/A	vew04	N/A	C	E	note		1	V	N/A	N/A		N/A		N/A	FALSE	WNE	Lemo	Lemo	57
vew05	air supply - cctv cooling, northeast plenum	EV-2	EV2	3/8	C	IA-2	10	scfm	5	psig	113 (45)	20	scfm	5	psig	150 (66)	TRUE	EN-2	Staubli	Staubli	
vew06	power - cctv, northeast plenum	N/A	vew06	N/A	C	E	1	A	24	V	N/A	1	A	120	V	N/A	FALSE	ENE	Lemo	Lemo	
vew07	air supply - cctv purge, northeast plenum	EV-1	EV1	3/4	C	IA-2	17	scfm	5	psig	113 (45)	20	scfm	15	psig	150 (66)	FALSE	EN-2	Staubli	Staubli	
vew08	signal - cctv, northeast plenum	N/A	vew08	N/A	C	E	note		1	V	N/A	N/A		N/A		N/A	FALSE	ENE	Lemo	Lemo	57
vew09	air supply - cctv cooling, southwest plenum	WV-4	WV4	3/8	C	IA-2	10	scfm	5	psig	113 (45)	20	scfm	5	psig	150 (66)	TRUE	WS-2	Staubli	Staubli	
vew10	power - cctv, southwest plenum	N/A	vew10	N/A	C	E	1	A	24	V	N/A	1	A	120	V	N/A	FALSE	WSE	Lemo	Lemo	
vew11	air supply - cctv purge, southwest plenum	WV-3	WV3	3/4	C	IA-2	17	scfm	5	psig	113 (45)	20	scfm	15	psig	150 (66)	FALSE	WS-2	Staubli	Staubli	
vew12	signal - cctv, southwest plenum	N/A	vew12	N/A	C	E	note		1	V	N/A	N/A		N/A		N/A	FALSE	WSE	Lemo	Lemo	57
vew13	air supply - cctv cooling, southeast plenum	EV-4	EV4	3/8	C	IA-2	10	scfm	5	psig	113 (45)	20	scfm	5	psig	150 (66)	TRUE	ES-2	Staubli	Staubli	
vew14	power - cctv, southeast plenum	N/A	vew14	N/A	C	E	1	A	24	V	N/A	1	A	120	V	N/A	FALSE	ESE	Lemo	Lemo	
vew15	air supply - cctv purge, southeast plenum	EV-3	EV3	3/4	C	IA-2	17	scfm	5	psig	113 (45)	20	scfm	15	psig	150 (66)	FALSE	ES-2	Staubli	Staubli	
vew16	signal - cctv, southeast plenum	N/A	vew16	N/A	C	E	note		1	V	N/A	N/A		N/A		N/A	FALSE	ESE	Lemo	Lemo	57

Tag	Description	Temp Conn ID	Melter Nozzle Tag	Line/ Wire Size (in)	Ops Mode (13)	Service Type (12)	Nominal Flow/Amp	Nom F/A Unit	Nominal Pres/Volt	Nom P/V Unit	Nom Temp F (C)	Design Flow/Amp	Des F/A Unit	Design Pres/Volt	Des P/V Unit	Des Temp F (C)	Critical Srvc	Connect Box Number	External Style (10)	Internal Style	Notes
vew17	power - cctv purge air heater, northwest	N/A	vew17	#10	C	E	27.3	A	220	V	N/A	27.3	A	220	V	N/A	FALSE	WNE	Lemo	Lemo	
vew18	TC - northwest cctv purge heater temperature	N/A	vew18	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	WNE	Lemo	Lemo	
vew19	TC - northeast cctv purge heater temperature	N/A	vew19	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	ENE	Lemo	Lemo	
vew20	power - cctv purge air heater, southwest	N/A	vew20	#10	C	E	27.3	A	220	V	N/A	27.3	A	220	V	N/A	FALSE	WSE	Lemo	Lemo	
vew21	TC - southwest cctv purge heater temperature	N/A	vew21	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	WSE	Lemo	Lemo	
vew22	power - cctv purge air heater, southeast	N/A	vew22	#10	C	E	27.3	A	220	V	N/A	27.3	A	220	V	N/A	FALSE	ESE	Lemo	Lemo	
vew23	TC - southeast cctv purge heater temperature	N/A	vew23	N/A	C	TC	N/A		N/A		N/A	N/A		N/A		N/A	FALSE	ESE	Lemo	Lemo	
vew24	power - cctv purge air heater, northeast	N/A	vew24	#10	C	E	27.3	A	220	V	N/A	27.3	A	220	V	N/A	FALSE	ENE	Lemo	Lemo	
vew25	air supply - west discharge, west air knife	lower	vew25																		38
vew26	air supply - east discharge, east air knife	lower	vew26																		38
vew27	air supply - east discharge, west air knife	upper	vew27																		38
vew28	air supply - west discharge, east air knife	upper	vew28																		38
vew29	air supply - gamma detector cooling, west seal head	N/A	vew29																		38
vew30	air supply - gamma detector cooling, east seal head	N/A	vew30																		38
vew31	air supply - cctv purge, west discharge pour stream	N/A	vew31																		38
vew32	air supply - cctv cooling, west discharge pour stream	N/A	vew32																		38
vew33	air supply - cctv purge, west seal head	N/A	vew33																		38
vew34	air supply - cctv cooling, west seal head	N/A	vew34																		38
vew35	air supply - ir cctv cooling, west seal head	N/A	vew35																		38
vew36	air supply - ir cctv purge, west seal head	N/A	vew36																		38
vew37	air supply - cctv purge, east discharge pour stream	N/A	vew37																		38
vew38	air supply - cctv cooling, east discharge pour stream	N/A	vew38																		38
vew39	air supply - cctv purge, east seal head	N/A	vew39																		38
vew40	air supply - cctv cooling, east seal head	N/A	vew40																		38
vew41	air supply - ir cctv cooling, east seal head	N/A	vew41																		38
vew42	air supply - ir cctv purge, east seal head	N/A	vew42																		38
vnt01	vent - west discharge lid return to plenum	W03	W03	2	C	OG	58	acfm	-5	in wc	932 (500)	58	acfm	+10/-40	in wc	1112 (600)	FALSE	N/A	N/A	Graylok	
vnt04	vent - annular space contamination control, exhaust	N/A	vnt04	12 x 17	C	Vent	1300	scfm	-2	in wc	59-113 (15-45)	1500	scfm	-2	in wc	59-113 (15-45)	FALSE	N/A	Custom 12 x 17 flange with bolts. See WTP-M-11751-14	N/A	18
vnt05	vent - annular space contamination control, supply	N/A	vnt05	12 x 17	C	Vent	1500	scfm	-2	in wc	59-113 (15-45)	1500	scfm	-2	in wc	59-113 (15-45)	FALSE	N/A	Custom 12 x 17 flange with bolts. See WTP-M-11751-14	N/A	18

Notes (numbers not shown have been deleted and are not referenced in the table):

1 Cooling water supply temperature is to be greater than melter gallery air temp to prevent condensation
6 Installed only during melter startup
10 See assembly drawings for connector details and part numbers.
11 Discharge chamber auxiliary heaters not normally connected. Heater to be used for pour flange glass blockage recovery only.
12 Nominal return temperature for normal feeding mode late in melter life with 50% glass contact refractory loss, range for all 5 PFD operating modes in parenthesis
13 Nominal return temperature for normal melter idling mode.
14 Air lift discharges are operated intermittently one at a time. Argon is purged through the air lift at 0.2 SCFH when glass is not being discharged
18 Shielded lid and wall module contamination control air exhausts are combined as "shield vent" exhaust air. vnt05 comes from wet process cell, vnt04 goes to C5 exh
19 See list below for description of service types and associated service qualities.
24 N/A = Not Applicable
27 Attached to standby offgas port.
28 Cooling air will be exhausted into the melter cave
29 Bubbler and start-up heaters fit same lid nozzles
30 Frit addition and feed nozzles fit same lid nozzles
33 Maximum temperature
35 May include water flush for film cooler
36 Included in pressure control air injection
37 Temperature may be higher if film cooler and air injection stops during pressure trip
38 Data is determined by Bechtel and defined in other design documents
39 Routing of air injection may be through the melter lid in which case it is an interface. If it is connected to the off-gas jumper its is not an interface
40 Seal pot or trap required
44 Temperatures assume 50 scfm cooling to side electrodes, 50 scfm to bottom electrode if cooled (bottom electrode normally not cooled), and 10 scfm cooling for side and bottom electrode extensions.
45 Design pressures based on maximum system pressures developed in the IA system, will need to get from SD or contractor P&ID (Project Reference)
48 Design temperature of the pipe/connection, with the potential for water to boil to create steam
49 Based on strict definition of B31.3. The cooling water system is "suspect radioactive" and may require more rigorous fabrication and inspection requirements
50 Once every four hours the feed lines are flushed - once through. This occurs for each of the six ADS pumps/feedlines or 1.5gph per melter
51 Startup from idle, once through water (for 30 min. use w/ 2 nozzles), use about once per month per melter (this is a guess based on bubbler replacement schedule)
52 Air flows during pours only, approximately 1 hour every 3 hours. Argon used as a continuous purge, even during pours (about 1 scfh)
53 Air flows during pours only, approximately 30 minutes every 3 hours. Argon used as a continuous purge, even during pours (about 1scfh).
54 Water used to "cool" plenum after an idle condition. Flow from only 1 nozzle required, duration approximately 30 minutes.

55 Signal is digital. RS 485 or 232.
57 Video signal format is "S-Video".
58 Criteria for this service defined by contractor, not subcontractor.
60 This is not a design interface between the contractor and subcontractor.

62 Vendor product shown is prefered. However, a contractor-approved equal may be acceptable.
63 See subcontractor assembly drawings for precise locations. Locations shown are for quick reference on the connections deemed the most critical.

64 Process values are based on pilot melter data and design development by subcontractor. Actual melter operating/design criteria may vary based on final services system design by project.
65 Service connection with no "CONN ID" were not given a unique tag number by the subcontractor.
66 This critical service can be halted long enough to change the supply source.
67 This critical service can be halted for a maximum of 3 hrs before irreparable damage may occur.
68 Not considered a critical service. However, loss of air may result in component failure after roughly 8-12 hours.

Operations Modes:

C Continuous
CIU Continuous if used
I Intermittent and likely use
Rare Not used except under special conditions or very infrequently

Service Types:

Ar Argon. Welding grade
CW-1 Cooling Water. Demineralized, filtered <2 microns, biocide additions allowed, no corrosion inhibitors, chlorides <40 ppm, sulfate <100ppm. TDS <340ppm, TSS <300ppm, total hardness <170ppm
CW-2 Cooling Water. Same as CW-1 except for having a specific conductivity <200 micromhos/cm
DR Drain
E Electrical
Feed Melter Feed
IA-1 Instrument Air. Per ANSI/ISA-S7.0.01-1996.
IA-2 Instrument Air. Same as IA-1 with final point-of-use filter to remove water, particulate, aerosols, and reduce total hydrocarbon content to <1ppm v/v methane basis.
LS Limit Switch
M Mechanical
OG Off-Gas
PA Plant Service Air. Oil free, dew point 33-39F, filter to 2 microns.
PW Process Water. Raw river water filtered to 2 microns. Recommend analysis for various times of the year be reviewed so dissolved species contents are known.
TC Thermocouple
Vent C5 Ventilation.

Appendix B- Melter Design Interface Details

Melter Engineering Specification Appendix Note:

The data in this appendix are based on experience from pilot melters and other operating units. This data was gathered early in the project and used as a guide for design of surrounding utilities. The values should not be used directly as input since in many cases the design has continued to evolve and there may be inconsistencies between issued design documents and values in these tables. Instead, refer to the appropriate design media, e.g. P&IDs, melter design drawings, melter design calculations, or other system calculations. These data may be used as an assumption for performing calculations but the assumption will require verification by the calculation where it was used or other design media.

Tag	Component (2, 3)	Interface Detail(2, 3)	Interface Criteria	System/Area	Comments
enc65	access panel - cooling water	weight of component	170 lb maximum	LSH	several cooling panel covers exist, the maximum value is used
enc63	access panel - discharge chamber shielded lid	weight of component	1020 lb approximate	LSH	
enc64	access panel - electrode bus	weight of component	100 lb maximum	LSH	several electrode panels exist, the maximum value is used
enc62	access panel - offgas, film cooler, primary and standby	weight of component	1000 lb approximate	LSH	
enc68	access panel - shielded lid large port	weight of component	175 lb approximate	LSH	
agi11	access panel - shielded lid large port (including bubblers)	shielded lid interface detail with project replacement equipment	dowel pins 1.5" dia. - 6UNC, spacing and hole locations per the project reference drawings, alignment via two, 3/8" alignment rods 175 degrees apart to match the CCB, gamma gate (exception - bubbler port EB18 has 2, 1-1/4" - 7 UNC)	LSH	
enc69	access panel - shielded lid small port	weight of component	20 lb approximate	LSH	
enc67	access panel - shielded lid vent cover	weight of component	210 lb approximate	LSH	
enc66	access panel -jack bolt (maximum)	weight of component	160 lb approximate	LSH	several jack bolt cover sizes exist, the maximum value is used
enc41	access panels- feed line junction box	weight of component	75 lb approximate	LSH	
agi13	bubbler	dimensions - envelope	20" dia. X 117" long	LSH	length from bottom of bubbler to top of cover (106.5") plus length of ball lock on top of cover plate (6")
agi03	bubbler	maintenance handling criteria	Bubbler to be replaced via CCB/gamma gate after manually unplugging thermocouple. Use of ball lock assembly to match CCB device. Air to be supplied continuously during insertion into melt pool.	LSH	required to meet the bubbler orientation established in agi12. Glass contact consumable
agi02	bubbler	operating life (predicted)	6 months (incl. thermocouples)	LSH	
agi12	bubbler	orientation	E-W direction, 180 degrees apart	LSH	
agi09	bubbler	shielded lid inner guide tube inside diameter	20.5" I. D.	LSH	
agi10	bubbler	shielded lid large port counter bore inner diameter	21.5" I. D. at 1/2" depth	LSH	
agi07	bubbler	weight of component	760 lb approximate	LSH	Bubbler weight provided without addition of air cylinder and subsequent equipment
vew07	cctv - for melter plenum	dimensions - envelope	14" dia. X 36" long	LSH	
vew03	cctv - for melter plenum	maintenance handling criteria	CCTV and view port to be independently replaceable (non-routine). Maintenance to be hands-on.	LSH	no specific lifting features incorporated into the design

Tag	Component (2, 3)	Interface Detail(2, 3)	Interface Criteria	System/Area	Comments
vew02	cctv - for melter plenum	operating life (predicted)	life of melter	LSH	
vew09	cctv - for melter plenum	weight of component	85 lb approximate	LSH	
enc55	consumables	weight of component	650 lb (maximum - for melter lid components only, excluding film cooler assemblies)	LSH	
enc56	consumables	dimensions - maximum (lid components only, excluding film cooler assemblies)	20" dia. X 125" long	LSH	Maximum envelope dimensions imposed on Duratek consumable design to accommodate project replacement equipment for lid components only (excluding film cooler assemblies). Based on a 1/4" radial clearance
fed28	consumables - small consumables	shielded lid inner guide tube counter bore	8.5" I.D. at 1/2" depth	LSH	includes feed nozzles, level detector, pressure probe (ITS), glass riser air lift lance, spare plugs, refractory thermowell/thermocouple, startup thermowell/thermocouple
fed27	consumables - small consumables	shielded lid inner guide tube inside diameter	7.5" I.D.	LSH	see fed28, dimension taken from the feed line nozzle, same dimension for all other small consumables
enc24	datum point - melter reference	melter datum point - description of physical location (x,y,z location from which all melter dimensions originate from)	centerline of the melter north-west seismic pin, top of rail, physical dimensions from column lines shown on project drawing reference	20	
enc92	discharge chamber	shielding thickness requirements	enclosure plate thickness (including penetration access panels) on all external faces of melter discharge chambers shall be a minimum of 2 inches.		
enc59	discharge chamber lid	maintenance handling criteria	a changeout box, built exclusively for the discharge chamber consumables, will be provided by contractor. Part of the weight of the changeout box will rest on the melter shielded lid. The vertical distance from top of the discharge chamber shielded lid to the melter shielded lid is 36.75"	LSH	
por39	discharge chamber lid with heaters	dimensions - envelope	42" (N-S) X 32.5" (E-W) X 80" high	LSH	height includes the lifting bail
por06	discharge chamber lid with heaters	maintenance handling criteria	four pick points, one on each corner of the lid	LSH	definition of specialty lifting equipment unknown, issues with guides and other equipment not resolved
por05	discharge chamber lid with heaters	operating life (predicted)	life of melter	LSH	based on continuous heater operation
por41	discharge chamber lid with heaters	weight of component	1170 lb approximate	LSH	
por110	discharge chamber pressure probe - lid plug, 4"	dimensions - envelope	7" dia. X 26.15" long	LSH	length does not include the wire rope lifting bail, lid plug used to measure the pressure in the discharge chamber
env85	discharge chamber shielded cover plate	maintenance handling criteria	4 pick points (folding bails) one in each corner	LSH	

