



06-ESQ-179

JAN 05 2007

Ms. Jane Hedges, Program Manager
Nuclear Waste Program
Washington State
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354

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EDMC

Dear Ms. Hedges:

COMMENTS ON THE DRAFT WASTE TREATMENT AND IMMOBILIZATION PLANT (WTP) DANGEROUS WASTE PERMIT: 2+2 MELTER CONFIGURATION PERMIT MODIFICATION

Reference: Ecology letter from J. A. Hedges to R. J. Schepens, ORP; K. A. Klein, RL; and W. S. Elkins, BNI, "Draft Waste Treatment and Immobilization Plant (WTP) Dangerous Waste Permit," dated October 4, 2006.

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Thank you for the opportunity to comment on the draft 2+2 Melter Configuration Permit Modification. Comments on the proposed permit modification are provided in Attachment 1. Attachment 2 provides recommended improvements to the permit which have been shared with your staff. Supporting materials to our comments are provided in Attachment 3.

In March 2004, the U.S. Department of Energy, Office of River Protection (ORP) and Bechtel National, Inc. (BNI) submitted a permit modification to the Washington State Department of Ecology (Ecology) that proposed to:

- Change the facility configuration to two Low-Activity Waste (LAW) and two High-Level Waste (HLW) melters (2+2 configuration);
- Remove the Technetium (Tc99) Ion Exchange System from the Pretreatment Facility; and
- Update engineering information in the permit that had been submitted previously to satisfy the compliance schedule and approved by Ecology.

Ecology's draft permit (Reference) contained a number of Ecology-initiated changes, including:

- Addition of HLW drawings to the permit that were not submitted by the permittees;
- Addition of permit requirements for support systems that transfer waste containers (e.g. cranes);

- Addition of permit requirements for utilities (e.g., steam and cooling water);
- A requirement to stop fabrication on six vessels; and
- Requirements to maintain the capability to install the third LAW melter and the Technetium Ion Exchange System.

ORP and BNI are concerned that the changes proposed by Ecology to retain the capability to add a third melter, to restore the Tc-99 ion exchange system into the Pretreatment Facility, to stop fabrication on six vessels, and to permit mechanical handling systems and other support systems (e.g., utilities) will not result in significantly greater protection of human health and the environment, but would likely impact the project's schedule because of the changes that would be necessary to current plans in order to comply with the proposed permit conditions.

Relative to the 2+2 melter configuration, ORP and BNI conducted extensive discussions with Ecology, including a technical meeting on March 31, 2003, to explain the basis for the proposed change. The change from three to two LAW melters was based on vendor tests showing that an approximate 50% increase in LAW throughput per melter could be achieved. The two enhanced LAW melters will be capable of achieving the same net throughput as the three LAW melters of the initial design. Given that the LAW Vitrification Facility design could only accommodate two of the higher capacity LAW melters, the addition of a third melter would be expensive and serve no value (it was pointed out that a third melter held in standby would deteriorate in the WTP environment). ORP, therefore, agreed to reserve space for the third LAW melter as a contingency, but not to actually install a third melter at plant startup. ORP's basic objection to Ecology's proposed language is the ambiguity regarding actions necessary by ORP to reserve third melter space. ORP has, therefore, recommended permit language to clarify currently ambiguous points in the draft language.

Relative to Tc-99 ion exchange, ORP demonstrated through performance assessments that Tc-99 does not present a groundwater issue for LAW glass produced in the WTP. In fact, if Tc-99 ion exchange were included in pretreatment, it is unclear that sufficient justification would then exist to vitrify the LAW.

Ecology states that its Tc-99 concern is focused on Tc-99 pathways that may exist for non-WTP supplemental LAW treatment alternatives under consideration in the Tank Closure and Waste Management (TC & WM) Environmental Impact Statement (EIS). ORP recommends that the Tc-99 ion exchange language be removed from the WTP permit since WTP LAW vitrified wastes do not require Tc-99 ion exchange to meet applicable standards. If the TC & WM EIS Record of Decision (ROD) leads to the selection of a supplemental LAW immobilization technology that requires Tc-99 removal to meet applicable standards, then ORP will include Tc-99 as a pretreatment for the technology. That Tc-99 pretreatment need not and would not take place within the Pretreatment Facility. Accordingly, ORP requests that Ecology remove Tc-99 ion exchange from the WTP Permit with the understanding that such ion exchange can be

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included, if necessary to meet applicable standards, as part of the pretreatment of waste feed to the supplemental LAW immobilization ultimately selected in the TC & WM EIS ROD.

We look forward to having an opportunity to discuss our comments with you, and to completing the task of designing, constructing, and commissioning the WTP.

If you have any questions, please contact me, or your staff may contact Lori A. Huffman, Office of Environmental Safety and Quality, (509) 376-0104, or Brad G. Erlandson, BNI, (509) 371-3826.


Roy J. Schepens, Manager
Office of River Protection


W. S. Elkins, Project Director
Bechtel National, Inc.

ESQ:LAH

Attachments (3)

cc w/attachs:

C. M. Albert, BNI
J. M. Atwood, BNI
W. S. Elkins, BNI
B. G. Erlandson, BNI
P. A. Fisher, BNI
D. A. Klein, BNI
J. Cox, CTUIR
S. Harris, CTUIR
M. Anderson-Moore, Ecology
B. Becker-Khaleel, Ecology
L. J. Cusack, Ecology
S. L. Dahl, Ecology
G. P. Davis, Ecology

J. Manning, Ecology
D. Bartus, EPA Region 10
S. A. Thompson, FHI
S. L. Leckband, HAB
G. Bohnee, NPT
K. Niles, Oregon Energy
P. Garcia, RL
A. C. McKarns, RL
P. E. Peistrup, WGI
R. Jim, YN
Administrative Record (WTP H-0-8)
BNI Correspondence
Environmental Portal, LMSI

Attachment 1
06-ESQ-179

Comments on Proposed Permit Modification



HANFORD TANK WASTE
TREATMENT AND
IMMOBILIZATION PLANT
(WTP)

HAZARDOUS WASTE PERMIT
DRAFT 2+2 PERMIT MODIFICATION
WTP COMMENTS

GENERAL COMMENT

TOPIC: *GENERAL*

- CONDITION NO:
- III.10.C.15
 - III.10.E.2.d
 - III.10.E.2.e
 - III.10.I.1.a.xxiii.
 - Attachment 51, Appendices 10.1, 10.2

COMMENT (00A): The Waste Treatment and Immobilization Plant (WTP) is being designed and constructed and will operate to address the radioactive legacy of the Cold War. Design and construction is being performed in compliance with State Hazardous Waste Regulations and environmental permit requirements to reduce the possibility of threats to the public, the environment, and the Columbia River. In addition to meeting these requirements, potential impacts associated with emissions from the facility must meet strict criteria for human health and ecological risks.

We are concerned that the additional requirements being imposed by Ecology will impact scheduled completion of the project without improving public health and safety, advancing Hanford Site clean-up, or protecting the environment. Additionally, we believe Ecology has exceeded the scope of the Hazardous Waste Regulations by requiring the project to maintain specific capabilities, and obtain Ecology approval of specific design elements not covered by environmental regulations. These concerns are elaborated in our other comments.

In September 2002, the WTP embarked with Ecology on an important permitting process when the Department issued the Hazardous Waste Permit. Besides including requirements for facility operations, the Permit included a compliance schedule to provide additional engineering information to Ecology. Since the Permit was issued, detailed information has been developed and submitted consistent with Permit requirements and has been approved by Ecology. In addition to the information in the original application, the Permit now contains:

- 41 Process Flow Diagrams
- 184 Piping and Instrumentation Diagrams
- 36 General Arrangement Drawings
- 43 Equipment Assembly Drawings
- 35 Specifications
- 79 Reports issued by an Independent, Registered, Qualified Professional Engineer
- 87 Material Selection Data Sheets
- 163 Mechanical Data Sheets
- 55 other permit documents.

Furthermore, nearly 1300 design and field changes have been provided to Ecology in accordance with Permit requirements. Ecology staff and management also receive the Office of River Protection WTP daily report, and routinely attend the Project's meetings on technical, cost, and schedule matters.

Consistent with early agreements made with Ecology, we have provided unencumbered

access to Project facilities. Many accommodations have been made to ensure Ecology has the information needed to monitor the progress of the Project:

- Around-the-clock electronic access to the Project's electronic library of over 215,000 drawings and documents from Ecology offices
- A turn-around office with computer access to the WTP three-dimensional design model at the WTP offices
- A turn-around office with computer at the WTP construction site
- Unescorted access to the WTP offices
- Unescorted access to the WTP construction site
- Unescorted access to WTP staff, supervisors, and management to discuss and resolve issues.

Additionally, the Permittees have worked to communicate with Ecology through over 100 "DWP Integration" meetings as well as numerous informal meetings to discuss and resolve issues.

In March 2004, a permit modification request was submitted to Ecology that proposed to:

- Change the facility configuration to 2 LAW and 2 HLW melters
- Remove the Technetium Ion Exchange System from the Pretreatment Facility
- Update information in the permit text based on engineering information that had been submitted and approved by Ecology to satisfy the compliance schedule.

The content and scope of the permit modification request was discussed with Ecology before the request was submitted, and Ecology was provided an opportunity to review the draft permit modification request and provide informal comments. These informal comments were resolved prior to formal submittal of the permit modification request

Given our history of engagement, the number of approved documents, the access given to Ecology, and the dialogue we have sought to maintain, Ecology's proposed requirements to maintain capability to install the third LAW melter, maintain capability to install the Technetium Ion Exchange system, require the permitting of utility systems and mechanical handling systems, and require fabrication of six vessels to be stopped are unnecessary and appear to be without regulatory foundation in Chapter 70.105 RCW and Chapter 173-303 WAC.

REFERENCE(S):

- WTP Dangerous Waste Permit
- Chapter 173-303 WAC
- Chapter 70.105 RCW



HANFORD TANK WASTE
TREATMENT AND
IMMOBILIZATION PLANT
(WTP)

HAZARDOUS WASTE PERMIT
DRAFT 2+2 PERMIT MODIFICATION
WTP COMMENTS

COMMENT #1

TOPIC: GENERAL

- CONDITION NO:
- III.10.C.15
 - III.10.E.2.d
 - III.10.E.2.e
 - Attachment 51, Appendices 10.1, 10.2

COMMENT (1): Please delete these permit conditions and the Ecology-added changes to Attachment 51 Appendix 10.1 and 10.2 or provide a basis from Chapter 173-303 WAC, specifically WAC 173-303-815(2)(b).

BASIS (1): The draft permit contains a number of proposed permit conditions identified below:

- Introduction of a new class of regulated unit, support systems (III.10.C.15)
- Requirement to stop fabrication of six vessels prior to the point of compliance, installation in the WTP (III.10.E.2.d)
- Requirement to retain the capability to install the Technetium Ion Exchange System (III.10.E.2.e)
- Modification of engineering drawings to incorporate utilities and support systems that do not manage dangerous waste after they were stamped by a Registered Professional Engineer and certified by the Permittees as true, accurate, and complete (Attachment 51, Appendices 10.1, 10.2)

Ecology identifies on page 17 of the Statement of Basis the need to add 45 new drawings to the permit.

These proposed requirements do not incrementally increase protection of the environment or worker and public safety, and could result in schedule delays.

When establishing permit conditions, the Department must follow the requirements established in WAC 173-303-815(2), "Establishing Permit Conditions." The Permittees could find no regulatory citation supporting the addition of these proposed permit conditions and the additions to Attachment 51.

WAC 173-303-815(2)(b)(i)

This regulation states:

“Each permit must include permit conditions necessary to achieve compliance with the Hazardous Waste Management Act chapter 70.105 RCW, [Chapter 173-303 WAC] and RCRA subtitle C. In satisfying this provision, the director may incorporate applicable requirements of this chapter directly into the permit or establish other permit conditions that are based on this chapter.” (Emphasis added.)

The Permittees could find no justification in this rule that supports creating a new class of regulated unit, stopping fabrication prior to the point of compliance, retaining capability to install equipment, and modification of drawings after they were submitted to the Department. Ecology has not provided a regulatory basis for these proposed permit conditions based on Chapter 173-303 WAC.

WAC 173-303-815(2)(b)(ii)

This regulation states:

“Each permit issued under this chapter must contain terms and conditions as the director determines necessary to protect human health and the environment.”

The new requirements proposed by Ecology are not necessary to protect human health and the environment, and the Permittees could find no justification from this rule that supports the new requirements. Ecology has not demonstrated that these proposed permit conditions are based on Chapter 173-303 WAC.

WAC 173-303-815(2)(b)(iii)

This regulation identifies criteria for an applicable permit requirement, and states in part:

“For a state-issued permit, an applicable requirement is a state statutory or regulatory requirement that takes effect prior to final administrative disposition of a permit.”

The Permittees could find no state statutory or regulatory requirement that justifies the new requirements. Ecology has not demonstrated that these proposed permit conditions are based on Chapter 173-303 WAC.

REFERENCE(S): • WAC 173-303-815(2)(b)



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TREATMENT AND
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(WTP)

DANGEROUS WASTE PERMIT
DRAFT 2+2 PERMIT MODIFICATION
WTP COMMENTS

COMMENT #2

TOPIC: *TECHNETIUM ION EXCHANGE (1)*

CONDITION NO: III.10.C.17

CONDITION TEXT: III.10.C.17. The existing PT facility will retain the capability to install the Technetium Ion Exchange Process System (TXP). This includes adequate provision of space for all related TXP equipment, vessels and evaporator systems, and placement of floor embedments and wall penetrations. This capability will be maintained until a suitable supplemental treatment technology or second LAW vitrification facility has been selected by the permittees and approved by Ecology.

COMMENT (2): Tc-99 is a radionuclide regulated by the Federal Atomic Energy Act of 1954, and is not regulated under the authority of the Dangerous Waste Permit and Chapter 70.105 RCW:

- Please delete the proposed permit condition and associated information related to Technetium ion exchange system in the permit text and tables.
- Please approve the permit modification request to remove the Technetium Ion Exchange System from the WTP Permit.

BASIS (2): The following summarizes the basis for this comment:

- Tc-99 is a radionuclide regulated by the Federal Atomic Energy Act of 1954 (AEA), as Ecology states in its *Statement of Basis* and permit Condition III.10.A.
- Under Washington statute, "The Department of Ecology may regulate all hazardous wastes, including those composed of both radioactive and hazardous components, **to the extent it is not preempted by federal law.**" (70.105.109 Revised Code of Washington [RCW]) (Emphasis added).

Federal law (the AEA) regulates Tc-99 as a radiation hazard and provides the Department of Energy authority to preempt Ecology's authority to regulate it. Although Ecology regulates mixed waste, the technetium ion exchange process is not designed to treat or render less hazardous the dangerous waste constituents in the tank waste. Without regulatory jurisdiction over Tc-99, the Permittees could find no basis in law for denying removal of the technetium ion exchange system or requiring the capability to install it.

- Under WAC 173-303-815(2)(b)(v), Ecology must incorporate permit conditions expressly or by reference. However, because Ecology does not have jurisdiction over radionuclides according to Washington law, Ecology has not demonstrated a regulatory basis under Washington code for Condition III.10.C.17.

This summary is elaborated below:

Ecology does not regulate radionuclides under Chapter 173-303 WAC. The Permittees could find no regulatory justification to retain the capability to install the technetium ion exchange system because Tc-99 is a radionuclide and, as Ecology acknowledges in its *Statement of Basis*, the Department's regulatory authority does not extend to radionuclides. Ecology defines the Department's authority in permit Condition III.10.A:

"Where information regarding treatment, management, and disposal of the radioactive source, byproduct material, and/or special nuclear components of mixed waste (as defined by the Atomic Energy Act of 1954, as amended) 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."

Tc-99 presents a radiation hazard that is regulated by the AEA, it is not dangerous waste as defined by state rule, and it is therefore exempt from the Dangerous Waste Regulations. The initial purpose of the technetium ion exchange system was to provide the capability to remove Tc-99 from the LAW feed stream as an AEA potential mitigation measure and was not designed to treat dangerous waste constituents, characteristics or criteria regulated under Chapter 173-303 WAC.

Because the Technetium removal system is described in the existing permit, and a proper modification request submitted to remove it, this design change constitutes an alteration to the original permit and therefore cause exists for Ecology to modify the permit under WAC 173-303-830(3)(a)(i) *Permit Changes*. Furthermore, leaving technetium ion exchange information in the permit, when the systems and equipment do not exist, is confusing given the new permit condition that says WTP must retain the capability to install the equipment.

The Permittees also note that, aside from Ecology lacking regulatory jurisdiction over Tc-99 removal, Ecology's basis for denying the request is not based on a WTP-related matter. For example, in the Statement of Basis Ecology denied removal of the Technetium Ion Exchange System "...until a suitable supplemental treatment technology or second LAW vitrification facility has been selected by USDOE and approved by Ecology." The modification requested by the Permittees is strictly limited to the WTP and not any future waste treatment facility.

The Permittees note that Tc-99 removal is not required for vitrified LAW relative to DOE's AEA authority because:

- a. The LAW will be well below 10 CFR 61.55 Class C concentration limits for all radionuclides including Tc-99;
- b. Tc-99 associated with WTP secondary wastes will meet all applicable regulatory standards for waste disposal;
- c. Tc-99 releases from vitrified LAW meet all applicable regulatory standards for waste disposal.

While unrelated to the WTP permit, we also note that if a supplemental LAW immobilization technology were to be selected via the Tank Closure & Waste Management Environmental Impact Statement Record of Decision that did warrant Tc-99 removal consistent with DOE's AEA authority (a situation that is not anticipated), DOE would provide for Tc-99 removal outside the WTP Pretreatment facility for several reasons. First, Tc-99 removal need not occur

in the Pretreatment facility. Second, it is no longer technically or economically practical to remove Tc-99 inside the Pretreatment Facility due to the state of construction. Third, Tc-99 is not a fully developed process technology and additional research and technology development would be required to develop a technetium ion exchange system that would function effectively with Hanford tank waste. We believe that such a system would likely occupy more space than was provided in the 2003 design.

Given that Ecology's rationale in the Statement of Basis for this permit condition is not valid relative to the WTP permit at hand, is not within Ecology's regulatory authority, and is not needed for compliance with Washington Dangerous Waste Performance Standards under WAC 173-303-283(3), the Permittees' request to remove the technetium system should be approved.

REFERENCE(S):

- Chapter 70.105 RCW
- Department of Ecology WTP Statement of Basis
- DOE letter 04-ED-068, "Additional Information to Support Class 2 Permit Modification for the Waste Treatment and Immobilization Plant (WTP)," dated August 4, 2004.
- Federal Atomic Energy Act of 1954 (AEA)
- Chapter 173-303 WAC
- WAC 173-303-040
- WAC 173-303-283
- WAC 173-303-283(3)
- WAC 173-303-400(2)
- WAC 173-303-600(3)
- WAC 173-303-815(2)(b)(v)
- WAC 173-303-830(3)(a)(i)



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(WTP)

HAZARDOUS WASTE PERMIT
DRAFT 2+2 PERMIT MODIFICATION
WTP COMMENTS

COMMENT #3

TOPIC: *TECHNETIUM ION EXCHANGE (2)*

CONDITION NO: III.10.C.17

CONDITION TEXT: III.10.C.17. The existing PT facility will retain the capability to install the Technetium Ion Exchange Process System (TXP). This includes adequate provision of space for all related TXP equipment, vessels and evaporator systems, and placement of floor embedments and wall penetrations. This capability will be maintained until a suitable supplemental treatment technology or second LAW vitrification facility has been selected by the permittees and approved by Ecology.

COMMENT (3): Please delete the proposed permit condition requiring the capability to install the Technetium ion exchange system because:

- Ecology does not have regulatory jurisdiction over Tc-99,
- Tc-99 is bound in the ILAW and IHLW and will not adversely impact Hanford groundwater,
- The LAW glass produced in the WTP will meet the Integrated Disposal Facility waste acceptance criteria,
- There is no justification for Ecology to regulate the WTP for matters that pertain to the Integrated Disposal Facility, and
- Installation of the system is neither technically nor economically practicable

BASIS (3): In its *Statement of Basis*, Ecology stated:

"The fate of Tc-99 is a major concern for Ecology. As a radionuclide subject to regulation under the Atomic Energy Act, Tc-99 is not specifically regulated under the Dangerous Waste Regulations in WAC 173-303. Tc-99 has a significant potential to impact the ground water and is a constituent addressed in the Federal safe drinking water standards. For this reason, the Tc-99 must be disposed in a waste form with long term-stability (thousands of years)."

Analyses provided by the Permittee to Ecology on August 4, 2004 (DOE letter 04-ED-068) shows that 97% of the Tc-99 entering the vitrification process will be incorporated into the LAW glass and 2.2% will be incorporated into the HLW glass. The text of Ecology's permit condition and the *Statement of Basis* indicates the Department is concerned about the efficacy of a supplemental LAW technology to immobilize Tc-99. Even if Ecology had authority to regulate Tc-99 (which it does not), concerns about groundwater protection from Tc-99 that may be released from wastes disposed of in the Integrated Disposal Facility should be

addressed in the waste acceptance criteria for that facility. Concerns regarding hazardous materials would similarly be addressed in the disposal facility permit as described in the Chapter 173-303 WAC, and not the WTP permit.

Waste shipped from the WTP to other facilities for treatment, storage or disposal must meet strict Waste Acceptance Criteria at those facilities in accordance with Permit Condition III.10.C.2.d and WAC 173-303-141(1).

It is not technically or economically practical to remove Technetium inside the Pretreatment Facility. Installing the system at this time or later would require additional research and technology and a redesign of the ion exchange system. The redesigned system would occupy more space than was provided in the 2003 design. The bases for removing the system from the design included: class C radioactive limits would not be exceeded even if all of the Tc-99 was incorporated into the LAW glass; with process recycles it is expected that 99.9% of the Technetium could be incorporated into the glass; Tc-99 would not enter the ground water at a rate that would cause the ground water limits to be exceeded; and Tc ion exchange can be added to a future supplemental LAW treatment facility if it is necessary.

In addition, permit condition III.10.E.2.e is not defined in sufficient detail to enable the Permittees to demonstrate compliance. The lack of detail places the Permittees at risk of *ad hoc* regulatory interpretations and regulatory enforcement actions.

REFERENCE(S):

- DOE letter 04-ED-068, "Additional Information to Support Class 2 Permit Modification for the Waste Treatment and Immobilization Plant (WTP)," dated August 4, 2004.



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HAZARDOUS WASTE PERMIT
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WTP COMMENTS

COMMENT #4

TOPIC: *MAINTAIN CAPABILITY TO INSTALL A THIRD LAW MELTER*

CONDITION NO: III.10.I.1.a.xxiii

CONDITION TEXT: The existing LAW building will retain capability to install the third melter before or after hot start-up. No melter support vessels or support systems should be deleted from the "process cell design" that could preclude later melter installation.

COMMENT (4): Please revise this condition to read:

"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.

Compliance with the following requirements constitutes compliance with this permit condition:

- The foundation for the third melter pour cave carousel will be installed;
- Embedments in the -21 foot level basemat will be installed;
- Embedments in the -21 foot level walls for the installation of equipment, piping and liners supporting the installation of the third melter will be installed;
- Piping/cable penetrations in the -21 foot level walls to support future installation of piping and wiring will be installed;
- No equipment will be installed in the third melter process cell that will eliminate the ability to install the process vessels for the third melter;
- The common pipeline sizes will be for three-melter service with a peak glass throughput rate of 10mt/day/per melter; however, the pumps and heat exchangers will be based on two melters with a peak throughput of 15 mt/day;
- Secondary offgas piping and equipment (with the exception of exhausters) will be sized to support three melters with a peak glass throughput rate of 10mt/day/per melter. The blowers will be sized for two melters with a peak throughput of 15 mt/day;
- General electrical capacity and configuration will support 3 melters with a 10mt/day/per peak glass throughput rate per melter;

- The structure for the third melter foundation will be installed in the +3 foot level floor;
- The following embedments will be installed:
 - Embedments in the +3 foot level floor except the melter rail anchor bolts and floor grillage;
 - Embedments in the +3 foot level walls for the installation of equipment, piping and liners supporting the installation of the third melter systems;
 - Embedments for the special melter pulleys;
 - Process cell sumps;
- The following floor and wall penetrations will be installed:
 - The cable tray penetrations for the third melter;
 - The melter buss duct penetration;
- The wall grillage in the third melter process cell will not be installed;
- The melter import rails and the process equipment tank rings are not required to be installed, but the +3 foot floor must retain the ability for future installation of the melter rails and process equipment tank rings.”

If melter throughput fell short of expectations, the permittees would determine the best approach to obtain the required LAW immobilization capability. Options would likely include: fixing the problem resulting in melter throughput below expectations within LAW Vitrification; providing the increased LAW immobilization capability in an Alternative LAW Facility; or outfitting the third LAW vitrification melter line. Disrupting operation to perform equipment installation and performing construction and equipment installation in a radioactively contaminated facility would clearly factor into the decision process. Any future modifications to the third process cell or third melter cell will not be completed until the permittees determine that a third melter should be installed for operational reasons and take appropriate actions through the permit process.

BASIS (4):

In the June 29, 2004 letter from Ecology to the DOE-ORP, Ecology judged that the 2+2 permit modification was complete. As allowed by WAC 173-303-840(b), Ecology requested supplemental information to complete the evaluation of the modification request. DOE-ORP submitted this response on August 4, 2004 (DOE letter 04-ED-068). The information contained in the August 4, 2004 ORP letter to Ecology outlined the commitments by ORP to maintain the ability to install a third LAW melter. Based on the consideration to minimize the project cost for the redundant systems not essential for safety, the above-mentioned capabilities have been provided in the current design and installation, to retain capability for installation of the 3rd melter.

It is important to note that implementation of Ecology’s permit condition as written will result in significant schedule delays for LAW construction, and the estimated cost for the engineering design drawings, procurement of embeds and other equipment for the third melter cell and third melter process cell described above is approximately \$150 million. Because the intent of the proposed permit condition can be interpreted to require the installation of process cell equipment before or after start-up, this ROM estimate is based on the installation of in-cell vessels and equipment.

REFERENCE(S):

- June 29, 2004, Letter from M.A. Wilson to R.J. Schepens and J. Henschel, *Waste Treatment and Immobilization Plant (WTP) Class 2 Dangerous Waste Permit (DWP) Modification*.
- August 4, 2004, Letter from R.J. Schepens to M.A. Wilson, *Additional Information to*

Support Class 2 Permit Modification for the Waste Treatment and Immobilization Plant (WTP) (ORP letter #04-ED-068).



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COMMENT #5

TOPIC: *HIGH LEVEL WASTE BUILDING PROCESS FLOW DIAGRAMS, PIPING AND INSTRUMENTATION DIAGRAMS AND MECHANICAL DRAWINGS*

CONDITION NO: Attachment 51 - Appendices 10.1, 10.2, 10.6

PROPOSED PERMIT CHANGES: Ecology proposes to incorporate into the permit (Attachment 51, Appendices 10.1, 10.2, and 10.6) an additional seven "source" drawings and 20 permit drawings edited by the Department. In the Statement of Basis, Ecology indicates that an additional 45 WTP engineering drawings will need to be incorporated into the permit. The proposed permit changes would incorporate design details into the permit for utilities and support services associated with operation of permitted equipment.

COMMENT (5): Please remove the proposed permit changes that would incorporate drawings that have been added and/or edited by Ecology into the permit. The Permittees could find no regulatory requirements supporting the permitting of utilities in a Dangerous Waste Permit in the following provisions of the WAC:

- Final facility permits (WAC 173-303-806)
- Establishing permit conditions (WAC 173-303-815(2))
- Environmental performance standards (WAC 173-303-680(2))
- Procedures for decision making (WAC 173-303-840(2)(b)):

However, the Permittees would be happy to provide additional documentation for incorporation into the Administrative Record.

BASIS (5): The changes proposed by Ecology include the following:

1. Addition of two "source" Piping and Instrumentation Diagrams (P&IDs):
 - 24590-HLW-M6-00012, *Melter 1 Film Cooler Utilities*
 - 24590-HLW-M6-20012, *Melter 2 Film Cooler Utilities*
2. Ecology's edited drawings (adding a note and bubbles): the 18 permit P&IDs and two Process Flow Diagrams (PFDs); replace these drawings with the drawings submitted by the Permittees with the HLW melter design package. The Ecology added note states:

"The portions of this drawing designating the seismic category and quality class, and portions enclosed in "bubbles" labeled "NR" (Not Regulated) are considered non-permit affecting and are not subject to regulatory requirements of the WAC code or the dangerous waste permit to the extent that those portions do not impact dangerous waste areas/operations."

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3. Five mechanical drawings developed by the WTP vendor:
 - WTP-M-21951-1, *HLW Melter Assembly, HLW Melter Envelope*
 - WTP-M-21951-1, *HLW Melter Assembly, Isometric View*
 - WTP-M-21951-1, *HLW Melter Assembly, Plan View*
 - WTP-M-21951-1, *HLW Melter Assembly, Section B-B*
 - WTP-M-21951-1, *HLW Melter Assembly, Section C-C*
 4. The future addition of 45 P&IDs showing utilities and support services, as indicated per Statement of Basis, page 17.

The Permittees could find no justification for the submittal of design details and drawings for utilities and support services and their subsequent permitting under Chapter 173-303 WAC:

1. **WAC 173-303-806, Final Facility Permits.** WAC 173-303-806(4) identifies the content for a Part B dangerous waste permit application. This information is required by Ecology to determine compliance with final facility standards for management of dangerous waste. This same information is described in Ecology Publication 95-402, *Dangerous Waste Permit Application Requirements*. Detailed design information, such as P&IDs, for utilities and support services is not required by WAC 173-303-806. The drawings added by Ecology to the permit have not been submitted to the Department in the Part B application and, consequently, have not been certified by the Permittees, as required by WAC 173-303-810(13).
2. **WAC 173-303-815(2), Establishing Permit Conditions.** WAC 173-303-815(2)(b)(i) requires each permit to include conditions necessary to achieve compliance with the Hazardous Waste Management Act (Chapter 70.105 RCW), Chapter 173-303 WAC, and RCRA Subtitle C. In satisfying this provision, the director may incorporate applicable requirements of Chapter 173-303 WAC directly into the permit or establish other permit conditions that are based on this chapter. WAC 173-303-815(2) (b)(ii) requires each permit issued under this chapter to contain terms and conditions the director determines necessary to protect human health and the environment. Permitting steam, cooling water, or other utility support services is not required to protect human health or the environment. The facility is designed and will be operated in accordance with the Dangerous Waste Regulations.

Additionally, WAC 173-303-815(2)(b)(v) requires all permit conditions to be incorporated either expressly or by reference. Ecology has not provided a regulatory basis describing the rationale for permitting utility systems, has not provided clarification in the Permit regarding what elements of the utility systems are permitted, and has not developed an administrative process the Department would use to approve designs of utilities and support services which do not treat, store, or dispose of dangerous waste.

3. **WAC 173-303-680(2), Environmental Performance Standards.** WAC 173-303-680(2) requires Permits for miscellaneous units to contain terms and provisions to protect human health and the environment, including but not limited to, as appropriate, design and operating requirements, detection and monitoring requirements, and requirements for responses to releases. In the Statement of Basis, Ecology cites WAC 173-303-680(2) for adding melter support services and utilities to the permit, and explains that the Department can request additional information that is necessary to evaluate compliance with the environmental performance standards of WAC 173-303-680(2). This additional information has already been addressed in

Chapter 4, Process Information, Chapter 7, Contingency Plan, and other permit documents.

4. **WAC 173-303-840, Procedures for Decision Making.** WAC 173-303-840(1)(b) describes the administrative procedures for Ecology to follow when requesting additional information that is necessary to clarify or supplement previously submitted material. The Permittees did not receive a formal request to provide additional melter drawings to clarify or supplement the HLW melter design package that was submitted to Ecology. Addition of drawings not submitted by the Permittees seems inconsistent with WAC 173-303-840(1)(b).
5. **WAC 173-303-810, General Permit Conditions and Permit Condition I.E.7.** WAC 173-303-810(6) and Permit Condition I.E.7 require proper operation and maintenance of all systems used to achieve compliance with the conditions of the permit. WAC 173-303-810(6) and Permit Condition I.E.7 do not require the Permittees to include design details relative to utilities and support services.
6. **Permit Condition III.10.J.5.e.ix.** excludes process monitors and instrumentation for non-waste management operations (e.g., utilities, raw chemical storage, non-contact cooling waters, etc.) from the tables of permitted instrumentation. Given this permit condition, the Permittees could find no justification for permitting utility systems proposed in the draft Permit.
7. **Resource Conservation and Recovery Act (RCRA), 40 Code of Federal Regulation (CFR) Part 264.** The Permittees could find no requirement in 40 CFR Part 264 for the permitting of utility services at a treatment, storage, and disposal facility (TSDF). These regulations cover the hazardous waste management by a TSDF and containment structures, but not the utilities which provide service to the TSDF. If a utility system is itself managing hazardous waste, it would be subject to RCRA for any applicable waste management activities.

DISCUSSION: 1.0 Background

The Permittees would like to offer a balanced discussion of “ghosting” to complement Ecology’s description of “ghosting” in the Statement of Basis. In the Statement of Basis, Ecology explains that the Permittees have not followed Ecology’s guidance provided in the September 27, 2005 letter on “ghosting” of engineering drawings. “Ghosting” has been used on drawings submitted by the Permittees and approved by Ecology since the inception of the Permit to identify non-permitted portions of the facility design in a lighter font than the permitted portions of the facility. Utilities and support systems have been ghosted since the first permit package was submitted to Ecology in late 2002.

In the Statement of Basis, Ecology states the effect of the proposed permit changes “...is to maintain design configuration control in the Permit for regulated systems and equipment, by requiring Permit modifications whenever design of those portions is modified.” The Permittees do not believe Ecology has the authority under Chapter 173-303 WAC or 40 CFR Part 264 to permit design details for utilities and support services that do not treat, store, or dispose dangerous waste.

The Permittees acknowledge that certain design aspects of utility systems and support services may be appropriate for Ecology review to clarify understanding of the operational approach for the permitted dangerous waste management units. This information already exists in Attachment 51, Chapter 4 and has been approved by Ecology. An update to this information is

required prior to the initial receipt of dangerous waste by Permit Conditions III.10.E.9.e.vi, III.10.J.5.d.vi, and others.

The Discussion below provides background of the WTP permitting process, summarizes the proposed permit changes, and describes the Permittees' position on this subject.

1.1 WTP Permitting Process

The process for obtaining a Dangerous Waste Permit (DWP) is to submit a permit application to Ecology containing the information required by WAC 173-303-806, Final Facility Permits. Ecology then issues a permit prior to the start of construction. In the case of the Waste Treatment and Immobilization Plant (WTP), Ecology agreed to a phased permitting approach in order to expedite WTP construction and ultimately treatment of Hanford tank waste. Bechtel National Inc. (BNI) and the United States Department of Energy Office of River Protection (ORP) submitted a DWP application using the best design information available. Ecology, ORP, and BNI conducted detailed reviews of the initial DWP permit application during 2000 and 2001 to assure the application would meet the Dangerous Waste Regulations. The draft permit prepared by Ecology was reviewed in the same manner. Ecology issued the WTP DWP in September 2002 with conditions, including a Compliance Schedule requiring submittal of additional information for incorporation into the permit.

The permit conditions (e.g., Permit Condition III.10.E.9.c.) require submittal of engineering documents and drawings for specifically identified equipment that manages dangerous waste. To ensure that Ecology received the design information the Department needed to permit the facility, the parties met and agreed on the types of drawings and other documents needed for the permitting, as well as a process for identifying which equipment was permitted. The process agreed upon was that before submitting engineering information for the permit, the Permittees used a bold font on design drawings (such as Piping and Instrumentation Drawings (P&IDs) and General Arrangement Drawings) to show the equipment to be permitted. These drawings were informally reviewed by Ecology, comments incorporated, and a meeting held to ensure all parties agreed on the permitted equipment. In deciding the permitted equipment, the fundamental criteria were the function of equipment and whether it was in contact with dangerous waste.

1.2 "Ghosting" on Permit Drawings

After the permitted equipment was identified, drawings were created which "ghosted" non-permitted equipment (i.e., shown in phantom) and the permitted equipment was bolded. A Professional Engineer (PE) stamped these permit drawings pursuant to WAC 173-303-806(4)(a). For each permitted system, an Independent Qualified Registered Professional Engineer (IQRPE) reviewed the design and wrote an integrity assessment report testifying that the equipment would not "collapse, rupture or fail," consistent with WAC 173-303-640(3)(a). The IQRPE report, the permit drawings and other permitting documents were assembled into "packages" and submitted to Ecology for each tank and miscellaneous unit system identified in the DWP that manages dangerous waste.

Ecology formally reviewed the packages and periodically opened groups of packages for public review and comment. After the public review, assuming there were no comments, Ecology issued an approval letter to the Permittees authorizing construction of the equipment addressed in the package, and incorporated the documents and drawings into the permit.

Ecology, ORP and BNI have used the above-described process since September 2002, and have permitted roughly 100 of 130 planned permit packages. The equipment that would be included in the permit was determined and a costed schedule developed based on this process. Engineering, Commissioning, and Training (C&T) also forecasted their costs and schedule

based on the equipment and systems identified in the permit and the permitting process described above. The established process was workable, predictable, and it allowed construction to proceed with building the WTP.

The WTP permit packages approved by Ecology and incorporated into the permit contain hundreds of engineering drawings including over 180 P&IDs showing in phantom (i.e., "ghosted") the non-permitted components (e.g., demineralized water lines, steam systems, instrument air lines, plant chilled water system, etc.) supporting operations of the permitted dangerous waste management units. The WTP drawings include a note developed with and approved by Ecology indicating "ghosted" components were non-permit affecting and not regulated by the WAC to the extent that they do not impact dangerous waste areas/operations consistent with WAC 173-303-810(6).

1.3 HLW Melter Design Package

The Permittees submitted the HLW melter permit packages (HLW-018 and HLW-019) on June 16, 2006, to meet the Compliance Schedule date of June 18, 2006. Components of the HLW melter permit package that are "ghosted" include support services, such as demineralized water piping, instrument air piping, and instruments generally associated with the support systems.

During the informal review of the draft HLW melter permit packages, Ecology provided comments requesting that more P&IDs be added to the permit. The Permittees complied with one exception - two P&IDs, representing the Film Cooler Utilities for Melter 1 and 2, were not included in the final HLW melter packages submitted to Ecology because these drawings address only utility systems, not waste management systems.

During the informal review, Ecology also requested that the utilities and support services be identified as permitted (i.e., "bolded") because, as the Department explained, these systems are important to the melter operations. When the Permittees requested the regulatory basis for incorporating drawings with design details for utilities and support services into the dangerous waste permit, Ecology's answer was that there are regulatory provisions allowing the Department to request more information. The Permittees believe that requesting additional information to support a permitting process is very different than permitting these systems.

On August 10, 2006, the Permittees received a letter from Ecology acknowledging receipt of the HLW melter permit packages and stating that the provided design information did not meet the Department's expectations. However, Ecology stated that the HLW melter permit packages would be incorporated into the permit along with additional drawings the Department believes are important to the melter operations. The letter did not request, as required by WAC 173-303-840(1)(b), that additional information be submitted to supplement the information already provided to Ecology. Instead, the Department informally obtained the WTP drawings from the Permittees' electronic library, and placed them in the draft permit for public review without the Permittees' certification.

2.0 Ecology Proposed Permit Changes

Ecology has decided that including drawings for utilities and support services in the permit is appropriate and necessary to ensure proper operation of regulated equipment. In the Statement of Basis, Ecology indicates that operation of the water and air supply lines is essential to operations of the HLW melter. Information regarding operations of the WTP utilities and support services has already been provided in Chapter 4, Process Information, of the permit. The Permittees do not agree with Ecology that design details for utilities and support services must be incorporated into the permit, since the utility and support services are required to function properly in accord with permit Condition I.E.7 and WAC 173-303-810(6). The

Permittees believe that the proposed WTP permit was not developed in accordance with the permitting process described in Dangerous Waste Regulations.

3.0 The Permittees' Position

The Permittees could not find a regulatory basis to require permitting of utility and support services such as water, steam or air that do not manage dangerous waste. It would appear that Ecology is proposing to expand the boundaries of the WTP permit and the RCRA regulations, without a rule making process pursuant to Chapter 34.05 RCW, Part III. Ecology's approach appears inconsistent with Chapter 173-303 WAC and contradicts the Department's *2007 - 2009 Strategic Plan*, page 14, which describes changes Ecology has implemented to ensure that the permit decisions are clear and the permitting process is predictable.

3.1 The proposed permit changes are not consistent with WAC 173-303-806, Final Facility Permit.

Incorporating design details associated with support services into the dangerous waste permit is not necessary to protect human health or the environment nor is it required under WAC 173-303-806, Final Facility Permit. WAC 173-303-806(4) identifies the content for a Part B dangerous waste permit application that is required to determine compliance with standards applicable to dangerous waste management units. This same information is described in Ecology Publication 95-402, *Dangerous Waste Permit Application Requirements* and in Permit Condition III.10.J.5.c. for the HLW facility miscellaneous units. Detailed design information (e.g., P&IDs) for utilities and support services is not required by Chapter 173-303 WAC or Ecology's guidance document *Dangerous Waste Permit Application Requirements* (Ecology publication 95-402).

To the extent utilities and support services are needed for proper operation of a permitted equipment, component or activity (e.g., steam ejectors used to remove dangerous waste from a vessel or sump), operability is addressed in documents already contained in the permit. The permit contains many design documents (e.g., equipment specifications) that describe design elements that are required to assure proper functioning of permitted equipment. Chapter 4, Process Description, contains information on how the WTP utility systems operate to support permitted dangerous waste management activities. The content of the WTP DWP is directly related to compliance with WAC 173-303-806(4), Contents of Part B. These regulations do not require submittal of design documents for systems or equipment that do not manage dangerous waste (e.g., steam, cooling water systems, etc.).

3.2 The proposed permit changes are not consistent with WAC 173-303-815(2), Establishing Permit Conditions.

WAC 173-303-815(2)(b)(i) requires each permit to include conditions necessary to achieve compliance with the Hazardous Waste Management Act (Chapter 70.105 RCW), Chapter 173-303 WAC, and RCRA Subtitle C. In satisfying this provision, the director may incorporate applicable requirements of this chapter directly into the permit or establish other permit conditions that are based on this chapter. WAC 173-303-815(2)(b)(ii) requires each permit issued under this chapter to contain terms and conditions the director determines necessary to protect human health and the environment. The Statement of Basis did not provide this rationale.

Including design details for steam, cooling water, or other utility support services in the Dangerous Waste Permit is not required to protect human health or the environment. The facility is designed and will be operated in accordance with the Dangerous Waste Regulations.

WAC 173-303-815(2)(b)(v) requires all permit conditions to be incorporated either expressly or by reference. Ecology's mark-up of HLW drawings, expectation that future packages will be consistent with the mark-up, and statements in the Statement of Basis indicating an additional 45 drawings will be incorporated into the Permit are not consistent with WAC 173-303-815(2)(b)(v). The Permittees could find no regulatory requirements or permit conditions addressing the permitting of utilities and support services which do not treat, store, or dispose of dangerous waste.

3.3 The proposed permit changes are not required under WAC 173-303-680(2), Environmental Performance Standards.

In the Statement of Basis, Ecology cites WAC 173-303-680(2), Environmental Performance Standards, as the basis for adding to the DWP melter utilities and support services to the Permit. The Department explains that additional information can be requested that is necessary to evaluate compliance with the environmental performance standards of WAC 173-303-680(2).

WAC 173-303-680(2) states:

"Permits for miscellaneous units are to contain such terms and provisions as necessary to protect human health and the environment, including but not limited to, as appropriate, design and operating requirements, detection and monitoring requirements, and requirements for responses to release of dangerous waste or dangerous waste constituents from the unit."

Operating requirements for the permitted dangerous waste units and responses to potential releases have already been addressed in permit conditions and Chapter 4, Process Information, Chapter 7, Contingency Plan, and other permit documents.

The Permittees found no regulatory support for permit conditions requiring that the HLW melter system support services and utilities be permitted and found no basis for the proposition that these conditions are protective of human health and the environment.

3.4 The proposed permit changes are not consistent with Permit Condition III.10.J.5.e.ix.

Permit Condition III.10.J.5.e.ix. states:

"...Process monitors and instruments for non-waste management operations (e.g., utilities, raw chemical storage, non-contact cooling waters, etc.) are excluded from this condition."

Including the WTP design drawings for utilities and support services that manage water, air, or steam, do not manage dangerous waste, have no direct contact with dangerous waste, and when they fail to operate would not cause releases of dangerous waste to the environment in the permit, is not consistent with this permit condition.

3.5 The proposed permit changes are not consistent with WAC 173-303-840(1)(b), Procedures for Decision Making.

WAC 173-303-840(1)(b), Procedures for Decision Making, describes the administrative procedures Ecology must follow when requesting additional information that is necessary to clarify or supplement previously submitted material. Ecology did not follow this process and did not formally request that additional drawings be submitted to clarify or supplement the submitted information. Instead, the Department informally obtained design drawings,

including vendor-developed mechanical drawings, from the WTP electronic library and incorporated these documents into the permit. This approach is clearly inconsistent with the administrative process in WAC 173-303-840.

3.6 The proposed permit changes are not consistent with WAC 173-303-810, General Permit Conditions and Permit Condition I.E.7

WAC 173-303-810(6) and Permit Condition I.E.7 require proper operation and maintenance of all systems used to achieve compliance with the conditions of the permit. As described in WAC 173-303-810(6), proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities, or similar systems, only when necessary to achieve compliance with the conditions of the permit. It does not require detailed design documentation and drawings of utilities and support services be provided for incorporation into the permit. Permitting utilities and support services is not consistent with WAC 173-303-810(6) and Permit Condition I.E.7.

4.0 Clarification from Environmental Protection Agency (EPA) Office of Solid Waste

The Permittees contacted the Environmental Protection Agency (EPA) Office of Solid Waste for clarification, asking whether the RCRA regulations contain requirements for utilities and support services associated with operations at treatment, storage, and disposal facilities. In the responses provided, EPA indicated that utilities and support services are not included within the scope of RCRA. The State of Washington has not enacted rules that are more stringent than the federal rule in this area. The question to EPA concerning regulation of utilities and support services, along with the EPA response, is given below:

Question Reference #060202-000033

Customer (Brad Erlandson) - 02/02/2006 05:47 PM

Are utilities (e.g., electricity, steam, cooling water) that support TSD permitted processes (e.g., removing waste with a steam ejector from a tank or sump, cooling for process off-gas treatment systems) regulated? Can you provide applicable code references or other guidance documents?

Response (OSW-CC) - 02/03/2006 04:14 PM

Mr. Erlandson,

There are no specific Resource Conservation and Recovery Act (RCRA) regulations for utilities providing services to a treatment, storage, and disposal facility (TSDF). The TSDF regulations, found in 40 CFR Part 264 and Part 265, typically cover the hazardous waste management by a TSDF and containment structures, but not the utilities which provide service to the TSDF. If a utility is itself managing hazardous waste, it would be subject to RCRA for any applicable waste management activities.

The TSDF regulations may be found at the following URL:

<http://www.epa.gov/epacfr40/chapt-I.info/ch1-1oc.htm>

This guidance represents clarification of the Federal regulations. Since most States are authorized to implement the Federal regulations, allowing them to be more stringent or broader in scope than the Federal requirements, you should contact your

state environmental agency for guidance on how your structures may be regulated. State Web sites are located at the following URL:

<http://www.epa.gov/epaoswer/osw/comments.htm>

We hope that this information is helpful to you.

The RCRA authorization provides Ecology the regulatory authority to enforce proper treatment and storage of dangerous waste, including proper operation of plant systems required for compliance with the permit and Chapter 173-303 WAC. However, this authority does not extend to design configuration control for non-permitted support services and utility equipment.

5.0 Examples Of The WTP Support Services That Ecology Would Incorporate Into The Dangerous Waste Permit

Below are two examples of support services that Ecology proposes to incorporate into the DWP.

5.1 Steam Supply For Ejectors

Steam ejectors are used to move process liquids designated as dangerous waste from vessels or sumps at the WTP. Steam ejectors operate by means of suction lift created by high-pressure steam accelerating through a nozzle. The steam ejectors are permitted equipment under the DWP since they transfer dangerous waste. However, consistent with WAC 173-303-806, the steam supply system used to operate them is not permitted. The steam supplied to the steam ejectors is not a dangerous waste, does not contact dangerous waste and failure of the steam supply system will not impact human health or protection of the environment.

The steam ejector engineering specification and associated discussion in Chapter 4 has been reviewed and approved by Ecology and is included in the DWP to provide information on how this utility system operates. The steam supply is adequately described in the permit already, and its function is regulated through permit condition I.E.7 and WAC 173-303-810(6). It is unnecessary to propose the steam supply for permitting to ensure proper operation of the ejector.

5.2 Air Supply to Bubblers

Bubblers are tubes inserted into the melter that inject a steady stream of air into the melter pool. During the melter design, BNI's research and development program confirmed that the throughput of the melter could be increased by adding more bubblers. The bubblers do not affect the quality of glass produced within the facility, but do have a significant impact on melter throughput. The dangerous waste regulations for treatment, storage, and disposal facilities do not contain requirements for facility throughput, except when there is a potential for production rates to adversely impact human health and the environment. For example, risk assessment results in excess of standards could lead to operating restrictions on a plant to ensure risk limits are not exceeded during operations.

ORP, BNI and Ecology agreed to permit the bubbler hardware, e.g., the tubes, because they contact waste in the melter pool. Apparently, to assure that the facility is able to produce IHLW at the required throughput, Ecology has decided that it is necessary to permit the air supply to the bubblers. Permitting the air supply to the bubblers does not guarantee a particular facility throughput, nor does it affect the quality of the glass that is produced within the facility.

REFERENCE(S):

- 40 CFR Part 264 and 265
- Ecology Publication 95-402, Dangerous Waste Permit Application Requirements
- Permit Condition I.E.7
- Permit Condition III.10.E.9.c
- Permit Condition III.10.J.5.c
- Permit Condition III.10.J.5.c.vi
- Permit Condition III.10.J.5.e.ix
- RCRA Subtitle C
- Revised Code of Washington (RCW) Chapter 70.105, Hazardous Waste Management Act
- WAC 173-303-680(2), Environmental Performance Standards
- WAC 173-303-806, Final Facility Permits
- WAC 173-303-810, General Permit Conditions
- WAC 173-303-815(2), Establishing Permit Conditions
- WAC 173-303-840(b), Procedures for Decision Making



HANFORD TANK WASTE
TREATMENT AND
IMMOBILIZATION PLANT
(WTP)

DANGEROUS WASTE PERMIT
DRAFT 2+2 PERMIT MODIFICATION
WTP COMMENTS

COMMENT #6

TOPIC: *SUPPORT SYSTEMS*

CONDITION NO: III.10.C.15

CONDITION TEXT: 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 10, Appendix 1.0 of this Permit, engineering information as specified below, for incorporation into Attachment 51, Appendices 9.6, 9.10, 10.6, and 10.10 of this Permit, 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 | f. HSH-CRN-00014 |
| b. HEH-CRN-00003 | g. LEH-CRN-00003 |
| c. HPH-CRN-00001 | h. LPH-CRN-00002 |
| d. HPH-CRN-00002 | i. HEH-CRN-00001 |
| e. HSH-CRN-00001 | |

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 Attachment 51, Appendices 9.13, 9.18, 10.13, and 10.18 of this Permit.

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.

B. Descriptions of operational procedures and inspection schedules 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.

III.10.C.15.a.iii. Prior to initial receipt of dangerous and/or mixed waste in the WTP Unit, the Permittee will submit to Ecology, pursuant to Permit Condition III.10.C.9.f., the following for incorporation into Attachment 51, Chapter 4.0: 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	HSW
	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

COMMENT (6): Please delete permit condition III.10.C.15, Table III.10.C.A, and Compliance Schedule Items 36 through 39 for support systems and mechanical handling systems. The Permittees could find no regulatory basis in WAC 173-303-806(4) or WAC 173-303-815(2) that requires permitting of support systems such as mechanical handling systems. Including support systems, such as mechanical handling systems, in the Permit is inconsistent with Ecology's historical permitting approach.

BASIS (6): 1. **There is no regulatory basis in WAC 173-303-806(4) that requires permitting of support systems such as mechanical handling systems.**

WAC 173-303-806(4) identifies the content for a Part B dangerous waste permit application. This information is required by Ecology to determine compliance with final facility standards for management of dangerous waste. This same information is described in Ecology Publication 95-402, *Dangerous Waste Permit Application Requirements*. Detailed design information, such as P&IDs, for utilities and support systems is not required by WAC 173-303-806 to be included in a Dangerous Waste Permit.

2. **Establishing permit conditions for support systems is inconsistent with the requirements of WAC 173-303-815(2).**

The inclusion of mechanical handling systems into the permit is inconsistent with the requirements of WAC 173-303-815(2), specifically WAC 173-303-815(2)(b)(i) or (ii). This new permit condition does not provide a basis identifying the regulatory requirements.

WAC 173-303-815(2)(b)(i) requires each permit to include conditions necessary to achieve compliance with the Hazardous Waste Management Act (Chapter 70.105 RCW), Chapter 173-303 WAC and RCRA Subtitle C. In satisfying this provision, the director may incorporate applicable requirements of this chapter directly into the permit or

establish other permit conditions that are based on this chapter. WAC 173-303-815(2)(b)(ii) requires each permit issued under this chapter to contain terms and conditions the director determines necessary to protect human health and the environment.

The Permittees could find no justification in WAC 173-303-815(2)(b)(ii) that would link permitting support systems with protection of human health and the environment. The value associated with implementing permit conditions that do not increase protection to human health and the environment, and are not driven by the Dangerous Waste Regulations, is questionable.

The addition of permit conditions requiring submittal of design information for support systems is equivalent to establishing a new class of waste management unit (e.g., those that transfer waste containers). By adding a new waste management unit currently not addressed in Chapter 173-303 WAC to the WTP permit, the Permittees believe Ecology has performed a rule making inconsistent with the rule making process described in Chapter 34.05, Part III RCW.

3. Including support systems, such as mechanical handling systems, in the Permit is inconsistent with Ecology's existing permitting approach.

Ecology, ORP, and BNI conducted detailed reviews of the initial DWP application during 2000 and 2001 to ensure the application would meet the standards of WAC 173-303-806(4) and Ecology publication 95-402, *Dangerous Waste Permit Application Requirements*. The draft permit prepared by Ecology was reviewed in the same manner. The initial permit submittal (DOE letter 01-EMD-038) included a checklist documenting where in the permit each requirement was addressed. Ecology issued a Notice of Deficiency (NOD) on the WTP permit application, and ORP and BNI followed with responses to resolve the deficiencies. Ecology did not identify any NODs associated with the descriptions of mechanical handling systems contained in the application. Therefore, no compliance schedule items were developed.

Following resolution of the NOD, Ecology acknowledged that the submittal addressed all of the requirements for a permit application, but not in sufficient detail to call the application complete (Washington Department of Ecology letter dated February 6, 2002). The Permittees developed a demonstration pursuant to WAC-173-303-806(4)(a) documenting why not all of the detailed information was available (DOE letter 02-EMD-009). Ecology accepted the demonstration and then developed a compliance schedule for inclusion in the permit that addressed the additional information needs (Attachment 51, Appendix 1). The compliance schedule did not include design information for mechanical handling or other support systems.

On March 29, 2004, the Permittees submitted the 2+2 permit modification (DOE letter 04-ED-024). Ecology judged the modification complete, and stated that only specific details still needed to be included as allowed under WAC 173-303-840(1)(b) (Ecology letter dated June 29, 2004). WAC 173-303-840(1)(b) allows the Department to request clarification of permit content, but not to require new information. Information related to mechanical handling systems was not part of the specific details still needed as identified in Ecology's June 29, 2004 letter. A discussion of how support systems facilitate plant operations is provided in Attachment 51, Chapter 4, Process Description.

The Permittees do not believe permitting support systems is required by regulations or supported by the approved permitting process utilized since the Permit's inception. Further, the Permittees believe the WTP is in full compliance with the Dangerous Waste Regulations and permit without this new permit condition. The Permittees believe Ecology did not identify design deliverables for mechanical handling systems during

initial permit negotiations because there are no specific requirements identified in the regulations or guidance documents.

4. The mechanical handling systems (cranes) identified in permit condition III.10.C.15.a do not transfer waste; they move waste containers.

Ecology's statement of basis for regulating mechanical handling systems (specifically cranes) refers to the definition of a critical system in the Hanford Site-Wide RCRA Permit. This definition includes 1) systems that transfer waste, and 2) equipment whose failure could lead to the release of dangerous waste into the environment:

"A critical system is defined in Part 1 of the Hanford Facility's Dangerous Waste portion of the RCRA Permit, 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."

And, for the addition of mechanical handling systems, Ecology writes in Section 4.4 of the Statement of Basis:

"The RWH, LEH, LMH, and HEH systems are used to transfer containers of dangerous waste from one part of the WTP to another. Mobile transfer equipment, such as forklifts or dollies, is not usually included in a RCRA Permit as regulated equipment. However, the mechanical handling systems listed above are stationary systems built into the WTP facility, all of which are essential to the transfer of regulated waste within the facility. The portion of the Permit for Operating Unit 10 does not currently address any information needs for mechanical handling systems; therefore, Ecology is proposing addition of the following Permit condition and associated compliance schedule items."

- a. The Permittees believe there is a difference in the definition of a critical system between systems that move waste containers and those that transfer waste (e.g., pipe). The federal regulations do not refer to the movement of waste containers as transferring waste. The only discussion on the transfer of waste in the Code of Federal Regulations pertains to 40 CFR 264.1084(j), 264.1085(e)(1), 265.1085(j), and 265.1086(e)(1). These sections pertain only to the transfer of waste between tanks or surface impoundments, in the context of controlling air pollutant emissions.

Cranes used to move dangerous waste containers are equivalent to a hand truck or forklift used at other facilities, which are not regulated. The Ecology Statement of Basis argues for the permitting of cranes since they are permanently installed systems in the facility and are not mobile such as forklifts and dollies. However, a permanently installed system is inherently safer to the environment to operate as it can only be used in the areas it is designed for.