Tag	Component (2, 3)	Interface Detail(2, 3)	Interface Criteria	System/Area	Comments
ogs53	discharge chamber vent insert	dimensions - envelope	7" dia. X 72.5" long	LSH	
ogs51	discharge chamber vent insert	maintenance handling criteria	vertical lift with overhead device, lifting bail on component after removal of vent line	LSH	
ogs50	discharge chamber vent insert	operating life (predicted)	life of melter	LSH	
ogs52	discharge chamber vent insert	weight of component	70 lb approximate	LSH	
ogs57	discharge chamber vent line	dimensions - envelope	discharge chamber section - 28" X 16" X 12", middle section - 48" X 12" X 12", lid section - 36" X 18" X 12"	LSH	dimension does not include the lifting bail
ogs54	discharge chamber vent line	operating life (predicted)	life of melter	LSH	
ogs56	discharge chamber vent line	weight of component	discharge chamber section - 62 lb, middle section - 55 lb, lid section - 48 lb (all approximate weights)	LSH	
ogs55	discharge chamber vent line - discharge chamber section, middle section, plenum section	maintenance handling criteria	welded lug attachments to accommodate overhead lifting device	LSH	vent line sections attached with graylok flanges
enc61	discharge chamber, shielded lid	shielded lid interface detail with project replacement equipment	dowel pins 1.5" dia. - 6 UNC, spacing and hole locations per the project reference drawings	LSH	restraint point locations on the shielded lid for the discharge chamber CCB, support provided by the shielded lid
enc49	drain for annulus space	location from datum	center of flange, raised face from datum: gas barrier - 137.76"E, 8.15" S, 15.81" up; annular space - 115.51"E, 8.15"S, 15.81" up	RLD	
env56	facility rails	centerline to centerline dimension	28'-4"	LMH	
env54	facility rails	deflection limits - maximum wheel travel	0.0625" - combined deflection and surface discontinuities	LMH	
env55	facility rails	finish/coating/heat treating/physical properties	Alloy steel 4340 (100 ksi yield) head hardened, 55-60 Rc	LMH	
env59	facility rails	maximum rail gap	1/4"	LMH	
env60	facility rails	size	rail height - 3'-11.125" elevation, rail width - 6"	LMH	
env61	facility rails	tolerance, straightness	rails shall be straight to within 0.040" per 16' of rail length in both directions	LMH	
fed12	feed nozzle	dimensions - envelope	7.5" dia. X 68.65" long	LSH	envelope length includes ball lock lifting assembly, envelope diameter includes the tadpole gasket (.25" dia.)
fed08	feed nozzle	maintenance handling criteria	ball lock assembly, 1" diameter, 4-ball	LSH	equipment used for removal determined by project, this component is not a glass contact item
fed07	feed nozzle	operating life (predicted)	life of melter	LSH	water cooled feed nozzle
fed16	feed nozzle	weight of component	149 lb approximate	LSH	
fed19	feed nozzle - glass frit addition	dimensions - envelope	12" dia. X 78" long	LSH	length does not include the lifting bail , diameter does not include the valve

Tag	Component (2, 3)	Interface Detail(2, 3)	Interface Criteria	System/Area	Comments
fed22	feed nozzle - glass frit addition	maintenance handling criteria	vertical lift with overhead device, lifting bail on component	LSH	equipment used for removal determined by project, this component is not a glass contact item
fed03	feed nozzle - glass frit addition	operating life (predicted)	temporary component, can be re-used since it is not exposed to radioactive material	LSH	
fed21	feed nozzle - glass frit addition	weight of component	110 lb approximate	LSH	
ogs13	film cooler - primary and standby	dimensions - envelope	28" X 50" X 64"	LSH	
ogs65	film cooler - primary and standby	maintenance handling criteria	non-routine maintenance activity, use of temporary rigging and strapping methods	LSH	
ogs03	film cooler - primary and standby	operating life (predicted)	life of melter	LSH	based on proper operation of the spray nozzles
ogs15	film cooler - primary and standby	weight of component	1300 lb approximate	LSH	weight includes transition piece, film cooler, wash nozzle, and bellows assembly. Will replace entire assembly rather than individual components
ogs66	film cooler - standby	functional requirements	1) keep port clean during slurry feeding so it is available to ventilate gases in upset. 2) provide cooling air for bypass idling.	LMP/LOP	
ogs47	film cooler - transition piece	maintenance handling criteria	non-routine maintenance activity, use of temporary rigging and strapping methods	LSH	transition piece to be replaced with the film cooler (one unit) if necessary. Life of melter component. Considered non-routine maintenance activity.
ogs46	film cooler - transition piece	operating life (predicted)	life of melter	LSH	
ogs17	film cooler cleaner	dimensions - envelope	4' X 4' X 15' high	LSH	
ogs08	film cooler cleaner	maintenance handling criteria	to be verified after completion of actual melter design	LSH	film cooler cleaner to be installed above the film cooler after removal of the water spray nozzle. Cleaner is only to be installed if persistent clogging cannot be resolved by other methods
ogs07	film cooler cleaner	operating life (predicted)	temporary component, used only when film cooler is blocked	LSH	installed to the film cooler only if necessary
ogs19	film cooler cleaner	weight of component	less than 5500 lb	LSH	
ogs45	film cooler spray nozzle	dimensions - envelope	10.12" dia. X 49" long, excludes pipe elbows on the top flange	LSH	envelope diameter includes 1" long shoulder screws to attach the lifting bail, actual flange diameter is 8.12". Pipe elbows are excluded from the overall assembly length
ogs43	film cooler spray nozzle	maintenance handling criteria	vertical lift with overhead device, lifting bail on component	LSH	
ogs42	film cooler spray nozzle	operating life (predicted)	12 months	LSH	
ogs44	film cooler spray nozzle	weight of component	150 lb maximum	LSH	
plv07	glass pool level detector/density probe/primary pressure probe	dimensions - envelope	7.5" dia. X 122.12" long	LSH	includes glass level detector, density probe and primary pressure probe in one consumable assembly. Length includes the ball lock lifting assembly, envelope diameter includes the tadpole gasket (.25" thick)

Tag	Component (2, 3)	Interface Detail(2, 3)	Interface Criteria	System/Area	Comments
plv03	glass pool level detector/density probe/primary pressure probe	maintenance handling criteria	ball lock assembly, 1" diameter, 4-ball, project to utilize CCB/gamma gate for replacement	LSH	includes glass level detector, density probe and primary pressure probe in one consumable assembly. Equipment used for removal to be determined by project. This component is glass contacting
plv02	glass pool level detector/density probe/primary pressure probe	operating life (predicted)	12 months	LSH	includes glass level detector, density probe and primary pressure probe in one consumable assembly
plv09	glass pool level detector/density probe/primary pressure probe	weight of component	131 lb approximate	LSH	includes glass level detector, density probe and primary pressure probe in one consumable assembly
por48	glass riser airlift lance	dimensions - envelope	6.9" dia. X 109 " long	LSH	envelope diameter includes the tadpole gasket (25" thick), envelope length includes ball lock assembly and ball lock support structure
por12	glass riser airlift lance	maintenance handling criteria	ball lock assembly, 1" diameter, 4-ball, project to utilize CCB/gamma gate for replacement	LSH	Equipment used for removal to be determined by project. This component is glass contacting
por96	glass riser airlift lance	operating life (predicted)	life of melter	LSH	
por50	glass riser airlift lance	weight of component	110 lb approximate	LSH	
por112	lid plug, 4", discharge chamber	maintenance handling criteria	vertical lift with overhead device, lifting bail on component	LSH	device used to monitor pressure within the discharge chamber. Not a glass contact component
por111	lid plug, 4", discharge chamber pressure probe	weight of component	40 lb approximate	LSH	lid plug used for measuring the pressure in the discharge chamber
por97	lid plug, 6", discharge chamber	dimensions - envelope	8.25" dia. X 30 " long	LSH	envelope length includes the wire rope lifting bail, plug to be used for inserting camera if necessary
por99	lid plug, 6", discharge chamber	maintenance handling criteria	vertical lift with overhead device, lifting bail on component	LSH	device used as a spare port for insertion of camera if necessary, not a glass contact component
por98	lid plug, 6", discharge chamber	weight of component	73 lb approximate	LSH	
env86	lifting bails	jackbolt cover plates	threaded insert for eye bolt	LSH	this is typical for the jack bolt covers
env35	lifting lugs on melter shell	configuration	lifting lugs (10) to be located on melter base on each end at the wheel support assemblies (5 per side).	LMP/LMH	
enc91	melter - enclosure	shielding thickness requirements	enclosure plate thickness (including penetration access panels) on all external faces of the melter shall be a minimum of 1 inch, except for the top surface plates directly above the film coolers, which shall be a minimum of 2 inches. The thicker plate above the film coolers shall extend a minimum of 1 foot from the centerline of the film coolers in all directions.		
env28	melter - general	castable refractory - allowable sit times before bakeout	1 year minimum with green castables	LMP	

Tag	Component (2, 3)	Interface Detail(2, 3)	Interface Criteria	System/Area	Comments
env21	melter - general	center of gravity	empty melter, W - 170", S - 116", Up - 82"; glass-filled melter, W - 170", S - 116", Up - 81"; grouted melter, W - 170", S - 114", Up - 95"	LMP/LMH	all dimensions with respect to the centerline of the east seismic pin at the top of the rail. (W - west, S - south)
gls10	melter - general	corrosion rate limits - refractory	<1.0 in/yr of K-3, measured at refractory coupon half down coupon at ~1200°C by the modified ASTM C621 method	LMP	
env22	melter - general	dimensions - envelope	262" long X 367" wide X 190" high	LMP/LMH	overall melter dimensions when the melter is in its final location, includes the seismic restraints, bus bars, and discharge chambers.
env19	melter - general	external loads induced on melter shell and structure	feed lines (slurry) routed in enclosure (tray) to be mounted to the face of the melter shield at north-east corner.	LMP/LFP	
enc19	melter - general	use of common nozzles between operating modes	spare exterior small ports used for frit addition, spare interior small ports used for startup thermocouples, bubbler ports used for start-up heaters during melter start-up	LMP	
env01	melter - general	weight of melter	empty - 594,319 lb; max glass level - 632,819 lb; grouted - 953,927 lb (all approximate)	LMH	
mab01	melter - general	welding of melter lid to melter wall modules	approximate: C-276 or alloy 690 - 110' scam weld 1/8" fillets (non-structural); A36 - 200' full pen welds 1" base metal; A36 - 45' 1/4" fillet weld on 1/4" base metal; A36 to SS (300 series) 200' fillet welds up to 1/4"	LMP	
env93	melter - lid	lifting/flipping attachment configuration	lifting lugs attached to lid suitable for flipping	LMH	
env92	melter - lid	lifting/flipping criteria	lid must be designed to be flipped 180 degrees after castable refractory is installed without damage to refractory.	LMH	based on the castables formed and poured with the lid flipped 180 degrees
env94	melter - lid	lifting/flipping loads	Lifting lug design and lifting and handling methods must comply with WTP site rigging and handling requirements.	LMH	
enc18	melter - lid	number and sizes of spare ports	8 spare ports (6" dia.) provided on the lid.	LMP	5 ports for refractory viewing, 2 ports for start up thermocouples, 1 port for spare pressure indicator with utilities. TQ-143 identifies 9 spare ports but one of these (WS-1) will be utilized for the ITS pressure probe
env95	melter - lid	top surface elevation	19'-9"	LMH	
vnt04	melter - operation	C5 ventilation system supply air flow during normal operations (see comments)	1500 ACFM	C5V	air flow only required for contamination control. Normal operations defined as start up, feeding, pouring, and idle melter conditions
gls01	DELETED				
gls07	DELETED				

Tag	Component (2, 3)	Interface Detail(2, 3)	Interface Criteria	System/Area	Comments
gls11	DELETED				
gls13	DELETED				
por42	DELETED				
htg26	DELETED				
gls16	DELETED				
ogs62	melter - operation	injection gases to primary film cooler during idling, (normal mode)	30-50 scfm (cold) air	LMP/PSA	
ogs63	melter - operation	injection gases to primary film cooler during slurry feeding	steam flow =200 kg/h; air flow =325 kg/h. Mixed gas shall be conditioned to avoid condensed water. Maximum mixed gas volume = 450 ACFM, approx. 150°C	LMP/PSA/SCW	
ogs64	melter - operation	injection gases to standby film cooler during slurry feeding, idling, bypass idling	air only: 30-50 scfm (cold air) during slurry feeding and idling; 100-150 scfm (cold air) during idling bypass mode.	LMP/PSA	
ogs30	melter - operation	offgas airflow - nominal airflow downstream of film cooler	1056 acfm @ 315 deg C	LOP	airflow for worst case envelope C
ogs28	melter - operation	offgas airflow - nominal airflow upstream of film cooler	760 scfm @ 400 deg C	LOP	worst case with envelope C
ogs41	melter - operation	offgas in-leakage	289 scfm at -5" w.c. for new melter	LOP/C5V	
ogs21	DELETED				
ogs23	melter - operation	offgas temperature in plenum - during idle conditions	~2100°F (1150°C) nominal	LOP	this is the glass temperature at idle conditions
ogs22	melter - operation	offgas temperature in plenum - normal feeding operations - before film cooler	752°F (400°C) nominal	LOP	plenum temperature, off-gas entering film cooler
tmp03	melter - operation	temperature of melter lid surface (maximum)	95°F. Small surface areas (less than 2' square) immediately above the film coolers that exceed 95°F are acceptable.	LSH	
tmp04	melter - operation	temperature of melter surfaces other than lid (maximum)	140°F, except the discharge chamber lid which is at 210°F (maximum)	LSH	
vnt08	melter - operation	ventilation - air in-leakage from gallery into melter annular spaces	none - access ports are provided with seals	C3V/C5V	
vnt11	melter - operation	ventilation - air in-leakage from melter annular spaces into plenum	296 ACFM, 254 SCFM	C5V/LOP	
vnt03	melter - operation	ventilation - airflow face velocity through penetrations	200 linear feet per minute - minimum	C3V/C5V	
vnt01	melter - operation	ventilation - melter annular space ventilation criteria	sufficient air extraction rate to maintain inflow rate requirement of VNT03 while a single shielded lid plug is removed (bubbler, etc). Discharge heater or film cooler replacement (non-routine maintenance) require temporary containment. This criteria does not apply during startup for jack-bolt panels.	C5V	to maintain sufficient face velocity (200 fpm) across the melter shielded lid openings during maintenance activities
vnt22	melter - operation	ventilation system (C5) exhaust air flow during normal operations (see comments)	1200 ACFM exhaust flow, 1500 ACFM supply to melter annulus	C5V	air flow only required for contamination control. Normal Operations defined as start up, feeding, pouring, and idle melter conditions

Tag	Component (2, 3)	Interface Detail(2, 3)	Interface Criteria	System/Area	Comments
vnt06	melter - operation	ventilation system (C5) exhaust air flow during other modes w/high demands	1893 ACFM; 1060 SCFM	C5V	air flow only required for contamination control. Based on offgas failure case noted in the reference
vnt10	melter - operation	ventilation system (C5) exhaust air flow from panel removal/ component changeout	1606 SCFM, 1676 ACFM	C5V	air flow only required for contamination control. Based on an opening size of 1400 in^2
res02	melter - seismic	loads on seismic restraints	176,162 lbs. For the N-S and E-W direction, total load each direction, includes 10% contingency	20	Seismic loads developed in melter must be conveyed to project for design of building restraints
res03	melter - seismic	location of seismic restraints	N-S seismic restraints to be located on the north end of the melter wheel trucks (total of 2 locations). E-W seismic restraints located along wheel trucks between wheels (total of 10 locations).	LMH	Seismic
res04	melter - seismic	quantity of seismic restraints	total of 12, 10 east-west, 2 north-south	LMH	
enc90	melter - seismic	seismic restraint bracket envelope	E-W seismic restraints clamp to outside of rails, and accommodate maximum thermal growth between rails of 0.25". N-S seismic restraint brackets are pinned to rail at 15'-5.68" from building grid F on rail centerlines. Shim packs will be used to hold the north face of the wheel truck assembly nominally 8"south of the pin centerline. Bracket shall allow for maximum of +1/2" adjustment from nominal dimension.	LMH	
res01	melter - seismic	seismic restraint interface configuration	N-S: pin in rail through slotted hole in bracket on north end of melter truck. Bracket is attached (on east side replaces guide roller bracket) once melter is rolled into place. Gap between end truck and bracket is filled with shims and bolts are tightened. E-W: Belleville Spring-loaded clamps on rails are fitted to melter chassis after melter is in position and tightened after final N-S position is fixed.;	LMH	
res08	melter - seismic	seismic restraint N-S pin size	3.5" X 3.5" square pin, utilize a 4.5" slotted hole. Pin projection above rail 2 7/8".	LMH	pin size and shape changed from 3" diameter to 3.5" square configuration
env38	melter - transport	clearance criteria for transport through facility	8" minimum under the melter, 2" minimum clearance under the melter transport pulley assembly	LMH	
env43	melter - transport	max allowable acceleration/ deceleration x/y/z (new melter only)	0.1 g	LMH	
env44	melter - transport	max relative vertical racking during transport (new melter only)	1/16 inch (corner to corner)	LMH	
env87	melter - transport	maximum melter width dimension for transport through facility, i.e.- door clearance	358.5"	LMH	Maximum dimension includes guide rollers, does not include seismic restraints. Seismic restraints installed when melter is in place.
env29	melter - transport	melter drive system - attached loads for pulling melter	43,000 lbs.	LMH	actual load is 41,152 lbs. Weight used bounds the actual weight
env30	melter - transport	melter drive system attachment interface to melter	pulleys/brackets with removable connections. Pulley centerline elevation at 3'-5" elevation connected to the melter base. Two pulleys in the front and the back located 102.88" in from the respective rail centerline	LMH	