Ecology's new interpretation of the term "critical system" makes it difficult to distinguish between types of mechanical handling equipment. The new interpretation of critical system does not distinguish between mobile transfer equipment and stationary transfer equipment as discussed in the statement of basis. However, the Statement of Basis clearly indicates that forklifts and dollies are not permitted. We submit that the definition of "processes that ... transfer ... dangerous waste" in the definition properly refers to bulk transfer mechanisms, e.g., pipelines, and not to container transfer mechanisms such as forklifts and cranes.

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- b. A canister falling within the HLW or LAW facilities will not result in a breach of the structure or a release of contamination to the public. BNI performed an analysis to estimate the damage that could result if a canister is dropped while it is being transported within the HLW facility. A similar analysis has been performed for the LAW facility. The analyses showed that the HLW and LAW structures remained in place after the bounding load drops and retained their integrity. These analyses show that failure of cranes does not result in a release of dangerous waste to the environment. In addition, a sealed HLW thin wall canister was subject to a seven-meter drop test to meet repository acceptance criteria. Following the drop, the thin wall canister passed a gas test that showed there were no leaks.

Even if the HLW calculation had shown that the canister breached the containment, the C5 ventilation system is designed to maintain a negative pressure with respect to the adjacent space. This ensures that under normal and abnormal conditions contamination should not be spread from the C5 space into the C3 space. The cascaded ventilation system is designed to flow from the C3 system into the C5 system. However, any potential crane drops resulting in the breach of a canister or release of other dangerous waste (e.g., canister drop onto a dangerous waste pipe) could be handled as part of contingency and emergency procedures in accordance with WAC 173-303-350 and Attachment 51, Chapter 7, Contingency Plan, of the Permit, as appropriate.

In addition, the cranes identified in permit condition III.10.C.15.a.i (B) are in areas that are permitted as containment buildings with the exception of HEH-CRN-00001. Containment buildings allow the handling of open containers while protecting human health and the environment. HEH-CRN-00001 is the truck bay crane used to load canisters onto the truck for transport out of the facility. This HEH crane is located in room H-0130 (loading area), which is permitted as a container (i.e., drum) storage area. Prior to the canister being lifted by this crane, the lid is welded on, and the canister is decontaminated, placed into a shielded cask, and the cask lid is bolted down. The canister cask is approved for use by the U.S. Department of Transportation and is rated to withstand drops from HEH-CRN-00001.

5. The definition of "critical systems" was developed to support the permit modification process, not to drive inclusion of additional design information in a permit.

The definition of a critical system as it was created in the Hanford Site Dangerous Waste Permit is as follows:

"The term "Critical Systems" 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 of a specific TSD unit may be developed and included in Part III, V, and/or VI of this Permit. In developing a critical system list, or in the absence of a critical system list, WAC 173-303-830 Modifications shall be considered."

The term "critical system" was developed to support the permit modification process. The term is used to identify which portions of the permitted design should be subject to the permit modification process if changes are required during construction or modification activities. It was not intended to drive the identification of systems for which additional design information is required to be submitted and incorporated into the permit. The definition of "critical

system” does not expand the information required to be included in a Dangerous Waste Permit Application identified in WAC 173-303-806. (See Ecology's Initial Responsiveness Summary for the Hanford RCRA Permit, 2/2/94, page 205.) It is not appropriate to use the definition of a critical system to create new permitting deliverables that do not increase protection of human health and the environment.

6. Inquiry with the U.S. Environmental Protection Agency (EPA) indicates the Agency does not regulate mechanical handling equipment under RCRA.

An inquiry with the EPA indicates the Agency does not regulate mechanical handling equipment under RCRA. The State of Washington has not enacted rules that are more stringent than the federal rule in this area. The BNI question to EPA concerning the regulation of mechanical handling equipment, along with the EPA response, is given below:

“Question Reference #060202-000031

Customer (Brad Erlandson) - 02/02/2006 05:19 PM

Under what circumstances might a container handling device (e.g., crane, dolly, forklift, cart) at a TSD be regulated? What about the device (e.g. design, function) would be regulated? Can you provide applicable code references or other guidance documents?

Response (OSW-CC) - 02/03/2006 04:12 PM

Mr. Erlandson,

There are no specific Resource Conservation and Recovery Act (RCRA) regulations for container handling devices at a treatment, storage, and disposal facility (TSDF). The TSDF regulations, found in 40 CFR Part 264 and Part 265, typically cover the hazardous waste containment structures themselves (containers, tanks, surface impoundments, waste piles, landfills, etc), but not the equipment used to manipulate these containment structures.

The TSDF regulations may be found at the following URL:

<http://www.epa.gov/epacfr40/chapt-I.info/chi-toc.htm>

This guidance represents clarification of the Federal regulations. Since most States are authorized to implement the Federal regulations, allowing them to be more stringent or broader in scope than the Federal requirements, you should contact your state environmental agency for guidance on how your structures may be regulated. State Web sites are located at the following URL:

<http://www.epa.gov/spaos/wet/osw/comments.htm>

You may also consider contacting the OSHA Compliance at (301) 515-6796, or at the following URL: <http://www.osha.gov/>

We hope that this information is helpful to you.”

As discussed previously, the Permittees do not believe mechanical handling equipment is subject to regulation under RCRA or the Dangerous Waste Regulations, except as identified in WAC 173-303-810(6) as an auxiliary system necessary to achieve

compliance with the conditions of the permit and permit condition I.E.7. However, discussions/descriptions of how mechanical handling systems support permitted activities are already included in Chapter 4. There are no objections to submitting system descriptions for incorporation into the administrative record when requested by Ecology as supplemental information.

7. Permitting mechanical handling equipment (Ecology review and approval of crane documentation) does not enhance protection of human health and the environment.

The safe design and operation of mechanical handling equipment is addressed under nuclear safety processes used at the WTP. This comprehensive process addresses nuclear and process safety, engineering and design, radiation protection, and quality that result in systems that are designed, fabricated, and operated in a manner that will provide the necessary protection for the worker, the public, and the environment.

8. It is not appropriate for Ecology to regulate the WTP differently than other Hanford RCRA regulated facilities.

There does not seem to be consistency across the Hanford Site with Ecology's interpretation and use of the term "critical system" to regulate mechanical handling systems. Mechanical handling systems are not identified as critical systems for the Integrated Disposal Facility (IDF) or the draft permitting materials for the Canister Storage Building.

While the permittees do not believe that permitting mechanical handling systems is necessary to achieve compliance with the Dangerous Waste Regulations or protect human health and the environment, the following proposed revision to Ecology's draft permit language is submitted should Ecology decline to delete the referenced conditions:

Revise permit condition III.10.C.15.a.i to read: "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 10, Appendix 1.0 of this Permit, engineering information as specified below, for incorporation into Attachment 51, Appendices 9.6, 9.10, 10.6, and 10.10 of this Permit, 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 | f. HSH-CRN-00014 |
| b. HEH-CRN-00003 | g. LEH-CRN-00003 |
| c. HPH-CRN-00001 | h. LPH-CRN-00002 |
| d. HPH-CRN-00002 | i. HEH-CRN-00001 |
| e. HSH-CRN-00001 | |

C. The following are excluded from this permit condition:

- a. Additional submittals beyond those described in permit condition III.10.C.15.a.i;
- 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 included in the 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.

In addition, please delete "and inspection schedules" from permit condition III.10.C.15.a.ii.B, so that condition III.10.C.15.a.ii.B reads:

"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."

REFERENCE(S):

- 40 CFR Part 264
- Attachment 51, Appendix 1
- Attachment 51, Chapter 4
- Chapter 34.05 RCW
- Chapter 70.105 RCW
- DOE letter 01-EMD-038
- DOE letter 02-EMD-009
- DOE letter 04-ED-024
- Ecology publication 95-402, *Dangerous Waste Permit Application Requirements*
- RCRA subtitle C
- WAC 173-303-350
- WAC 173-303-806
- WAC 173-303-810 (6)
- WAC 173-303-815(2)
- WAC 173-303-815(2) (b)(i)
- WAC 173-303-830
- WAC 173-303-840(b)
- Washington Department of Ecology letter, *Waste Treatment and Immobilization and Treatment Plant (WTP) Class 2 Dangerous Waste Permit (DWP) Modification*, dated June 29, 2004
- Washington Department of Ecology letter, *Waste Treatment Plant (WTP) Dangerous Waste Permit Application (DWPA)*, dated February 6, 2002
- 40 CFR 264.1084(j), 264.1085(e)(1), 265.1085(j), and 265.1086(e)(1)
- Attachment 51, Chapter 7, Contingency Plan
- Ecology's Initial Responsiveness Summary for the Hanford RCRA Permit, dated February 2, 1994, page 205



HANFORD TANK WASTE
TREATMENT AND
IMMOBILIZATION PLANT
(WTP)

HAZARDOUS WASTE PERMIT
DRAFT 2+2 PERMIT MODIFICATION
WTP COMMENTS

COMMENT #7

TOPIC: MECHANICAL HANDLING SYSTEMS

- CONDITION NO:
- Table III.10.C.A
 - III.10.C.15.a.i
 - Attachment 51, Appendix 2

CONDITION
TEXT:

Critical System List

Mnemonic System Locator	System Name
Pretreatment Systems	
CNP	Cesium Nitric Acid Recovery Process System
CXP	Cesium Ion Exchange Process System
FEP	Waste Feed Evaporation Process System
FRP	Waste Feed Receipt Process System
HLP	HLW Lag Storage and Feed Blending Process System
PFH	Pretreatment Filter Cave Handling System
PIH	Pretreatment In-Cell Handling System
PJV	Pulse Jet Ventilation System
PVP	Pretreatment Vessel Vent Process System
PVV	Process Vessel Vent System
PWD	Plant Wash and Disposal System
RDP	Spent Resin and Dewatering Process System
RLD	Radioactive Liquid Waste Disposal System
RWH	Radioactive Solid Waste Handling System
TCP	Treated LAW Concentrate Storage Process System
TEP	Technetium Eluant Recovery Process System
TLP	Treated LAW Evaporation Process System
TXP	Technetium Ion Exchange Process System
UFP	Ultrafiltration Process System
Low-Activity Waste Systems	
LCP	LAW Concentrate Receipt Process System
LEH	LAW Canister Export Handling System
LFH	LAW Container 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
LVP	LAW Secondary Offgas/Vessel Vent Process System
RLD	Radioactive Liquid Waste Disposal System
RWH	Radioactive Solid Waste Handling System

High-Level Waste Systems	
HCP	HLW Concentrate Receipt Process System
HDH	HLW Canister Decontamination Handling System
HEH	HLW Canister Export Handling System
HFH	HLW Filter Cave Handling System
HFP	HLW Melter Feed Process System
HMH	HLW Melter Handling System
HMP	HLW Melter Process System
HOP	Melter Offgas Treatment Process System
HPH	HLW Canister Pour Handling System
HSH	HLW Melter Cave Support Handling System
PJV	Pulse-Jet Ventilation System
PVV	Process Vessel Vent System
RLD	Radioactive Liquid Waste Disposal System
RWH	Radioactive Solid Waste Handling System
Analytical Laboratory Systems	
RLD	Radioactive Liquid Waste Disposal System
RWH	Radioactive Solid Waste Handling System
Balance of Facilities Systems	
CPE	Cathodic Protection Electrical System
RLD	Radioactive Liquid Waste Disposal System
RWH	Radioactive Solid Waste Handling System

COMMENT (7A): Please remove systems that perform generator functions, such as the Radioactive Solid Waste Handling (RWH) from Table III.10.C.A and list of critical systems because such systems do not treat, store, or dispose of dangerous waste for longer than 90 days.

BASIS (7A): The purpose of the RWH system is to package, remove, and transport radioactive solid waste from the WTP facilities to the Department of Energy for disposal. The RWH systems for each facility are a new point of generation and will accumulate waste for less than 90 days in accordance with 40 CFR 262.34 and WAC 173-303-200. Less-than-90-day accumulation areas are not required to be permitted. In addition, Washington State Department of Ecology agreed to remove the RWH system from the critical systems list in a meeting between BNI, DOE, and Ecology on August 22, 2005.

The RWH systems do not treat waste. The definition of "treatment" in WAC 173-303-040 is:

"The physical, chemical, or biological processing of dangerous waste to make such wastes non-dangerous or less dangerous, safer for transport, amenable for energy or material resource recovery, amenable for storage, or reduced in volume, with the exception of compacting, repackaging, and sorting as allowed under WAC 173-303-400(2) and 173-303-600(3)."

REFERENCE(S):

- 40 CFR 262.34
- WAC 173-303-040
- WAC 173-303-200

COMMENT (7B): Please remove the HLW Melter Cave Support Handling (HSH) system from Table III.10.C.A and remove HSH-CRN-00001 and HSH-CRN-00014 from permit condition III.10.C.15.a.i.B because these perform generator functions and are not associated with treatment, storage, or disposal of dangerous waste.

BASIS (7B): The purpose of the HLW HSH system is to perform or enable the lifecycle handling of remote equipment within the melter cave and its associated decontamination and maintenance areas. The HLW HSH system consists of two distinct elements: a mechanical handling element, and a tank system element.

The HSH system is considered a new point of generation and the mechanical handling portion of HSH would be regulated as a less-than-90-day accumulation area in accordance with 40 CFR 262.34 and WAC 173-303-200. The secondary waste associated with mechanical handling activities is still regulated; it just does not require a permit.

The mechanical handling element of the HSH system does not treat waste. The definition of "treatment" in WAC 173-303-040 is:

"The physical, chemical, or biological processing of dangerous waste to make such wastes non-dangerous or less dangerous, safer for transport, amenable for energy or material resource recovery, amenable for storage, or reduced in volume, with the exception of compacting, repackaging, and sorting as allowed under WAC 173-303-400(2) and 173-303-600(3)."

The tank system element of the HSH system is permitted pursuant to Permit Condition III.10.E to allow storage of secondary dangerous waste for greater than 90 days. Because the HSH tank systems are permitted pursuant to Permit Condition III.10.E, it is appropriate to keep HSH on the list of critical systems.

REFERENCE(S):

- 40 CFR 262.34
- WAC 173-303-040
- WAC 173-303-200



HANFORD TANK WASTE
TREATMENT AND
IMMOBILIZATION PLANT
(WTP)

HAZARDOUS WASTE PERMIT
DRAFT 2+2 PERMIT MODIFICATION
WTP COMMENTS

COMMENT #8

TOPIC: *HLW VITRIFICATION SYSTEM PROCESS AND LEAK DETECTION SYSTEM INSTRUMENTS AND PARAMETERS*

CONDITION NO: Table III.10.J.C.

PROPOSED PERMIT TABLE CHANGES: Ecology proposed to include 42 instruments (21 for each melter) in the *HLW Vitrification System Process and Leak Detection System Instruments and Parameters* table.

COMMENT 8A): Please retain the 14 indicated instruments associated with detecting potential releases of dangerous waste from the melter to the melter cave, and remove the remaining 28 instruments from the HLW melter instruments table (Table III.10.J.C). Instruments remaining monitor:

- Plenum pressure
Melter 1: PDT-0139A, PDI-0139A, PDI-0139, PDT-0139B
Melter 2: PDT-2139A, PDI-2139A, PDT-2139B, PDI-2139B
- Glass pool level/density
Melter 1: LT-0131, LI-0131 and DT-0132, DI-0132
Melter 2: LT-2131, LI-2131 and DT-2132, DI-2132
- Plenum temperature (thermocouples)
Melter 1: TE-0920A, TT-0920A, TI-0920A, TE-0920B, TI-0920B, TE-0920C, TT-0921A, TI-0920C, TE-920D, TI-0920D
Melter 2: TE-2920A, TT-2920A, TI-2920A, TE-2920B, TI-2920B, TE-0920C, TT-0921A, TI-0920C, TE-2920D, TI-2920D

BASIS (8A): This basis provides rationale for retaining the plenum pressure, glass pool level/density, and plenum temperature instruments in the Table III.10.J.C.

Plenum Pressure, Instrument tag numbers:

Melter 1: PDT-0139A, PDI-0139A, PDI-0139, PDT-0139B
Melter 2: PDT-2139A, PDI-2139A, PDT-2139B, PDI-2139B

The melter plenum is maintained at a nearly constant vacuum to contain gases (vapors, aerosols, and particulates) released during slurry feeding. The melter offgas is drawn into the HLW offgas process system (HOP). The HOP system maintains the plenum in a vacuum relative to its exterior environment, the HLW melter cave. Melter plenum vacuum is monitored and controlled to prevent melter pressurization and potential release of dangerous waste, such as aerosols, into the melter cave.

During normal operations, the off-gas system will maintain a melter plenum vacuum of

approximately negative 5 inches of water column relative to the C5 melter cave. Plenum pressure instruments detect increases in pressure in the melter plenum (low plenum vacuum) and provide an actuating signal to stop feed to the melter, discharge of glass, and injection of air to the film cooler. Unacceptable low plenum vacuum is alarmed with control interlocks and feeding the melter is secured. There are redundant plenum pressure taps with independent pressure transmitters to ensure continuing melter operations while one of the instruments is being repaired/replaced.

Instrument tag numbers PDY-0139A and PDY-2139A should be deleted from the HLW melter instruments table because they do not indicate physical conditions in the melter; they are part of the software providing "Relay/Compute" function (see strikeouts in the table below).

Glass pool level/density, Instrument tag numbers:

Melter 1: LT-0131, LI-0131 and DT-0132, DI-0132

Melter 2: LT-2131, LI-2131 and DT-2132, DI-2132

Glass pool level and density detectors are installed in the 6-inch port at the center of the melter lid. The density instrument is used to compensate the level detector in order to obtain the level measurement; the plenum pressure instrument is used as a reference to determine glass pool level. Loss of glass pool level/density instruments would be detected by erratic or no signal from the associated pressure transmitters. The control system will alarm the operator and terminate melter feed when the high-high melter level switch is activated.

It is intended that routine replacement of the glass pool thermocouples will be performed while the melter is processing feed. Failure of the melter pool level/density measurement capability (e.g., thermowells) would require stopping feed and idling the melter (only long enough to perform the actual remote handling of components out of and into the melter) to repair/replace the failed equipment. The glass pool control/monitoring thermowells will be remotely replaceable with the melter idling.

Plenum temperature (thermocouples), Instrument tag numbers:

Melter 1: TE-0920A, TT-0920A, TI-0920A, TE-0920B, TI-0920B, TE-0920C, TT-0921A, TI-0920C, TE-920D, TI-0920D

Melter 2: TE-2920A, TT-2920A, TI-2920A, TE-2920B, TI-2920B, TE-0920C, TT-0921A, TI-0920C, TE-2920D, TI-2920D

Plenum temperature is measured to determine whether the melter is over-fed or under-fed. While receiving the feed, the melter plenum temperature is controlled within the range of 400°C to 600°C by adjusting the rate of feed addition to the melter. Feed and plenum temperature adjustments are not part of the control loop. Operators monitor the plenum temperature and manually adjust feed rate.

Plenum temperature is measured by four thermocouples (two each in two thermowells) that are averaged to provide a calculated plenum temperature used as a reference for feed control. A minimum of one direct plenum temperature measurement is necessary to control the feed rate; the calculated average is an operational tool that is not required to properly control the feed rate. The average temperature is provided by software, not a direct measurement. The average calculation should be deleted from the permit table (see strikeouts in the table below).

COMMENT (8B): Please add a footnote to the HLW melter instruments table indicating redundant instruments, and require the operation of only one instrument of each type at any one time. (See table below indicating the redundant instruments.)

BASIS (8B): Plenum pressure, Instrument tag numbers:
Melter 1 - PDT-0139A, PDI-0139A, PDI-0139, PDT-0139B
Melter 2 - PDT-2139A, PDI-2139A, PDT-2139B, PDI-2139B

Each melter has two redundant plenum pressure instruments: one of two instruments must function when the melter is receiving the feed. It is reasonable to include in the permit a requirement for one of two plenum pressure instruments to be functional when the HLW melter is receiving the feed.

Plenum thermocouples), Instrument tag numbers:
Melter 1 - TE-0920A, TT-0920A, TI-0920A, TE-0920B, TI-0920B, TE-0920C, TT-0921A, TI-0920C, TE-920D, TI-0920D
Melter 2 - TE-2920A, TT-2920A, TI-2920A, TE-2920B, TI-2920B, TE-0920C, TT-0921A, TI-0920C, TE-2920D, TI-2920D

Each melter has four plenum temperature thermocouples, which send signals to calculate the average plenum temperature. The calculated average value provides operational information used to adjust the feed rates. A minimum of one plenum temperature measurement is necessary to adjust the feed. Failure of any single thermocouple does not inhibit operation and control of the HLW melter. Since the thermocouples require periodic replacement, the melter is designed with redundant instruments to ensure continued glass production without maintenance interruptions for replacement of the plenum thermocouples. It is reasonable to include in the permit a requirement for one of four plenum thermocouples to be functional when the HLW melter is receiving the feed.

COMMENT (8C): Please delete the Melter 1 and 2 East and West Canister Level instruments (East Melter 1: LT-0820, LI-0820A, LI-0820B and Melter 2: LT-2816, LI-2816A, LI-2816B; West Melter 2: LT-2820, LI-2820A, LI-2820B and Melter 2: LT-2816, LI-2816A, LI-2816B) because these instruments are not designed to monitor leaks of dangerous waste from the HLW melter, and are not associated with melter performance. (See table below.)

BASIS (8C): The Immobilized HLW (IHLW) canister level instruments are not designed to monitor leaks of dangerous waste from the HLW melter and do not impact melter performance. The HLW facility is equipped with the canister level instruments to comply with the Waste Product Acceptance System Requirements Document (WASRD) Specification 4.2.3.1, *Specific Criteria for High-Level Waste*, which states that canister fill height shall be equivalent to at least 87% of the volume of the empty canister. The WASRD defines the requirements for acceptance of the IHLW glass canisters in the geologic repository.

The IHLW canisters will be managed in accordance with WAC 173-303-630, Use and Management of Containers. Container level measurement instrumentation is not required under WAC 173-303-630. Operations procedures and practices for management of dangerous waste containers will be provided in accordance with Permit Conditions III.10.J.5.e and III.10.D.10.c.

COMMENT (8D): Delete the Melter 1 and 2 refractory temperature instruments (Melter 1: TE-0337, TT-0037, TI-0337, TE-0338, TI-0338, TE-0339, TI-0339, TE-0341, TI-0341, TE-0342, TT-0342, TI-0342, TE-0343, TI-0343, TE-0344, TI-0344, TE-0345, TI-0345, TE-0346, TI-0346; Melter 2: TE-2337, TT-2337, TI-2337, TE-2338, TI-2338, TE-2339, TI-2339, TE-2340, TI-2340, TE-2341, TI-2341, TE-2342, TT-2342, TI-2342, TE-2343, TI-2343, TE-2344, TI-2344, TE-2345, TI-2345, TE-2346, TI-2346) because these instruments are not designed to monitor leaks of dangerous waste from the melter and are not associated with melter performance. (See table below.)

BASIS (8D): The refractory temperature instruments (thermocouples) are not designed to monitor leaks of dangerous waste from the HLW melter and do not impact melter performance. The refractory thermocouples are useful to collect data during operations that could be used to enhance future melter design. They are placed behind the glass contact refractory and cast into the refractory of the discharge wall. They have questionable value for either operational troubleshooting or process control because they monitor a very small area of the melter and the area they do monitor is not representative of the bulk of the inner melter surface area. Failure will not impact glass quality or off gas emissions. It is intended that the refractory monitoring thermocouple replacement be performed without having to idle the melter.

COMMENT (8E): Delete the Melter 1 and 2 shell leak detection instruments (Melter 1: LT-0144, LI-0144 and Melter 2: LT-2144, LI-2144) because these instruments are not associated with dangerous waste leak detection or monitoring.

BASIS (8E): The melter shell level detection instruments are not associated with dangerous waste leak detection or monitoring. The leak detector monitors the presence of water in the annulus between the melter shell and cooling panels. The instruments will not distinguish between a water leak and condensation that could form in this space. It will be an alarmed but not an interlocked signal. With an alarm, a review of the condition is required to determine the source and the volume of the water while melter operation continues. A drain prevents a buildup of liquids. The leak detector is an operational troubleshooting tool not used for process control. Failure will not impact glass quality or off gas emissions.

**PROPOSED
CHANGES TO
TABLE
III.10.J.C:**

P&ID	Monitoring or Control Parameter	Instrument or Control Device Tag No.
Melter 1		
24590 HLW M6-HMP P0013	Melter 1 shell leak detection	LT-0144, LI-0144
24590 HLW M6-HMP P0003	Melter 1 refractory temperature, East wall, 45"	TE-0337, TT-0037, TI-0337
24590 HLW M6-HMP P0003	Melter 1 refractory temperature, East wall, 33"	TE-0338, TI-0338
24590 HLW M6-HMP P0003	Melter 1 refractory temperature, East wall, 21"	TE-0339, TI-0339
24590 HLW M6-HMP P0003	Melter 1 refractory temperature, East wall, 9"	TE-0340, TI-0340
24590 HLW M6-HMP P0003	Melter 1 refractory temperature, East wall, 3"	TE-0341, TI-0341
24590 HLW M6-HMP P0014	Melter 1 refractory temperature, West wall, 45"	TE-0342, TT-0342, TI-0342

24590-HLW-M6-HMP-P0014	Melter 1 refractory temperature, West wall, 33"	TE-0343, TI-0343
24590-HLW-M6-HMP-P0014	Melter 1 refractory temperature, West wall, 21"	TE-0344, TI-0344
24590-HLW-M6-HMP-P0014	Melter 1 refractory temperature, West wall, 9"	TE-0345, TI-0345
24590-HLW-M6-HMP-P0014	Melter 1 refractory temperature, West wall, 3"	TE-0346, TI-0346
24590-HLW-M6-HMP-P0004	Melter 1 plenum temperature, 62"	TE-0920A, TT-0920A, TI-0920A*
24590-HLW-M6-HMP-P0004	Melter 1 plenum temperature, 59"	TE-0920B, TI-0920B*
24590-HLW-M6-HMP-P0004	Melter 1 plenum temperature, 62"	TE-0920C, TT-0921A, TI-0920C*
24590-HLW-M6-HMP-P0004	Melter 1 plenum temperature, 59"	TE-920D, TI-0920D*
24590-HLW-M6-HMP-P0004	Melter 1 plenum average temperature	TY-0920, TI-0920
24590-HLW-M6-HMP-P0013	Melter 1 glass pool density	DT-0132, DI-0132
24590-HLW-M6-HMP-P0013	Melter 1 glass pool level	LT-0131, LI-0131
24590-HLW-M6-HMP-P0013	Melter 1 plenum pressure	PDT-0139A, PDI-0139A* PDI-0139B, PDT-0139B* PDY-0139A
24590-HLW-M6-HMP-P0008	Melter 1 West canister level	LT-0816, LI-0816A, LI-0816B
24590-HLW-M6-HMP-P0008	Melter 1 East canister level	LT-0820, LI-0820A, LI-0820B
Melter 2		
24590-HLW-M6-HMP-P20013	Melter 2 shell leak detection	LT-2144, LI-2144
24590-HLW-M6-HMP-P20003	Melter 2 refractory temperature, East wall, 45"	TE-2337, TT-2337, TI-2337
24590-HLW-M6-HMP-P20003	Melter 2 refractory temperature, East wall, 33"	TE-2338, TI-2338
24590-HLW-M6-HMP-P20003	Melter 2 refractory temperature, East wall, 21"	TE-2339, TI-2339
24590-HLW-M6-HMP-P20003	Melter 2 refractory temperature, East wall, 9"	TE-2340, TI-2340
24590-HLW-M6-HMP-P20003	Melter 2 refractory temperature, East wall, 3"	TE-2341, TI-2341
24590-HLW-M6-HMP-P20014	Melter 2 refractory temperature, West wall, 45"	TE-2342, TT-2342, TI-2342
24590-HLW-M6-HMP-P20014	Melter 2 refractory temperature, West wall, 33"	TE-2343, TI-2343
24590-HLW-M6-HMP-P20014	Melter 2 refractory temperature, West wall, 21"	TE-2344, TI-2344
24590-HLW-M6-HMP-P20014	Melter 2 refractory temperature, West wall, 9"	TE-2345, TI-2345
24590-HLW-M6-HMP-P20014	Melter 2 refractory temperature, West wall, 3"	TE-2346, TI-2346
24590-HLW-M6-HMP-P20004	Melter 2 plenum temperature, 62"	TE-2920A, TT-2920A, TI-2920A*
24590-HLW-M6-HMP-P20004	Melter 2 plenum temperature, 59"	TE-2920B, TI-2920B*
24590-HLW-M6-HMP-P20004	Melter 2 plenum temperature, 62"	TE-2920C, TI-2920C*
24590-HLW-M6-HMP-P20004	Melter 2 plenum temperature, 59"	TE-2920D, TI-2920D*
24590-HLW-M6-HMP-P20004	Melter 2 plenum average temperature	TY-2920, TI-2920

24590-HLW-M6-HMP-P20013	Melter 2 glass pool density	DT-2132, DI-2132
24590-HLW-M6-HMP-P20013	Melter 2 glass pool level	LT-2131, LI-2131
24590-HLW-M6-HMP-P20013	Melter 2 plenum pressure	PDT-2139A, PDI-2139A* PDT-2139B, PDI-2139B* PDY-2139A
24590-HLW-M6-HMP-P20008	Melter 2 West canister level	LT-2816, LI-2816A, LI-2816B
24590-HLW-M6-HMP-P20008	Melter 2 East canister level	LT-2820, LI-2820A, LI-2820B

* Footnote: These instruments are redundant. Only one instrument is required to function when the HLW melter is receiving feed.