Tag	Component (2, 3)	Interface Detail(2, 3)	Interface Criteria	System/Area	Comments
env31	melter - transport	melter drive system positioning tolerance in facility (north-south)	plus, minus 1/4"	LMH	
env50	melter - transport	transporter load distribution criteria	two linear pads, 300 inches apart (outside edges) tolerance +0.00"/-0.50", width not to exceed 12" (6" nominal), thickness between 1" and 2"	LMH	Required to spread the transport load as close to the wheels as possible to avoid reverse deflection of the refractory. Design requirement for the melter and the project transporter.
env51	melter - transport	transporter rigging criteria	hold down lugs attached to the melter base are not required	LMH	
enc44	piping - all nozzles except for offgas	thermal movement (maximum) of any nozzle, from centroid of melter	+/- 1"	LMP	
clg03	piping - cooling water	cooling panel/pipe pressure differential	15 psig per loop, maximum differential	PCW	pressure drop across panel must be minimized
clg02	piping - cooling water	slope	no slope required. Panels to be emptied through air "blow-down".	PCW	
fed18	piping - feed	attachment to melter	the melter feed line will be routed in a secondary enclosure (tray), tray attached to melter wall with a sealed connection	LFP	
enc45	piping - offgas nozzles	thermal movement from centroid of melter	+/- 1/2"	LMP	
ogs61	plenum vent insert	dimensions - envelope	11.5" diameter X 36" long	LSH	
ogs59	plenum vent insert	maintenance handling criteria	vertical lift with overhead device, lifting bail on component after removal of vent line	LSH	
ogs58	plenum vent insert	operating life (predicted)	life of melter	LSH	discharge chamber vent system to plenum
ogs60	plenum vent insert	weight of component	70 lb approximate	LSH	
plv18	pressure probe - primary (ITS)	dimensions - envelope	7.5" dia. X 52" long	LSH	
plv16	pressure probe - primary (ITS)	maintenance handling criteria	ball lock assembly to mate with project reference drawings, project to utilize CCB/gamma gate for replacement	LSH	
plv15	pressure probe - primary (ITS)	operating life (predicted)	12 months	LSH	
plv17	pressure probe - primary (ITS)	weight of component	130 lb maximum	LSH	
enc58	shielded lid access covers	maintenance handling criteria	folding bail, inset to preclude tripping hazards (flush with top surface)	LSH	
enc60	small diameter holes, shielded lid (feed nozzles, air lift lances, refractory thermocouple, level detectors, ITS pressure probe, spare plugs, start up ports)	shielded lid interface detail with project replacement equipment	dowel pins 1" dia. - 8 UNC, spacing and hole locations per the project reference drawings	LSH	
enc54	spare lid plug - small	dimensions - envelope	7.5" dia. X 36.37" long	LSH	envelope diameter includes the tadpole gasket (.25" thick), envelope length includes the ball lock assembly

Tag	Component (2, 3)	Interface Detail(2, 3)	Interface Criteria	System/Area	Comments
enc52	spare lid plug - small	maintenance handling criteria	ball lock assembly to mate with project reference drawings, project to utilize CCB/gamma gate for replacement	LSH	Equipment used for removal to be determined by project This component is glass contacting
enc51	spare lid plug -small	operating life (predicted)	life of melter	LSH	
enc53	spare lid plug -small	weight of component	85 lb approximate	LSH	
htg28	startup heater	dimensions - envelope	19.5" dia. X 68" long	LSH	diameter includes the tadpole gasket (.25"), length does not include the lifting bail
htg03	startup heater	maintenance handling criteria	vertical lift with overhead device, lifting bail on component	LSH	equipment used for removal determined by project, not a glass contact component
htg02	startup heater	operating life (predicted)	temporary component used at melter startup only, can be re-used for subsequent melter start ups.	LSH	operations decision for subsequent re-use
htg31	startup heater	weight of component	518 lb approximate	LSH	
tmp11	thermocouple - discharge chamber	dimensions - envelope	7" dia. X 71" long	LSH	envelope length includes the lifting bail
tmp07	thermocouple - discharge chamber	maintenance handling criteria	vertical lift with overhead device, lifting bail on component	LSH	
tmp06	thermocouple - discharge chamber	operating life (predicted)	12 months	LSH	type "N" or type "S" material
tmp13	thermocouple - discharge chamber	weight of component	19 lb approximate	LSH	
tmp21	thermocouple - melter electrode extension	dimensions - envelope	53" long	LSH	
tmp17	thermocouple - melter electrode extension	maintenance handling criteria	no specific handling features incorporated in the design, hands on replacement only	LSH	thermocouple manually removed through access port on side of melter after disconnecting lemo connector
tmp16	thermocouple - melter electrode extension	operating life (predicted)	12 months	LSH	type "N" or type "S" material
tmp23	thermocouple - melter electrode extension	weight of component	not to exceed 25 lb	LSH	
tmp68	thermocouple - melter electrode extension cooling air exhaust	dimensions - envelope	20" long, dia. not to exceed 6"	LSH	
tmp67	thermocouple - melter electrode extension cooling air exhaust	maintenance handling criteria	no specific handling features incorporated in the design, hands on replacement only	LSH	thermocouple manually removed through access port on side of melter after disconnecting lemo connector
tmp66	thermocouple - melter electrode extension cooling air exhaust	operating life (predicted)	life of melter	LSH	
tmp70	thermocouple - melter electrode extension cooling air exhaust	weight of component	not to exceed 25 lb	LSH	

Tag	Component (2, 3)	Interface Detail(2, 3)	Interface Criteria	System/Area	Comments
tmp26	thermocouple - melter glass pool and plenum	operating life (predicted)	6 months	LSH	thermocouples designed integral to bubblers, changed out with bubblers, no specific mechanical handling required
tmp41	thermocouple - melter refractory	dimensions - envelope	7" dia. X approximately 119" long	LSH	
tmp37	thermocouple - melter refractory	maintenance handling criteria	vertical lift with overhead device, lifting bail on component	LSH	
tmp36	thermocouple - melter refractory	operating life (predicted)	12 months	LSH	
tmp43	thermocouple - melter refractory	weight of component	not to exceed 25 pounds	LSH	
tmp74	thermocouple - melter view port	dimensions - envelope	20" long, dia. not to exceed 6"	LSH	
tmp73	thermocouple - melter view port	maintenance handling criteria	no specific handling features incorporated in the design, hands on replacement only	LSH	thermocouple manually removed through access port on side of melter after disconnecting lemo connector
tmp72	thermocouple - melter view port	operating life (predicted)	life of melter	LSH	
tmp75	thermocouple - melter view port	weight of component	not to exceed 25 lb	LSH	
tmp52	thermocouple - startup	dimensions - envelope	7" dia. X 131.9" long	LSH	overall thermocouple assembly plus, ball lock lifting assembly plus the lifting assembly support stand
tmp47	thermocouple - startup	maintenance handling criteria	vertical lift with overhead device, lifting bail on component	LSH	Equipment used for removal to be determined by project. This component is glass contacting
tmp46	thermocouple - startup	operating life (predicted)	used for start-up only - should last through multiple melters	LSH	
tmp54	thermocouple - startup	weight of component	45 lb approximate	LSH	
tmp77	thermowell - discharge chamber	dimensions - envelope	10.25" dia. X 58" long	LSH	diameter includes shoulder screws (.625" long) to attach lifting bail, length does not include the lifting bail
tmp79	thermowell - discharge chamber	maintenance handling criteria	vertical lift with overhead device, lifting bail on component	LSH	
tmp57	thermowell - discharge chamber	operating life (predicted)	life of melter	LSH	
tmp76	thermowell - discharge chamber	operating life (predicted)	life of melter	LSH	
tmp78	thermowell - discharge chamber	weight of component	67 lb approximate	LSH	
tmp60	thermowell - startup	dimensions - envelope	6.91" dia. X 110.94" long	LSH	envelope length includes the ball lock lifting assembly, envelope diameter includes the tadpole gasket (.25" dia..)
tmp63	thermowell - startup	maintenance handling criteria	ball lock assembly to mate with project reference drawings, project to utilize CCB/gamma gate for replacement	LSH	Equipment used for removal to be determined by project. This component is glass contacting
tmp64	thermowell - startup	operating life (predicted)	potentially reusable for other melters - used for start up only	LSH	
tmp59	thermowell - startup	weight of component	105 lb approximate	LSH	weight obtained from total weight of thermowells (208.9 lbs.) from reference and divided by 2

Tag	Component (2, 3)	Interface Detail(2, 3)	Interface Criteria	System/Area	Comments
env88	wheels	clearance envelope for melter wheels/guide roller assemblies	guide roller assemblies may not exceed 5 4" below the top of the rail elevation established in env60	LMH	
env10	wheels	maintenance handling criteria	N/A - life of melter component	LSH	so long as the wheel loads do not exceed allowables, no maintenance is required. Project responsible for handling non-routine maintenance requirements.
env69	wheels	maximum wheel loading	Does not exceed load limits as defined by wheel supplier, thurst bearing capacity of 66,400 pounds limiting thrust static load of 196,000 pounds, and a radial bearing capacity of 138,000 pounds, radial static load of 276,000 pounds.	LMH	
env71	wheels	quantity and location	12 total, 6 per side evenly spaced along ~15' width of melter	LMH	
env75	wheels	type/materials	Osborn International, Plain Yoke Roller PLRY-10, Heavy Duty Shaft SHB-4250	LMH	
env76	wheels	vertical displacement criteria	maximum wheel vertical displacement = 1/16" over any 150" length	LMH	

Notes:

1 Column Descriptions
"Tag" - Detail identifier Not to be reused.
"Component" - Description of specific melter SSC for which the interface detail is associated, use as a sorting column.
"Interface Detail" - Description of interface/design detail in question. Use "Component" column for complete detail description
"Interface Criteria" - Interface/design data, based on requirements in the specification
"System/Area Locators" - developed in accordance with project procedures, identifies impacted discipline.
"Comments" - For providing status and/or additional clarification.
2 Write key words first, followed by secondary description if necessary.
3 Use these columns together to fully define interface detail.
4 N/A - not applicable
5 Interproject interface detail, not a subcontractor/project interface detail.

Appendix C - CSA Concurrence for Use of R_p

From:	Theriault, Philippe
Sent:	Wednesday, February 04, 2015 2:07 PM
To:	Vincent, Travis R
Cc:	Peters, Richard D (WTP); Wilcox, Wade
Subject:	RE: Request for the Rp=3.0 for the Qualification of the LAW Melters

I concur with the use of Rp = 3.0 in this application.

Thank you

Philippe Thériault | WTP CS&A Functional Manager
Bechtel National Inc. | 2435 Stevens Center, Richland, WA, 99354
[illegible]
T: [illegible] | M: [illegible] | E: prtheria@bechtel.com

From: Vincent, Travis R
Sent: Wednesday, February 04, 2015 12:58 PM
To: Theriault, Philippe
Cc: Peters, Richard D (WTP); Wilcox, Wade
Subject: Request for the Rp=3.0 for the Qualification of the LAW Melters

Philippe,
Per Section 4.3.1 of 24590-WTP-3PS-FB01-T0001 Rev 6, I'm requesting the use of Rp=3.0 in UBC-97 section 1632, equation (32-2), for the seismic qualification of the LAW Melters.

The LAW melters are seismically supported by the LAW melter rails that are support by the +3 elevation of the LAW building.

Please advise.

Regards,
Travis Vincent
WTP – PD Functional Manager
Main K-121
509-371-8597

Issued by
RPP-WTP PDC

Specification Change Notice

CHANGE DOCUMENT NO. 24590-LAW-3PN-LMP-00002

JOB NO.	TITLE FOR CHANGE NOTICE
24590	Update Seismic Clamp Installation

DOCUMENT NUMBER	REV	DOCUMENT NUMBER	REV
24590-LAW-3PS-LMP-T0002	1		

PART OF DESIGN CHANGE PACKAGE (DCP)? ☐ Yes ☒ No DCP No.: Rev:

JUSTIFICATION FOR CHANGE

Is the change associated with a Q SSC? ☒ Yes ☐ No

If yes, was margin reduced? ☐ Yes ☒ No

If margin was reduced provide Calculation or MAJ number:

Justification:

The spring compression distance as indicated in this change was determined by the structural analysis group to provide the required force loading for seismic motion. This SCN is issued concurrently with calculation 24590-LAW-M2C-LMP-00002 to provide this technical basis.

Supersedes Change Document ☐ Yes ☒ No

REQUIREMENTS REVIEW

Client Approval Required ☐ Yes ☒ No | Interface Resolution Required * ☐ Yes ☒ No

Address any "yes" answers in the description

DESCRIPTION OF CHANGE

Specification Changes Retroactive ☐ Yes ☒ No

Change Section 4.12 as shown in markup on following page.

ORIGINATOR	CHECKER
ORG/Discipline – Rich Peters Rich Peters	Dick McGrew Dick McGrew

Approval(s)

Title	Title	Title	Title
LAW MECH EGS P. RAJACUPALAN	N/A	N/A	N/A

Date *(inserted by final approver)*: 11/19/15

Please note that source, special nuclear, and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA) are regulated at the U. S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

4.11.6 Construction to move the melter North, align the North East Seismic Pin slots and install the Seismic Pin (24590-QL-POA-MQR0-00001-02-00015) through Seismic Pin Support Frame and into the mating Seismic Pin Rail Slot. Note: Construction to monitor the East/West position of the wheels during Melter movement to ensure the wheel to rail overlap does not exceed 0.25".

4.11.7 Construction to install the North West Seismic Pin (24590-QL-POA-MQR0-00001-02-00015) through North West Seismic Pin Support Frame and into the mating Seismic Pin Rail Slot, install Shims (items 58, 59, and 60 of WTP-M-11950) as required to fill the space between the Seismic Pin Support Frame and the melter base, and snug tighten Bolts (items 21 of WTP-M-11950).

4.11.8 Construction to measure the "Melter Discharge Spout centerlines relative to as-built LAW Container centerline with the Elevator in the lifted/pour position" for the purpose of documenting the alignment.

Hold Point 25 - Contractor to verify the "Melter Discharge Spout centerlines relative to as-built ILAW Container centerline with the Elevator in the lifted/pour position" are within tolerance IAW 24590-WTP-FC-M-12-0350 based on Construction's documentation.

Note: If the alignment exceeds the tolerance specified in 24590-WTP-FC-M-12-0350, the melter may be moved North or South by installing another combination of Shims (items 58, 59, and 60 of WTP-M-11950) between the Seismic Pin Support Frame and the melter base after Contractor approval.

4.11.9 Construction to tighten Bolts (items 21 of WTP-M-11950) and install Nuts (items 61 of WTP-M-11950) IAW WTP-M-11950

4.12 Installing Base Seismic Clamp Assemblies (items 23 of WTP-M-11950)

THIS SCN

~~4.12.1 Construction to tighten Nut (item 3 of WTP-M-11715) until Belleville washers (items 6 of WTP-M-11715) are fully compressed on each Base Seismic Clamp Assembly.~~

4.12.1

~~4.12.2~~ Construction to install the 10 Base Seismic Clamp Assemblies, Bolts, and Washers (items 23, 24, and 25 of WTP-M-11950) to the melter base IAW WTP-M-11950.