REFERENCE(S):

- Permit Condition III.10.J.5.f.
- Waste Acceptance System Requirements Document (WASRD), January 2002, USDOE - Office of Civilian Radioactive Waste Management Division



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COMMENT #9

TOPIC: *WEAR PLATES IN PRETREATMENT FACILITY VESSELS*

CONDITION NO: III.10.E.2.d

PROPOSED PERMIT CHANGES: III.10.E.2.d. Fabrication and assembly of vessels HLP-VSL-00022, HLP-VSL-00027A, HLP-00027B, HLP-VSL-00028, UFP-VSL-00002A, UFP-VSL-00002B, and their internal components will be suspended until Ecology has provided written approval of the revised structural integrity assessment reports addressing adequacy of erosion allowance for those vessels.

COMMENT (9): Please delete the proposed permit condition requiring installation of wear plates on six vessels. The Permittees could find no regulatory or permit condition supporting the proposed condition.

BASIS (9): By letter to the Permittees dated April 22, 2004, Ecology approved construction of the HLP and UFP tank systems. After receiving Ecology's initial approval, the Permittees engaged independent experts to reevaluate whether the wear plates are designed sufficiently for erosion protection; this evaluation is in progress. The Permittees explained this situation to Ecology in a letter dated August 3, 2006. Ecology responded in their letter of September 28, 2006, stating that fabrication must stop until Ecology approves the design in writing.

The point of compliance is installation. Per WAC 173-303-640(3)(a) and permit condition III.10.E.9.c, the Permittees must submit a report from an independent, qualified, registered professional engineer (IQRPE) attesting to the structural integrity of each vessel. The permit condition stipulates that Ecology's requirements will be satisfied prior to installation, not fabrication. Ecology has not provided cause or regulatory basis for stopping fabrication.

The current permitting process requires that an IQRPE report based on final design be submitted to Ecology prior to installation. Ecology has not received the final design IQRPE report. If the design is reviewed by an IQRPE and shown to have sufficient structural integrity and is "acceptable for the storing and treating of dangerous waste" (WAC 173-303-640(3)(a)), then Ecology's requirements have been met. Ecology's approval is based on the IQRPE certification, as stated in WAC 173-303-640(3)(a):

"...This assessment (which will be used by the department to review and approve or disapprove the acceptability of the tank system design at facilities which are pursuing or have obtained a final state permit)..."

Stopping fabrication may create additional project delays. Stopping fabrication of these vessels is not only inconsistent with the permitting process but may create delays with the vendors. Compliance with this condition interferes with the forward progress that is possible on these vessels while still maintaining the ability to install different erosion protection if needed.

A major challenge for the Project, and one that affects these vessels, has been finding vendors that meet the stringent nuclear quality construction standards. These standards require that the vendor use highly specialized and qualified teams to build these vessels. The Permittees' goal is to have the vendor continue work on these vessels where possible without affecting the ability to change the erosion protection. Should the vendor be required to stop fabricating these vessels, these teams may be let go or reassigned to work other jobs. It is expected to take a number of extra weeks or even months to restart fabrication if the vendor's teams are disbanded.

Ecology agreed on October 17, 2006 the work could continue on the vessels provided the work did not affect the vendor's ability to install or change wear plates or the cooling jackets. This issue is best resolved by continuing to include Ecology in the decision process.

Ecology restrictions on fabricating these vessels do not provide any more protection of human health and environment than existing permit conditions, as required by WAC 173-303-815(2)(b)(ii). No written regulatory basis has been provided to the Permittees justifying the inclusion of this condition in the Permit.

In conclusion, the Permittees understand Ecology's concerns about the erosion protection in Pretreatment Facility vessels using Pulse Jet Mixers (PJM). The Permittees are actively verifying that the expected wear due to erosion is less than the thickness of the designed wear plates for vessels HLP-VSL-00022, HLP-VSL-00027A, HLP-VSL-00027B, HLP-VSL-00028, UFP-VSL-00002A, and UFP-VVSL-00002B. We expect to provide Ecology with the results of the verification by February 28, 2007.

REFERENCE(S):

- Ecology letter dated April 22, 2004, "Completion of the April 2004 Modification of the Waste Treatment and Immobilization Plant Dangerous Waste Permit
- Ecology letter dated September 28, 2006, "Fabrication and Assembly Hold on Vessels with Pulse Jet Mixers (PJMs Waste Acceptance System Requirements
- ORP letter dated August 3, 2006 (06-WTP-106), "Wear Allowances and Integrity Assessment for Waste Treatment and Immobilization Plant (WTP) Vessels with Pulse Jet Mixers
- Permit Condition III.10.E.9.d
- WAC 173-303-640(3)(a)
- WAC 173-303-815(2)(b)(ii)



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COMMENT #10

TOPIC: *STATEMENT OF BASIS – SECTION 3.0 PROCEDURES FOR REACHING A FINAL DECISION ON THE DRAFT MODIFICATION, PAGE 6 OF 31*

SECTION: Statement of Basis, Section 3.0, page 6 of 31

COMMENT (10): Please revise the language in Section 3.0, page 6 of 31, that may lead a reader to believe that Class 1 and Class ¹1 modifications were open for public review and comment. Suggested text:

“In addition, this draft permit includes the addition of detailed design information for the HLW melters submitted in Permit Design Packages HLW-018 and HLW-019, flooding volume calculations and sump data submitted in the PT building design package PTF-065, and several new permit conditions. Ecology also approved several Class 1 and Class ¹1 Permit modifications in accordance with WAC 173-303-830, and they have been administratively incorporated into the permit.”

BASIS (10): Per WAC 173-303-830 (4)(a)(i) and (ii), Class 1 and Class ¹1 permit modifications are minor modifications that are implemented upon proper documentation and notification, and in the case of Class ¹1 modifications are approved by the Director and do not require public review. This comment is consistent with the text in Section 4.0 of the Statement of Basis which states that these Class 1 and Class ¹1 modifications have been incorporated into the permit.

REFERENCE(S):

- WAC 173-303-830 (4)(a)(i) and (ii)
- WAC 173-303-830 (4)(b)(vi)(A)(III)(AA)
- WAC 173-303-830 (4)(c)
- WAC 173-303-840 (2)



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COMMENT #11

TOPIC: IDF WASTE ACCEPTANCE CRITERIA

CONDITION NO: III.10.C.2.m.

CONDITION TEXT: III.10.C.2.m. Waste streams generated at the WTP, when combined with the related impacts from other waste forms disposed of in IDF, will not cause an exceedance of the requirements dictated in the IDF's permit waste acceptance criteria.

COMMENT (11): Please delete Condition III.10.C.2.m because it makes the WTP responsible for matters that are properly within the IDF operator's responsibilities. According to Chapter 173-303 WAC, the WTP is not responsible for the design, construction, permitting, operation, or performance of another treatment, storage, or disposal facility.

BASIS (11): WTP will meet Integrated Disposal Facility (IDF) waste acceptance criteria as required by permit condition III.10.C.2.d and WAC 173-303-141.

Dangerous and/or mixed waste may be transferred from the WTP TSD unit to a permitted TSD only, in accordance with the receiving TSD unit's waste acceptance criteria. (III.10.C.2.d.)

A person may offer a designated dangerous waste only to a TSD facility which is operating either: Under a permit issued pursuant to the requirements of this chapter; or, if the TSD facility is located outside of this state, under interim status or a permit issued by United States EPA under 40 CFR Part 270, or under interim status or permit issued by another state which has been authorized by United States EPA pursuant to 40 CFR Part 271. (WAC 173-303-141(1))

The WTP Project permittees are not responsible for the design, construction, permitting, operation, or performance of the Integrated Disposal Facility. While DOE will ensure that waste forms produced by the WTP will meet the IDF WAC, it is not the responsibility of WTP designers or managers to conduct IDF performance assessments to ensure that all wastes disposed of in the IDF, regardless of source, will meet applicable standards. That is the responsibility of the IDF operator/permittee. While DOE is the overall owner of both facilities, it should be clear within permit space what each facility permittee/operator is responsible for. The proposed Ecology language confuses those responsibilities in a manner that cannot and should not be addressed within the WTP Project. Moreover, the IDF permit already contains this requirement as part of the "WTP ILAW Waste Acceptance Criteria" permit condition (IDF unit specific permit condition III.11.I.2.a.ii)

REFERENCE(S):

- Chapter 173-303 WAC
- IDF permit condition III.11.I.2.a.ii



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COMMENT #12

TOPIC: *PART A PERMIT APPLICATION*

CONDITION NO: N/A

COMMENT (12): Please approve the Part A Permit Application:

- The approach to calculating tank storage and treatment capacity is consistent with the approach used in the original application and approved by Ecology
- Content, assumptions, and calculation methods were discussed with Ecology at length before submitting the Part A Application
- No regulatory basis was provided justifying rejection of the Part A.

BASIS (12): Section 4.6 of the Statement of Basis describes Ecology's denial of the revised Part A Permit Application. The Part A Permit Application was updated to remove the Technetium Ion Exchange System, change the melter configuration in the WTP to 2 LAW and 2 HLW melters, and update storage and treatment capacities based on current design information.

Consistent with the Part A Application currently in the Permit, the revised Part A was developed using conservative assumptions on plant processing rates and vessel volumes. This was done with Ecology's concurrence to ensure that the Plant's capacity was bounded and would not be out of compliance until the Part A Permit Application was submitted again pursuant to Condition III.10.C.2.i. The content, assumptions, and calculation methods were discussed at length with Ecology during preparation of the Part A Application (beginning in April 2003) and are consistent with the methods used in the currently approved Part A Application.

Ecology's letter of June 29, 2004 stated: "The proposed modification application is judged complete." Additional information regarding the Technetium removal system and the third LAW melter was requested by Ecology pursuant to WAC 173-303-840(1)(b). No additional information regarding the Part A Application was requested by the Department.

Rejection of the Part A Application would cause a significant disconnect between the Part A and Part B Applications: (e.g., Chapter 4 tables are consistent with the revised Part A Application.) Finally, the Part A will be updated in accordance with Permit Condition III.10.C.2.i.

REFERENCE(S):

- Statement of Basis
- Washington Department of Ecology letter, *Waste Treatment and Immobilization and Treatment Plant (WTP) Class 2 Dangerous Waste Permit (DWP) Modification*, dated June 29, 2004



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COMMENT #13

TOPIC: *ATTACHMENT 51, CHAPTER 4 - PROCESS INFORMATION*

CONDITION NO: *Attachment 51, Chapter 4 - Process Information*

COMMENT (13): The process description in Attachment 51, Chapter 4 represents the WTP as it existed in March 2004. This text, in some cases, may slightly deviate from the Ecology-approved design media incorporated into the Permit since then. Consequently, consistent with Permit Conditions III.10.D.10.c.i, III.10.E.9.e.vi, III.10.F.7.d.ii, III.10.G.10.e.vi, III.10.H.5.e.vi, III.10.J.5.e.vi, the Chapter 4 Narrative Descriptions will be updated prior to initial receipt of dangerous waste in the WTP Unit.

REFERENCE(S):

- WAC 173-303-806



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COMMENT #14

TOPIC: ATTACHMENT 51, APPENDIX 1 - , COMPLIANCE SCHEDULE

CONDITION NO: Attachment 51

CONDITION TEXT: Submit WTP permit version of *Pipe Stress Design Criteria Including "Pipe Stress Criteria" and "Span Method Criteria"*, 24590-WTP-DC-PS-01-001, including a commitment to meet ASME B31.3 for DWP regulated piping.

COMMENT (14A): Revise the compliance schedule item to be consistent with other compliance schedule items, i.e., do not identify in the compliance schedule item a need to commit to meeting ASME B31.3 for DWP-permitted piping. Please revise this compliance schedule item to read:

Submit WTP permit version of *Pipe Stress Design Criteria Including "Pipe Stress Criteria" and "Span Method Criteria"*, 24590-WTP-PER-PS-05-001.

BASIS (14A): The recommended numbering and wording in the comment is consistent with other compliance schedule items. The commitment to meet ASME B31.3 is already contained in the permit in Chapter 4, Section 4.2.2.1.1, Design Requirements, under the heading Piping and Pipe Support Design, on page 51-4-201. Further, the text of the source and permit versions of the Pipe Stress Design Criteria document describes compliance with various applicable codes and standards.

COMMENT (14B): Revise the compliance schedule date to July 31, 2007 for submitting *Pipe Stress Design Criteria including "Pipe Stress Criteria" and "Span Method Criteria"* (24590-WTP-PER-PS-05-001).

BASIS (14B): July 31, 2007 is a more realistic date to transmit the document, given needed time for the development, review, and approval.

REFERENCE(S):

- 24590-WTP-PER-PS-05-001, *Pipe Stress Criteria including "Pipe Stress Criteria" and "Span Method Criteria"*



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ALTERNATE

TOPIC: *ALTERNATE CONDITION REGARDING SUBMITTAL OF DESIGN DOCUMENTS FOR INCORPORATION INTO THE PERMIT*

ALTERNATE (3): The following comment is proposed for discussion with Ecology as an alternate comment regarding submittal of design documents for incorporation into the permit:

Requirements in the compliance schedule (III.10.E.9.b.ii, III.10.E.9.c.ii, III.10.E.9.d.ii, III.10.F.7.c.i, III.10.G.10.b.ii, III.10.G.10.c.ii, III.10.G.10.d.ii, III.10.H.5.b.ii, III.10.H.5.c.ii, III.10.H.5.d.ii, III.10.J.5.b.ii, III.10.J.5.c.ii, III.10.J.5.d.ii) require submittal of engineering documentation for incorporation into the Permit. When required by these permit conditions, source design drawings, mechanical data sheets, material selection data sheets, and specifications shall be submitted and will have the following characteristics:

- Certified in accordance with WAC 173-303-810(13).
- Certification by a registered professional engineer (i.e., stamping) in accordance with WAC 173-303-806(4)(a) is not required.
- Systems, structures, and components in contact with dangerous waste or providing secondary containment functions require structural integrity assessments (IQRPE reports) in accordance with Permit Conditions III.10.E.9.b.i, III.10.E.9.c.i, III.10.E.9.d.i, III.10.G.10.b.i, III.10.G.10.c.i, III.10.G.10.d.i, III.10.H.5.b.i, III.10.H.5.c.i, III.10.H.5.d.i, III.10.J.5.b.i, III.10.J.5.c.i, III.10.J.5.d.i, and WAC 173-303-640(3)(a).
 - Plant items requiring structural integrity assessments (IQRPE reports) are identified in Permit Tables III.10.E.A, III.10.E.B, III.10.E.C, III.10.E.D, III.10.G.A, III.10.G.A.i, III.10.H.A, III.10.I.A, III.10.J.A, and III.10.K.A.
- Systems, structures, and components in contact with dangerous waste or providing secondary containment functions require installation inspections in accordance with Permit Conditions III.10.E.3.a, III.10.G.3.a, III.10.H.1.a.x, III.10.J.1.a.x, and WAC 173-303-640(3)(c).
 - Plant items requiring installation inspection are identified in Permit Tables III.10.E.A, III.10.E.B, III.10.E.C, III.10.E.D, III.10.G.A, III.10.G.A.i, III.10.H.A, III.10.I.A, III.10.J.A, and III.10.K.A.
- Permitted instruments are identified in Permit Tables III.10.E.E, III.10.E.F, III.10.E.G, III.10.E.H, III.10.G.C, III.10.H.C, III.10.I.C, III.10.J.C, and III.10.K.C. Process monitors and instruments for non-waste management operations (e.g., utilities, raw chemical storage, non-contact cooling waters, etc.) are excluded from these tables in accordance with Permit Conditions III.10.E.9.e.ix, III.10.J.5.e.x, III.10.H.5.e.x,
- Any change document prepared for these source design documents will be supplied to Ecology in accordance with Permit Condition III.10.C.9.h.

-
- Plant items associated with directly managing waste and requiring periodic inspection are identified in the inspection schedules of Attachment 51, Chapter 6.0 of this Permit in accordance with Permit Condition III.10.C.5.c.
 - Inspection and maintenance of utility systems, support systems, and mechanical handling systems not in direct contact with dangerous waste is at the discretion of the Permittees. Functionality of utility and support systems depicted in these source design documents is required in accordance with Permit Condition I.E.7 and WAC 173-303-810(6).

Attachment 2
06-ESQ-179

Recommended Improvements to the Permit



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RECOMMENDED IMPROVEMENTS

TOPIC: DETAILED IMPROVEMENTS TO THE PERMIT
CONDITION NO: General

IMPROVEMENT (01): **Global Comment** (initially found in Appendix 6A):
The use of ILAW canisters vs. ILAW containers is inconsistent throughout the permit. The correct verbiage is ILAW container. However, a note can be added to the front matter of the permit identifying that any references to an ILAW canister is the same as an ILAW container.

IMPROVEMENT (02): **Condition III.10.A, Operating Unit 10, Titles for Chapters 5, 9, and 10:**
The draft permit reads as follows for the titles to chapter 5, 9, and 10:

- Chapter 5.0, Groundwater Monitoring (Reserved)
- Chapter 9.0, Corrective Action (Reserved)
- Chapter 10.0, Waste Minimization Certification (Reserved)

This format implies these sections are applicable to the WTP, but will be added at a later date. This is not the case. WTP will be closed in accordance with permit requirements; ground water monitoring will not be required. The unit specific chapter for corrective action is not needed; this is covered at the site wide level. The unit specific chapter for waste minimization is not needed; this is covered at the site wide level. Either the titles should be removed so only "(Reserved)" is shown or "Reserved" should be replaced with "Not Applicable."

IMPROVEMENT (03): **Table III.10.C.A, Mechanical Handling Systems:**
Table III.10.C.A. identifies all the mechanical handling systems of interest for each facility. Therefore these systems should be removed from the list of critical systems in Attachment 51, Appendix 2. Having systems identified in two separate areas of the permit causes confusion and inconsistencies.

**IMPROVEMENT
(04):**

Table III.10.D.A, Page 29, Items 2, 3, and 4, Container Storage/Containment Building Areas Description:

Based on the permit modification Table 4.2, the Container Storage room sizes should be corrected as follows:

- HLW Canister Storage Cave - 21,735 ft³
- HLW East Corridor El. 0 (HC-0108/9/10) - 41,480 ft³
- HLW Loading Area (H-0130) - 21,280 ft³

Please make following corrections to Pretreatment Facility:

- Add P-0335A Decon Chamber
- Correct P-0121A to read "Spent Resin Dewatering"
- Correct P0335 to read "Pretreatment Filter Cave Room"

**IMPROVEMENT
(05):**

Table III.10.E.A, Cesium Nitric Acid Recovery Process (CNP):

The column *Engineering Description* includes four specifications that do not belong in this table. Please remove the following drawings:

- 24590-PTF-3PS-MEVV-T0001 - Source specification not submitted for permit
- 24590-PTF-3PS-MEVV-T0002 - Source specification not submitted for permit
- 24590-PTF-3PS-MEVV-TP001 - Specification for Forced Circulation Vacuum Evaporator for the equipment FEP-SEP-00001A/B. This is an FEP miscellaneous unit system while this table is for *Pretreatment Plant Tank Systems Description* and this row of the table is for the CNP system.
- 24590-PTF-3PS-MEVV-TP002 - Specification for Cesium Nitric Acid Recovery Forced Circulation Vacuum Evaporator System, which is a miscellaneous unit system, therefore this specification does not belong in this table.

**IMPROVEMENT
(06):**

Table III.10.E.A., Pretreatment Plant Tank Systems Description:

To avoid duplication and inconsistencies with other facilities' tables, please revise Table III.10.E.A, to:

- Retain information consistent with the Dangerous Waste Permit Application Table 4-3
- Remove information that belongs in other unit tables, such as Miscellaneous Treatment Unit Table III.10.G.A.

IMPROVEMENT
(07):

Table III.10.E.A., Pretreatment Plant Tank Systems Description:

Please make the following changes documents/drawings:

Dangerous and/or Mixed Waste Tank Systems Name	Engineering Description (Drawing Nos., Specifications Nos., etc.). 24590-PTF-:	Total Volume
Waste Feed Receipt Process System FRP-VSL-0002A FRP-VSL-0002B FRP-VSL-0002C FRP-VSL-0002D	<ul style="list-style-type: none"> • DELETE M6-FRP-P0003 (Ancillary) • DELETE P1-P01T-P0002 (Ancillary) 	
Waste Feed Evaporation Process System FEP-VSL-00005 FEP-VSL-00017A FEP-VSL-00017B	<ul style="list-style-type: none"> • DELETE M6-FEP-P0002 (miscellaneous unit system) • DELETE M6-FEP-P0004 (miscellaneous unit system) • DELETE M6-FEP-P0005 (miscellaneous unit system) 	FEP-VSL-00017A = 85,496 FEP-VSL-00017B = 85,496
Ultrafiltration Process System UFP-FILT-00001A UFP-FILT-00001B UFP-FILT-00002A UFP-FILT-00002B UFP-FILT-00003A UFP-FILT-00003B UFP-VSL-00001A UFP-VSL-00001B UFP-VSL-00002A UFP-VSL-00002B UFP-VSL-00062A UFP-VSL-00062B UFP-VSL-00062C	<ul style="list-style-type: none"> • DELETE M6-UFP-P0013 (Ancillary) • DELETE M6-UFP-P0016 (Ancillary) • DELETE M6-UFP-P0017 (Ancillary) • ADD M6-UFP-P00021 • ADD M6-UFP-P00022 • DELETE PER-CON-02-001 (redundant - see Appendix 7.12) 	
HLW Lag Storage and Feed Blending Process System HLP-VSL-00022 HLP-VSL-00027A HLP-VSL-00027B HLP-VSL-00028	<ul style="list-style-type: none"> • DELETE M6-HLP-P0010 (Ancillary) • DELETE PER-CON-02-001 (redundant - see Appendix 7.12) 	

<p>Cesium Ion Exchange Process System</p> <p>CXP-IXC-00001 CXP-IXC-00002 CXP-IXC-00003 CXP-IXC-00004 CXP-VSL-00001 CXP-VSL-00004 CXP-VSL-00005 CXP-VSL-00026A CXP-VSL-00026B CXP-VSL-00026C</p>		<p>CXP-VSL-00005 = 1141</p> <p>CXP-VSL-00026A = 39,000</p> <p>CXP-VSL-00026B = 39,000</p> <p>CXP-VSL-00026C = 39,000</p>
<p>Cesium Nitric Acid Recovery Process System</p> <p>CNP-VSL-00001 CNP-VSL-00003 CNP-VSL-00004</p>	<ul style="list-style-type: none"> • DELETE 24590-PTF-3PS-MEVV-T0001 (Source drawing) <ul style="list-style-type: none"> ▫ 24590-PTF-3PS-MEVV-T0002 - Source drawing not submitted for permit ▫ 24590-PTF-3PS-MEVV-TP001 - Specification for Forced Circulation Vacuum Evaporator for the equipment FEP-SEP-00001A/B. This is an FEP miscellaneous unit system while this table is for <i>Pretreatment Plant Tank Systems Description</i> and this row of the table is for the CNP system. ▫ 24590-PTF-3PS-MEVV-TP002 - Specification for Cesium Nitric Acid Recovery Forced Circulation Vacuum Evaporator System, which is a miscellaneous unit system, therefore this specification does not belong in this table. • DELETE 3PS-MEVV-T0002 - Source drawing • DELETE -3PS-MEVV-TP001 (miscellaneous unit system) • DELETE - 3PS-MEVV-TP002 (miscellaneous unit system) • DELETE - M6-CNP-P0008 (miscellaneous unit system) • DELETE - M6-CNP-P0010 	<p>CNP-VSL-00003 = 21,570</p>

	(miscellaneous unit system)	
Technetium Ion Exchange Process System (TXP) and Technetium Eluant Revocery Process System (TEP)	<ul style="list-style-type: none"> • Please delete this equipment from the table. Because this equipment does not exist in the current design it is misleading and confusing to list nonexistent equipment as permitted. • If a Technetium removal process is added to the Pretreatment Facility in the future, then the proper equipment should be included when this Permit is modified. 	
Treated LAW Concentrate Storage TCP-VSL-00001	<ul style="list-style-type: none"> • ADD 24590-PTF-M5-V17T-P0006 • DELETE - 24590-PTF-MVD-TCP-00001. (Source document that has been cancelled.) 	
Treated LAW Evaporation Process System TLP-VSL-00002 TLP-VSL-00009A TLP-VSL-00009B	<ul style="list-style-type: none"> • CORRECT document I.D. to 24590-PTF-MEVV-TP001 • DELETE PER-CON-02-001 (redundant - see Appendix 7.12) 	
Spent Resin and Dewatering Process System RDP-VSL-00002A RDP-VSL-00002B RDP-VSL-00002C RDP-VSL-00004	<ul style="list-style-type: none"> • ADD MVD-RDP-P0008 • DELETE M6-RLD-P0002 (Ancillary) • DELETE M6-RLD-P0003 (Ancillary) • DELETE M6-RLD-P0004 (Ancillary) • DELETE PER-CON-02-001 (redundant - see Appendix 7.12) 	RDP-VSL-00002A = 15,230 RDP-VSL-00002B = 15,230 RDP-VSL-00002C = 15,230 RED-VSL-00004 = 101
Pretreatment Plant Wash and Disposal System PWD-VSL-00015 PWD-VSL-00016 PWD-VSL-00033 PWD-VSL-00043 PWD-VSL-00044 PWD-VSL-00046	<ul style="list-style-type: none"> • DELETE (Ancillary): <ul style="list-style-type: none"> ▫ M6-PWD-P0001 ▫ M6-PWD-P0005 ▫ M6-PWD-P0006 ▫ M6-PWD-P0007 ▫ M6-PWD-P0008 ▫ M6-PWD-P0009 ▫ M6-PWD-P0010 ▫ M6-PWD-P0011 ▫ M6-PWD-P0012 ▫ M6-PWD-P0014 ▫ M6-PWD-P0033 	

	<ul style="list-style-type: none"> ▫ M6-PWD-P0044 ▫ M6-PWD-P0050 ▫ M6-PWD-P0051 ▫ M6-PWD-P0057 ▫ M6-PWD-P0058 	
Pretreatment Vessel Vent Process PVP-VSL-00001	<ul style="list-style-type: none"> • DELETE M5-V17T-P0021004 • DELETED M6-PVP-P0002 (Ancillary) • DELETE M6-PVP-P0009 (Ancillary) 	
Pulse-jet Ventilation System PJV-VSL-00002	<ul style="list-style-type: none"> • DELETE (Ancillary) <ul style="list-style-type: none"> ▫ M6-PJV-P0001 ▫ M6-PJV-P0004 	

IMPROVEMENT (08):

Table III.10.E.A, Spent Resin and Dewatering Process System (RDP):

Please add to the *Engineering Description* column, RDP row, the Process Data Sheet 24590-PTF-MVD-RDP-P0008.

IMPROVEMENT (09):

Table III.10.E.A., Treated LAW Concentrate Storage process System (TCP):

- Please add the Process Flow Diagram 24590-PTF-M5-V17T-P0006 to the *Engineering Description* column in TCP row.
- Please delete from the *Engineering Description* column, TCP row, the Process Data Sheet 24590-PTF-MVD-TCP-00001. This document is a source document that has been cancelled and was never submitted for the permit.

IMPROVEMENT (10):

Table III.10.E.A., Technetium Ion Exchange Process System (TXP) and Technetium Eluant Recovery Process System (TEP):

As discussed elsewhere in our set of comments, please delete this equipment from the table.

IMPROVEMENT (11):

Table III.10.E.B., LAW Vitrification Plant Tank System Descriptions (Beginning on page 60 of 293):

- Please delete the reference to Figure 4A-20 from the Narrative Description Column on page 60. This figure has been deleted and superceded by the LAW Process Flow Diagrams 24590-LAW-M5-V17T-P0001 and 24590-LAW-M5-V17T-P0002 in Attachment 51.

- Please delete the reference to Figure 4A-23 from the Narrative Description Column on page 61. This figure has been deleted and superceded by the LAW Process Flow Diagrams 24590-LAW-M5-V17T-P0010 and 24590-LAW-M5-V17T-P0011 in Attachment 51
- Please delete the reference to Figure 4A-2 from the Narrative Description Column on page 62. The LAW system is not referenced on this figure, it is a PT figure.

**IMPROVEMENT
(12):**

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

- General comment: Please delete System Descriptions from this table (3rd column, all documents starting as 24590-3YD-) because all HLW System Descriptions have been submitted for the DWP Administrative Record as required by Permit Condition III.10.E.9.c.vii.
- Row 2, Vessels HFP-VSL-00001/5, 3rd column: Delete -M6-HFP-P0002 because this P&ID does not include vessels HFP-VSL-00001/5
- Row 4, Vessels HOP-VSL-00903/HOP-VSL-00904: Change the vessels name to Melter 1 and Melter 2 SBS Condensate Receiver Vessel
- Row 5, Vessel HDH-VSL-00001, 3rd column, last item: Change the vessel name to Canister Rinse Vessel; change the engineering specification to 24590-HLW-3PS-MQR0-TP002
- Row 7, Vessel HDH-VSL-00003, 5th column: Correct the vessel volume to the previous value of 5315 gallons, per Mechanical Data Sheet 24590-HLW-MVD-HDH-P0003, Rev.2.

**IMPROVEMENT
(13):**

Table III.10.E.D., Analytical Laboratory Tank System Descriptions (On page 70 of 293, Hot Cell Drain Collection Vessel (RLD-VSL-00165), Engineering Description column.):

- Please change the maximum capacity of RLD-VSL-00164 back to 3180 gallons. This is consistent with Table 4-6 and with the Mechanical Data Sheet for this vessel: 24590-LAB-MVD-RLD-P0164.
- Please delete the reference to Figure 4A-1 and 4A-2, from this table. The LAB is not referenced on this figure.
- Please delete the reference to Figure 4A-115 from this table. This figure has been deleted from the permit.
- Please retain the reference to general arrangement drawing 24590-LAB-P1-60-P0010 in the Engineering Description column for the Hot Cell Drain Collection Vessel (RLD-VSL-00165).
- Please delete the reference to the LAB System Description 24590-LAB-3YD-RLD-00001. System descriptions are only listed in the Administrative Record not the permit.

IMPROVEMENT (14): **Table III.10.E.E. Pretreatment Plant Tan System Process and Leak Detection System Instruments and Parameters**

- Please delete P&ID drawing numbers
 - Please combine this table with Tables III.10.F.D and III.10.G.C.
-

IMPROVEMENT (15): **Table III.10.E.F., LAW Vitrification Plant Tank System Process and Leak Detection System Instruments and Parameters (General beginning on page 75 of 293, Tank System Locator Column):**

- Please delete the reference to the P&ID in this column consistent with Footnote (a) of this table.
-

IMPROVEMENT (16): **Table III.10.E.G., HLW Vitrification Plant Tank System Process and Leak Detection System Instruments and Parameters:**

- Delete Items 8, 9, 10 and the footnote: RWH-SUMP-00001, RWH-SUMP-00005, RWH-SUMP-00006. The RWH sumps are located in the Drum Transfer Tunnel and are not part of the Tank System. The Drum Transfer Tunnel is not a permitted dangerous waste management unit. (See Ecology's approval of the Class 2 permit modification removing the Drum Transfer Tunnel Containment Building (H-B015) from the DWP, 24590-HLW-PCN-ENV-0903-002, dated January 13, 2004)
 - Delete Items 13, 14 and the footnote: HMH-SUMP-00002 and HMH-SUMP-00003. The HMH sumps are located in the containment buildings (Rooms H-0105B and H-0116B) that do not manage dangerous waste liquids. Containment buildings that do not manage dangerous waste liquids are not required to be equipped with secondary containment and leak detection systems (WAC 173-393-695).
-

IMPROVEMENT (17): **Table III.10.E.H., Laboratory Tank System Process and Leak Detection System Instruments and Parameters (General beginning on 80 of 293):**

- In the Operating Trips column, please change the RESERVED to Not Applicable to be consistent with the rest of the text in this table.
-

IMPROVEMENT (18): **Table III.10.E.J. Pretreatment Plant Tank Systems Secondary Containment Systems Including Sumps, Bulges, and Floor Drains**

- For PWD-SUMP-00040, please delete nominal operating volume of 140.3 gallons, this is now a dry sump.
 - Please delete General Arrangement section drawings that have been cancelled and removed from permit.
-

- Add missing room numbers and elevations
- Delete PWD-SUMP-00034 and -00035 and add to tables III.10.F.C. and III.10.F.D.
- Add drain line PVP-ZY-00036-S11B-03 from PVP-BULGE-00002 on 24590-PTF-M6-PVP-P00018

**IMPROVEMENT
(19):**

Table III.10.E.L., LAW Vitrification Plant Tank System Secondary Containment Systems Including Sumps, Bulges, and Floor Drains (General beginning on 96 of 293):

- In the Sump or Drain Line Dimensions column, please add the word "Approximate" to the title so this column title reads: "Approximate Sump or Drain Line Dimensions (inches)...." This is consistent with both the permit Secondary Containment Document (24590-WTP-PER-CSA-02-001 and the LAW sump data document which describe the sumps as either 24" or 36" O.D. Dished Heads.
- Page 97 of 293, please correct the alignment of the referenced general arrangement drawing, P1-P01T-P0010.
- Pages 98 and 99 of 293, 1st column of table, please revise the names of the "Melter 1 Feed Detection Box Leak, El +3, and Melter 2 Feed Detection Box Leak, El +3 (respectively), to "Melter 1 Encasement Assembly drain, El +3, and "Melter 2 Encasement Assembly drain, El +3." These are the correct names of these drains, as provide on LAW P&ID - 24590-LAW-M6-RLD-P0003 in PCN 24590-LAW-PCN-ENV-05-002.

**IMPROVEMENT
(20):**

Table III.10.E.P., Laboratory Tank System Secondary Containment Systems Including Sumps and Floor Drains (General beginning on 103 of 293):

- Please revise the title of this table to "Laboratory Tank System Secondary Containment Systems Including Sumps." The Analytical Laboratory does not have floor drains that flow directly to sumps.
- In the Sump or Drain Line Dimensions column, please add the word "Approximate" to the title so this column title reads: "Approximate Sump or Drain Line Dimensions (inches)" This is consistent with both the permit Secondary Containment Document (24590-WTP-PER-CSA-02-001) and LAW Sump Data Document which describe the sumps as 30" O.D. Dished Heads.
- On page 104 or 293, please delete all reference to the four drain lines provide in the table (RLD-ZN-02207-S11E-04, RLD-ZN-02203-S11E-04, RLD-ZN-03393-S11E-04, RLD-ZN-03394-S11E-04). These drains are associated with weirs that drain sumps 43A, 43B, 44, and 45. These sumps are already included in this table. Further, these lines drain to either RLD-VSL-00164 or RLD-VSL-00165 and if a leak were to occur they would drain to secondary containment system sumps for these vessels (sumps 41 or 42), that are also include in this table.

IMPROVEMENT (21):

Table III.10.F.A. - Containment Building Unit Description

- For the Pretreatment Plant, please correct the room name for P-0121A to "Spent" Resin Dewatering.
- For Room P0431A General Filter Rm, add "RESERVED" across the row.

IMPROVEMENT (22):

Table III.10.F.C., Containment Building Secondary Containment Systems Including Sumps and Floor Drains:

- Item 10 (HFP-SUMP-00002), 3rd column: Delete "Wet Sump/60" (see Attachment 51 Appendix 10.5) and retain the correct information ("Dry Sump/55.6").
- Items 12 and 13, 4th column: Delete "30" Dia. X 18" Deep" (see Attachment 51 Appendix 10.5) and retain the correct information ("31.5"x25.5"x16").
- Add Pretreatment Facility hot cell sumps in Room P-123.
- Delete Pretreatment Facility General Arrangement section drawings that have been cancelled and removed from permit by PCN.

IMPROVEMENT (23):

Table III.10.F.D. - Containment Building Leak Detection System Instrumentation and Parameters

- For PWD-SUMP-00034 AND -00035, add Radar as type of leak detection instrument and add RESERVED for location of leak detection instrument.
- Add Pretreatment Facility hot cell sumps PWD-SUMP-00028 and -00029.

IMPROVEMENT (24):

Table III.10.G.A., Pretreatment Plant Miscellaneous Unit Systems:

- To avoid duplication and inconsistencies, please revise Table III.10.G.A. , as indicated below, to:
 - Retain information relative to the PTF miscellaneous units to be consistent with Table 4-14
 - Remove duplicate information, which is already contained in Table III.10.E.A., Table 4-3, and Attachment 51 Appendix 8.
- Retain the following information in Table III.10.G.A. (and delete the remaining information and footnotes):

Miscellaneous Unit System Description	Engineering Description (drawings, data sheets, specifications, etc.)	Total volume (gallons)
Waste Feed Evaporation Process System (FEP)	<u>24590-PTF-</u> ▫ M5-V17T-P0004002	FEP-SEP-00001A = 13,569

<p>[Comprised of the following miscellaneous units and equipment:]</p> <p>Waste Feed Evaporator Separator Vessels:</p> <ul style="list-style-type: none"> ▫ FEP-SEP-0001A ▫ FEP-SEP-0001B 	<ul style="list-style-type: none"> ▫ M6-FEP-P0002 ▫ M6-FEP-P0004 ▫ MVD-FEP-P0006 ▫ MVD-FEP-P0007 ▫ N1D-FEP-P0007 ▫ P1-P01T-P0001 ▫ 3PS-MEVV-TP001 	<p>FEP-SEP-0001B = 13,569</p>
<p>Waste Feed Evaporation Process System (FEP) [Comprised of the following miscellaneous units and equipment:]</p> <p>Waste Feed Evaporator Primary Condensers:</p> <ul style="list-style-type: none"> ▫ FEP-COND-00001A ▫ FEP-COND-00001B <p>Waste Feed Evaporator Inter-Condensers:</p> <ul style="list-style-type: none"> ▫ FEP-COND-00002A ▫ FEP-COND-00002B <p>Waste Feed Evaporator After-Condensers:</p> <ul style="list-style-type: none"> ▫ FEP-COND-00003A ▫ FEP-COND-00003B 	<p>24590-PTF-</p> <ul style="list-style-type: none"> ▫ M5-V17T-P0004002 ▫ M6-FEP-P0002 ▫ M6-FEP-P0004 ▫ MED-FEP-P0003 ▫ MED-FEP-P0004 ▫ MED-FEP-P0005 ▫ MED-FEP-P0006 ▫ MED-FEP-P0007 ▫ MED-FEP-P0008 ▫ N1D-FEP-P0009 ▫ N1D-FEP-P0010 ▫ N1D-FEP-P0013 ▫ P1-P01T-P0003 ▫ 3PS-MEVV-TP001 	
<p>Waste Feed Evaporation Process System (FEP) [Comprised of the following miscellaneous units and equipment:]</p> <p>Waste Feed Evaporator Reboilers: FEP-RBLR-00001A FEP-RBLR-00001B</p>	<p>24590-PTF-</p> <ul style="list-style-type: none"> ▫ M5-V17T-P0004002 ▫ M6-FEP-P0002 ▫ M6-FEP-P0004 ▫ MED-FEP-P0009 ▫ MED-FEP-P0010 ▫ N1D-FEP-P0008 ▫ P1-P01T-P0001 ▫ 24590-WTP-3PS-MESO-TP001 ▫ 3PS-MEVV-TP001 	
<p>Cesium Nitric Acid Recovery Process System (CNP) [Comprised of the following miscellaneous units and equipment:]</p> <p>Cesium Evaporator Separator Vessel:</p> <ul style="list-style-type: none"> ▫ CNP-EVAP-00001 	<p>24590-PTF-</p> <ul style="list-style-type: none"> ▫ M5-V17T-P0014 ▫ M6-CNP-P0008 ▫ MVD-CNP-P0006 ▫ N1D-CNP-P0005 ▫ P1-P01T-P0002 ▫ 3PS-MEVV-TP002 	

<p>Cesium Nitric Acid Recovery Process System (CNP) [Comprised of the following miscellaneous units and equipment:]</p> <p>Cesium Evaporator Concentrate Reboiler: ▫ CNP-HX-00001</p>	<p><u>24590-PTF-</u></p> <ul style="list-style-type: none"> ▫ M5-V17T-P0014 ▫ M6-CNP-P0008 ▫ MED-CNP-P0005 ▫ N1D-CNP-P0004 ▫ P1-P01T-P0001 ▫ 3PS-MEVV-TP002 	
<p>Cesium Nitric Acid Recovery Process System (CNP) [Comprised of the following miscellaneous units and equipment:]</p> <p>Cesium Nitric Acid Rectifier Column: ▫ CNP-DISTC-00001</p>	<p><u>24590-PTF-</u></p> <ul style="list-style-type: none"> ▫ M5-V17T-P0014 ▫ M6-CNP-P0010 ▫ MWD-CNP-P0001 ▫ N1D-CNP-P0001 ▫ P1-P01T-P0003 ▫ 3PS-MEVV-TP002 	
<p>Cesium Nitric Acid Recovery Process System (CNP) [Comprised of the following miscellaneous units and equipment:]</p> <p>Cesium Evaporator Primary Condenser: ▫ CNP-HX-00002</p> <p>Cesium Evaporator Inter-Condenser: ▫ CNP-HX-00003</p> <p>Cesium Evaporator After-Condenser: ▫ CNP-HX-00004</p>	<p><u>24590-PTF-</u></p> <ul style="list-style-type: none"> ▫ M5-V17T-P0014 ▫ M6-CNP-P0010 ▫ MED-CNP-P0003 ▫ MED-CNP-P0010 ▫ MED-CNP-P0004 ▫ N1D-CNP-P0002 ▫ N1D-CNP-P0003 ▫ N1D-CNP-P0012 ▫ P1-P01T-P0004 ▫ 3PS-MEVV-TP002 	
<p>Treated LAW Evaporator Process System (TLP) [Comprised of the following miscellaneous units and equipment:]</p> <p>Treated LAW Evaporator Separator Vessel: ▫ TLP-SEP-00001</p>	<p><u>24590-PTF-</u></p> <ul style="list-style-type: none"> ▫ M5-V17T-P0005 ▫ M6-TLP-P0003 ▫ MVD-TLP-P0005 ▫ N1D-TLP-P0005 ▫ P1-P01T-P0001 ▫ 3PS-MEVV-TP001 	<p>TLP-SEP-00001 = 13,369</p>

<p>Treated LAW Evaporator Process System (TLP) [Comprised of the following miscellaneous units and equipment:]</p> <p>Treated LAW Evaporator Reboiler:</p> <ul style="list-style-type: none"> ▫ TLP-RBLR-00001 	<p>24590-PTF-</p> <ul style="list-style-type: none"> ▫ M5-V17T-P0005 ▫ M6-TLP-P0003 ▫ MED-TLP-P0004 ▫ N1D-TLP-P0011 ▫ P1-P01T-P0001 ▫ 3PS-MEVV-TP001 	
<p>Treated LAW Evaporator Process System (TLP) [Comprised of the following miscellaneous units and equipment:]</p> <p>Treated LAW Evaporator Primary Condenser:</p> <ul style="list-style-type: none"> ▫ TLP-COND-00001 <p>Treated LAW Evaporator Inter-Condenser:</p> <ul style="list-style-type: none"> ▫ TLP-COND-00002 <p>Treated LAW Evaporator After-Condenser:</p> <ul style="list-style-type: none"> ▫ TLP-COND-00003 	<p>24590-PTF-</p> <ul style="list-style-type: none"> ▫ M5-V17T-P0005 ▫ M6-TLP-P0002 ▫ MED-TLP-P0001 ▫ MED-TLP-P0002 ▫ MED-TLP-P0003 ▫ N1D-TLP-P0002 ▫ N1D-TLP-P0003 ▫ P1-P01T-P0003 ▫ 3PS-MEVV-TP001 	

IMPROVEMENT (25):

Table III.10.G.A.i., Pretreatment Plant Miscellaneous Unit Systems' Pretreatment Vessel Vent Process System:

- Suggest changing the table title to read: "Pretreatment Facility Miscellaneous Units Associated with Vessel Ventilation Systems"
- To avoid duplication and inconsistencies, please revise Table III.10.G.A.i., as indicated below, to:
 - Retain information relative to the PTF miscellaneous units: PVP, PVV, and PJV, as found in Table 4-14. Please note that most of the design documents, except for general arrangement drawings, process flow diagrams, and some piping and instrumentation diagrams for these units still need to be provided, so RESERVED should be added in the table.
 - Remove duplicate information, which is already contained in Table III.10.G.A., III.10.E.A., and Attachment 51 Appendix 8.
- Retain the following information in Table III.10.G.A.i. (and remove the remaining information):

Miscellaneous Unit System Description	Engineering Description (drawings, data sheets, specifications, etc.)
--	--

<p>Pretreatment Vessel Vent Process System (PVP) [Comprised of the following miscellaneous units and equipment:]</p> <p>Carbon Bed Adsorbers:</p> <ul style="list-style-type: none"> ▫ PVP-ADBR-00001A/B 	<p><u>24590-PTF-</u></p> <ul style="list-style-type: none"> ▫ M5-V17T-P0021001 ▫ M6-PVP-P0004 ▫ P1-P01T-P0003 ▫ RESERVED
<p>Pretreatment Vessel Vent Process System (PVP) [Comprised of the following miscellaneous units and equipment:]</p> <p>After Cooler:</p> <ul style="list-style-type: none"> ▫ PVP-CLR-00001 	<p><u>24590-PTF-</u></p> <ul style="list-style-type: none"> ▫ M5-V17T-P0021001 ▫ M6-PVP-P0004 ▫ P1-P01T-P0003 ▫ RESERVED
<p>Pretreatment Vessel Vent Process System (PVP) [Comprised of the following miscellaneous units and equipment:]</p> <p>VOC Oxidizer Unit:</p> <ul style="list-style-type: none"> ▫ PVP-OXID-00001 	<p><u>24590-PTF-</u></p> <ul style="list-style-type: none"> ▫ M5-V17T-P0021001 ▫ M6-PVP-P0004 ▫ P1-P01T-P0003 ▫ RESERVED
<p>Pretreatment Vessel Vent Process System (PVP) [Comprised of the following miscellaneous units and equipment:]</p> <p>Adsorber Outlet Filter:</p> <ul style="list-style-type: none"> ▫ PVP-FILT-00001 	<p><u>24590-PTF-</u></p> <ul style="list-style-type: none"> ▫ M5-V17T-P0021001 ▫ M6-PVP-P0004 ▫ P1-P01T-P0003 ▫ RESERVED
<p>Pretreatment Vessel Vent Process System (PVP) [Comprised of the following miscellaneous units and equipment:]</p> <p>HEME Filter(s):</p> <ul style="list-style-type: none"> ▫ PVP-HEME-00001A ▫ PVP-HEME-00001B ▫ PVP-HEME-00001C 	<p><u>24590-PTF-</u></p> <ul style="list-style-type: none"> ▫ M5-V17T-P0021001 ▫ M6-PVP-P0018 ▫ P1-P01T-P0003 ▫ RESERVED
<p>Pretreatment Vessel Vent Process System (PVP) [Comprised of the following miscellaneous units and equipment:]</p> <p>Caustic Scrubber:</p> <ul style="list-style-type: none"> ▫ PVP-SCB-00002 	<p><u>24590-PTF-</u></p> <ul style="list-style-type: none"> ▫ M5-V17T-P0021001 ▫ M6-PVP-P0017 ▫ MKD-PVP-P0002 ▫ N1D-PVP-P0001 ▫ P1-P01T-P0001 ▫ 3PS-MKAS-TP001

<p>Pretreatment Vessel Vent Exhaust System (PVV) [Comprised of the following miscellaneous units and equipment:]</p> <p>Primary HEPA Filters:</p> <ul style="list-style-type: none"> ▫ PVV-HEPA-00001A ▫ PVV-HEPA-00001B <p>Secondary HEPA Filters:</p> <ul style="list-style-type: none"> ▫ PVV-HEPA-00002A ▫ PVV-HEPA-00002B 	<p><u>24590-PTF-</u> M5-V17T-P0021001 P1-P01T-P0002 RESERVED</p>
<p>Pretreatment Vessel Vent Exhaust System (PVV) [Comprised of the following miscellaneous units and equipment:]</p> <p>Exhaust Fans:</p> <ul style="list-style-type: none"> ▫ PVV-FAN-00001A ▫ PVV-FAN-00001B 	<p><u>24590-PTF-</u> M5-V17T-P0021001 P1-P01T-P0003 RESERVED</p>
<p>Pretreatment Vessel Vent Exhaust System (PVV) [Comprised of the following miscellaneous units and equipment:]</p> <p>PVV Stack</p>	<p><u>24590-PTF-</u> M5-V17T-P0021001 P1-P01T-P0003</p>
<p>Pretreatment Pulse Jet Ventilation System (PJV) [Comprised of the following miscellaneous units and equipment:]</p> <p>Primary HEPA Filters:</p> <ul style="list-style-type: none"> ▫ PJV-HEPA-00001A ▫ PJV-HEPA-00001B ▫ PJV-HEPA-00001C ▫ PJV-HEPA-00001D ▫ PJV-HEPA-00001E ▫ PJV-HEPA-00001F ▫ PJV-HEPA-00001G <p>Secondary HEPA Filters:</p> <ul style="list-style-type: none"> ▫ PJV-HEPA-00002A ▫ PJV-HEPA-00002B ▫ PJV-HEPA-00002C ▫ PJV-HEPA-00002D ▫ PJV-HEPA-00002E ▫ PJV-HEPA-00002F 	<p><u>24590-PTF-</u> M5-V17T-P0021002 P1-P01T-P0003 P1-P01T-P0004 RESERVED</p>

<p>Pretreatment Pulse Jet Ventilation System (PJV) [Comprised of the following miscellaneous units and equipment:]</p> <p>Exhaust Fans:</p> <ul style="list-style-type: none"> ▫ PJV-FAN-00001A ▫ PJV-FAN-00001B ▫ PJV-FAN-00001C 	<p>24590-PTF- M5-V17T-P0021002 P1-P01T-P0004 RESERVED</p>
<p>Pretreatment Pulse Jet Ventilation System (PJV) [Comprised of the following miscellaneous units and equipment:]</p> <p>Demisters:</p> <ul style="list-style-type: none"> ▫ PJV-DMST-00002A ▫ PJV-DMST-00002B ▫ PJV-DMST-00002C 	<p>24590-PTF- M5-V17T-P0021002 M6-PJV-P0002 P1-P01T-P0003 RESERVED</p>
<p>Pretreatment Pulse Jet Ventilation System (PJV) [Comprised of the following miscellaneous units and equipment:]</p> <p>PJV Stack</p>	<p>24590-PTF- M5-V17T-P0021002 P1-P01T-P0003</p>

IMPROVEMENT (26):

Table III.10.G.B. - Pretreatment Plant Miscellaneous Unit Secondary Containment Systems Including Sumps, Bulges, and Floor Drains.

- Add PTF-SUMP-00009 to Room P-0112 and PTF-SUMP-00012 to Room P-0117.

IMPROVEMENT (27):

Table III.10.G.C., Pretreatment Plant Miscellaneous Unit System Process and Leak Detection Instruments and Parameters:

Please correct Table III.10.G.C, as indicated below:

Miscellaneous Unit System Locator, Name and Room
PVP-BULGE-00001, Vessel Vent Caustic Scrubber Transfer Pump Bulge, P-0105
PVP-BULGE-00014, Vessel Vent Heat Exchanger Bulge, P-0302

**IMPROVEMENT
(28):**

Table 111.10.H.A., General Comment beginning on 178 of 293:

Delete reference to Table 4-4 in the narrative description column. Table 4-4 is for LAW Tank systems.

**IMPROVEMENT
(29):**

Table 111.10.H.A., General Comment beginning on 178 of 293:

- In the Narrative Description, Tables and Figures Column, please delete the reference to Table 4-4 on this page. In both cases the Sub-system Description is for a miscellaneous unit system and Table 4-4 is a vessel table and is not an applicable reference here.
 - Throughout Table 111.10.H.A., please delete the phrase “and Figure 4A-22”. This figure has been deleted and replaced with process flow diagrams 24590-LAW-M5-V17T-P0007 and 24590-LAW-M5-V17T-P0008.
 - As provided in earlier comments, in the Engineering Description column please correct the reference the on pages 180 please correct the references to process flow diagrams 24590-LAW-M5-V17T-P0007 and 24590-LAW-M5-V17T-P0008, and 24590-LAW-M5-V17T-P0010. These process flow diagrams are listed incorrectly as 24590-LAW-M5-V17T-P0007 and 24590-LAW-M5-V17T-P0008 (T left out). On pages 181 and 183 please correct the references to process flow diagrams 24590-LAW-M5-V17T-P0010. It is listed as 24590-LAW-M5-LVP-P0010.
 - As provided in earlier comments, on page 182 please correct the references to the following LAW General Arrangement drawings in the Engineering Description column. 24590-LAW-P1-P01T-P0004 and 24590-LAW-P1-P01T-P0009 should be. 24590-LAW-P1-P01T-P0002 and 24590-LAW-P1-P01T-P0010 respectively.
 - Page 184, The Engineering Description column for the LAW Secondary Offgas/Vessel Vent Process System [Comprising the following equipment LAW Stack]. Consistent with table III.10.I.A please delete this entire row in the table or add the appropriate drawing (24590-LAW-M6-LVP-P0002 and 24590-LAW-M5-V17T-P0011) because no further permit documentation will be submitted for the offgas LAW stack.
-

**IMPROVEMENT
(30):**

Table III.10.H.B., LAW Vitrification System Description (Page 185 of 293):

Consistent with table III.10.I.B, please delete the reference to LVP-FD-00001 and replace with RESERVED. This floor drain is a vertical drain that is sleeved through the floor and if a leak were to occur, it would be collected and detected in the sump for LVP-VSL-00001.

**IMPROVEMENT
(31):**

Table III.10.I.A., LAW Vitrification System Description (General beginning on 208 of 293):

- The inclusion of two duplicate tables in III.10.H.A and III.10.I.A is very confusing. Please consider deleting one table and referencing the reader to that table in the text of the permit for the long- term and short-term compliance actions. This duplication leads
-

to the increased potential for errors between sections of the permit text.

- In the Narrative Description, Tables and Figures Column, please delete the reference to Table 4-4 on pages 208 and 209. In both cases the Sub-system Description is for a miscellaneous unit system and Table 4-4 is a vessel table and is not an applicable reference here.
- Throughout Table III.10.I.A., please delete the phrase “and Figure 4A-22”. This figure has been deleted and replaced with LAW PFD - 24590-LAW-M5-V17T-P0007 and 24590-LAW-M5-V17T-P0008.
- As provided in earlier comments, in the Engineering Description column please correct the reference on page 210 to 24590-LAW-M5-V17T-P0007, 24590-LAW-M5-V17T-P0008, and 24590-LAW-M5-V17T-P0010. These process flow diagrams are listed incorrectly as 24590-LAW-M5-V17-P0007 and 24590-LAW-M5-V17-P0008 (T left out).
- Please correct the reference to M6-V17T-P0001 on page 213 in the Engineering Description column. This is a P&ID, and should be the same as the reference on Table III.10.H.A, 24590-LAW-M6-LVP-P0001.

**IMPROVEMENT
(32):**

Table III.10.J.A., HLW Vitrification System Description:

- General comment: Delete System Descriptions from this table (3rd column, all documents starting as 24590-3YD-) because all HLW System Description documents have been submitted for the DWP Administrative Record in accordance with Permit Condition III.10.J.5.c.vii.
- Row 4, Change to Film Cooler, add HOP-FCLR-00003 and -00004
- Delete the footnote - it is not applicable.
- Add the following drawings under the last Item (Stack) that have been incorporated into the Attachment 51 Appendices 10.1 and 10.2:
 - 24590-HLW-M5-V17T-P0004
 - 24590-HLW-M5-V17T-P20004
 - 24590-HLW-M6-HOP-P0008
 - 24590-HLW-M6-HOP-P20008

**IMPROVEMENT
(33):**

Table III.10.K.A., HLW Vitrification System Description:

- General comment: Delete System Descriptions from this table (3rd column, all documents starting as 24590-3YD-) because all HLW System Description documents have been submitted for the DWP Administrative Record in accordance with Permit Condition III.10.J.5.c.vii.
- Row 4, Change to Film Cooler, add HOP-FCLR-00003 and -00004
- Delete the footnote - it is not applicable.

- Add the following drawings under the last Item (Stack) that have been incorporated into the Attachment 51 Appendices 10.1 and 10.2:
 - 24590-HLW-P1-P01T-P0004
 - 24590-HLW-P1-P01T-P20004
 - 24590-HLW-M6-HOP-P0008
 - 24590-HLW-M6-HOP-P20008
- Delete the last 3 items: PJV Electric Heater, PJV HEPA Filters and PJV Fans to maintain consistency with Table III.10.J.A and because the PJV system is associated with the HLW tank systems, not the Vitrification (i.e., the melter system).

**IMPROVEMENT
(34):**

Tables, General Comments:

We have some ideas for making the tables easier to use while keeping the same information. We believe that these changes will significantly reduce confusion and increase accuracy of the permit data. Repeating the same information in multiple places in the permit is causing errors and inconsistencies that will only worsen as data is added to the tables.

Two suggestions we're offering will minimize the number of tables. Below are some specific suggestions:

1. Remove tables and reference PER documents instead.

The tables titled *...Secondary Containment Systems Including Sumps, Bulges, and Floor Drain* should be removed and instead reference the sump data documents for each facility. Remove the following tables III.10.E.J., III.10.E.L., III.10.E.N., III.10.E.P., III.10.F.C, III.10.G.B., III.10.H.B., III.10.I.B, III.10.J.B., III.10.K.B., for tanks, miscellaneous unit systems and containment buildings.

The equipment identification numbers, room locations, capacity, type, dimensions, materials of construction, and P&ID numbers are all found in the Sump Data documents. The only information on these tables not found in the Sump Data Documents is the General Arrangement drawing number. However, since the documents tell the reader the elevation and room number where the sump, bulge or drain is located, a reference to the appendices with GAs would easily tell the reader where to find the GA.