~~4.12.3 Construction to loosen the adjustment Nut (item 3 of WTP-M-11715) on each Base Seismic Clamp Assembly until the resulting compressed height of the stacked Belleville Washers (item 6 of WTP-M-11715) is equal to 75% of the uncompressed height specified on WTP-M-11715 within a tolerance of +0.0/-0.03 inches.~~

~~4.12.4 Construction to verify the end of the Seismic Retainer is touching the side of the melter rail and the Nut should be loose. If this is not the case, insert stainless steel shim material (minimum 5 1/2" by 5 1/2") as needed between the Seismic Retainer and the melter rail to achieve the prescribed height while maintaining the compressed height. Tighten the two Nuts (items 3 of WTP-M-11715) together without disturbing the preload on the Belleville Washers.~~

4.12.2 Shim as necessary between seismic retainer head and melter rail to achieve a final spring compression set on each seismic clamp assembly of 0.258 +/- 0.010 inch, with jam nuts (item 3) locked in place with a minimum total gap of 3/8 inches between nut (item 3) and washer (item 5) and the Clamp Frame (item 1).

Issued by
RPP-WTP PDC

BECHTEL	**Mechanical Data Sheet: LAW Melter 1**	Data Sheet Number	24590-LAW-M0D-LMP-00001
		Component Tag Number	LMP-MLTR-00001

Site: Hanford
Project: RPP-WTP
Project No: 24590
Building: LAW Facility, Lower Melter Gallery, Room L-0112
System: LMP
Function: Convert blended LAW slurry and glass formers into glass and deliver the glass to containers
Quality Level/Seismic Classification: Q/SC-III (Note 1)
Equipment/Environment Qualification: Reference 1
Corrosion Evaluation: Reference 18

MECHANICAL
(References)

Melter Design Life (9, page 6)	years	5	Melter Base, Rail to Rail Center Distance (16)	ft-in	28 - 4
Melter Outside Envelope, installed condition, L x W x H (3, 4)	inch	256 x 367 x 190			
Estimated Maximum Assembled Weight, Empty, no glass, no cooling water (8, Table 7-3)	pounds	**650,000**			
Estimated Maximum Assembled Weight with Glass and Cooling Water (8, Table 7-3)	pounds	**700,000**			

PROCESS
(References)

Design Glass Production (9, page 7)	MT/D	15	Melt Pool Temperature, Maximum (13, page 24)	°F	2192
Maximum Operating Glass Pool Depth (13, page 72)	inch	31.5	Melter Cooling Water (15)	gal/min	**316**
Glass Tank Volume (13, page 30)	ft^3	270	Melter Cooling Water (15)	Delta T °F	**8.5**
Glass Tank Surface Dimensions, L x W (13, page 30)	inch	80 x 194	Beta/gamma dose rate from glass (17)	Rad/hr	260
Melt Pool Temperature, Operating (13, page 24)	**°F**	**2102 +/- 45°F**			

ELECTRICAL
(References)

Electrodes, kW (10)	1430 maximum
Start-up Heaters, kW (11)	25.1 maximum per heater element, 452 total maximum
Discharge Chamber, kW (11)	75 maximum per chamber

MAJOR COMPONENTS - Materials
Ref 14 (pages)

Gas Barrier base, walls, and lid (44)	Alloy 690	Electrodes and extensions (34)	Alloy 690
Discharge trough and dam (35)	Alloy 690	Cooling Panels (pages 44, 46)	C276, 316L
Shielded Enclosure (46)	A36, A500		
Film Cooler (39)	Alloy 690, Alloy 625		

REPLACEABLE COMPONENTS
Ref 12

	Design Life (months)		Design Life (months)
Glass pool and plenum thermocouples	6	Discharge Chamber Thermocouples	12
Refractory Thermocouple	12	Bubblers	6
Electrode Extension Thermocouples	12	Air Lift Lance	life of melter
Electrode Extension Cooling Air Thermocouple	life of melter	Glass Level detector	life of melter
Feed Nozzle	life of melter	Spare Lid Plugs	life of melter
Film Cooler	life of melter	Discharge Chamber vent line and vent insert	life of melter
Discharge Chamber Lid Assembly (Incl heaters)	life of melter	Leak detectors	life of melter
Discharge Chamber Thermowell	life of melter		

	Mechanical Data Sheet: LAW Melter 1	Data Sheet Number	24590-LAW-M0D-LMP-00001
		Component Tag Number	LMP-MLTR-00001

NOTES

1. Subcomponents may be graded CM and SC-IV

2. Contents of this document are Dangerous Waste Permit affecting.

3. Incorporated 24590-LAW-M6N-M80T-00008 and further revised with updated dose values. Updated "Replaceable Components", added "Quality Level/Seismic Classification", added "Equipment/Environment Qualification", updated References. Deleted Controls and Instrumentation references, deleted elevation dimensional data. Complete revision, rev bars not shown.

4. Updated references, cooling water data and added operating temperature. Design margin is not affected. This datasheet contains data developed in calculations where margin is addressed.

REFERENCES

Reference #	
1	24590-LAW-M0Q-LMP-00003, Rev 0, Equipment Qualification Datasheet for Low Activity Waste (LAW) Melters
2	24590-LAW-MF-LMP-00001, Rev 0, LAW Melter Assembly LAW-MLTR-00001/00002 Isometric View
3	24590-LAW-MF-LMP-00002, Rev 0, LAW Melter Assembly LAW-MLTR -00001/00002 Plan View
4	24590-LAW-MF-LMP-00003, Rev 0, LAW Melter Assembly LAW-MLTR -00001/00002 East, West And North
5	24590-LAW-MF-LMP-00004, Rev 0, LAW Melter Assembly LAW-MLTR -00001/00002 Section A-A
6	24590-LAW-M6-LMP-00012001, Rev 0, P&ID LAW - LAW Melter Process System - Melter 1 Feed Nozzles Cooling System and Feed Nozzles
7	24590-LAW-M6-LMP-00042001, Rev 0, P&ID LAW - LAW Melter Process System - Melter 2 Feed Nozzles Cooling System and Feed Nozzles
8	**24590-LAW-M2C-LMP-00002, Rev A, LMP-MLTR-00001 & LMP-MLTR-00002, LAW Melter Units, Structural and Seismic Analysis with ANSYS**
9	24590-LAW-3PS-AE00-T0001, Rev 6, Engineering Specification for Low Activity Waste Melters
10	24590-LAW-M6C-LMP-00011, Rev 1, Electrode Power Requirements for LAW Melter
11	24590-LAW-RPT-E-03-002, Rev 1, LAW Electrical Requirements for Startup and Discharge Heaters
12	24590-101-TSA-W000-0010-409-1137, Rev 00A, LAW Melter Life Report
13	24590-101-TSA-W000-0010-409-359, Rev N/A, LAW Melter System Description
14	24590-101-TSA-W000-0010-42-02 Rev 00B, Report - LAW Melter Materials Selection
15	24590-LAW-MEC-PCW-0000**2**, Rev 0, **Melter Panels Cooling Water Heat Exchangers PCW-HX-00004A/B and PCW-HX-00005A/B Sizing Calculation**
16	24590-LAW-M0-LMH-00002001, Rev **3**, LAW Vitrification System LMH Design Proposal Drawing LSM Rail Assembly
17	24590-WTP-Z0C-W13T-00010, Rev F, Contact Dose Rates to Equipment from Beta and Gamma Emitters
18	**24590-LAW-N1D-LMP-00001, Rev 1, Corrosion Evaluation of LMP-MLTR-00001 & LMP-MLTR-00002 - LAW Melter 1 and Melter 2 Gas Barrier and Cooling Panels**

Date	Rev	Reason for Revision	Originator	Checker	Approver
11/19/15	3	See Note 4. Changes are shown in bold/underline.	Originator By: Rich Peters - rpeters1 Org Name: LAW Mech Sys Lead Placed: Nov 12, 2015, 2:16 pm	Checked By: Matt Meyer - mtmeyer1 Org Name: LAW - Mechanical Systems Placed: Nov 12, 2015, 2:39 pm	P. RAJAGOPALAN
3/5/2015	2	See Note 3.	Rich Peters	Matt Meyer	Prabhu Rajagopalan
10/15/2002	0	Issued for Design	M. Hall	L. Donovan	Will Eaton

Please note that source, special nuclear, and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA) are regulated at the U. S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

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BECHTEL	**Mechanical Data Sheet: LAW Melter 2**	Data Sheet Number	24590-LAW-M0D-LMP-00002
		Component Tag Number	LMP-MLTR-00002

Site: Hanford
Project: RPP-WTP
Project No: 24590
Building: LAW Facility, Lower Melter Gallery, Room L-0112
System: LMP
Function: Convert blended LAW slurry and glass formers into glass and deliver the glass to containers
Quality Level/Seismic Classification: Q/SC-III (Note 1)
Equipment/Environment Qualification: Reference 1
Corrosion Evaluation: Reference 18

MECHANICAL
(References)

Melter Design Life (9, page 6)	years	5	Melter Base, Rail to Rail Center Distance (16)	ft-in	28 - 4
Melter Outside Envelope, installed condition, L x W x H (3, 4)	inch	256 x 367 x 190			
Estimated Maximum Assembled Weight, Empty, no glass, no cooling water (8, **Table 7-3**)	pounds	**650,000**			
Estimated Maximum Assembled Weight with Glass and Cooling Water (8, **Table 7-3**)	pounds	**700,000**			

PROCESS
(References)

Design Glass Production (9, page 7)	MT/D	15	Melt Pool Temperature, Maximum (13, page 24)	°F	2192
Maximum Operating Glass Pool Depth (13, page 72)	inch	31.5	Melter Cooling Water (15)	gal/min	**316**
Glass Tank Volume (13, page 30)	ft^3	270	Melter Cooling Water (15)	Delta T °F	**8.5**
Glass Tank Surface Dimensions, L x W (13, page 30)	inch	80 x 194	Beta/gamma dose rate from glass (17)	Rad/hr	260
Melt Pool Temperature, Operating (13, page 24)	**°F**	**2102 +/- 45°F**			

ELECTRICAL
(References)

Electrodes, kW (10)	1430 maximum
Start-up Heaters, kW (11)	25.1 maximum per heater element, 452 total maximum
Discharge Chamber, kW (11)	75 maximum per chamber

MAJOR COMPONENTS - Materials
Ref 14 (pages)

Gas Barrier base, walls, and lid (44)	Alloy 690	Electrodes and extensions (34)	Alloy 690
Discharge trough and dam (35)	Alloy 690	Cooling Panels (pages 44, 46)	C276, 316L
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Refractory Thermocouple	12	Bubblers	6
Electrode Extension Thermocouples	12	Air Lift Lance	life of melter
Electrode Extension Cooling Air Thermocouple	life of melter	Glass Level detector	life of melter
Feed Nozzle	life of melter	Spare Lid Plugs	life of melter
Film Cooler	life of melter	Discharge Chamber vent line and vent insert	life of melter
Discharge Chamber Lid Assembly (Incl heaters)	life of melter	Leak detectors	life of melter
Discharge Chamber Thermowell	life of melter		

	Mechanical Data Sheet: LAW Melter 2	Data Sheet Number	24590-LAW-M0D-LMP-00002
		Component Tag Number	LMP-MLTR-00002

NOTES

1. Subcomponents may be graded CM and SC-IV

2. Contents of this document are Dangerous Waste Permit affecting.

3. Incorporated 24590-LAW-M6N-M80T-00008 and further revised with updated dose values. Updated "Replaceable Components", added "Quality Level/Seismic Classification", added "Equipment/Environment Qualification", updated References. Deleted Controls and Instrumentation references, deleted elevation dimensional data. Complete revision, rev bars not shown.

4. Updated references, cooling water data and added operating temperature. Design margin is not affected. This datasheet contains data developed in calculations where margin is addressed.

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4	24590-LAW-MF-LMP-00003, Rev 0, LAW Melter Assembly LAW-MLTR -00001/00002 East, West And North
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6	24590-LAW-M6-LMP-00012001, Rev 0, P&ID LAW - LAW Melter Process System - Melter 1 Feed Nozzles Cooling System and Feed Nozzles
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12	24590-101-TSA-W000-0010-409-1137, Rev 00A, LAW Melter Life Report
13	24590-101-TSA-W000-0010-409-359, Rev N/A, LAW Melter System Description
14	24590-101-TSA-W000-0010-42-02 Rev 00B, Report - LAW Melter Materials Selection
15	24590-LAW-MEC-PCW-0000**2**, Rev 0, **Melter Panels Cooling Water Heat Exchangers PCW-HX-00004A/B and PCW-HX-00005A/B Sizing Calculation**
16	24590-LAW-M0-LMH-00002001, Rev **3**, LAW Vitrification System LMH Design Proposal Drawing LSM Rail Assembly
17	24590-WTP-Z0C-W13T-00010, Rev F, Contact Dose Rates to Equipment from Beta and Gamma Emitters
18	**24590-LAW-N1D-LMP-00001, Rev 1, Corrosion Evaluation of LMP-MLTR-00001 & LMP-MLTR-00002 - LAW Melter 1 and Melter 2 Gas Barrier and Cooling Panels**

Date	Rev	Reason for Revision	Originator	Checker	Approver
11/19/15	3	See Note 4. Changes are shown in bold/underline.	Originator By: Rich Peters - rpeters1 Org Name: LAW Mech Sys Lead Placed: Nov 12, 2015, 2:15 pm	Checked By: Matt Meyer - mfmeyer1 Org Name: LAW - Mechanical Systems Placed: Nov 12, 2015, 2:40 pm	P. RAJAGOPALAN
3/5/2015	2	See Note 3.	Rich Peters	Matt Meyer	Prabhu Rajagopalan
10/15/2002	0	Issued for Design	M. Hall	L. Donovan	Will Eaton

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R11743694

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WTP PDC

CORROSION EVALUATION

LMP-MLTR-00001 & LMP-MLTR-00002
LAW Melter 1 and Melter 2 Gas Barrier and Cooling Panels Inside of Gas Barrier

Contents of this document are Dangerous Waste Permit affecting

Results

Materials Considered:

Material (UNS No.)	Acceptable Material
Carbon Steel	
Type 304L (S30403)	
Type 316L (S31603)	
Al-6XN® 6% Mo (N08367)	
Hastelloy® C-276 (N10276)	X
Hastelloy® C-22® (N06022)	
Inconel® 690 (N06690)	X
Ti-2 (R50400)	

Materials of Fabrication **Gas Barrier – Inconel® 690 (UNS N06690)**
Cooling Panels Inside of Gas Barrier: Hastelloy® C-276 (UNS N10276)

Inputs and References

- Conditions for Gas Barrier
  - Temperature of base: 121 °F to 133 °F (24590-QL-HC4-W000-00094-05-00001)
  - Temperature of side walls: 206 °F to 358 °F (24590-QL-HC4-W000-00094-05-00001)
  - Temperature of lid: 185 °F (24590-LAW-M2C-LMP-00001)
  - Stream composition: Hot side, in contact with surrounding melter conditions - assume similar to LMP14
    Cold side, in contact with cooling water - use plant cooling water (PCW)
- Conditions for Cooling Panels Inside of Gas Barrier
  - Temperature of panels (°F) (norm/max): 93/114 (24590-LAW-MEC-PCW-00005)
  - Stream composition: Hot side, in contact with surrounding melter conditions - assume similar to LMP14
    Cold side, in contact with cooling water - use plant cooling water (PCW)
- Corrosion allowance
  - Components within the gas barrier (excluding cooling panels): 0.125 inch (24590-QL-HC4-W000-00094-05-00001)
  - Cooling panels located inside the gas barrier: 0.031 inch (One corrosion allowance for both heat transfer surfaces)

Assumptions and Justifications:

- Material selections process was performed under contract with Duratek and is documented in 24590-101-TSA-W000-0010-42-02, *Report - LAW Melter Materials Selection*.
- The LAW melters have a minimum design life of 5 years and will be replaced multiple times throughout the life of the plant.

Operating Restrictions

- Once filled, the gas barrier and cooling panels shall not be idled, with no flow, for periods longer than 72 hours.
- Plant cooling water is clean, non-scaling, non-silting and not prone to biological growth. Sampling and chemical addition will ensure the quality of the water is maintained.

Concurrence
Operations

REV	DATE	REASON FOR REVISION	ORIGINATE	CHECK	REVIEW	APPROVE
1	11/13/15	Extensive changes to text throughout to clarify content in response to client review. No revision bars shown	Originator By: Debbie Adler - dladler Org Name: MET Placed: Oct 30, 2015, 7:22 am	Checked By: A. Rangus - aprangus Org Name: Bechtel Placed: Oct 30, 2015, 11:19 am	Reviewed No Comments By: Robert Davis - rbdavis Org Name: Bechtel Placed: Nov 04, 2015, 7:05 am	
				TRangus	RBDavis	TErwin
0	4/16/15	Initial Issue	DLAdler	TRangus	RBDavis	TErwin

CORROSION EVALUATION

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This bound document contains a total of 8 sheets.