Deleting these tables would require changing permit conditions. A suggested change to condition III.10.E.9.b.vii. might read:

Provide the following information for all secondary containment sumps, bulges and floor drains: line identification number and room location; maximum capacity for sump/bulge (gallons) or drain line (gallons per minute); sump type; dimensions (inches) and materials of construction; engineering description (drawing numbers, specifications, etc.) This information will be incorporated in Appendices 8.5, 9.5, 10.5 and 11.5.

Hot links could be added to the appendices.

2. Consolidate tables with same information for each facility.

Combine all the *Process and Leak Detection System Instruments and Parameters* tables into one table for each facility. For example, combine the Pretreatment tables III.10.E.E., III.10.F.D, and III.10.G.C. into one table and annotate the sump/bulge/drain ID numbers to show if it is part of a tank system, miscellaneous unit system, containment building or some combination. The new table could go in its facility-specific Appendix,

instead of the permit body. Do the same thing for tables III.10.E.F, III.10.H.C, III.10.I.C, for LAW, and III.10.E.G, III.10.J.C, and III.10.K.C for HLW, and III.10.E.H for the Lab.

We found that repeating tables for each waste management unit with the same information was very confusing, particularly because the same equipment often was part of more than one type of waste management unit. In Pretreatment, the table *Tank System Secondary Containment Systems Including Sumps, Bulges and Floor Drain* (III.10.E.J.) overlaps with the same information in tables III.10.F.C. and III.10.G.B. Because the PT hot cell is permitted as a tank system, miscellaneous unit system, and containment building, the three sumps located in the hot cell belong in all three of these tables, but were not.

Permit condition III.10.C.3.e.iii would need to be changed to reference the newly combined tables in the appendices.

**IMPROVEMENT
(35):**

Attachment 51, Appendix 4A, Table 4-14:

As referenced in Tables III.10.J.A. and III.10.K.A., please add the following components to Attachment 51, Appendix 4A, Table 4-14:

- HOP-SCO-00002
- HOP-SCO-00003

**IMPROVEMENT
(36):**

Attachment 51, Appendix 4A, Figures and Drawings:

1. The table of contents listing for figure 4A-116 is shown as follows:

- Analytical Laboratory ~~Hot Cell Ventilation Deleted~~

It should be modified to be shown as follows:

- ~~Analytical Laboratory Hot Cell Ventilation Deleted~~

2. Figures 4A-65 and 4A-70 are out dated and no longer reflect the current design. The drawings will be updated if not superseded by general arrangements as a later permit modification.

**IMPROVEMENT
(37):**

Attachment 51, Appendix 6A, Inspection Schedules:

Table 6A-3, pg 51-6A-11:

Under the HFP system, the entries for the HLW melter feed preparation vessels should be consolidated to match the entry for the HLW melter feed vessels.

Table 6A-3, pg 51-6A-5:

Under the CXP system, the plant item number for the cesium reagent vessel needs to be

changed from CXP-IXC-00005 to CXP-VSL-00005.

Table 6A-3, pg 51-6A-8:

All entries for the TXP and TEP systems need to be deleted. Because this equipment does not exist in the current design it is misleading and confusing to list nonexistent equipment as permitted.

If a Technetium removal process is added to the Pretreatment Facility in the future, then the proper equipment should be included when this Permit is modified.

**IMPROVEMENT
(38):**

Attachment 51, Appendix 10.11, High-Level Waste Building IQRPE Reports:

Typo: The last two items added to Table 10.11 should be:

- 24590-CM-HC4-HXYG-00211 *AREVA* -IA-084, Rev. 0
- 24590-CM-HC4-HXYG-00211 *AREVA* -IA-082, Rev. 1

Attachment 3
06-ESQ-179

Supporting Materials to Comments



U.S. Department of Energy
Office of River Protection

P.O. Box 450
Richland, Washington 99352

NOV 28 2001

01-EMD-038

026197

Mr. Michael A. Wilson, Program Manager
Nuclear Waste program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336

**RPP-WTP
RECEIVED**

DEC 11 2001

Dear Mr. Wilson:

BY PDC

HANFORD FACILITY DANGEROUS WASTE PERMIT APPLICATION (DWPA) PART A FORMS 1 AND 3, AND PART B FOR THE RIVER PROTECTION PROJECT (RPP) WASTE TREATMENT AND IMMOBILIZATION PLANT (WTP)

- References:
1. Ecology letter from N. Uziemblo to H. L. Boston, ORP, and R. F. Naventi, BNI, "Notice of Deficiency Comments Remaining Open," dated August 7, 2001.
 2. Ecology letter from N. Uziemblo to H. L. Boston, ORP, and R. F. Naventi, BNI, 1. "Completion of dangerous waste Notice of Intent"
2. "Information demonstration requirements of Washington Administrative Code (WAC) 173-303-806(4)(a)," dated October 23,

Enclosed are the DWPA Part A Forms 1 and 3, and Part B for the RPP WTP. These applications, which are being submitted by the U.S. Department of Energy (DOE), Office of River Protection (ORP), DOE Richland Operations Office (RL), and Bechtel National, Inc. (BNI), are consistent with the recovery plan submitted to the State of Washington Department of Ecology (Ecology) on October 1, 2001.

In April 2000, DOE submitted a permit application for the WTP. Ecology provided detailed comments on the permit application in the form of a Notice of Deficiency in August 2000. ORP and BNI have dispositioned Ecology's August 2000 comments; 78 of these are considered open as documented in Reference 1. Many of the open items relate to design detail that was not available at submittal of the first application, and is not available at this time for inclusion in this application. This submittal incorporates the disposition of Ecology's comments as agreed to in the Notice of Deficiency process.

As you know, the design process for the WTP is ongoing. As a result, the attached permit application is consistent with design maturity at this time. In order to address the need to provide the requisite design and operating information for the permit application, we will: 1) continue to make design information available to Ecology at the BNI offices as the detailed design of the WTP continues; and 2) provide permitting information related to specific elements of the

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Mr. Michael A. Wilson
01-EMD-038

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permitting process in accordance with the completion schedule incorporated in the permit application. The design of the project is developing and maturing, and some changes may affect the permitting documentation. For example, evaluation of the treatment plant's feed receipt capacity and ability to manage entrained solids is currently being performed; the results of this evaluation may necessitate changes to the process information and related drawings. DOE and BNI are committed to maintaining Ecology involvement with the project as design and construction progress. We will work with Ecology to establish a mutually agreeable documented process to keep Ecology informed of design progress and resulting changes to the information submitted in the application.

The April 2000 version of the permit application included submittal of the Screening Level Risk Assessment Work Plan. Consistent with the accelerated permitting approach, the revised Risk Assessment Work Plan that incorporates Ecology comments will be provided under separate cover at a later date.

As mentioned above, the revised application is being submitted early in the design process for the treatment plant. In response to Reference 2, a letter containing information demonstration requirements of Washington Administrative Code 173-303-806(4)(a) is being sent under separate cover to support an Ecology determination regarding permitting the WTP. In addition, a 10-year compliance history for BNI will also be submitted under separate cover.

If you have any questions regarding this submittal, please contact James E. Rasmussen, (509) 376-2247, or your staff may contact Lori A. Huffman, (509) 376-0104.

Sincerely,



Harry L. Boston
Manager

EMD:LAH

Enclosure

NOV 28 2001

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Mr. Michael A. Wilson
01-EMD-038

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cc w/encl:

R. Gay, CTUIR
P. Sobotta, NPT
R. Naventi, BNI
S. Dahl-Crumpler, Ecology
J. Grantham, Ecology
D. Bartus, EPA at Ecology
S. Skurla, Ecology
K. Elsethagen, Ecology
R. Jim, YN
Administrative Record
Environmental Portal, LMSI
T. C. McKarns, RL

cc w/o encl:

F. Beranek, BNI
B. Erlandson, BNI
J. Markillie, BNI
J. S. Hertzal, FHI
J. B. Hebdon, RL
C. E. Clark, RL



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

1315 W. 4th Avenue • Kennewick, Washington 99336-6018 • (509) 735-7581

February 6, 2002

028414

Mr. Harry L. Boston, Manager
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United States Department of Energy
Richland Operations Office
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Richland, Washington 99352-0550

Mr. Ronald F. Naventi, Project Manager
Bechtel National, Inc.
3000 George Washington Way, MSIN: H4-02
Richland, Washington 99323

RPP-WTP
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FEB 06 2002

REC'D

Dear Messrs. Boston and Naventi:

Re: Waste Treatment Plant (WTP) Dangerous Waste Permit Application (DWPA)

The Washington State Department of Ecology (Ecology) received the *WTP Dangerous Waste Permit Application* (DOE-RL-2001-64, Revision 0) from the United States Department of Energy, Office of River Protection (ORP) and Bechtel National Inc. (BNI) on December 6, 2001. The DWPA was submitted in accordance with the mutually agreed to permitting schedule.

Ecology is required by Washington Administrative Code (WAC) 173-303-840(1)(b) to review each permit application for completeness within sixty (60) days of its receipt. This letter serves to notify you that, although the DWPA addresses all the requirements for a permit application listed in WAC 173-303-806(4), the information was not of sufficient detail to judge the DWPA complete. However, ORP and BNI have submitted a demonstration pursuant to WAC 173-303-806(4)(a) that states that the information prescribed in the permit application requirements cannot be provided to the extent required at this time, and requested that Ecology make allowances for submission of such information on a case by case basis. Because ORP and BNI have involved Ecology in all drafts of the demonstration, we are able to respond quickly to this request. The demonstration, submitted on February 5, 2002, addressed what information was not included, why it was not available, and when it will be available. This letter serves to notify you that the demonstration is accepted by Ecology, although the schedule for submitting the unavailable information will be revised as necessary in the WTP Dangerous Waste Permit.



Messrs. Boston and Naventi
February 6, 2002
Page 2

In regards to the DWPA review, there are several issues that Ecology has raised recently regarding some of the regulatory interpretations made in the DWPA. This letter serves to provide guidance to ORP and BNI in meeting the dangerous waste regulatory requirements and to document staff comments made to ORP and BNI over the last several weeks.

An issue which has surfaced recently is the evaporation or volatilization of mixed waste at the WTP in units such as evaporators and melters. The interpretation has been made by ORP and BNI that waste that is no longer considered a 'contained gas' is a newly generated waste and no longer carries the listed codes acquired from tank farms (F001 through F005). This interpretation is incorrect. Residues from treating, storing, or disposing of a listed hazardous waste continue to be listed hazardous wastes under the derived-from rule [40 CFR 261.3(c)(2)(i)]. The only way such a residue ceases to be hazardous is if the generator petitions the agency for a delisting [40 CFR 261.3(d)(2)]. This is consistent with the regulation of process condensate from the 242-A Evaporator, which remains a listed waste until treated at the 200 Area Effluent Treatment Facility, which has obtained a delisting from the Environmental Protection Agency (EPA) as documented in 40 CFR 261 Appendix IX, Table 2. Gases and/or process condensate resulting from the treatment of dangerous waste, either in tanks or in the off-gas systems, continue to be a listed waste.

ORP and BNI's interpretation is also inconsistent with the actions taken under EPA's June 19, 1998, (63 FR 33783) Resource Conservation and Recovery Act (RCRA) Comparable Fuels Exclusion which provided an exclusion from RCRA for fuels which are produced from hazardous waste, but which are comparable to some currently used fossil fuel. The exclusion, which would allow the burner of the comparable fuel not to require a RCRA permit for the burning activity, was applied to all fuels meeting the specification including syngas. On page 33795 of this FR, it clearly states that any treatment to enable the fuel to meet the specifications would be required to be performed in RCRA permitted units. It also states on page 33795, "In addition, residuals from the treatment of a hazardous waste to generate an excluded syngas fuel remain solid waste and are subject to applicable Subtitle C regulations if they are also hazardous wastes. Residuals from the treatment of a listed hazardous waste to generate a syngas fuel remain hazardous wastes due to the derived-from rule; the residuals are derived from treatment of listed hazardous waste." Processes used to treat the syngas to meet the fuel spec would include, but not be limited to, wet and dry gas scrubbing devices. If ORP and BNI's interpretation of regulatory authority for treating gases from the treatment of dangerous waste was correct, this exclusion would have not been necessary to be promulgated for syngas generated from the treatment of hazardous waste.

For reasons discussed above, Ecology has determined that tanks containing process condensate are regulated under WAC 173-303 and will be included in the permit. If process water includes recycled process condensate derived from a listed waste, the process water used in the facilities will be regulated as a listed, dangerous waste. Solid waste mixed with listed waste will also be regulated as dangerous waste [WAC 173-303-082(3)]. This information is currently not included in the WTP DWPA, and will be required to be provided through the WTP Permit compliance

Messrs. Boston and Naventi
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Page 3

schedule. In addition, the process currently in place to obtain an Independent, Qualified, Registered Professional Engineer (IQRPE) certified written assessment for regulated tank system design as required under WAC 173-303-640 only addresses tanks identified in the WTP DWPA, and will need to be updated to include additional regulated tanks as discussed above. Installation of the additional regulated tanks will be contingent upon the IQRPE certified written assessment for those tanks being included in the WTP Permit.

The Pretreatment Plant off-gas treatment system (ductwork and treatment units) is also regulated under WAC 173-303, for the reasons discussed above, and will be included in the permit. The pretreatment evaporator systems (LAW Feed Evaporation and Cesium Nitric Acid Recovery) involve thermal treatment as defined in WAC 173-303-040 and are better classified as 'miscellaneous units.' This reclassification of the systems, including the evaporators, will not change the permit requirements envisioned by Ecology for the systems, but will be more consistent with the fact that these units are more complex (e.g., including heat exchangers, condensers, demisters, etc.) than just a 'tank' as defined in the regulations, posing release pathways not addressed by applying the tank regulations alone. Ecology will combine the evaporator systems with the pretreatment off-gas system units in the permit as 'miscellaneous units' pursuant to WAC 173-303-680.

The WTP Permit will include the melter off-gas treatment system components including the vessel vent system (ductwork and treatment units) as part of the melter system (melter and off-gas system) to be permitted as a 'miscellaneous unit' pursuant to of WAC 173-303-680.

Requirements that will be applied to these miscellaneous units may include, but are not limited to, secondary containment requirements where liquids are present and integrity assessment requirements as described in WAC 173-303-640, operating and monitoring requirements, and emission limits pursuant to WAC 173-303-680. Performance demonstration test requirements for melter systems were included in a letter from Ecology dated April 27, 2001. As additional details are submitted to Ecology in accordance with the WTP Permit compliance schedule, other units may be determined to be miscellaneous units pursuant to WAC 173-303-680. Any additional miscellaneous units identified will be added to the WTP Permit.

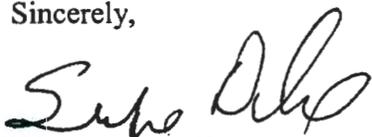
Regulations in WAC 173-303-692 (air emission standards for tanks, surface impoundments, and containers) incorporates 40 CFR 264.1081 through 264.1091 (Subpart CC) by reference. Treatment, Storage, and Disposal (TSD) units that solely manage radioactive mixed waste are exempted from the Subpart CC regulation. The DWPA states that air emission requirements in Subpart CC do not apply to dangerous waste generated at the WTP, as the WTP will be solely managing radioactive mixed waste. Ecology reminds ORP and BNI that, if cold commissioning includes testing with a non-radioactive waste simulant that designates as a dangerous waste, requirements of Subpart CC will apply to units managing the simulant during cold commissioning.

Messrs. Boston and Naventi
February 6, 2002
Page 4

As with any large document, some errors in the permit application are inevitable. Ecology will use our permitting authority to correct the selected errors or to clarify text where practicable before attaching affected sections of the application to the permit. A compliance schedule will be added to the permit to supply additional detailed information as discussed in the demonstration required by WAC 173-303-806(4)(a). The changes and clarifications are being coordinated through BNI staff. To ensure proper documentation, the fact sheet issued in accordance with WAC 173-303-840(2)(f) will list all changes made to the DWPA text.

If there are any questions regarding this letter, please feel free to contact me at (509) 736-5705.

Sincerely,



Suzanne Dahl, Tank Waste Disposal Project Manager
Nuclear Waste Program

SD:SS:sb

cc: Dave Bartus, EPA
Doug Sherwood, EPA
Cathy Massimino, EPA-X
Lori Huffman, USDOE-ORP
Sandy Johnson, USDOE-ORP
Jim Rasmussen, USODE-ORP
Bill Taylor, USDOE-ORP
Tony McKarns, USDOE-RL
Brad Erlandson, BNI
Fred Marsh, BNI
Roger Bowman, FH
Fred Beraneck, WGI
Phil Peistrup, WGI
Bill Poulsen, WGI
Todd Martin, HAB
J.H. Richards, CTUIR
Pat Sobotta, NPT
Russell Jim, YN
Ken Niles, OOE
Administrative Record: WTP Dangerous Waste Permit



U.S. Department of Energy

~~Office of River Protection~~

P.O. Box 450
Richland, Washington 99352

FEB 05 2002

02-EMD-009

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Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504

RPP-WTP
RECEIVED

FEB 07 2002

BY PDC

Dear Mr. Wilson:

INFORMATION DEMONSTRATION FOR WASTE TREATMENT AND
IMMOBILIZATION PLANT (WTP) DANGEROUS WASTE PERMIT APPLICATION
(DWPA)

- References:
1. ORP letter from H. L. Boston to M. A. Wilson, Ecology, "Hanford Facility Dangerous Waste Permit Application (DWPA) Part A Forms 1 and 3, and Part B for the River Protection Project (RPP) Waste Treatment and Immobilization Plant (WTP)," 01-EMD-038, dated November 28, 2001.
 2. Ecology letter from N. Uziemblo to H. L. Boston, ORP, and R. F. Naventi, BNI, "1) Completion of Dangerous Waste Notice of Intent (NOI) and 2) Information Demonstration Requirements of Washington Administrative Code (WAC) 173-303-806(4)(a)," dated October 23, 2001.

Reference 2 noted that not all information required for the WTP DWPA might be available in the level of detail required by the agency when the application is resubmitted. Reference 2 requested that an information demonstration be submitted, by December 6, 2001, in accordance with WAC 173-303-806 (4)(a) describing why the information cannot be provided to the extent required by regulation. Reference 1 transmitted the DWPA for the WTP and identified that the information demonstration would be provided under separate cover. A draft demonstration was prepared, shared with your staff for review, and discussed at several meetings immediately following submittal of the WTP DWPA on December 6, 2001. Your staff's comments on the information demonstration have been very valuable, and their comments have been incorporated in this submittal.

The U.S. Department of Energy, Office of River Protection (ORP) is requesting your review of the attached information demonstration. Discussion with ORP and the State of Washington Department of Ecology (Ecology) staff provided a basis for development of a DWPA information demonstration. We believe the DWPA is a complete application, but agree it does

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Mr. Michael A. Wilson
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not include the level of design and operations detail normally expected by Ecology. However, for the reasons provided in the demonstration, we request that Ecology proceed with development of a dangerous waste permit for review by the public.

ORP and Bechtel National, Inc., appreciate the cooperation, expertise, and commitment that Ecology staff have showed in processing this and other WTP permits.

If you have any questions or comments, please contact me, (509) 376-2247, or Lori Huffman, of my staff, (509) 376-0104.

Sincerely,



James E. Rasmussen, Director
Environmental Management Division

EMD:LAH

Attachment

cc w/attach:

F. Beranek, BNI
B. Erlandson, BNI
J. Markillie, BNI
R. Naventi, BNI
S. Dahl-Crumpler, Ecology
S. Skurla, Ecology
K. Elsethagen, Ecology
J. Hebdon, RL
A. McKarns, RL
Administrative record
Environmental Portal, LMSI

FEB 05 2002

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Mr. Michael A. Wilson
02-EMD-009

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bcc: EMD OFF File
EMD RDG File
L. A. Huffman, EMD
J. E. Rasmussen, EMD
S. D. Stubblebine, ORP

**02-EMD-009
ATTACHMENT**

INFORMATION DEMONSTRATION

FEBRUARY 2002

INFORMATION DEMONSTRATION

1. Introduction

The River Protection Project (RPP) – Waste Treatment and Immobilization Plant (WTP) is being designed to vitrify mixed radioactive and dangerous waste currently stored in 177 underground tanks at the U.S. Department of Energy's (DOE) Hanford Site. The vitrified waste product will be disposed of in radioactive or mixed waste land-disposal units licensed by state or federal agencies. The Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement), (Milestone M-62-09) requires the WTP to begin operation by December 15, 2007. The plant has a forty-year design life. A dangerous waste permit application (DWPA) was submitted to the State of Washington Department of Ecology (Ecology) on December 6, 2001.

1.1 Regulatory Requirement

Washington Administrative Code (WAC) 173-303-806(4) identifies the content requirements for Part B of a DWPA. This information is required by Ecology to determine compliance with final facility standards, the minimum state-wide standards for management of dangerous waste. WAC 173-303-806(4)(a) also provides that, "If owners and operators of TSD facilities can demonstrate that the information prescribed in Part B cannot be provided to the extent required, the department may make allowance for submission of such information on a case-by-case basis."

1.2 Background

The DOE Office of River Protection (ORP) submitted a certified DWPA to Ecology in April 2000. Ecology provided detailed comments on the application in the form of a Notice of Deficiency in August 2000.

ORP and Bechtel National, Inc. (BNI) dispositioned 243 Ecology comments. Ecology informally accepted the disposition of 165 comments. The remainder of the comments are open, pending Ecology's review of the new application including a proposed completion schedule. Many of the open comments relate to design details that were not available at the time of the application.

During the comment resolution process, Ecology, ORP, and BNI negotiated a permitting strategy compliant with Chapter 173-303 WAC that would facilitate BNI's close coupled engineering, procurement, and construction process as identified in the ORP project baseline. It was agreed that a new DWPA would be submitted to Ecology in December 2001.

In a letter dated October 23, 2001, Ecology reiterated that not all of the information in the April 2000 DWPA was included at the level of detail normally required. Ecology recognized in this letter "BNI is following a concurrent design and construct approach and that all information needed for the DWPA may not be available when the revised

DWPA is submitted on December 6, 2001." To avoid delays in the permitting process, Ecology requested that ORP and BNI provide an information demonstration explaining why certain information cannot be provided at the time of the application.

2. DEMONSTRATION

In order to expedite construction of the WTP, DOE and BNI would like to have Ecology's dangerous waste permit as early as July 1, 2002. This is an early project date for start of construction (M-62-06 Start of Construction Phase 1 Treatment Complex) and supports out-year schedules including start of mixed waste treatment in 2007.

ORP and BNI believe the WTP DWPA provides sufficient information to allow Ecology to draft a dangerous waste permit for public review and to issue a permit for start of construction for the following reasons.

1. The DWPA addresses the dangerous waste requirements for construction and, if all requirements are met, operation of the WTP as a treatment and storage unit under final facility standards (WAC 173-303-600).

Information in the application is organized according to Ecology's *Dangerous Waste Permit Application Requirements for Facilities Which Store and/or Treat Dangerous Wastes in Tank Systems and/or Containers* (Ecology Publication 95-402). Included with this demonstration is a State of Washington Part B permit application Review Checklist. This checklist indicates that all elements required for a complete DWPA have been addressed, recognizing additional details must be provided as design and operating parameters are finalized and before start of hot commissioning by December 31, 2007.

2. A proposed completion schedule is provided.

A proposed completion schedule is included as part of the DWPA and this demonstration. The completion schedule identifies those items that will be updated as the detailed design of the WTP continues and before start of construction, installation of equipment, and/or commissioning. The enclosed completion schedule also presents the rationale for submitting the information after submittal of the DWPA. Items submitted as part of the completion schedule will be certified as true, accurate, and complete.

3. Issuance of a dangerous waste permit is required for ORP to maintain aggressive design and construction schedules that support Tri-Party Agreement milestone M-62-00.

Tri-Party Agreement Milestone M-62-06 required start of WTP construction by July 31, 2001. Construction did not start on this date as a result of a change in WTP contractors. Ecology issued a final determination and issued a penalty. On October 1, 2001 ORP submitted a recovery plan showing how Tri-Party

Agreement Milestone M-62-09 would be met. ORP and Ecology reached a tentative agreement on the recovery plan on January 18, 2002. In the recovery plan, ORP identified the start of construction as December 31, 2002. ORP and BNI are working, however, to accelerate Start of Construction (M-62-06) in advance of the recovery plan date. In order to meet the 2007 Tri-Party Agreement commitment for mixed waste treatment, DOE and BNI have established aggressive design, permitting, and construction schedules.

4. BNI uses a close coupled engineering, procurement, and construction (EPC) process to tightly coordinate the development and implementation of detailed design information.

In the close coupled EPC process as applied to large industrial facilities, the facility is divided into construction planning zones after major process and structural features are defined. Detailed design and procurement for a particular zone is completed to support construction of the items within that area, in advance of other areas to be constructed later. For example, early design and procurement activities will focus on elements associated with the lowest elevation of the facility and the first pour of structural concrete. Design and procurement activities then shift to support features on upper elevations that are constructed and installed later. This results in plant elements within the many construction planning zones that are at different stages of design, procurement, fabrication, and installation.

The Bechtel Group, including BNI, has successfully used the EPC process for decades to design and construct major capital projects across the industrial sectors Bechtel supports. Chemical and petrochemical facilities, fossil and nuclear power plants, mining and ore processing facilities, and water and waste processing plants are typical of large projects where execution efficiency and time to market considerations dictate a close coupled EPC approach.

The success of major projects depends on close integration of fully engaged construction, procurement, and project planning personnel with engineering and detail design execution. This is achieved most effectively if procurement and construction mobilize concurrently with the design effort in an integrated EPC team. This opportunity for real time coordination at a very detailed level contributes substantially to the safety, quality, and constructability of the design and the ultimate success of the project. It also allows early stages of procurement and construction to proceed concurrent with detail design eliminating unnecessary duplicate re-design.

Close coupled EPC process may be contrasted with the design-bid-build approach used more commonly for non-complex federal projects and smaller industrial facilities.

Effective execution of the close coupled EPC strategy requires recognition and accommodation of the following considerations:

- **Linkage of design, procurement, and construction:** The design process must be organized in a logical sequence that generates the information needed for early project phases first. For example, plant layout and structural design, and thus initial procurement and construction activities, must be supported by early definition of system processes and major equipment. Design of commodities such as HVAC, piping, and pipe routing can follow because they support later installation activities. Very detailed, integrated schedules capture this logic and serve as the primary tool for tracking progress and highlighting problems areas.
- **Design input maturity:** Design is typically based on inputs derived from multiple sources. A design deliverable is not issued for use by other design organizations, procurement, or construction until inputs are finalized for the purpose of supporting the specific deliverable.

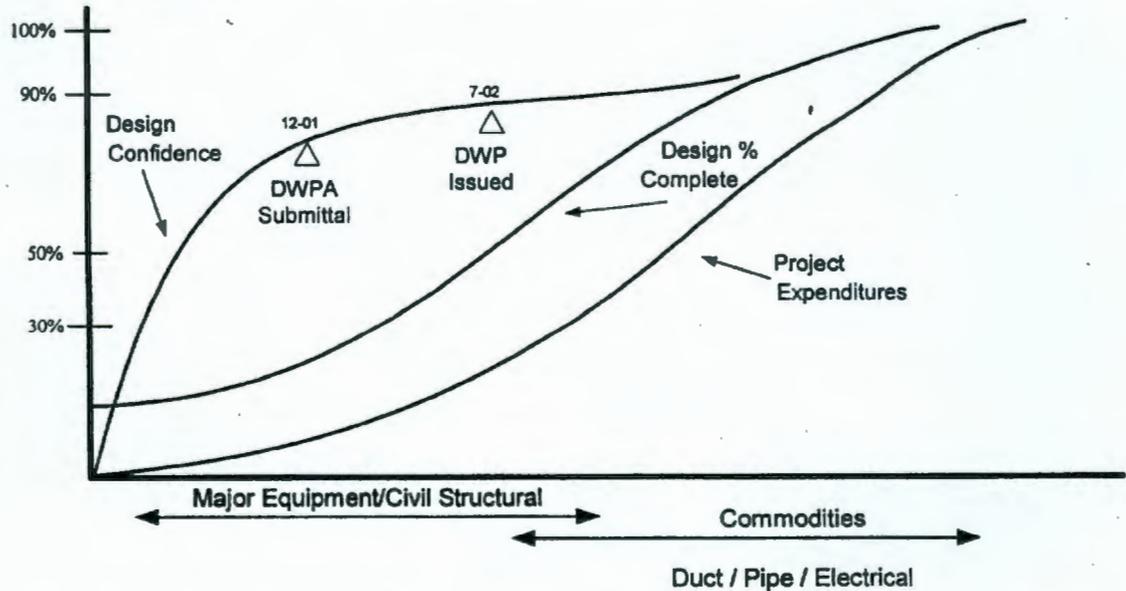
For example, basic process features to pretreat and then vitrify the waste stream are approved on process flow diagrams. These then serve as input to more specific representation of the sequence of equipment, piping, valve, and control features shown on piping and instrumentation diagrams (P&IDs). P&IDs then serve as input to the three dimensional (3-D) computer design model of the plant. The model allows optimization of the plant arrangement and footprint from various perspectives, including efficient space utilization, safety, constructability, operability and maintainability.

Design details are developed in the model to support sequential construction activities. Major structural features, including floors and walls, are finalized first so that structural analyses and structural details can be developed. Equipment locations are refined so that embedments for equipment anchorage can be designed. Piping systems, HVAC duct, and electrical distribution systems are routed so that fabrication details of these commodities can be developed.