CORROSION EVALUATION

Corrosion/Erosion Detailed Discussion

The LAW melter is "encapsulated" in an Inconel® 690 outer shell, although some air in-leakage is permitted. Within the outer shell of the lower melter assembly are cooling panels constructed of Hastelloy® C-276 (24590-101-TSA-W000-0010-42-02, *Duratek LAW Melter Materials Selection Report REP-WTP-11003*). There is no stainless steel or carbon steel within the gas barrier. The materials of construction for the LAW melter were selected by Duratek under their contract with WTP. Materials were selected for their suitability for use and corrosion resistance in the conditions expected in the melter environment. Melter offgas corrosion testing was performed and documented in the Duratek LAW Melter Materials Selection Report. Results are shown here:

LAW Pilot Off-gas Corrosion Coupon Results

Alloy	Comments	Pit Depth	Metal loss*	
		mils	mm	mils
Hastelloy® C-22	Undulating metal surface with deep local pits; remnants of deposits in places.	0.2	0.0375	1.48
Hastelloy® C-276	Pitted on one side only; surfaces smooth with scalloped profile; little deposit retention.	0.5	0.0295	1.16
Nicrofer 6025HT	Occasional pits; deposit thicker on one side of coupon.	0.1	0.0055	0.22
Inconel® 690	Relatively smooth surface; deposit thicker on one side of coupon.	0.05	0.0095	0.37
HR160	Significant localized pitting in some places; oxide formed.	2.2	0.0575	2.26

* Metal Loss is represented as the average material loss over the test area for a specific coupon.

The alloys stated in the table above were placed into the LAW Pilot Melter offgas system for 452 days. As seen above in the table, Hastelloy® C-276 and Inconel® 690 exhibited acceptable pitting and corrosion rates.

The waste feed is pumped onto the surface of the molten glass where heat from the melt pool evaporates water, decomposes various chemicals and organics, and melts into the glass pool. The glass pool is lined with corrosion resistant refractory blocks stacked in layers with the outermost surface being water-cooled. The gas space above the glass pool is also lined with refractory to produce a plenum where entrained feed materials separate from the steam and gases exiting the melter. The melter is capped with a lid, which is lined on its bottom surface with corrosion-resistant refractory. The entire melter refractory package is encased by a metallic shell referred to as the gas barrier that allows the melter to be under vacuum and prevents the escape of melter exhaust gases.

The gas compositions for the inlet stream to the LOP system are used as a conservative limit. Because the offgas from the melter contains about 40 % water, condensation is feasible at the expected temperatures. The presence of NOx and SOx is expected to result in a condensate at the cooling panels with a pH of approximately 1.5; some chloride will be present along with fluoride.

1 General/Uniform Corrosion Analysis

a Background

General corrosion or uniform corrosion is corrosion that is distributed more-or-less uniformly over the surface of a material without appreciable localization. This leads to relatively uniform thinning on sheet and plate materials and general thinning on one side or the other (or both) for pipe and tubing. It is recognized by a roughening of the surface and by the presence of corrosion products. The mechanism of the attack typically is an electrochemical process that takes place at the surface of the material. Differences in composition or orientation between small areas on the metal surface create micro-anodes and cathodes that facilitate the corrosion process.

Corrosion test results of melter materials have been reported by Wicks (1980), Imrich and Jenkins (1996), Imrich K.J (2001), and Keith S. Matlack (2011). The materials used in the melter systems were exposed to the liquid glass, in the splash zone, and vapor space. Melts of pure frits are generally more corrosive than melts that contain concentrated sludge waste. The corrosion is caused by the alkali oxides (6 to 7 wt%) in the melt. Alloys with molybdenum are singularly called out as susceptible to corrosion, due to the silica forming $MoSi_2$ compounds that can affect the material integrity. Above the melt, the corrosion increases as the acid gasses form, are wetted by the water vapor, and are carried by gas flow throughout the gas barrier. High temperature nitric acid (HNO_3) vapor attacks most alloys. Decomposition of sodium nitrate will also produce nitrogen oxides which will corrode most nickel alloys with the exception of Inconel® 690, which is a nickel-chromium-iron alloy and does not have molybdenum. The effect molten glass and pilot melter offgas had on Inconel® 690 coupons was reported by Imrich (1996) in a series of LAI (liquid air interface) tests; corrosion rates in the splash zone were 15 mpy and in the vapor space 8 mpy. Preferential edge attack was observed.

b Component-Specific Discussion- Gas Barrier

The melter gas-barrier was fabricated from UNS N06690 (Inconel® 690). This material has been specified to prevent corrosion by warm, wet, salt deposits. During normal operations, the temperatures at the gas barrier will be 133 °F at the base, 185 °F at the lid, and 206 to 358 °F at the side walls. The process conditions for the hot-side are expected to be similar to those shown for stream LMP14 in 24590-WTP-RPT-PR-04-0001-04, *WTP Process Corrosion Data – Volume 4*. The cold side of the lid will be in contact with plant cooling water (PCW). The material used to construct the gas barrier and gas barrier lid is resistant to general corrosion in the expected offgas environment as well as any condensate containing low levels of chloride and fluoride salts, and NOx and SOx; see sections 4.2.3 and 4.2.5

CORROSION EVALUATION

of 24590-101-TSA-W000-0010-42-02. The cold side of the gas barrier lid exposed to PCW water is immune to general corrosion as the PCW water is treated and benign. The effect molten glass and pilot melter offgas had on Inconel® 690 coupons was reported by Imrich (1996) in a series of LAI tests; corrosion rates in the splash zone were 15 mpy and in the vapor space 8 mpy. These conditions are more extreme than those expected at the gas barrier and are therefore bounding. It is apparent that margin has been provided since the 8 mpy seen in more extreme scenarios would only corrode 40 mils of the 125 mils allotted over the minimum design life of the melters (5 years).

c Component-Specific Discussion- Cooling Panels

The cooling panels within the gas-barrier will be fabricated from UNS N10276 (Hastelloy® C-276). This material has been selected because the cooling panel surfaces are likely to have deposits of condensed plenum gas salts and will probably be wet/moist from water vapor condensation. During normal operations, the temperature at the cooling panels will be 93 °F (114 °F max). The process conditions for the cooling panels' hot sides are conservatively assumed to be similar to those shown for stream LMP14 in 24590-WTP-RPT-PR-04-0001-04. The cold sides of the cooling panels will be in contact with PCW water. Hastelloy® C-276 is immune to general corrosion in PCW as this water is treated and benign. See section 4.2.5.2 of 24590-101-TSA-W000-0010-42-02 for additional discussion.

The inlet room air flows from the bottom of the melter to the top, mixing with the melter gases in the plenum and out to the film cooler to the offgas treatment systems. The cooling panels are located adjacent to the inlet vents that draw clean air into the melter offgas system. The gas barrier annulus contains the cooling panels and has a passive purge of 10 volume changes per hour to prevent the intrusion and buildup of salts from the plenum (24590-101-TSA-W000-0010-42-02).

Section 4.3.2 of the design guide 24590-WTP-GPG-M-047, *Preparation of Corrosion Evaluations*, explains that a zero corrosion allowance is acceptable on heat transfer surfaces (internal & external) providing a corrosion resistant material is selected. Hastelloy® C-276 is a corrosion resistant material. The recommended corrosion allowance is consistent with Tubular Exchanger Manufacturers Association (TEMA) and other national standards used to design and fabricate heat exchangers and cooling panels. Heat transfer surfaces fabricated using high alloy corrosion resistant materials are often specified with, or assumed to have, a zero corrosion allowance. TEMA provides guidance that, in some cases, an approximate 1/64 inch is added to the thickness, above the pressure design code minimum required thickness. The recommended corrosion allowance is 1/32 inch for added conservatism. Results of testing that took place in the LAW Pilot Melter offgas system over 452 days resulted in a uniform corrosion rate of 0.9 mpy. General corrosion is not expected to be a concern during the first 5 years of melter operation since the observed corrosion rate of 0.9 mpy in the off-gas coupons does not exceed the recommended corrosion allowance of 0.031 inches (31 mils) after 5 years of operation.

Although the recommended corrosion allowance is 0.031 inches, the WTP LAW melter cooling panels were built with a corrosion allowance of 1/8" (0.125 inches), which greatly exceeds the recommended corrosion allowance and provides additional margin (24590-QL-HC4-W000-00011-03-00505, *Specification - Low Active Waste (LAW) And High Level Waste (HLW) Cooling Panel Procurement Specification*).

2 Pitting Corrosion Analysis

Pitting is localized corrosion of a metal surface that is confined to a point or small area and takes the form of cavities. Under the stated conditions, Hastelloy® C-276 and Inconel® 690 have excellent resistance to pitting corrosion (24590-101-TSA-W000-0010-42-02). Hastelloy® C-276 is commonly used in the fabrication of embossed cooling panels installed in similar environments (24590-101-TSA-W000-0010-42-02). The table above shows test results from coupons that were exposed to the LAW Pilot Melter off-gas system for 452 days. Hastelloy® C-276 experienced slight pitting to a depth of 0.5 mils and Inconel® 690 experienced almost no pitting with a reported pit depth of 0.05 mils. The recommended corrosion allowances for the cooling panels inside the gas barrier and the gas barrier itself are 0.031 inches and 0.125 inches respectively. Extrapolating the pitting data for Hastelloy® C-276 and Inconel® 690 shows it would be decades before pitting would become an issue, which is significantly longer than the melters' 5 year minimum design life. Additional information on Inconel® 690 and Hastelloy® C-276 can be found in Special Metals (2002) and Haynes International (2001).

3 Crevice Corrosion Analysis

Crevice corrosion is a form of localized corrosion of a metal or alloy surface at, or immediately adjacent to, an area that is shielded from full exposure to the environment because of close proximity of the metal or alloy to the surface of another material or an adjacent surface of the same metal or alloy. Crevice corrosion is similar to pitting in mechanism and may be present at the interface between the refractory brick, and the bottom of the Inconel® 690 cooling lid and cooling panels. The cooling lid is positioned above the molten glass, and the vaporized water will condense onto the surface. Melter design anticipates crevice corrosion and limits the life of the melter, including the lid.

The Hastelloy® C-276 nominal chemistry of 57% nickel, 16% molybdenum, and 16% chromium makes it highly resistant to localized corrosion. The critical crevice corrosion temperature is 176 °F (80 °C) in a NaCl + HCl solution (>24,000 ppm chlorides at pH 2); and 203 °F (95 °C) per the ASTM G48 test with 6% Fe_2Cl_3 ferric chloride solution. Based on the operating conditions in the locations where Hastelloy® C-276 is used, crevice corrosion is not a concern during the design life of the melter.

4 Stress Corrosion Cracking Analysis

Stress corrosion cracking (SCC) is the cracking of a material produced by the combined action of corrosion and sustained tensile stress (residual or applied). In addition, sensitization of the grain boundaries is prevented with the materials recommended. Inconel® 690 has 58% nickel. At these concentrations, the alloy is generally considered immune to SCC (Sedriks 1996). The high nickel content of the alloys is expected to reduce the probability of cracking to a low value and is not a concern at the stated conditions.

CORROSION EVALUATION

5 End Grain Corrosion Analysis

End grain corrosion is preferential aqueous corrosion that occurs along the worked direction of wrought stainless steels exposed to highly oxidizing acid conditions. End grain corrosion typically is not a major concern; it propagates along the rolling direction of the plate, not necessarily through the cross sectional thickness. End grain corrosion is exclusive to metallic product forms with exposed end grains from shearing or mechanical cutting. Conditions which lead to end grain corrosion are not present in this component; therefore, end grain corrosion is not a concern during the design life of the melter.

6 Weld Corrosion Analysis

Providing correct weld procedures are followed, no preferential corrosion of weld beads or heat-affected zones is expected. Per the report from Duratek, Inconel® 690 was welded with ERNiCrFe-7 weld filler material, which is essentially a matching chemical composition to Inconel® 690. The Hastelloy® C-276 cooling panels were specified by Duratek-BNFL and fabricated by Tranter. Review of vendor submittals for weld procedures and other design media was performed by Bechtel. Supplier Quality oversight and standard practices for welding and inspections demonstrate that the proper filler metal for joining the two metals was used.

7 Microbiologically Influenced Corrosion Analysis

Microbiologically influenced corrosion (MIC) refers to corrosion affected by the presence or activity, or both, of microorganisms. Such microorganisms can survive through a limited range of environmental conditions. The temperatures and off-gas chemistry will kill all microbes. Cooling water will be chemically treated to prevent microbiological growth and the spread of microbes through the system. Furthermore, the temperature and radiological conditions in the melter will kill those microbes associated with MIC of nickel-alloy materials.

8 Fatigue/Corrosion Fatigue Analysis

Fatigue is the process of progressive localized permanent structural change occurring in a material subjected to fluctuating stresses less than the ultimate tensile strength of the material. Corrosion fatigue is the process wherein a metal fractures prematurely under conditions of simultaneous corrosion and repeated cyclic loading at lower stress levels or fewer cycles than would be required to cause fatigue of that metal in the absence of the corrosive environment. Based on the anticipated low mechanical and thermal cycling, it can be stated that conditions which lead to fatigue or corrosion fatigue are not present in this component. Fatigue and corrosion fatigue are not a concern during the design life of the melter.

9 Vapor Phase Corrosion Analysis

The materials used in the melter systems were exposed to the liquid glass, in the splash zone, and vapor space. Above the melt, the corrosion increases as the acid gasses form and are wetted by water vapor. High temperature nitric acid (HNO_3) vapor attacks most alloys. Decomposition of sodium nitrate will also produce nitrogen oxides which will corrode most nickel alloys with the exception of Inconel® 690, which is a nickel-chromium-iron alloy and does not have molybdenum. Coupon exposure to molten glass and vapor from pilot melters was reported by Imrich (1996) in a series of LAI tests, Inconel® 690 corrosion rates in the splash zone were 15 mpy and 8 mpy in the vapor space. The temperatures in the vapor space ranged from 1112 °F to 1562 °F, while the max temperature at the gas barrier (constructed out of Inconel® 690) is 358 °F. Thus, the Defense Waste Processing Facility (DWPF) environment was harsher than that expected for these components at WTP, and the anticipated corrosion rate is expected to be less. However, even accounting for the rates from the DWPF melter, the specified 125 mil corrosion allowance would last the minimum design life of the melter.

10 Erosion Analysis

Erosion is the progressive loss of material from a surface resulting from mechanical interaction between a particle and that surface. Solid particle erosion can occur in air, steam, and water fluid systems. There is insufficient fluid flow and air flow on the exterior of the cooling panels and gas barrier to cause erosion. The lid and cooling panels use PCW water which has extremely low particulates. Such conditions are not sufficient to support erosion.

11 Galling of Moving Surfaces Analysis

Galling is a form of wear caused by a combination of friction and adhesion between moving surfaces. Under high compressive forces and movement, the friction temperatures cold-weld the two surfaces together at the surface asperities. As the adhesively bonded surface moves some of the bonded material breaks away. Microscopic examination of the galled surface shows some material stuck or even friction welded to the adjacent surface, while the softer of the two surfaces appears gouged with balled-up or torn lumps of material stuck to its surface. The surfaces are expected to be fixed in place. Galling is not a concern during the design life of the melter.

12 Fretting/Wear Analysis

Fretting corrosion refers to corrosion damage caused by a slight oscillatory slip between two surfaces. Similar to galling but a much smaller movement, the corrosion products and metal debris break off and act as an abrasive between the surfaces, classic 3-body wear problem. This damage is induced under load and repeated relative surface motion, as induced for example by vibration. Pits or grooves and oxide debris characterize this damage, typically found in machinery, bolted assemblies and ball or roller bearings. The surfaces are expected to be fixed in place. Fretting is not a concern during the design life of the melter.

CORROSION EVALUATION

13 Galvanic Corrosion Analysis

Galvanic corrosion is an electrochemical process in which one metal corrodes preferentially to another when both metals are in electrical contact, in the presence of an electrolyte. Dissimilar metals and alloys have different electrode potentials, and when two are in contact in an electrolyte, one metal acts as anode and the other as cathode. The electropotential difference between the dissimilar metals is the driving force for an accelerated attack. There is not a significant potential difference between the alloys used in the construction of the components.

14 Cavitation Analysis

Cavitation corrosion is defined as another synergistic process, the combined influence of mechanical disruption of the metal surface and the corrosion of the active metal. Cavitation occurs when the local fluid pressure drops below the vapor pressure of the fluid resulting in a liquid vapor interface or bubbles to form. Their collapse on the metal surface has sufficient energy to rupture the oxide film and depending on alloy, may be capable of removing metal. There is no fluid flow in contact with the metal part of the gas barrier, which is protected by refractory, or in the off-gas, where fluids are not present.