Formal coordination, review, and approval processes precede release of each element of the design to the internal customers. The 3-D model and certain high-level design documents contain a combination of some information that is relevant to early EPC activities and other information that supports later activities. The content of such design documents can be released in stages with information added and approved incrementally to support sequential design, procurement, and construction activities.

- **Firm design concept:** Substantial confidence must exist in the adequacy of the front end engineering concept to underpin the detailed-design. The following figure is a qualitative illustration of the distinction between

design confidence, reflecting completion of front-end design decisions and supporting analyses (including safety and environmental), and design percent complete reflecting design hours expended divided by total hours forecast.



BNI confidence in the WTP design and construction plan increased with initial due diligence assessments that affirmed many areas of the front-end engineering, provided focus on areas of uncertainty, and supported development of systematic strategies to resolve or mitigate the impact of remaining uncertainties. Design confidence advanced substantially as safety and environmental analyses are completed that confirm the adequacy of the EPC plan and envelope detailed design development.

Review and approval of the DWPA further enhances confidence that cost/schedule intensive detailed work can proceed safely and fully compliant with minimal uncertainty and risk. The remaining detailed design work will generate substantial numbers of implementation documents. However, this remaining effort consists of design activities within the envelope established by the front-end design. These remaining activities carry limited residual uncertainty or risk to detract from overall confidence that the design can be executed consistent with both its safety and production mission and requirements.

3. ADDITIONAL INFORMATION

1. The WTP DWPA will be incorporated into the Hanford Facility Dangerous Waste Permit.

The WTP application is consistent with the *Hanford Facility Dangerous Waste Permit* and, wherever appropriate, the application draws from the General

Information Portion of the permit in lieu of repeating information that has already been submitted to and approved by Ecology. Incorporation of the WTP into an existing site permit with which both DOE and Ecology have substantial history provides some assurance that the facility will meet key Ecology requirements.

2. Routine Ecology involvement.

ORP and BNI staff and management are committed to maintaining Ecology involvement with the project as design and construction progress. The project is committed to providing Ecology the opportunity to participate in design review.

3. Risk assessment and performance testing.

Ecology, DOE, and U.S. Environmental Protection Agency have been working closely together to develop a Resource Conservation and Recovery Act Risk Assessment Work Plan to evaluate the impacts of WTP emissions on the public. This assessment will support development of a performance test plan and may contribute to the establishment of emission limits for the Plant. These evaluations provide additional assurance to Ecology and the public that the Plant has been properly designed.

4. **CONCLUSION**

ORP and BNI request Ecology use its discretion in preparing a dangerous waste part B permit for public review based on the content of the DWPA submitted on December 6, 2001. The application addresses all of the elements required for a complete application and provides sufficient design information to allow the start of construction. ORP and BNI are committed to clean up of the Hanford Site consistent with Tri-Party Agreement milestones and meeting the commitments identified in the RPP Baseline. We believe the proposed completion schedule, Ecology's authority to issue additional permit conditions, Ecology involvement in design review, risk assessment, and performance testing provide sufficient reason to believe this facility can be constructed and operated in accordance with dangerous waste requirements.

**02-EMD-009
ENCLOSURE TO ATTACHMENT**

COMPLETION SCHEDULE INFORMATION

FEBRUARY 2002

COMPLETION SCHEDULE INFORMATION

The following table identifies those items that will be updated as the detailed design of the Waste Treatment and Immobilization Plant (WTP) continues. The date identified below is the date that DOE will provide the requisite information to Ecology. The discussion column provides additional information regarding the completion schedule item.

Item	Description	Date	Discussion
1	Provide updated Waste Analysis Plan to Ecology	18 months prior to start of commissioning ¹ . Estimated submittal date is August 12, 2005.	<p>The WAP will be revised and reissued to incorporate emerging information. Information important to the Waste Analysis Plan (WAP) is being developed from a number of sources, including the following activities:</p> <ul style="list-style-type: none"> • The WTP is characterizing samples of Hanford Tank Waste in accordance with <i>Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization</i> (PNNL-12040). The results of this characterization will be reflected in the revised WAP, as necessary. • A research and technology effort is ongoing to optimize the pretreatment and vitrification systems. The results of the research and technology effort could identify changes to or additional waste analysis needs that should be addressed in the WAP. • An environmental risk assessment is in progress to determine potential chronic and acute risks to selected human and ecological receptors associated with air emissions from the WTP. Results from the environmental risk assessment could identify constituents in the waste feed that need to be limited to ensure appropriate risk thresholds are maintained. These constituents, if present in waste feed, would need to be analyzed as part of the waste acceptance activities described in the WAP. • Preliminary sampling points for waste analysis are presented in the WAP. Detailed tank system design must be completed prior to finalizing the specific WAP sampling points.

Item	Description	Date	Discussion
			<p>The WAP is one of the documents Ecology requested as part of a permit modification associated with operational-type activities. The US Department of Energy Office of River Protection (ORP) and Bechtel National, Inc. (BNI) agree the appropriate time for submitting the revised WAP is 18 months prior to the start of commissioning.</p> <p>This completion schedule item corresponds with DWPA Checklist Item C.</p>
2	Provide updated WAP QAPjP	18 months prior to start of commissioning ¹ . Estimated submittal date is August 12, 2005.	<p>Preparation of revised quality assurance aspects for waste analysis is concurrent with the WAP. As the WAP is updated, the WAP quality assurance project plan (QAPjP) should be updated to maintain currency and consistency with the WAP. It follows that activities identified in Item 1 above need to be completed prior to updating the WAP's quality assurance project plan.</p> <p>The WAP quality assurance project plan is one of the documents Ecology requested as part of a permit modification associated with operational-type activities. ORP and BNI agree the appropriate time for submitting the revised WAP is 18 months prior to the start of commissioning.</p> <p>This completion schedule item corresponds with DWPA Checklist Item C.</p>
3	Provide updated Emergency Response Plan to Ecology	18 months prior to start of commissioning ¹ . Estimated submittal date is August 12, 2005.	<p>Development of a revised emergency response plan to support operation of the WTP requires the completion of preliminary and final safety analysis reports. These reports will be used to identify hazards and to develop appropriate emergency responses to these hazards. In order to complete the preliminary and final safety analyses, additional design and operating information needs to be further developed.</p> <p>Selection and optimization of egress routes from each occupied area of each waste management building, and selection and optimization of staging areas must also be performed. In order for egress routes to be finalized, general arrangement drawings for each level in each waste management building need to be issued for construction. Staging areas cannot be selected and optimized until</p>

Item	Description	Date	Discussion
			<p>vehicle routes within the WTP have been finalized.</p> <p>The revised emergency management plan is one of the documents Ecology requested as part of a permit modification associated with operational-type activities. ORP and BNI agree the appropriate time for submitting the revised emergency response plan 18 months prior to the start of commissioning.</p> <p>This completion schedule item corresponds with DWPA Checklist Item G.</p>
4	Provide approved Piping Class Material Index to Ecology	6 months following completion of Stage D P&IDs. Estimated submittal date is October 6, 2003.	<p>Piping and instrumentation diagrams (P&IDs) must be issued and approved for construction. Approval for construction of P&IDs corresponds to the completion of design Stage D. The piping class material index is prepared based on these Stage D P&IDs, and cannot be prepared until these P&IDs are issued.</p> <p>Physical characteristics for each waste stream within each Plant must be finalized by the WTP's Process Technology and Process Engineering groups prior to specification of compatible materials of construction for pipes, fittings, valve bodies, valve trim, and gaskets.</p> <p>This completion schedule item corresponds with DWPA Checklist Item D-2a(1).</p>
5	Provide schedule for issuing New Tank Design Assessment Reports for remaining tanks to be assessed.	Estimated submittal date is June 30, 2003.	<p>A multi-facility integrity assessment report will be issued and contain assessments of the following:</p> <ul style="list-style-type: none"> • Procurement documents • Plant facility foundation/secondary containment • Dangerous waste tanks • Ancillary equipment. <p>An underground transfer system integrity assessment report will be issued and contain assessments of the following:</p> <ul style="list-style-type: none"> • Inter-plant transfer system • Intra-plant transfer system • Corrosion assessment.

Item	Description	Date	Discussion
			<p>New tank system design assessments will be performed by a subcontracted independent qualified, registered professional engineer (IQRPE) on a schedule that supports installation of the tank systems. Detailed construction planning is ongoing.</p> <p>Design assessments for two tanks will begin once the contract with the IQRPE has been established, and will be used as a basis for developing the schedule for performing additional assessments.</p> <p>Upon completion of detailed construction scheduling and the initial design assessments, a schedule for preparing additional new tank design assessments will be provided to Ecology.</p> <p>This completion schedule item corresponds with DWPA Checklist Item D-2a(2).</p>
6	Provide Environmental Performance Demonstration Plan (EPDP)	Start of commissioning ¹ . Estimated submittal date is February 12, 2007.	<p>Increased maturity in design and operating methods are needed before an environmental performance demonstration plan is developed. Design and operations elements needing further development include:</p> <ul style="list-style-type: none"> • Anticipated melter system operating conditions during the performance demonstration and post-demonstration • Selection of principal organic dangerous constituents (PODCs) • Specific testing/analytical methods, development of methods for introducing the PODCs into the treatment systems. <p>Many of these elements will be derived from ongoing research and technology programs.</p> <p>The environmental performance demonstration will be one of many required tests and trials performed during WTP commissioning; it will be scheduled near the end of the commissioning activities associated with the LAW and HLW vitrification plants.</p> <p>This is one of the documents Ecology requested as part of a permit modification</p>

Item	Description	Date	Discussion
			associated with operational-type activities. ORP and BNI believe submittal of the environmental performance demonstration plan at the start of nearly year-long commissioning program will be sufficiently early to obtain Ecology's approval of the plan.
7	Provide EPD QAPjP	Start of commissioning ¹ . Estimated submittal date is February 12, 2007.	<p>Development of the quality assurance aspects associated with the environmental performance demonstration is concurrent with preparing the EPDP. As the EPDP updated, its quality assurance project plan (QAPjP) should be updated to maintain currency and consistency with the EPDP. It follows that the activities identified in Item 6 above need to be completed prior to updating the EPD quality assurance project plan.</p> <p>This is one of the documents Ecology requested as part of a permit modification associated with operational-type activities. ORP and BNI believe submittal of the EPD quality assurance project plan at the start of nearly year-long commissioning program will be sufficiently early to obtain Ecology's approval of the plan.</p>
8	Issue miscellaneous treatment unit treatment effectiveness report	10 months following submittal of Final Risk Assessment. Estimated submittal date is August 31, 2009.	The miscellaneous treatment unit effectiveness report will document the results of the environmental performance demonstration and the final risk assessment. The report developed per DWPA Appendix 4D, and will be submitted to Ecology 10 months following submittal of the WTP's final risk assessment report.
9	Issue containment building assessment report by a qualified registered professional engineer certifying each containment building unit meets design requirements of 40 CFR 264.1101(a), (b), and (c), as appropriate, for Pretreatment Plant	10 months following completion of Pretreatment Plant construction. Estimated submittal date is April 2, 2007.	Approved design drawings issued for construction are required for the qualified registered professional engineer to perform the analysis necessary to certify each containment building. Construction must be completed so that the qualified registered professional engineer can verify each as-built containment building is compliant with the design.
10	Issue containment building	10 months following	Approved design drawings issued for construction are required for the qualified

Item	Description	Date	Discussion
	assessment report by a qualified registered professional engineer certifying each containment building unit meets design requirements of 40 CFR 264.1101(a), (b), and (c), as appropriate, for HLW Vitrification Plant	completion of HLW Vitrification Plant construction. Estimated submittal date is July 19, 2007.	registered professional engineer to perform the analysis necessary to certify each containment building. Construction must be completed so that the qualified registered professional engineer can verify each as-built containment building is compliant with the design.
11	Issue containment building assessment report by a qualified registered professional engineer certifying each containment building unit meets design requirements of 40 CFR 264.1101(a), (b), and (c), as appropriate, for LAW Vitrification Plant	10 months following completion of LAW Vitrification Plant construction. Estimated submittal date is January 30, 2007.	Approved design drawings issued for construction are required for the qualified registered professional engineer to perform the analysis necessary to certify each containment building. Construction must be completed so that the qualified registered professional engineer can verify each as-built containment building is compliant with the design.
12	Update example inspection tables	18 months prior to start of commissioning ¹ . Estimated submittal date is August 12, 2005.	<p>There are a number of technical elements that must be completed prior to revising the inspection tables. These elements include:</p> <ul style="list-style-type: none"> • Completion of piping and instrumentation diagrams for systems managing dangerous waste • Completion of tank system design and associated new tank design assessment process being performed pursuant to WAC 173-303-640(3)(a) • Completion of container storage area designs • Design completion of the Plant Information Network, Integrated Control System, Mechanical Handling Systems, and other information management systems necessary to monitor and operate the Plant • Completion of general arrangement drawings which specify locations for each waste management unit

Item	Description	Date	Discussion
			<ul style="list-style-type: none"> • Issuance of instrument and camera specifications which identify specific operational requirements for each instrument and camera to be employed at the WTP. <p>This completion schedule item corresponds with DWPA Checklist Item F-2d.</p>
13	Revise closure plan	4 months prior to start of Pretreatment Plant hot commissioning. Estimated submittal date is July 21, 2008.	<p>The closure plan will be revised and reissued to incorporate any changes to the WTP operating plans or design that affect closure of the Plant. These changes may include:</p> <ul style="list-style-type: none"> • Additions or changes to the dangerous waste constituents to be managed at the WTP • Changes in waste management capacity • Design updates to dangerous and mixed waste management units, including ancillary equipment, secondary containment areas, and supporting structures • Any new decontamination technologies that may be developed and are applicable to the WTP. <p>This completion schedule items corresponds with DWPA Checklist Item I.</p>
14	Update traffic information	Estimated submittal date is December 31, 2003.	<p>The Site Transportation Report will be revised and reissued to incorporate emerging information. Additional information requires development, prior to revising the Report. Items to be updated, include:</p> <ul style="list-style-type: none"> • Final design of the Plant roads based on finalized plant operational philosophy and updated traffic network study • Development of revised traffic controls system, including: traffic pattern; traffic control signs, signals, and procedures; and points of conflict • Finalization of the WTP melter transporter path and pavement design • Identification and design of loading/unloading dock areas. <p>This completion schedule items corresponds with DWPA Checklist Item B-4.</p>
15	Provide operations and maintenance controls and practices to ensure containment of waste within	18 months prior to start of commissioning ¹ . Estimated submittal date is August 12, 2005.	<p>Operations and maintenance controls and practices for containment building units will be developed based on the development of final design and operational information. These operational and maintenance controls and practices are needed to support commissioning of the plant.</p>

Item	Description	Date	Discussion
	Pretreatment Plant containment building units is compliant with 40 CFR 264.1101(c)(1)		<p>Operational inputs needed to develop containment building controls include:</p> <ul style="list-style-type: none"> • Operations and maintenance procedures to maintain proper air flow • Waste management procedures appropriate for the activities to be performed within each containment building that ensure waste is contained within the containment building unit • Development of inspection procedures to ensure integrity of each containment building's primary barrier. <p>Other inputs necessary to establish the controls and practices for containment of waste during operation and maintenance include the Preliminary Safety Analysis Report, which identifies and analyzes the hazards related to the Pretreatment Plant and will also identify safety features necessary to ensure safe operation.</p>
16	Provide operations and maintenance controls and practices to ensure containment of waste within HLW Vitrification Plant containment building units is compliant with 40 CFR 264.1101(c)(1)	18 months prior to start of commissioning ¹ . Estimated submittal date is August 12, 2005.	<p>Operations and maintenance controls and practices for containment building units will be developed based on the development of final design and operational information. These operational and maintenance controls and practices are needed to support commissioning of the plant.</p> <p>Operational inputs needed to develop containment building controls include:</p> <ul style="list-style-type: none"> • Operations and maintenance procedures to maintain proper air flow • Waste management procedures appropriate for the activities to be performed within each containment building that ensure waste is contained within the containment building unit • Development of inspection procedures to ensure integrity of each containment building's primary barrier. <p>Other inputs necessary to establish the controls and practices for containment of waste during operation and maintenance include the Preliminary Safety Analysis Report, which identifies and analyzes the hazards related to the HLW Vitrification Plant and will also identify safety features necessary to ensure safe operation.</p>
17	Provide operations and	18 months prior to start of	Operations and maintenance controls and practices for containment building

Item	Description	Date	Discussion
	maintenance controls and practices to ensure containment of waste within LAW Vitrification Plant containment building units is compliant with 40 CFR 264.1101(c)(1)	commissioning ¹ . Estimated submittal date is August 12, 2005.	<p>units will be developed based on the development of final design and operational information. These operational and maintenance controls and practices are needed to support commissioning of the plant.</p> <p>Operational inputs needed to develop containment building controls include:</p> <ul style="list-style-type: none"> • Operations and maintenance procedures to maintain proper air flow • Waste management procedures appropriate for the activities to be performed within each containment building that ensure waste is contained within the containment building unit • Development of inspection procedures to ensure integrity of each containment building's primary barrier. <p>Other inputs necessary to establish the controls and practices for containment of waste during operation and maintenance include the Preliminary Safety Analysis Report, which identifies and analyzes the hazards related to the LAW Vitrification Plant and will also identify safety features necessary to ensure safe operation.</p>
18	Provide revised sizes, volumes, and materials of construction for tanks	10 months after completion of all vessel material requisitions. Estimated submittal date is April 15, 2005.	<p>Tank sizes, volumes, and materials of construction are finalized when tank material requisitions are submitted to Procurement for purchase. The DWPA tables depicting tank characteristics will be revised and provided to Ecology following completion of all tank material requisitions. The tank material requisitions are used by vendors to fabricate the tanks designed by BNI.</p> <p>A number of design elements affect the development of tank material requisitions:</p> <ul style="list-style-type: none"> • Final implementation of strategies to mitigate hydrogen build-up in tanks, which directly affect tank sizes • Completion of corrosion evaluation and material selection • Finalization of waste stream constituents being processed in each of the WTP unit operations • Finalizing process batch volumes to determine tank volumes • Refinement of tank diameter and length/height dimensions for placement

Item	Description	Date	Discussion
			<p>within cells.</p> <p>This completion schedule items corresponds with DWPA Checklist Item D-2a(1).</p>
19	Provide revised materials of construction and heights for cell liners	10 months following completion of liner plate drawings. Estimated completion date is July 12, 2004.	<p>Materials of construction and heights of cell liners will be revised based on emerging information prepared during detailed design. Design elements affecting liner height include the following:</p> <ul style="list-style-type: none"> • The liner height in each cell is directly associated with the size of the tanks located within each cell. Liner heights can be specified once tank volumes have been calculated. • Revised process stream constituents may result in the need to reevaluate the materials of construction selected for each liner. <p>This completion schedule items corresponds with DWPA Checklist Item D-2b(1).</p>
20	Provide MACT compliance proposal	Estimated submittal date is September 30, 2002.	<p>The maximum achievable control technology (MACT) standard was not promulgated for direct application to radioactive waste melter technology, but rather was designed for hazardous waste incinerators. Application of the MACT performance standards must be evaluated based on the technological and operational differences between hazardous waste incinerators and the radioactive waste melter technology being used at the WTP. This evaluation includes analysis of melter design; operation; and safety structures, systems, and components; as well as the offgas treatment technology selected as best available by the Project.</p> <p>Following completion of this evaluation, BNI will prepare a proposal for complying with the MACT requirements, and submit it to Ecology.</p>
21	Provide installation inspection plan for tanks managing dangerous waste	2 months following placement of rebar. Estimated submittal date is June 10, 2002.	<p>This inspection plan will guide the performance of dangerous waste tank system installation inspections described in DWPA Appendix 4C. A subcontractor will be used to develop the installation inspection plan.</p>

Item	Description	Date	Discussion
			<p>A number of months is required to complete the bid, evaluate, and award process to select the plan development subcontractor. An additional period of time is required for the subcontractor to develop the plan.</p> <p>The date for submittal of the installation inspection plan reflects the time necessary to select the subcontractor, develop and issue the plan, and submit the plan to Ecology.</p> <p>This completion schedule items corresponds with DWPA Checklist Item D-2a(4).</p>
22	Provide updated process flow and general arrangement figures for dangerous waste management processes associated with Pretreatment Plant	10 months following completion of Pretreatment Plant construction. Estimated submittal date is April 2, 2007.	<p>This completion schedule item acknowledges the need to provide final process flow diagrams and final general arrangement drawings for dangerous waste management processes associated with the Pretreatment Plant. As detailed design and process modeling continues, waste flows and equipment locations may change from those presented in the DWPA in order to optimize the WTP waste treatment processes.</p> <p>Waste flow information and placement of waste treatment equipment will be finalized when construction is completed. Following completion of construction of the Pretreatment Plant, process flow and general arrangement figures for dangerous waste management processes will be revised, reviewed for accuracy, and submitted to Ecology.</p> <p>This completion schedule items corresponds with DWPA Checklist Item D.</p>
23	Provide updated process flow and general arrangement figures for dangerous waste management processes associated with LAW Vitrification Plant	10 months following completion of LAW Vitrification Plant construction. Estimated submittal date is January 30, 2007.	<p>This completion schedule item acknowledges the need to provide final process flow diagrams and final general arrangement drawings for dangerous waste management processes associated with the LAW Vitrification Plant. As detailed design and process modeling continues, waste flows and equipment locations may change from those presented in the DWPA in order to optimize the WTP waste treatment processes.</p> <p>Waste flow information and placement of waste treatment equipment will be</p>

Item	Description	Date	Discussion
			<p>finalized when construction is completed. Following completion of construction of the LAW Vitrification Plant, process flow and general arrangement figures for dangerous waste management processes will be revised, reviewed for accuracy, and submitted to Ecology.</p> <p>This completion schedule items corresponds with DWPA Checklist Item D.</p>
24	Provide updated process flow and general arrangement figures for dangerous waste management processes associated with HLW Vitrification Plant	10 months following completion of HLW Vitrification Plant construction. Estimated submittal date is July 19, 2007.	<p>This completion schedule item acknowledges the need to provide final process flow diagrams and final general arrangement drawings for dangerous waste management processes associated with the HLW Vitrification Plant. As detailed design and process modeling continues, waste flows and equipment locations may change from those presented in the DWPA in order to optimize the WTP waste treatment processes.</p> <p>Waste flow information and placement of waste treatment equipment will be finalized when construction is completed. Following completion of construction of the HLW Vitrification Plant, process flow and general arrangement figures for dangerous waste management processes will be revised, reviewed for accuracy, and submitted to Ecology.</p> <p>This completion schedule items corresponds with DWPA Checklist Item D.</p>
25	Provide general arrangement figures for dangerous waste management areas associated with Balance of Facilities	10 months following completion of Balance of Facilities construction. Estimated submittal date is August 28, 2006.	<p>Dangerous waste management areas contained within the Balance of Facilities include the non-radioactive dangerous waste storage pad, the out-of-service melter storage areas, and the central waste storage area. Designs of each of these areas may be revised as waste volume projections become more firm and melter overpack designs are prepared.</p> <p>General arrangements of each of these waste management units will be finalized when detailed design and construction are completed.</p> <p>This completion schedule items corresponds with DWPA Checklist Item D.</p>
26	Provide updated process flow and general	10 months following completion of Laboratory	<p>The laboratory is the newest Project Area of the WTP. Consequently, the design of the laboratory is not as mature as the other waste processing plants. As the</p>

Item	Description	Date	Discussion
	arrangement figures for dangerous waste management processes associated with Laboratory	construction. Estimated submittal date is October 14, 2005.	<p>Laboratory's scope is refined, detailed design and process modeling continues, waste flows and equipment locations may change from those presented in the DWPA.</p> <p>Waste flow information and placement of waste treatment equipment will be finalized when construction is completed. Following completion of construction of the Laboratory, process flow and general arrangement figures for dangerous waste management processes will be revised, reviewed for accuracy, and submitted to Ecology.</p> <p>This completion schedule items corresponds with DWPA Checklist Item D.</p>
27	Provide final design for immobilized LAW container	10 months following completion of ILAW container . Estimated submittal date is February 28, 2005.	<p>Detailed design of the immobilized LAW container is ongoing, and will be finalized upon completion of developing the ILAW container specification.</p> <p>This completion schedule items corresponds with DWPA Checklist Item D-1a</p>
28	Provide final design for immobilized HLW canister	10 months following completion of IHLW container specification. Estimated submittal date is November 22, 2004.	<p>Detailed design of the immobilized HLW container is ongoing, and will be finalized upon completion of developing the IHLW container specification.</p> <p>This completion schedule items corresponds with DWPA Checklist Item D-1a</p>
29	Submit Risk Assessment Work Plan	7 months following issuance of the Dangerous Waste Permit. Estimated submittal date is February 3, 2003.	The Risk Assessment Work Plan was prepared in April 2000, and is being revised based on regulatory agency comments. Based on regulatory agency comment, the Work Plan will be revised and resubmitted to the agencies seven months following Ecology's issuance of the dangerous waste permit.

Notes

1. Commissioning is defined at the time when simulated LAW feed enters the LAW vitrification plant, planned for February 12, 2007.



U.S. Department of Energy

086439

~~OFFICE OF ENVIRONMENTAL STATEMENTS~~

P.O. Box 450
Richland, Washington 99352

MAR 29 2004

04-ED-024

Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336

RPP-WTP
RECEIVED

APR 06 2004

JY PDC

Dear Mr. Wilson:

SUBMITTAL OF CLASS 2 PERMIT MODIFICATION REQUEST FOR THE WASTE TREATMENT AND IMMOBILIZATION PLANT (WTP)

- References:
1. Hanford Facility RCRA Permit, WA7890008967, Chapter 10, and Attachment 51, Waste Treatment and Immobilization Plant.
 2. Technical Basis for Classification of Low-Activity Waste from Hanford Site Tanks, WCH-SD-WM-TI-699, Revision 2, dated September 1996.
 3. NRC letter from C. J. Paperiello to J. E. Kinzer, RL, "Classification of Hanford Low-Activity Waste Fraction," dated June 9, 1997.

This letter transmits a Class 2 permit modification request to the above Permit (Reference 1). The proposed permit modification includes:

- Update of elements of Attachment 51 to incorporate compliance schedule packages;
- Incorporation of the new WTP configuration of two high-level waste (HLW) melters and two low-activity waste (LAW) melters; and
- Elimination of the technetium ion exchange system from the pretreatment (PT) facility.

Each of these is briefly discussed below.

Update of Elements of Attachment 51 to Incorporate Compliance Schedule Packages.

Since the Permit was initially issued in September 2002, thirty-five compliance schedule packages have been incorporated into the Permit by the State of Washington Department of Ecology (Ecology). These packages addressed secondary containment systems, tank systems, containment buildings, and container storage throughout the WTP. Consistent with the requirement to submit information for the Hanford Resource Conservation and Recovery Act (RCRA) Facility Permit renewal, this modification aligns the text portions of Attachment 51, Chapters 1, 2, 4, and Appendices 4A and 6A with these approved packages. In addition, Chapter 4 is being revised in support of the Hanford RCRA Facility Permit renewal. Narrative descriptions, tables, and figures associated with regulated systems of the WTP that have not yet been the subject of compliance schedule packages have been updated.

Mr. Michael A. Wilson
04-ED-024

-2-

MAR 29 2004

Incorporation of the New WTP Configuration of Two HLW Melters and Two LAW Melters.

This modification proposes to change the configuration of the WTP from three LAW melters and one HLW melter to two LAW melters and two HLW melters.

The Hanford Federal Facility Agreement and Consent Order (HFFACO) milestone date for completion of waste processing is 2028. An analysis of options was performed to maximize the opportunity to use the WTP to complete this waste cleanup mission at Hanford. It was determined that the first step to accelerate Hanford waste processing to meet the HFFACO milestone of 2028 was to increase initial HLW throughput by completing the second melter line in the WTP. Results of significant research and technology, flowsheet analysis, process modeling, and design evolution were used in the analysis. Based on this analysis, the WTP configuration of two HLW and two LAW melters meets the initial performance requirements and provides the opportunity to optimize LAW treatment with supplemental facilities to efficiently complete Hanford's tank waste clean-up mission.

Elimination of the Technetium Ion Exchange System from the PT Facility.

The Part B permit application submitted in December 2001 included technetium removal through ion exchange as a process step. Technetium removal was not provided to comply with dangerous waste regulations or specifically treat a dangerous waste component of tank waste, a mixed waste, but was provided to remove a radioactive constituent regulated by the U.S. Department of Energy (DOE) under the Atomic Energy Act of 1954 (AEA). The decision not to incorporate a technetium removal system in the WTP is consistent with DOE's 1996 technical analysis (Reference 2) regarding tank waste pretreatment. That analysis indicated, to the satisfaction of the U.S. Nuclear Regulatory Commission (NRC) (Reference 3), that technetium removal was neither required (it is low-level waste and not highly radioactive), nor economically practical. Even though the analysis and DOE's agreement with the NRC indicated technetium removal was not required, a technetium removal system was included in the WTP conceptual and preliminary design, and included in the Part B permit application. Work performed during the ongoing design process has again confirmed that technetium removal is not a practical, cost-effective process. The proposed modification deletes the related process equipment, tanks, and ancillary equipment.