15 Creep Analysis

Creep is defined as a time-dependent deformation at elevated temperature and constant stress, creep is a thermally activated process. The temperature at which creep begins depends on the alloy composition. Creep failures and stress rupture failures follow the same mechanism and influenced by similar variables like temperature. Stress rupture is defined as bi-axial creep restricted to pipe like geometries. Creep is found in components subjected to heat for long periods and the creep rate generally increases as the temperature nears the melting point. The normal operating temperatures are too low to cause creep in the alloys being used.

16 Inadvertent Addition of Nitric Acid

There is no practical method of adding nitric acid.

17 Conclusion and Justification

This corrosion evaluation is for the gas barrier and cooling panels inside of the gas barrier. Both are recommended to be made from corrosion resistant alloys; Inconel® 690 for the gas barrier and Hastelloy® C-276 for the cooling panels. On the cold side of these heat exchangers, the material will be exposed to clean and treated cooling water from the PCW system. Both Inconel® 690 and Hastelloy® C-276 are corrosion resistant in near-neutral water with low chlorides; little, if any, corrosion on the water side is expected over the 5 year minimum design life. The cooling panels are attached to the outside of the melter adjacent to the refractory. The outside surface of the cooling panels will likely be coated with condensed salts as well as continually wet from water condensation. The gas barrier is made out of Inconel® 690 and is not directly exposed to the molten glass. At the stated operating conditions, end grain corrosion, weld corrosion, MIC, creep, and inadvertent nitric acid addition are not active corrosion mechanisms. Conditions which lead to fatigue or corrosion fatigue, galling, fretting, galvanic corrosion, and cavitation are not present in this component. The recommended corrosion allowances, 0.125 inches for Inconel® 690 and 0.031 inches for Hastelloy® C-276, provide sufficient margin for the melters minimum design life.

18 Margin

The DM 1200 Melter system has been designed and specified by BNFL-Duratek. The melter system is designed for a minimum life of 5 years. The corrosion evaluation design guide doesn't require a corrosion allowance for the melters since the entire unit is replaceable. Although corrosion allowances are not required by the design guide they have been provided for the gas barrier and cooling panels. The gas barrier and cooling panels are made out of two separate materials; Inconel® 690 and Hastelloy® C-276. Inconel® 690 has received extensive testing in direct contact with melter offgas. Testing revealed a corrosion rate of 8 mpy when exposed to melter offgas conditions and temperatures ranging from 1112 °F to 1562 °F. The gas barrier operates at temperatures between 121 °F and 358 °F, considerably lower than the test temperature; therefore, the gas barrier is expected to have a uniform corrosion rate less than 8 mpy. Assuming a corrosion rate of 8 mpy (conservative scenario), the melter offgas will corrode the gas barrier approximately 40 mils over 5 years; therefore, margin has been provided since a corrosion allowance of 125 mils is recommended for the gas barrier. The Hastelloy® C-276 used in the cooling panels is expected to corrode less than 5 mpy leading to 25 mils of wear after 5 years of operation, which is less than the 0.031 inches (31 mils) recommended. It is also important to note that the cooling panels were built with a 0.125 inch (125 mils) corrosion allowance, which drastically exceeds the recommended corrosion allowance and adds additional margin. Based on the data available, it is apparent that the gas barrier and cooling panels will last the minimum design life of the melter.

Localized erosion is not expected to be a concern as the fluid is air or condensed water moving at slow velocities. Therefore, localized erosion is not expected at the gas barrier or cooling panels.

Localized corrosion could occur due to warm, wet, salt deposits on the cooler parts of the gas barrier and cooling panels. However, Hastelloy® C-276 has been shown to have excellent pitting resistance under the expected conditions and has been used satisfactorily in similar environments before. Results of testing that took place in the LAW Pilot Melter offgas system over 452 days resulted in pit depths of 0.5 mils. Since 31 mils is recommended, and only 0.5 mils was lost due to pitting over 452 days, it is apparent that it would take significantly longer than 5 years before pitting becomes an issue.

The gas barrier is made out of Inconel® 690. The temperatures at the gas barrier range from 121°F to 358°F. Section 4.2.5.1 of 24590-101-TSA-W000-0010-42-02 states that Inconel® 690 has been specified for its corrosion resistance to warm, wet, salt deposits that can occur at the gas barrier interface. Results of testing that took place in the LAW Pilot Melter offgas system over 452 days resulted in pit depths of 0.05 mils (test results on sheet 3). Since 125 mils is recommended, and only 0.05 mils was lost due to pitting over 452 days, it is apparent that it would take significantly longer than 5 years before pitting becomes an issue.

CORROSION EVALUATION

19 References

1. 24590-101-TSA-W000-0010-42-02, *LAW Melter Materials Selection Report.*
2. 24590-LAW-M2C-LMP-00001, *LAW Melter Lid CFD Analysis.*
3. 24590-LAW-MEC-PCW-00005, *Design Pressure and Design Temperature for Plant Cooling Water (PCW) System.*
4. 24590-QL-HC4-W000-00094-05-00001, *Calculation - LAW Discharge Chamber and South Wall Details Temperature Profile.*
5. 24590-WTP-GPG-M-047, *Preparation of Corrosion Evaluations.*
6. 24590-WTP-RPT-PR-04-0001-04, *WTP Process Corrosion Data - Volume 4.*
7. Hastelloy® C-276, 2001, Haynes International, Inc.
8. Imrich KJ and Jenkins CF. 1996. *Materials Performance in a Radioactive Waste/Glass Melter System Environment*, WSRC-MS-95-0482. Westinghouse Savannah River Company, Aiken, SC.
9. Imrich KJ. 2001. *Failure Analysis of a Pilot Scale Melter*, WSRC-MS-2001-00605. Westinghouse Savannah River Company, Aiken, SC.
10. Inconel® 690, 2002, Publication Number SMC-079, Special Metals Corporation.
11. Sedriks AJ. 1996. *Corrosion of Stainless Steels.* John Wiley & Sons, Inc., New York, NY.
12. Smith E C. and Matlack KS. 2011. *Advanced Joule Heated Melter Design to Reduce Hanford Waste Treatment Plant Operating Costs*, WM2011 Conference, WM Symposia, Tempe, AZ.
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Additional Reading

- 24590-LAW-3PS-AE00-T0001, *Engineering Specification for Low Activity Waste Melters.*
- CCN 120764, e-mail from M Hall to JR Divine, 24 March 2005, Melter Materials and Operating Conditions.
- Agarwal DC. 2000. *Nickel and Nickel Alloys*, In: Revie, WW, *Uhlig's Corrosion Handbook*, 2nd Edition, Wiley-Interscience, New York, NY.
- Davis JR (Ed). 1987. *Corrosion, Vol 13*, In "Metals Handbook", ASM International, Metals Park, OH.
- Imrich KJ. 1998. *Metallurgical Evaluation of an Inconel 690 Insert from a Radioactive Waste Glass Melter Pour Spout.* Westinghouse Savannah River Company, Aiken, SC.
- Wright IG. 1987. *High-Temperature Oxidation*, In: Davis, JR (Ed), *Corrosion, Vol 13*, In "Metals Handbook", ASM International, Metals Park, OH.

CORROSION EVALUATION

PROCESS CORROSION DATA SHEET (extract)

Component(s) (Name/ID #) LMP-MLTR-00001 & LMP-MLTR-00002 (LAW Melter 1&2 Gas Barrier and Cooling Panels

Facility LAW

In Black Cell? No

		Stream ID LMP14
Chemicals	Unit	**Gaseous**
CO2	ppmV	25,417
HCl	ppmV	558
HF	ppmV	4357
NH3	ppmV	22
NO	ppmV	2129
NO2	ppmV	10
SO2	ppmV	35
SO3(s)	mg/m^3	105
RH	%	0
Suspended Solids	wt%	n/a
Temperature	°F	n/a

AFS-15-0433

December 8, 2015

Ms. Tess Klatt
Subcontract Administrator
Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

Dear Ms. Klatt:

BECHTEL NATIONAL, INC. CONTRACT NO. 24590-CM-HC4-HXYG-00240 IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT FOR LAW LMP MISCELLANEOUS UNIT MELTERS (LMP-MLTR-00001/2) (IA-3014936-000)

The integrity assessment of the subject LAW LMP Miscellaneous Unit Melters (LMP-MLTR-00001/2) has been completed per the contract requirements and is enclosed for your use. The assessment found that the design is sufficient to ensure that the LAW LMP Miscellaneous Unit Melters (LMP-MLTR-00001/2) are adequately designed and have sufficient structural strength, compatibility with the waste(s) to be processed/stored/treated, and corrosion protection to ensure that they will not collapse, rupture, or fail.

If you have any questions, please contact Tarlok Hundal at (509) 371-1975, or via email at tarlok.hundal@areva.com.

Sincerely,

Elizabeth W. Smith, C.P.M
Contract Administrator
AREVA Federal Services LLC
Richland Office

Enclosure (1)

LP

cc: D. C. Pfluger, MS 12-2A w/enclosure (2)

AREVA

IA-3014936-000

IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT FOR LAW LMP MISCELLANEOUS UNIT MELTERS (LMP-MLTR-00001/2)

Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts; that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

AREVA

IA-3014936-000

IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT
FOR LAW LMP
MISCELLANEOUS UNIT MELTERS
(LMP-MLTR-00001/2)

"I, Tarlok Singh Hundal, have reviewed and certified a portion of the design of a new tank system or component located at the Hanford Waste Treatment Plant, owned/operated by Department of Energy, Office of River Protection, Richland, Washington. My duties were independent review of the current design for the LAW LMP Miscellaneous Unit Melters (LMP-MLTR-00001/2), as required by the Washington Administrative Code, *Dangerous Waste Regulations*, Section WAC-173-303-640(3) (a) through (g) applicable components."

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

The documentation reviewed indicates that the design fully satisfies the requirements of the WAC.

The attached review is sixteen (16) pages numbered one (1) through sixteen (16).

TARLOK SINGH HUNDAL
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER

Signature

12/8/2015
Date

Scope	Scope of this Integrity Assessment	This Integrity Assessment includes the evaluation of two LAW Melters (LMP-MLTR-00001/2), including their appurtenances located at Elevation 3'-0" in Room L-0112 of the LAW Vitrification Building as shown on plant general arrangement plan drawing 24590-LAW-P1-P01T-00002. In this report, the Melters are also interchangeably referred to be as miscellaneous units, vessels, or plant items.
Summary of Assessment		For each item of "Information Assessed" (i.e., Criteria) on the following pages, the documents listed under "Source of Information" were reviewed and found to furnish adequate design requirements and controls to ensure that the design fully satisfies the requirements of Washington Administrative Code (WAC), Chapter 173-303 WAC, *Dangerous Waste Regulations,* Section WAC-173-303-640 (3) (a) through (g) applicable elements of the *Tank Systems.*

References	Material Requisition and Specifications	Material Requisition (MR): 24590-QL-MRA-MEEM-00001, Rev. 10, Melter, Fabrication and Assembly, LAW (ML007), including SDDR No. 24590-WTP-ML-SDDR-10-00091. Specifications Listed in MR: The following Specifications with their respective revision and Specification Change Notices (SCNs) are listed in the above listed Material Requisition: 24590-WTP-3PS-G000-T0002, Engineering Specification for Positive Material Identification (PMI); 24590-WTP-3PS-G000-T0003, Engineering Specification for Packaging, Handling, and Storage Requirements; 24590-WTP-3PS-G000-T0006, Engineering Specification for Preserving, and Preparing Melter and Melter Components for Shipping, Handling, and Storage; 24590-WTP-3PS-G000-T0019, Engineering Specification for Acquisition of Commercial Items and Services for use in Safety Application at WTP. Specifications: 24590-LAW-3PS-AE00-T0001, Rev. 6, Engineering Specification for Low Activity Waste Melters; 24590-WTP-3PS-MQR0-T0004, Rev.1, Engineering Specification for LAW Facility Melter Rails, including 24590-WTP-3PN-MQR0-00033, 24590-WTP-FC-M-08-0114, 24590-WTP-SDDR-MH-07-00014, and 24590-WTP-SDDR-08-00011; 24590-LAW-3PS-M000-T0001, Rev. 1, Engineering Specification for LAW Pour Spout and Seal Head, including 24590-WTP-SDDR-M-05-00601; 24590-WTP-3PS-FB01-T0001, Rev. 6, Engineering Specification for Structural Design Loads for Seismic Category III & IV Equipment and Tanks, including 24590-WTP-3PN-FB01-00011, 24590-WTP-SDDR-E-15-00002, -00004, -00011, and 24590-WTP-SDDR-J-15-00003.

References (cont'd)	Plant Drawings	Plant Drawings including Drawing Change Notices (DCNs) listed in the above listed Material Requisition 24590-LAW-P1-P01T-00002, Rev. 7, LAW Vitrification Building General Arrangement Plan at El. 3'-0"; 24590-LAW-M6-LMP-00001001 (CBI), Rev. 0, P & ID-LAW Melter Process System Melter 1 Agitation Zone 1 & Zone 2 LMP-RK-0040A/B; 24590-LAW-M6-LMP-00031001(CBI), Rev. 0, P & ID-LAW Melter Process System Melter 2 Agitation Zone 1 & Zone 2; 24590-LAW-M6-LMP-00002001 (CBI), Rev. 0, P & ID-LAW Melter Process System Melter 1 Agitation Zone 3 and Level Detection LMP-RK-00040B and PPJ-RK-00001; 24590-LAW-M6-LMP-00002002 (CBI), Rev. 0, P & ID-LAW Melter Process System Melter 1 Agitation Zone 3 and Level Detection LMP-RK-00040C; 24590-LAW-M6-LMP-00032001 (CBI), Rev. 0, P & ID-LAW Melter Process System Melter 2 Agitation Zone 3 & Level Detection LMP-RK-00041B and PPJ-RK-00002; 24590-LAW-M6-LMP-00032002 (CBI), Rev. 0, P & ID-LAW Melter Process System Melter 2 Agitation Zone 3 & Level Detection LMP-RK-00041C; 24590-LAW-M5-V17T-00004, Rev. 4, Process Flow Diagram LAW Vitrification Melter 1 (System LMP & LOP); 24590-LAW-M5-V17T-00005, Rev. 4, Process Flow Diagram LAW Vitrification Melter 2 (System LMP & LOP); 24590-LAW-DB-S13T-00158, Rev. 3, LAW Vitrification Building Main Building Melter Rail Anchorage Enlarged Plan; 24590-LAW-DB-S13T-00014, Rev. 6, LAW Vitrification Building Main Building Partial Conc. Forming Plan Zone 1 @ El (+) 3'-0"; 24590-WTP-DD-S13T-00004, Rev. 5, Civil/Structural Standards Standard Embedded Anchor Bolt Details. 24590-LAW-DB-S13T-00018, Rev. 5, LAW Vitrification Building Main Building Partial Conc. Forming Plan Zone 5 @ El (+) 3'-0"; 24590-LAW-M0-LMH-00002001, Rev. 3, Vitrification System LMH Design Proposal Drawing LSM Rail Assembly; 24590-LAW-M0-LMH-00002002, Rev. 3, Vitrification System LMH Design Proposal Drawing LSM Rail Assembly Details; 24590-LAW-M0-LMH-00002003, Rev. 2, Vitrification System LMH Design Proposal Drawing LSM Rail Assembly Details; 24590-LAW-MF-LMP-000001, Rev. 0, LAW Melter Assembly-LAW-MLTR-00001/00002 Isometric View; 24590-LAW-MF-LMP-000002, Rev. 0, LAW Melter Assembly-LAW-MLTR-00001/00002 Plan View; 24590-LAW-MF-LMP-000003, Rev. 0, LAW Melter Assembly-LAW-MLTR-00001/00002 East, West and North Elevation; 24590-LAW-MF-LMP-000004, Rev. 0, LAW Melter Assembly-LAW-MLTR-00001/00002 Section A-A; 24590-LAW-MX-LMP-00009001, Rev. 0; LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009002, Rev. 0; LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009003, Rev. 0; LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009004, Rev. 0; LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009005, Rev. 0; LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009006, Rev. 0; LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009007, Rev. 0; LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009008, Rev. 0; LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009009, Rev. 0; LAW Melter Shield Lid Assembly (WTP-M-11750);

References (cont'd)	Plant Drawings	24590-LAW-MX-LMP-00010001, Rev. 0; LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010002, Rev. 0; LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010003, Rev. 0; LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010004, Rev. 0; LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010005, Rev. 0; LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010006, Rev. 0; LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010007, Rev. 0; LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010008, Rev. 0; LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010009, Rev. 0; LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010010, Rev. 0; LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010011, Rev. 0; LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010012, Rev. 0; LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806).

References (cont'd)	Vendor Drawings	Vendor Fabrication Drawings (* Bechtel Status Code 1 Drawings): **Note**: Many of the following drawings have been changed via various design change media documents, however, instead of listing all of them herein due to their very high number, they have been identified in the Redlined Drawings listed in Attachment L of 24590-LAW-M2C-LMP-00002, Rev. A, Structural and Seismic Analysis document. Each Redlined Drawing listed therein includes the list of change documents and shows the associated changes. All design changes issued against a drawing have been accounted for in the aforementioned analysis document. During the aforementioned analysis process, additional changes were recommended and incorporated as listed in the Vendor Design Change Notice (VDCN) # 24590-LAW-VDCN-ML-15-00018. This Integrity Assessment Report has been prepared inclusive of the review of the applicable drawings and design media. 24590-QL-HC4-W000-00011-03-32, Rev. 00C, South Wall Module Assembly; 24590-QL-HC4-W000-00011-03-33, Rev. 00A, South Wall Module Assembly; 24590-101-TSA-W000-0010-409-122, Rev. 00C, South Wall Module Assembly; 24590-101-TSA-W000-0010-409-123, Rev. 00C, South Wall Module Assembly; 24590-101-TSA-W000-0010-409-124, Rev. 00C, South Wall Module Assembly; 24590-101-TSA-W000-0010-409-125, Rev. 00C, South Wall Module Assembly; 24590-101-TSA-W000-0010-409-128, Rev. 00C, South Wall Module Assembly; 24590-101-TSA-W000-0010-409-111, Rev. 00B, South Wall Module Details; 24590-101-TSA-W000-0010-409-112, Rev. 00B, South Wall Module Details; 24590-101-TSA-W000-0010-409-113, Rev. 00C, South Wall Module Details; 24590-101-TSA-W000-0010-409-114, Rev. 00B, South Wall Module Details; 24590-101-TSA-W000-0010-409-955, Rev. 00B, South Wall Module Assembly; 24590-QL-HC4-W000-00011-03-00286, Rev. 00A, South Wall Module Assembly; 24590-QL-HC4-W000-00011-03-00309, Rev. 00A, North Wall Module Assembly; 24590-QL-HC4-W000-00011-03-00310, Rev. 00A, North Wall Module Assembly; 24590-QL-HC4-W000-00011-03-00312, Rev. 00A, North Wall Module Assembly; 24590-QL-HC4-W000-00011-03-00313, Rev. 00A, North Wall Module Assembly; 24590-QL-HC4-W000-00011-03-00314, Rev. 00A, North Wall Module Assembly; 24590-QL-HC4-W000-00011-03-00315, Rev. 00A, North Wall Module Assembly; 24590-QL-HC4-W000-00011-03-00316, Rev. 00B, North Wall Module Shielding Assembly; 24590-QL-HC4-W000-00011-03-00319, Rev. 00B, North Wall Module Shielding Assembly; 24590-101-TSA-W000-0010-409-167, Rev. 00B, North Wall Module Shielding Details; 24590-QL-HC4-W000-00011-03-00320, Rev. 00A, North Wall Module Details; 24590-QL-HC4-W000-00011-03-00321, Rev. 00A, North Wall Module Details; 24590-QL-HC4-W000-00011-03-00323, Rev. 00A, North Wall Module Details; 24590-101-TSA-W000-0010-409-131, Rev. 00C, South Wall Module Gas Barrier Assembly; 24590-101-TSA-W000-0010-409-888, Rev. 00B, South Wall Module Gas Barrier Assembly;

References (cont'd)	Vendor Drawings	24590-101-TSA-W000-0010-409-140, Rev. 00C, South Wall Module Shielding Assembly; 24590-101-TSA-W000-0010-409-141, Rev. 00C, South Wall Module Shielding Assembly; 24590-QL-HC4-W000-00011-03-38, Rev. 00A, North Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-39, Rev. 00A, North Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-40, Rev. 00A, North Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-43, Rev. 00A, North Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-00324, Rev. 00A, West Wall Assembly Module; 24590-QL-HC4-W000-00011-03-00325, Rev. 00A, West Wall Assembly Module; 24590-QL-HC4-W000-00011-03-00326, Rev. 00A, West Wall Assembly Module; 24590-QL-HC4-W000-00011-03-00327, Rev. 00A, West Wall Assembly Module; 24590-QL-HC4-W000-00011-03-00328, Rev. 00A, West Wall Assembly Module; 24590-101-TSA-W000-0010-409-186, Rev. 00E, West Wall Module Gas Barrier Assembly; 24590-101-TSA-W000-0010-409-187, Rev. 00C, West Wall Module Gas Barrier Assembly; 24590-101-TSA-W000-0010-409-188, Rev. 00E, West Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-00332, Rev. 00A, West Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-00335, Rev. 00A, West Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-00336, Rev. 00A, West Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-00337, Rev. 00A, West Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-00338, Rev. 00A, West Wall Module Shielding Assembly; 24590-QL-HC4-W000-00011-03-00339, Rev. 00A, West Wall Module Shielding Assembly; 24590-QL-HC4-W000-00011-03-00340, Rev. 00A, West Wall Module Shielding Assembly; 24590-QL-HC4-W000-00011-03-00341, Rev. 00A, West Wall Module Shielding Assembly; 24590-QL-HC4-W000-00011-03-00342, Rev. 00A, West Wall Module Shielding Assembly; 24590-QL-HC4-W000-00011-03-00343, Rev. 00A, West Wall Module Shielding Assembly; 24590-QL-HC4-W000-00011-03-00349, Rev. 00B, East Wall Assembly Module; 24590-QL-HC4-W000-00011-03-00350, Rev. 00B, East Wall Assembly Module; 24590-QL-HC4-W000-00011-03-00351, Rev. 00B, East Wall Assembly Module; 24590-QL-HC4-W000-00011-03-00352, Rev. 00A, East Wall Assembly Module; 24590-QL-HC4-W000-00011-03-00355, Rev. 00A, East Wall Assembly Module; 24590-QL-HC4-W000-00011-03-00357, Rev. 00A, East Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-00358, Rev. 00A, East Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-00359, Rev. 00A, East Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-00360, Rev. 00A, East Wall Module Gas Barrier Assembly; 24590-QL-HC4-W000-00011-03-00345, Rev. 00A, West and East Wall Module Details; 24590-QL-HC4-W000-00011-03-00346, Rev. 00A, West and East Wall Module Details;

References (cont'd)	Vendor Drawings	24590-QL-HC4-W000-00011-03-00347, Rev. 00A, West and East Wall Module Details; 24590-QL-HC4-W000-00011-03-00348, Rev. 00A, West and East Wall Module Details; 24590-QL-HC4-W000-00011-03-00235, Rev. 00C, Lower Containment Box Liner (Pour Spout); 24590-QL-HC4-W000-00011-03-00236, Rev. 00A, Lower Containment Box Liner (Pour Spout); 24590-QL-HC4-W000-00011-03-00274, Rev. 00B, Lower Containment Box Liner (Pour Spout); 24590-QL-HC4-W000-00011-03-00624, Rev. 00A, Lower Containment Box Liner (Pour Spout); 24590-QL-HC4-W000-00011-03-00625, Rev. 00A, Lower Containment Box Liner (Pour Spout); 24590-QL-HC4-W000-00011-03-00626, Rev. 00A, Lower Containment Box Liner (Pour Spout); 24590-QL-HC4-W000-00011-03-00627, Rev. 00A, Lower Containment Box Liner (Pour Spout); 24590-101-TSA-W000-0010-409-1387, Rev. 00B, Lower Containment Box Liner (Pour Spout); 24590-101-TSA-W000-0010-409-1388, Rev. 00B, Lower Containment Box Liner (Pour Spout); 24590-QL-HC4-W000-00011-03-00428, Rev. 00A, Base Assembly; 24590-QL-HC4-W000-00011-03-00429, Rev. 00A, Base Assembly; 24590-QL-HC4-W000-00011-03-00430, Rev. 00A, Base Assembly; 24590-QL-HC4-W000-00011-03-00431, Rev. 00A, Base Assembly; 24590-QL-HC4-W000-00011-03-00432, Rev. 00A, Base Assembly; 24590-QL-HC4-W000-00011-03-00433, Rev. 00A, Base Assembly; 24590-QL-HC4-W000-00011-03-00434, Rev. 00A, Base Frame Assembly; 24590-QL-HC4-W000-00011-03-00435, Rev. 00A, Base Frame Assembly; 24590-QL-HC4-W000-00011-03-00436, Rev. 00A, Base Frame Assembly; 24590-QL-HC4-W000-00011-03-00437, Rev. 00A, Base Frame Assembly; 24590-QL-HC4-W000-00011-03-00438, Rev. 00A, Base Frame Assembly; 24590-QL-HC4-W000-00011-03-00439, Rev. 00A, Base Frame Assembly; 24590-QL-HC4-W000-00011-03-00445, Rev. 00A, Base Frame Details; 24590-QL-HC4-W000-00011-03-00446, Rev. 00A, Base Frame Details; 24590-101-TSA-W000-0010-409-1063, Rev. 00A, Base Frame Details; 24590-101-TSA-W000-0010-409-1057, Rev. 00A, Base Seismic Clamp Assembly; 24590-101-TSA-W000-0010-409-1058, Rev. 00A, Base Seismic Clamp Assembly; 24590-101-TSA-W000-0010-409-1059, Rev. 00A, Base Seismic Clamp Assembly; 24590-101-TSA-W000-0010-409-450, Rev. 00B, Base Seismic Clamp Assembly; 24590-101-TSA-W000-0010-409-451, Rev. 00B, Base Seismic Clamp Frame; 24590-101-TSA-W000-0010-409-452, Rev. 00B, Base Seismic Clamp Details; 24590-101-TSA-W000-0010-409-453, Rev. 00C, Seismic Pin Support Frame; 24590-101-TSA-W000-0010-409-454, Rev. 00C, Rail Guide Details; 24590-101-TSA-W000-0010-409-455, Rev. 00B, Rail Guide Details;

References (cont'd)	Vendor Drawings	24590-101-TSA-W000-0010-409-430, Rev. 00B, Base Roller Assembly; 24590-101-TSA-W000-0010-409-432, Rev. 00B, Roller Frame Details; 24590-101-TSA-W000-0010-409-456, Rev. 00B, Pulley Assembly; 24590-QL-HC4-W000-00011-03-00447, Rev. 00A, Gas Barrier Plate Details; 24590-QL-HC4-W000-00011-03-00448, Rev. 00A, Gas Barrier Plate Details; 24590-QL-HC4-W000-00011-03-00451, Rev. 00B, Base Center Assembly; 24590-QL-HC4-W000-00011-03-00452, Rev. 00B, Base Center Assembly; 24590-QL-HC4-W000-00011-03-00453, Rev. 00B, Base Center Assembly; 24590-QL-HC4-W000-00011-03-00454, Rev. 00A, Base Center Assembly; 24590-QL-HC4-W000-00011-03-00455, Rev. 00B, Base Center Assembly; 24590-QL-HC4-W000-00011-03-00456, Rev. 00B, Pulley Assembly; 24590-QL-HC4-W000-00011-03-00578, Rev. 00A, Melter Assembly Base and Wall Module; 24590-QL-HC4-W000-00011-03-00587, Rev. 00A, Melter Assembly Base and Wall Module; 24590-QL-HC4-W000-00011-03-00579, Rev. 00A, Melter Assembly Base and Wall Module;+- 24590-QL-HC4-W000-00011-03-00580, Rev. 00A, Melter Assembly Base and Wall Module; 24590-101-TSA-W000-0010-409-651, Rev. 00B, Refractory Assembly; 24590-101-TSA-W000-0010-409-652, Rev. 00B, Refractory Assembly; 24590-101-TSA-W000-0010-409-528, Rev. B02, Gas Barrier Lid Assembly; 24590-101-TSA-W000-0010-409-529, Rev. B00, Gas Barrier Lid Assembly; 24590-101-TSA-W000-0010-409-540, Rev. B02, Gas Barrier Lid Assembly; 24590-101-TSA-W000-0010-409-541, Rev. B01, Gas Barrier Lid Assembly; 24590-101-TSA-W000-0010-409-550, Rev. B01, Gas Barrier Lid Assembly; 24590-101-TSA-W000-0010-409-551, Rev. B01, Gas Barrier Lid Assembly; 24590-101-TSA-W000-0010-409-562, Rev. 00C, East and West Lid Castable Forms Assembly; 24590- QL-HC4-W000-0011-03-00540, Rev. 00A, Melter Assembly Gas Barrier Lids; 24590-101-TSA-W000-0010-409-228, Rev. 00C, Jackbolt Assembly; 24590-101-TSA-W000-0010-409-229, Rev. 00C, Jackbolt Assembly; 24590-101-TSA-W000-0010-409-230, Rev. 00C, Jackbolt Assembly; 24590-QL-HC4-W000-00011-03-00546, Rev. 00A, Melter Assembly Glass Pool; 24590-QL-HC4-W000-00011-03-00558, Rev. 00A, Melter Assembly Glass Pool; 24590-QL-HC4-W000-00011-03-00523, Rev. 00A, Melter Assembly Shielded Lid; 24590-QL-HC4-W000-00011-03-00524, Rev. 00A, Melter Assembly Shielded Lid; 24590-QL-HC4-W000-00011-03-00525, Rev. 00A, Melter Assembly Shielded Lid; 24590-QL-HC4-W000-00011-03-00526, Rev. 00A, Melter Assembly Shielded Lid; 24590-QL-HC4-W000-00011-03-00527, Rev. 00A, Melter Assembly Shielded Lid; 24590-QL-HC4-W000-00011-03-00531, Rev. 00A, Melter Assembly Shielded Lid;

References (cont'd)	Vendor Drawings, Mechanical Data Sheets, and System Design Description	24590-QL-HC4-W000-00011-03-65, Rev. 00C, Shielded Lid Support Structure Assembly; 24590-QL-HC4-W000-00011-03-66, Rev. 00B, Shielded Lid Support Structure Assembly; 24590-QL-HC4-W000-00011-03-67, Rev. 00C, Shielded Lid Support Structure Assembly; 24590-QL-HC4-W000-00011-03-70, Rev. 00B, Shielded Lid Support Structure Assembly; 24590-QL-HC4-W000-00011-03-78, Rev. 00A, Shielded Lid Support Structure Assembly. * Bechtel Status Code 1 Drawing is an "as fabricated vendor drawing" approved/accepted by Bechtel. Mechanical Data Sheets: 24590-LAW-M0D-LMP-00001, Rev. 3, LAW Melter 1 (LMP-MLTR-00001); 24590-LAW-M0D-LMP-00002, Rev. 3, LAW Melter 2 (LMP-MLTR-00002). System Design Description: 24590-LAW-3ZD-LMP-00001, Rev. 0, Low-Activity Waste Melter Process System Design Description.

	Information Assessed	Source of Information	Assessment
Design	Vessel design standards are appropriate and adequate for the vessel's intended use.	Material Requisition, Mechanical Data Sheets, Specifications, and Drawings listed above under References; ASME Boiler and Pressure Vessel Code (BPV), Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers; ASME Boiler and Pressure Vessel Code (BPV), Section VIII, Division 2, Alternate Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers; ASME Boiler and Pressure Vessel Code (BPV), Section II, Part D, Materials Properties, American Society of Mechanical Engineers; ASME NQA-1, Quality Assurance Requirements for Nuclear Facilities, American Society of Mechanical Engineers; ASME B31.3 Code, Process Piping, American Society of Mechanical Engineers; AISC N690-1994, Specification for the Design, Fabrication, and Erection of the Steel Safety-Related Structures for Nuclear Facilities, American Institute of Steel Construction; AISC M016-89, Manual of Steel Construction-Allowable Stress Design, 9th Edition, American Institute of Steel Construction; AWS D1.1, Structural Welding Code-Steel, American Welding Society; AWS D1.6, Structural Welding Code-Stainless Steel, American Welding Society; ASCE-7, Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers; UBC 1997, Uniform Building Code, International Conference of Building Officials.	The Mechanical Data Sheets and Engineering Specification for LAW Melters require that LMP Melter 1 and Melter 2 (LMP-MLTR-00001/2) and their appurtenances are to be designed for the design parameters listed therein and to be in compliance with the applicable requirements of various codes and standards listed in the Source of Information column. The requirements of the listed codes and standards are appropriate for these plant items operating with mixed waste solutions over the pressure and temperature ranges specified for them. Additional supplementary requirements are also specified in Material Requisition and other listed Specifications. Supplementary requirements address vessels' positive material identification, lifting attachment design, acceptable welding procedures for the vessel and appurtenances, welder qualifications and testing records, NDE inspections and records, packaging, handling and storage requirements. The Mechanical Data Sheets and drawings show that the overall dimensions of LMP-MLTR-00001/2 outer shell are 256" W x 367" L x 190" H. Each vessel is supported on 12 wheel assemblies which roll on two carbon steel rails anchored to the concrete floor slab. Each plant item has internal equipment such as a bubbler and thermal couple wells that are supported from the top lid are made of Inconel 690 (Alloy 690) material. The Mechanical Data Sheets list the materials for the shell comprising of base, external walls, lid and lid cover as a mixture of various types such as A36, A500, Hastelloy C276 (Alloy C276), Alloy 690, Alloy 625, and 316L stainless steel. The design standards and codes listed in the Source of Information column are appropriate and adequate for the design, construction, and intended use of the Melters.

	Information Assessed	Source of Information	Assessment
Design (cont'd)	If a non-standard vessel is to be used, the design calculations demonstrate sound engineering principles of construction.	Specifications, Mechanical Data Sheets, Material Requisition, and Drawings listed above under References; ASME B31.3 Code, Process Piping, American Society of Mechanical Engineers; ASME Boiler and Pressure Vessel Code (BPV), Section II, Part D, Materials Properties, American Society of Mechanical Engineers; UBC 1997, Uniform Building Code, International Conference of Building Officials; ASCE 7, Minimum Design Loads in Building and Other structures (1998), American Society of Civil Engineers; AISC 1989, Manual of Steel Construction ADS, Ninth Edition, American Institute of Steel Construction; 24590-LAW-M2C-LMP-00001, Rev. 0, Thermal Analysis of Gas Barrier Lid; Law Melter Lid CFD Analysis; 24590-LAW-M2C-M80T-00003, Rev. B, LAW Melter Lid Refractory Thermal/Structural Finite Element Analysis Using ANSYS; 24590-LAW-M2C-LMP-00002, Rev. A, LMP-MLTR-00001 & LMP-MLTR-00002, LAW Melter Units, Structural and Seismic Analysis with ANSYS; CCN 159372, ISM Review-Revised LAW Melter Lid Cooling Design; 24590-QL-HC4-W000-00094-05-00001, Rev. 00B, LAW Melter Thermal Profile Analysis; 24590-QL-HC4-W000-00011-03-00647, Rev. 00A, Seismic Analysis of LAW Pour Spout; 24590-QL-HC4-W000-00011-03-00257, Rev. 00B, LAW Pour Spout Bolted and Welded Connection Structural Analysis; 24590-QL-HC4-W000-00011-03-00258, Rev. 00B, LAW Pour Spout Thermal Stress Calculation; 24590-WTP-DC-PS-01-001, Rev. 8, Pipe Stress Design Criteria; 24590-LAW-P61C-LMP-00002, Rev. A, LAW Melter Process Piping and Discharge Chamber Vent Piping Analysis with ANSYS; 24590-LAW-P61C-LOP-00002, Rev. C, LAW Main/Standby Offgas Piping.	The LAW Melter 1 and Melter 2 (LMP-MLTR-00001/2) are unique non-standard vessels. The Specification for LAW Melters states that these plant items are to be designed to the applicable requirements of the combination of various codes and standards listed in the Source of Information column. The Mechanical Data Sheets refer to use Specification for LAW Melters that requires these miscellaneous units and their components to be delivered after design, fabrication, inspection, and testing. Review of the Design Calculation documents of these Melters including its components show that they have been designed as required per above listed codes and standards and other documents listed in the Material Requisition for these units. The aforementioned statements and the vendor fabrication drawings reviewed demonstrate that sound engineering principles of construction and fabrication have been used for these Melters.

	Information Assessed	Source of Information	Assessment
Design (cont'd)	Vessel has adequate strength, after consideration of the corrosion allowance, to withstand the operating pressure, operating temperature, and seismic loads.	Specifications, Mechanical Data Sheets, and Material Requisition, listed above under References; ASME Boiler & Pressure Vessel Code (BPV), Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers; UBC 1997, Uniform Building Code, International Conference of Building Officials; ASCE 7, Minimum Design Loads in Building and Other structures (1998), American Society of Civil Engineers; 24590-WTP-DC-ST-04-001, Rev. 4A, Seismic Analysis and Design Criteria; AISC 1989, Manual of Steel Construction ADS, Ninth Edition, American Institute of Steel Construction; 24590-LAW-M2C-M80T-00003, Rev. B, LAW Melter Lid Refractory Thermal/Structural Finite Element Analysis Using ANSYS; 24590-LAW-M2C-LMP-00002, Rev. A, LMP-MLTR-00001 & LMP-MLTR-00002, LAW Melter Units, Structural and Seismic Analysis with ANSYS; CCN 159372, ISM Review-Revised LAW Melter Lid Cooling Design; 24590-LAW-M2C-LMP-00001, Rev. 0, Thermal Analysis of Gas Barrier Lid; Law Melter Lid CFD Analysis.	The Specification for LAW Melters identifies their operating pressure and temperature ranges, the materials selected, the melter quality level, and its seismic category. The Mechanical Data Sheets refer to use Specification for LAW Melters that requires these Melters to be delivered after design, fabrication, inspection, and testing. Review of the Design Calculation documents of these melters show that they have been designed as required per above listed documents and specifications listed in the Material Requisition document and additional Specifications. The Mechanical Data Sheets list LAW Milters' Seismic Category as SC- III. For SC-III plant items, the detailed requirements for seismic load determination (per UBC 1997) are furnished in the Specification for Structural Design Loads for Seismic Category III & IV Equipment and Tanks to provide for the seismic design analysis. The outer Melter enclosure structure is not exposed to any corrosive environment inside or outside, therefore, no corrosion allowance is required for it. However, some other components have been evaluated for corrosion as reported below in the Corrosion Protection and Corrosion Allowance sections. The Engineering Specification for Seismic Qualification Criteria for Pressure Vessels provides pertinent requirements for determination of seismic loads, analysis, and acceptance criteria for the vessels and their supports. Review of the Design Calculation documents demonstrates that all components of the Melter units after consideration of applicable corrosion allowances have adequate strength to withstand the applicable operating pressure, temperature, and seismic loads for the specified design life of the vessels. Furthermore, approval and acceptance of the vendor fabrication drawings by Bechtel National Inc. (BNI) is an added assurance that all applicable requirements stated above and as described in documents (including daughter documents) listed in Material Requisition and various Specifications for the plant items have been met.

	Information Assessed	Source of Information	Assessment
Foundation	Vessel foundation will maintain the load of a full vessel.	Specifications listed above under References; 24590-WTP-DC-ST-04-001, Rev. 4A, Seismic Analysis and Design Criteria; 24590-WTP-DC-ST-01-001, Rev. 13, Structural Design Criteria. 24590-WTP-DB-ENG-01-001, Rev. 2, Basis of Design; 24590-LAW-M2C-LMP-00003, Rev. 0, LAW Melter Seismic Restraint Capacity; 24590-LAW-S0C-S15T-00032, Rev. A, LAW Melter Rail Seismic Anchor Pin Analysis; 24590-LAW-DDC-S13T-00014, Rev. 0A, Melter Seismic Restraint; 24590-LAW-S0C-S15T-00031, Rev. 0A, Seismic Qualification of the LAW Facility Melter Rails; 24590-LAW-M2C-LMP-00002, Rev. A, LMP-MLTR-00001 & LMP-MLTR-00002, LAW Melter Units, Structural and Seismic Analysis with ANSYS.	The Engineering Specification for LAW Melters provides the structural requirements for the design of Melter shell components inclusive of supports that they will be designed per Seismic Analysis and Design Criteria and Structural Design Criteria documents, ensuring an adequate design for the Melter supports. Review of the Design Calculation documents of the vessels show that the plant items supports have adequate strength to maintain the loads of full Melters. Furthermore, Chapter 14 of the Basis of Design document requires that the foundation underlying the vessel support must be adequate to support the loads from full vessel, which is out of scope of this assessment. The assessment of the adequacy of the underlying foundation is part of a separate integrity assessment report for the Secondary Containment of the vessels.
	If in an area subject to flooding, the vessel is anchored.	Drawings, Mechanical Data Sheets listed under References; 24590-LAW-PER-M-02-002, Rev. 7, Dangerous Waste Permit (DWP) Liner Heights in LAW Facility.	Drawings show that the Melters are located in Room L-0112 at floor Elev. 3'-0" of the LAW facility building. The Mechanical Data Sheets and the Liner Heights documents do not list any flooding in Room L-0112; therefore, the flooding consideration does not apply.
	Vessel system will withstand the effects of frost heave.	24590-WTP-DC-ST-01-001, Rev. 13, Structural Design Criteria.	The Structural Design Criteria document requires that all structural foundations for outdoor equipment to extend a distance below grade that exceeds the 30" depth of the frost line. The vessels are located inside/interior of the building at Elev. 3'-0" level, and the building's lower level floor is at Elev. (-) 21'-0", therefore, the melters' foundations are not subject to frost heave.

	Information Assessed	Source of Information	Assessment
Waste Characteristics	Characteristics of the waste to be stored or treated have been identified (dangerous waste characteristics, specific gravity, vapor pressure, flash point, storage temperature).	System Design Description and Specifications listed above under References; 24590-LAW-N1D-LMP-00001, Rev. 1, Corrosion Evaluation, LAW Melter 1 & Melter 2 (LMP-MLTR-00001/2) Gas-barrier and Cooling Panels; 24590-101-TSA-W000-0010-42-02, Rev. 00B, LAW Melter Materials Selection Report; 24590-WTP-PER-PR-03-002, Rev. 3, Control of Toxic Vapors and Emissions from WTP Tank and Miscellaneous Unit Systems; CCN 280210, LAW Miscellaneous Treatment Unit Hydrogen Accumulation Documentation for the DWP Administrative Record.	The System Design Description, Specification for Melters, Corrosion Evaluation, and Melter Materials Selection Report documents identify the process conditions and design parameters of the melters, such as the waste chemical composition, temperatures, and pressures. The Melter Materials Selection Report document evaluates numerous material used for various components of the Melter units. The Corrosion Evaluation document appropriately addresses the pH value and chemical composition of the condensate and selects appropriate material for the melter gas barrier shell and cooling panels. Waste characteristics that are hazardous, such as ignitability, reactivity, toxicity, and hydrogen accumulation are appropriately addressed in the Control of Toxic Vapors and Emissions and CCN 280210 documents. Review of these documents show that the Melter units do not pose any dangerous or hazardous conditions.
	Vessel is designed to store or treat the wastes with the characteristics defined above and any treatment reagents.	System Design Description listed above under References; 24590-101-TSA-W000-0010-42-02, Rev. 00B, LAW Melter Materials Selection Report.	The Melter Materials Selection Report document demonstrates in depth that the Melter units are designed to handle the process discussed in the System Design Description. The System Design Description document discusses the normal and off-normal operations for the Melter units. The System Design Description document describes that the Melter system is designed to convert the mixture of pretreated LAW and glass-forming chemicals into glass or immobilized low activity waste (ILAW).
	The waste types are compatible with each other.	System Design Description listed above under References.	The System Design Description for the LAW LMP system does not describe any operations where incompatible wastes are mixed in these Melters for processing. These Melters are part of LAW LMP system for producing the LAW waste containers.

	Information Assessed	Source of Information	Assessment
Corrosion Protection	Vessel material and protective coatings ensure the vessel structure is adequately protected from the corrosive effects of the waste stream and external environments (expected to not leak or fail for the design life of the system).	Mechanical Data Sheets and Drawings listed above under References; 24590-101-TSA-W000-0010-42-02, Rev. 00B, LAW Melter Materials Selection Report; 24590-LAW-N1D-LMP-00001, Rev. 1, Corrosion Evaluation, LAW Melter 1 & Melter 2 (LMP-MLTR-00001/2) Gas-barrier and Cooling Panels. 24590-LAW-PER-M-02-002, Rev. 7, Dangerous Waste Permit (DWP) Liner Heights in LAW Facility.	The Melter Materials Selection Report extensively evaluates the selects various corrosion resistant material for the Melter and its components. The five-sided glass pool open top box in lined with refractory to withstand molten glass corrosion. The gas space plenum above the glass pool is also a five-side open bottom box is also lined with refractory to withstand hot corrosive gases, thermal shock, and glass splatter. The Metallic Gas-barrier and Cooling Panels are evaluated in Corrosion Evaluation document which recommends 0.125" corrosion allowance for components within the Gas-barrier and 0.031" for the Cooling Panels inside the Gas-barrier. The other pertinent Melter operation and design information is provided in the Mechanical Data Sheets and Specification for LAW Melters. Each Melter is built up with a mix of Inconel 690, Hastelloy C-276, 316L stainless steel, and A36/A500 carbon steel materials. The Liner Heights document does not indicate any flooding problem in the Melters room area (Room L-0112); therefore, it should remain dry during normal operations which will prevent external corrosion of the Melters for their service life of 5 years. Careful selection of internal and external materials, provide adequate protection from waste stream and external environment.

	Information Assessed	Source of Information	Assessment
Corrosion Allowance	Corrosion allowance is adequate for the intended service life of the vessel.	Mechanical Data Sheets listed above under References; 24590-101-TSA-W000-0010-42-02, Rev. 00B, LAW Melter Materials Selection Report; 24590-LAW-N1D-LMP-00001, Rev. 1, Corrosion Evaluation, LAW Melter 1 & Melter 2 (LMP-MLTR-00001/2) Gas-barrier and Cooling Panels.	The Melter Materials Selection Report evaluates numerous components materials of the Melter in detail and it recommends specific type of corrosion resistant material for specific component, compartment or area. The areas included are glass pool, cold cap, plenum, discharge chamber, gas-barrier annulus, and shielding annulus areas. The Corrosion Evaluation, Melter Materials Selection Report, and Mechanical Data Sheets documents list the Cooling Panels are made up of Alloy 276 (UNS N10276) material and the Gas-barrier components are made up of Alloy 690 (UNS N10690). The Corrosion Evaluation report recommends 0.125" corrosion allowance for components within the Gas-barrier and 0.031" for the Cooling Panels inside the Gas-barrier. Based on the review of Corrosion Evaluation and Melter Materials Selection Report, the corrosion allowance for materials selected for various components are adequate for their intended service during the 5-year design life of the Melters.
Pressure Relief	Pressure controls (vents and relief valves) are adequately designed to ensure pressure relief if normal operating pressures in the vessel are exceeded.	Drawings and System Design Description listed above under References.	The LMP Melter 1 and Melter 2 (LMP-MLTR-00001/2) receive blend of LAW concentrate and glass former additives from the LFP system. The drawings show that the Melters are fed from the top. To avoid the pressurization and high level in the Melters, appropriate controls are provided at the control station in addition to exhaust vent and overflow thru spout. The System Design Description document also describes that the pressure relief valves are provided for each Melter, which will prevent their over pressurization.

This information has been identified as **CONFIDENTIAL BUSINESS INFORMATION**

Per the Department of Ecology's letter 11-NWP-126, dated October 28, 2011, "Re: Certification of Confidential Business Information for the Waste Treatment Plant," under the criteria of 43.21A.160 RCW and WAC 173-303-810 (15), the following document and associate changes are granted confidentiality and are exempt from public review:

Document Number: 24590-LAW-MF-LMP-00001 Title: P&ID –

This information has been identified as **CONFIDENTIAL BUSINESS INFORMATION**

Per the Department of Ecology's letter 11-NWP-126, dated October 28, 2011, "Re: Certification of Confidential Business Information for the Waste Treatment Plant," under the criteria of 43.21A.160 RCW and WAC 173-303-810 (15), the following document and associate changes are granted confidentiality and are exempt from public review:

Document Number: 24590-LAW-MF-LMP-00002 Title: P&ID –

This information has been identified as **CONFIDENTIAL BUSINESS INFORMATION**

Per the Department of Ecology's letter 11-NWP-126, dated October 28, 2011, "Re: Certification of Confidential Business Information for the Waste Treatment Plant," under the criteria of 43.21A.160 RCW and WAC 173-303-810 (15), the following document and associate changes are granted confidentiality and are exempt from public review:

Document Number: 24590-LAW-MF-LMP-00003 Title: P&ID –

This information has been identified as **CONFIDENTIAL BUSINESS INFORMATION**

Per the Department of Ecology's letter 11-NWP-126, dated October 28, 2011, "Re: Certification of Confidential Business Information for the Waste Treatment Plant," under the criteria of 43.21A.160 RCW and WAC 173-303-810 (15), the following document and associate changes are granted confidentiality and are exempt from public review:

Document Number: 24590-LAW-MF-LMP-00004 Title: P&ID –

U.S. Department of Energy, Office of River Protection Certification

The following certification statement is provided for the submittal of the Hanford Facility Resource Conservation and Recovery Act Permit Modification Notification LAW-016 Engineering Documentation.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

K. W. Smith, Manager for
U.S. Department of Energy,
Office of River Protection

12/17/15
Date

Bechtel National, Inc. Certification

The following certification statement is provided consistent with Contract No. DE-AC27-01RV14136, Section H.26, Environmental Permits, paragraph (g) for the submittal of the Hanford Facility Resource Conservation and Recovery Act Permit Package LAW-016 Engineering Documentation.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. G. McCullough
Project Director

12/15/15
Date

OXENFORD Acting For MGM