In accordance with the dangerous waste regulations, a notice on the proposed modification will be sent to the facility mailing list and published in the local newspaper. In addition, a public meeting will be held on the proposed Class 2 permit modification.

Please note that the two figures in the attached revised Part A Form 3 permit application are designated "Official Use Only," Pages 51-1-16 and 51-1-17, and require protection due to national security concerns.

APR 02 2004

Mr. Michael A. Wilson
04-ED-027

-2-

Due to the potential sensitivity of the attached engineering information, Ecology is requested to place the data for public review in the standard information repositories, but not provide electronic dissemination of the information.

If you have any questions, please contact me, or your staff may contact Lori A. Huffman, Environmental Division, (509) 376-0104.

Sincerely,


Roy J. Schepens
Manager

ED:LAH

Attachments: (3)

cc w/attachs:

B. G. Erlandson, BNI
J. P. Henschel, BNI
J. Cox, CTUIR
S. Harris, CTUIR
R. K. Biyani, Ecology
S. L. Dahl, Ecology
S. J. Skurla, Ecology (22)
S. A. Thompson, FHI
P. Sobotta, NPT
J. B. Hebdon, RL (w/o attachs)
A. C. McKarns, RL
R. Jim, YN
Administrative Record
Environmental Portal, LMSI



093684

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
3100 Port of Benton Blvd • Richland, WA 99352 • (509) 372-7950

RPP-WTP
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JUN 30 2004

BY PDC

June 29, 2004

Mr. Roy J. Schepens, Manager
Office of River Protection
United States Department of Energy
P.O. Box 450, MSIN: H6-60
Richland, Washington 99352

Mr. Jim Henschel, Project Manager
Bechtel National Inc.
2435 Stevens Center Place, MSIN: H4-02
Richland, Washington 99323

Dear Messrs. Schepens and Henschel:

Re: Waste Treatment and Immobilization and Treatment Plant (WTP) Class 2 Dangerous Waste Permit (DWP) Modification

The 60-day public comment period for the WTP Class 2 DWP modification began on March 31, 2004 and ended on June 1, 2004. This modification request includes a proposal to remove one Low-Activity Waste (LAW) melter, add one High-Level Waste (HLW) melter, and eliminate the technetium-99 (Tc-99) ion exchange system in the Pretreatment Building.

At the close of the public comment period, the Washington State Department of Ecology (Ecology) had received significant comments from four groups and one individual. The comments received were similar, containing significant public concerns about the proposed modification. As a result, pursuant to Washington Administrative Code (WAC) 173-303-830(4)(b)(vi)(A)(III)(AA), Ecology has elected to require that the modification follow the procedures for a Class 3 modification contained in WAC 173-303-830(4)(c). The 60-day public comment period on the modification request required for a Class 3 modification was completed during the Class 2 modification process, therefore, Ecology will be proceeding directly with the WAC 173-303-840 process, as required for a Class 3 modification.

The proposed modification application is judged complete. As allowed under WAC 173-303-840(b), Ecology is requesting more detailed supplemental information be submitted to Ecology as soon as possible in order to complete our evaluation of the modification request. The supplemental information to be supplied includes the following:



2+2 Modification

- Explanation of the LAW melter performance and how they have been demonstrated.
- Explain the limitations of the LAW material handling and cooling systems related to the increased glass output.
- Explain the difference in vitrification end dates between the WTP configuration of one HLW melter and three LAW melters and the configuration of two HLW melters and two LAW melters and relate to the Tri Party Agreement 2028 date for completing retrieval of all tanks.
- Explain how WTP LAW Vitrification Facility output will not provide enough feed to keep HLW operating at capacity.
- Explain how a third melter could be added later if the through put of two melters falls short of expectations.

Elimination of Tc-99 Removal Systems

- Provide a material balances and flow sheets on Tc-99 similar to the one presented to Ecology in the March 29 meeting showing the following:
 - Tc-99 removal using ion exchange columns (not including supplemental technology)
 - No Tc-99 ion exchange in conjunction with bulk vitrification
 - No Tc-99 ion exchange and no bulk vitrification.

Include a narrative to describe the processes, written to be understood by the general public.

- Could Tc-99 ion exchange be put back into WTP Pretreatment at a future date? If so, provide a description of the work required and a rough estimate of cost.
- Other than bulk vitrification, what methods to mitigate Tc-99 could be implemented in the future?

By asking United States Department of Energy to provide information on Tc-99, Ecology is not asserting it has regulatory authority over radionuclides.

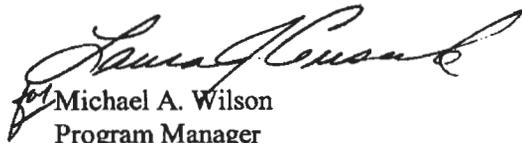
After Ecology has reviewed the above supplemental information, Ecology will write additional permit conditions, if warranted. Ecology will also prepare a public notice, a Statement of Basis, and schedule a 45-day public review and public meeting pursuant to WAC1173-303-840(2)(d) and (3) through (5). At the conclusion of the 45-day public comment period, Ecology will consider and respond to all significant comments and make a final permit decision.

Messrs. Schepens and Henschel
June 29, 2004
Page 3

To expedite the processing of this permit modification request, it is requested that the Permittees respond to supplemental information request as soon as possible.

If there are any questions regarding this letter, please contact Suzanne Dahl at (509) 372-7892.

Sincerely,



Michael A. Wilson
Program Manager
Nuclear Waste Program

MW:SS:jc

cc: Dave Bartus, EPA
Nick Ceto, EPA
Cathy Massimino, EPA
John Eschenberg, ORP
Lori Huffman, ORP
Jim Rasmussen, ORP
Jim Betts, BNI
Bill Clements, BNI
Brad Erlandson, BNI
Tim Horst, BNI
Bob Lawrence, BNI
Phil Schuetz, BNI
Rich Tosetti, BNI
Mark Sautman, DNFSB
Todd Martin, HAB
R. Vinson, PEC
Fred Beranek, WGI
Phil Peistrup, WGI
Steve Piccolo, WGI
Stuart Harris, CTUIR
Pat Sobotta, NPT
Russell Jim, YN
Ken Niles, ODOE
Administrative Record: Tank Waste Treatment Requirements
Environmental Portal



U.S. Department of Energy

Office of River Protection

P.O. Box 450
Richland, Washington 99352

096674

04-ED-068

AUG 04 2004

Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99352

RPP-WTP
RECEIVED

AUG 04 2004

BY PDC

Dear Mr. Wilson:

ADDITIONAL INFORMATION TO SUPPORT CLASS 2 PERMIT MODIFICATION FOR
THE WASTE TREATMENT AND IMMOBILIZATION PLANT (WTP)

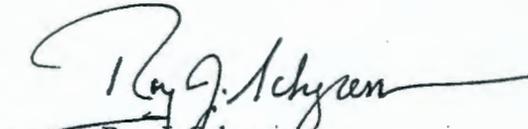
Reference: Ecology letter from M. A. Wilson to R. J. Schepens, ORP, and J. P. Henschel,
BNI, "Re: Waste Treatment and Immobilization Plant (WTP) Class 2 Dangerous
Waste Permit (DWP) Modification," dated June 29, 2004.

This letter transmits information requested in the referenced State of Washington Department of Ecology letter to support evaluation of the proposed modification and development of draft permit conditions following the procedures for a Class 3 permit modification.

The additional information, attached, is in regards to the change in configuration of the WTP from three Low-Activity Waste (LAW) melters and one High-Level Waste (HLW) melter to two LAW melters and two HLW melters, and to the removal of the technetium ion exchange process from the Pretreatment Facility.

If you have any questions, please contact me, or your staff may contact John R. Eschenberg, WTP Project Manager, (509) 376-3681.

Sincerely,


Roy J. Schepens
Manager

ED:LAH

Attachment:
2 + 2 Modification

cc: See page 2

Mr. Michael A. Wilson
04-ED-068

-2-

AUG 04 2004

cc w/attach:

J. Betts, BNI
B. G. Erlandson, BNI
J. P. Henschel, BNI
J. Cox, CTUIR
S. L. Dahl, Ecology
G. P. Davis, Ecology (w/o attach)
L. Cusack, Ecology
S. J. Skurla, Ecology
N. Ceto, EPA
C. Massimino, EPA
P. Sobotta, NPT
K. Niles, Oregon Energy (w/o attach)
J. B. Hebdon, RL (w/o attach)
A. C. McKarns, RL
R. Jim, YN
Administrative Record
Environmental Portal, LMSI

Attachment
04-ED-068

2+2 Modification

2+2 Modification

Question: Explain Low-Activity Waste (LAW) melter performance and how it has been demonstrated.

The LAW Vitrification Facility melters were originally designed to achieve a production capacity of 10 metric tons of glass per day (MTG/day). With three melters, this meant the design throughput of the LAW Vitrification Facility was 30 MTG/day. As part of the research and testing program to support the design and construction of the LAW melters, glass testing was conducted with a one-third scale pilot melter in Columbia, Maryland. This testing was designed to evaluate several processing parameters, including melter throughput. While the original required throughput rates were 10 MTG/day for each LAW melter, the melters were expected to actually achieve greater processing rates, closer to 15 MTG/day.

During testing in the LAW Pilot meter it was determined that the glass melting rates were higher than previously estimated, resulting in a glass production rate of approximately 20 MTG/day per melter for the current melter design. In addition, design studies have been conducted to determine how to expand the LAW melter surface area and further increase the glass melting rate. These two factors will be used, along with glass formulation modifications, to achieve a potential LAW melter glass production capacity of 22.5 MTG/day. These enhanced capacity melters may be installed when the initial LAW melters require replacement.

Therefore, the expectation is that the LAW Vitrification Facility equipped with two melters will have a glass production design rate of up to 45 MTG/day, exceeding the original planned design throughput of 30 MTG/day for three melters. By achieving the design throughput of the three melters originally planned in the LAW Vitrification Facility with just two melters, the U.S. Department of Energy (DOE) was able to apply resources to complete the second High-Level Waste (HLW) Vitrification Facility melter line, doubling the HLW Vitrification Facility throughput much earlier than originally planned.

Question: Explain the limitations of the LAW material handling and cooling systems related to the increased glass output.

In addition to melter production capacity, LAW Vitrification Facility throughput is limited by other processes including material handling and cooling systems.

The LAW Vitrification Facility design can be segmented into several major process steps: melter feed preparation and vitrification; filled LAW glass container handling; and melter and glass container heat removal. After the glass container is filled by the LAW melter, the LAW glass container is allowed to cool in the container handling line. The container is subsequently processed through the remainder of the container handling line where sand is added, if necessary, to achieve a minimum fill level and the container is sealed; decontaminated; and smear checked to ensure acceptable external radioactive contamination levels.

As previously stated, the original requirement for melter throughput was 10 MTG/day per melter, for a total melter throughput rate of 30 MTG/day. The LAW Vitrification Facility support systems, such as melter feed preparation, materials handling, and other services were sized to support this production rate. The balance of LAW Vitrification Facility systems were evaluated to determine whether the facility could support the increased throughput rates, because the increased melter throughput rates exceed the original design requirements. Results indicated the container handling line, which includes container cooling, was a pinch point. The capacity of the LAW container handling line appears to be limited to six containers per day due to heat removal limitations. This is equivalent to a glass production capacity of 36 MTG/day. DOE Office of River Protection (ORP) will evaluate this capacity estimate in future studies.

Question: Explain the difference in vitrification end dates between the WTP configuration of one HLW melter and three LAW melters, and the configuration of two HLW melters and two LAW melters and relate to the Tri-Party Agreement 2028 date for completing retrieval of all tanks.

The Hanford Performance Management Plan (DOE/RL-2002-47, Revision D) provides a brief description of the prior and current Hanford tank waste clean-up programs. The prior plan was based upon one HLW melter and three LAW melters operating until 2018. In 2018, the HLW and LAW vitrification capacity would be expanded to include a total of two HLW melters, the original LAW Vitrification Facility and a new second LAW Vitrification Facility. Based upon the capacity of these facilities, and the waste to be processed, the end of tank waste processing was estimated to be 2041 to 2048.

During strategic planning for the Hanford Performance Management Plan, the waste treatment facility concept was changed to accelerate waste treatment. The current plan involves two HLW melters operating at full capacity, a two-melter LAW Vitrification Facility, and additional LAW Immobilization provided by Supplemental Treatment (e.g., Bulk Vitrification or Steam Reforming technology). Additional tank waste treatment is supplemented by direct packaging of the transuranic tank wastes. The currently planned completion date for tank waste treatment and immobilization is 2028.

Question: Explain how WTP LAW Vitrification Facility throughput will not support delivery of enough feed to keep HLW operating at capacity.

The Hanford tank wastes are comprised of soluble and insoluble fractions. The soluble fraction is comprised primarily of Na, nitrate, nitrite, and hydroxide. The insoluble fraction is comprised of metal hydroxides of Fe, Al, Ca, Ni, and Cr and other metals. During treatment of the insoluble fraction, using water washing and caustic washing, a large portion of the Al and Cr is dissolved. These dissolved metals are combined with the soluble waste fraction, treated to remove cesium, and immobilized as LAW in either the WTP LAW Vitrification or Supplemental Treatment Facility. The washed and leached insoluble solids are blended with the cesium and immobilized as HLW.

The effective treatment of the tank wastes requires that the treatment and immobilization capacities for the LAW and HLW be balanced to ensure that each of the LAW and HLW immobilization facilities is fully utilized. This is needed to ensure that the tank waste treatment mission can be completed by 2028. Because of the tank waste compositions and limitations on the interim storage of tank wastes, the effective operation of the WTP HLW Vitrification Facility at full capacity (e.g., 480 canisters HLW/year) will require that the LAW immobilization capacity be approximately 3000 MT Na/year. The WTP LAW Vitrification Facility is only capable of immobilizing 733 to 1,100 MT Na/year with potential enhancements supporting up to 1400 MT Na/year. Thus, Supplemental Treatment equivalent to 1600 to 1900 MT Na/year is needed to support effective HLW Vitrification operations. Completion of the LAW treatment mission with the single WTP LAW Vitrification Facility, as the only LAW immobilization technology, would double the tank waste treatment mission schedule due to limitations in LAW Vitrification, and the ability to treat HLW waste prior to immobilization.

Question: Explain how a third melter could be added later if the throughput of two melters fall short of expectations.

Necessary provisions to install the third melter in the future have been made as outlined below. To define exactly how a third melter could be added later involves several variables driven by "when" in construction, commissioning, or operations this decision would be made.

The Bechtel National, Inc. (BNI) Contract and ORP letters of direction to BNI require design and construction of the LAW Vitrification Facility to not preclude installation of a third LAW melter in the future. At this time ORP believes the best strategy to complete Hanford tank waste treatment includes the WTP with a HLW Vitrification Facility with two HLW melters, a LAW Vitrification Facility with two LAW melters, and the use of Supplemental LAW treatment. BNI contract, Sections C7(c)(1) and (5), requires the contractor to design and build the WTP with features to provide increased waste treatment capacities, or which allow for expansion to support increased treatment capabilities. Sections C7(c)(1) and (5) state:

- "(1) The LAW facility design shall not preclude installation of a third melter, melter power and control systems, melter feed, offgas treatment, container handling, HVAC, and other systems and components not initially installed. The capability to expand waste treatment shall be consistent with an increase from the design treatment capacity of 733 Na waste units per year to 1100 Na waste units per year...
- (5) Routing capability, prior to the pretreatment process, shall be included to allow for transfer of waste, if necessary, to a potential new facility. The routing capability shall include the installation of piping exterior to the pretreatment building that will allow for tie-in at a later date."

ORP letter, 03-AMWTP-001, dated January 22, 2003, R. J. Schepens, ORP, to R. F. Naventi, BNI, requires the following:

- The foundation for the third melter pour cave carousel will be installed;

- All the embedments in the -21 ft. basemat will be installed;
- All the embedments in the -21 ft. walls for the installation of equipment, piping and liners supporting the installation of the third melter will be installed;
- Piping/tubing/cable penetrations in the -21 ft. walls to support future installation of piping and wiring will be installed;
- The +3 level process cell will be designed to allow for future installation of the cell equipment without affecting the structural integrity of the facility;
- No equipment will be installed in the third melter process cell that will eliminate the ability to install the process vessels for the third melter;
- The common pipeline sizes will be for three-melter service; however, the pumps and heat exchangers will be based on two melters;
- Secondary offgas piping and equipment (with the exception of exhausters) will be sized to support three melters. The blowers will be sized for two melters; and
- Electrical transformers, bus ducts, switchboards, main control centers, and uninterruptable power sources will be sized for three-melter service. However, down stream equipment exclusively for the third melter will not be installed.

ORP letter, 03-AMWTP-033, dated June 4, 2003, R. J. Schepens, ORP, to J. P. Henschel, BNI, requires the following:

- The structure for the third melter foundation will be installed in the +3' floor;
- Embedments that should be installed:
 - All the embedments in the +3' level floor except the melter rail anchor bolts and floor grillage;
 - All the embedments in the +3' level walls for the installation of equipment, piping and liners supporting the installation of the third melter systems;
 - The embedments for the special melter pulleys;
 - Process tank anchor bolts; and
 - Process cell sumps.
- Floor and wall penetrations that should be installed:
 - Piping and conduit penetrations, greater than 2" diameter, in the +3' level walls to support future installation of piping and cabling;
 - The melter buss duct penetration; and
 - The cable tray penetrations for the third melter.
- No equipment will be permanently installed in the third melter cell or process cell that will eliminate the ability to install the process vessels for the third melter;

- Modifications to the +3' level walls for future installation of the third melter process cell equipment should be consistent with good engineering judgment. The wall grillage in the process cell should be installed; and
- The melter import rails and the process equipment tank rings do not have to be installed but the +3' floor must retain the ability for future installation of the melter rails.

ORP letter, 03-WEC-040, dated September 12, 2003, R. J. Schepens, ORP, to J. P. Henschel, BNI, requires the following:

- Maintain LAW facility permanent system design capacities (30 MTG/day), and design margins, to support the ORP objective as stated in the Contract that the facility be capable of expansion to support increased treatment capabilities from the minimum treatment rate of 733 Na units per year to 1,100 units per year. This applies to systems affected by ORP acceptance of the change from three to two melters as well as other design changes contemplated for the LAW Facility;
- Identify systems that are affected by this requirement (e.g., primary and secondary offgas, the facility Heating Ventilation and Air Conditioning systems, feed preparation and glass former delivery systems, melter electrode power supplies, melter cooling systems);
- Verify that the engineering configuration control and trend processes ensure that permanent systems are identified and that the capabilities of permanent systems are maintained during consideration of potential design changes; and
- Ensure that the system design process as defined in Standard 3, Design, is configured and implemented to satisfy these requirements.

If melter throughput fell short of expectations, ORP would need to determine the best approach to obtain the required LAW immobilization capability. Options would likely include: fixing the problem resulting in melter throughput below expectations within LAW Vitrification; providing the increased LAW immobilization capability in an Alternative LAW Facility; or outfitting the third LAW vitrification melter line. Disrupting operation to perform equipment installation and performing construction and equipment installation in a radioactively contaminated facility would clearly factor into ORP's decision process.

Elimination of Tc-99 Removal Systems

Question: *Provide material balances and flow sheets on technetium-99 (Tc-99) similar to the one presented to Ecology in the March 29 meeting:*

- Tc-99 removal using ion exchange columns (not including supplemental technology);
- No Tc-99 ion exchange in conjunction with Bulk Vitrification; and

- No Tc-99 ion exchange and no bulk vitrification.

Tc-99 is a fission product generated in Hanford production reactors. Tc-99 is a low energy Beta emitter with a half life of 211,100 years. The total quantity of Tc-99 produced at Hanford is estimated to be 33,500 Ci. The total quantity of Tc-99 remaining in tank waste is approximately 25,500 Ci after accounting for Tc-99 transferred to Fernald, Ohio, with uranium oxide, and transfers to cribs and past tank leaks. This quantity of Tc-99 is less than 0.02% of activity in tank farms.

Performance Assessment models for the proposed disposal facilities are used to predict long-term impacts to human health and the environment. DOE conducted Performance Assessments for the disposal of WTP Immobilized LAW for 1000 years based on DOE O 435.1 and 10,000 years based on 10 CFR 61 and the U.S. Nuclear Regulatory Commission incidental waste ruling. Tc-99 is a predominant radionuclide in LAW disposal performance assessment impacts. Current performance assessments demonstrate Tc-99 removal is not required for LAW produced from WTP to meet performance objectives (see Figure 1).

Immobilized LAW produced from WTP will not exceed applicable concentration limits for Class C Low-Level Waste ($< 3 \text{ Ci/m}^3$). The average Tc-99 concentration for all tank waste immobilized as glass is projected to be approximately 0.2 Ci/m^3 .

Modeling of the WTP and ORP process system has been performed to predict the fate of Tc-99. Figures 2 through 4 present the overall Tc-99 balance for the WTP. Figures 2 and 3 reflect the WTP configuration described in the Dangerous Waste Permit. Figure 4 shows WTP configured with an Alternative LAW Facility (e.g., Supplemental Treatment Facility) consistent with the System Plan Revision 2 Target Case. These balances are based on best estimate predictions of WTP performance assuming a typical feed. Actual performance will vary from batch to batch.

Figure 2 shows the overall Tc-99 balance with Tc-99 separation from LAW by ion exchange in the Pretreatment Facility. Approximately 90% of the Tc-99 ends up in HLW glass, 9% in LAW glass, and the remaining 1% in secondary waste streams.

Figure 3 shows the overall Tc-99 balance without Tc-99 separation from LAW by ion exchange. Approximately 2% of the Tc-99 ends up in HLW glass, 97% in LAW glass, and the remaining 1% in secondary waste streams. The overall balance without Tc-99 ion exchange has slightly less Tc-99 being routed to liquid effluents due primarily to the elimination of the Tc eluate evaporator. The overall balance without Tc-99 ion exchange has slightly higher Tc-99 being routed to HEPA solids in LAW due to the higher concentration in LAW Vitrification.

Figure 4 shows the overall Tc-99 balance without Tc-99 separation from LAW and with an Alternative LAW Facility consistent with the System Plan Revision 2 Target Case. In this scenario, Tc ion exchange is not included. Approximately 60% of LAW in Pretreatment is routed to the Alternate LAW Facility, and LAW Vitrification scrubber liquids are routed to the Alternative LAW Facility. Approximately 2% of the Tc-99 ends up in HLW glass, 26% in LAW glass, 71% in Alternative LAW product, and 1% in secondary waste streams.

In all three balances, approximately 99% of the Tc-99 ends up in HLW glass, LAW glass, and Alternative LAW waste product. Secondary waste products account for approximately 1% of the Tc-99.

Question: Could Tc-99 ion exchange be put back into WTP Pretreatment at a future date? If so, provide a description of the work required and a rough estimate of cost.

In BNI's Contract, DOE required space be provided within the Pretreatment Facility for equipment to remove Tc should it become necessary in the future. Contract Section C.7(d)(1)(iv) states:

"Contractor shall not design or procure equipment relating to the Technetium Ion Exchange System. However, Contractor shall provide space within the Pretreatment Facility for such equipment should it become necessary to provide technetium removal capability in the future. Contractor shall place floor embedments and wall penetrations within the facility to ensure that the option to install the Technetium Ion Exchange System equipment is maintained. Should Tc removal be required in the future, the Tc removal process shall use the elutable SuperLig SL®-639 resin (registered trademark of IBC Advanced Technologies, Inc.) or DOE approved equivalent. The Contractor shall not conduct additional research on alternative resins for use in this process."

Subsequent to establishing this Contract requirement, Pretreatment Facility design progressed to the point where key design and construction decisions were required. Cost savings associated with elimination of the Tc ion exchange system could not be realized if design was finalized, and equipment procured for placement in facility black cells. Design of vessels and evaporator systems required to support technetium ion exchange was not completed. Design to establish locations for floor embedments and wall penetrations was not performed. Some space originally planned for Tc ion exchange was required to address other process and design issues. Installation of Tc ion exchange in Pretreatment is still feasible; however, significant cost and schedule would be incurred to include this capability at this time due to design rework, construction rework, and delayed procurements. Once construction of the black cells is complete and hot operations initiated, it would be nearly impossible to install Tc ion exchange into the WTP Pretreatment Facility. The work required and cost to reinstall Tc ion exchange in WTP Pretreatment has not been planned or estimated at this time.

The need to remove Tc from LAW is not anticipated for WTP LAW Vitrification. If Alternative LAW waste forms require Tc removal, DOE will need to evaluate appropriate technologies and architectures to perform this treatment. Tc removal could be performed in a lightly shielded, less costly facility, other than the WTP Pretreatment Facility.

Question: *Other than bulk vitrification, what methods to mitigate Tc-99 could be implemented in the future?*

DOE has no studies under way to evaluate Tc-99 removal from Hanford tank waste. The technology best understood for Tc-99 removal from Hanford tank waste is ion exchange. Should the need arise to remove Tc-99 from tank waste, DOE will evaluate appropriate technologies and architectures to perform this treatment. As indicated above, Tc-99 removal could be performed in a lightly shielded less costly facility other than the WTP Pretreatment Facility. In addition, disposal facilities for LAW and/or mixed waste must meet the DOE requirements for long term performance. Depending on the requirements and circumstances, waste forms and disposal facility design may also be looked at to mitigate technetium release rates.

Performance Assessment

Impacts (mrem/yr)

	0 – 1,000 years	0 – 10,000 years	Performance Objective
All-Pathways Dose	0.00030	0.175	25
Drinking Water	0.000070	0.034	4

Source – Table 4.17 of DOE/ORP-2000-24

Figure 1

Overall Technetium Balance with Separation from LAW

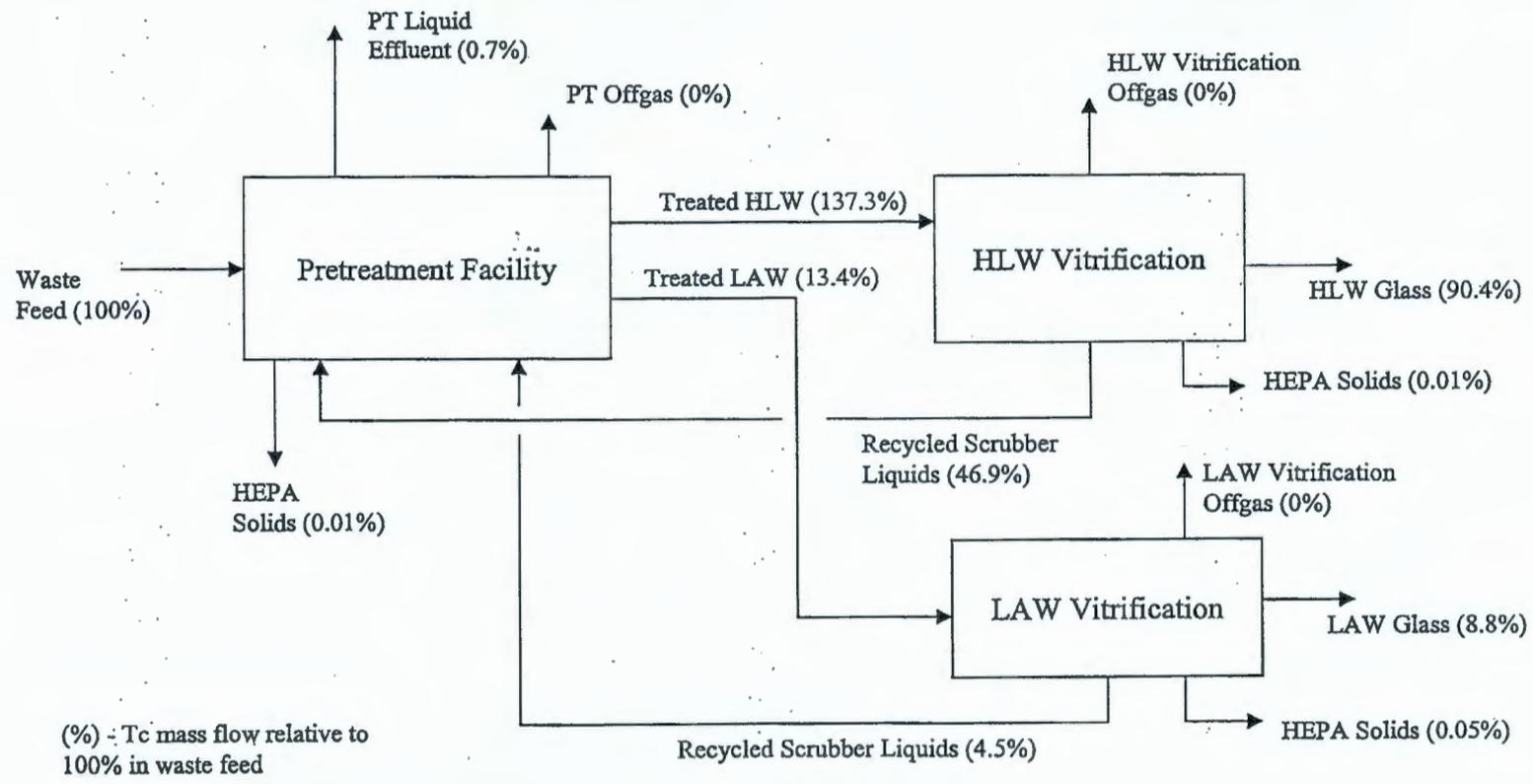


Figure 2

Overall Technetium Balance without Separation from LAW

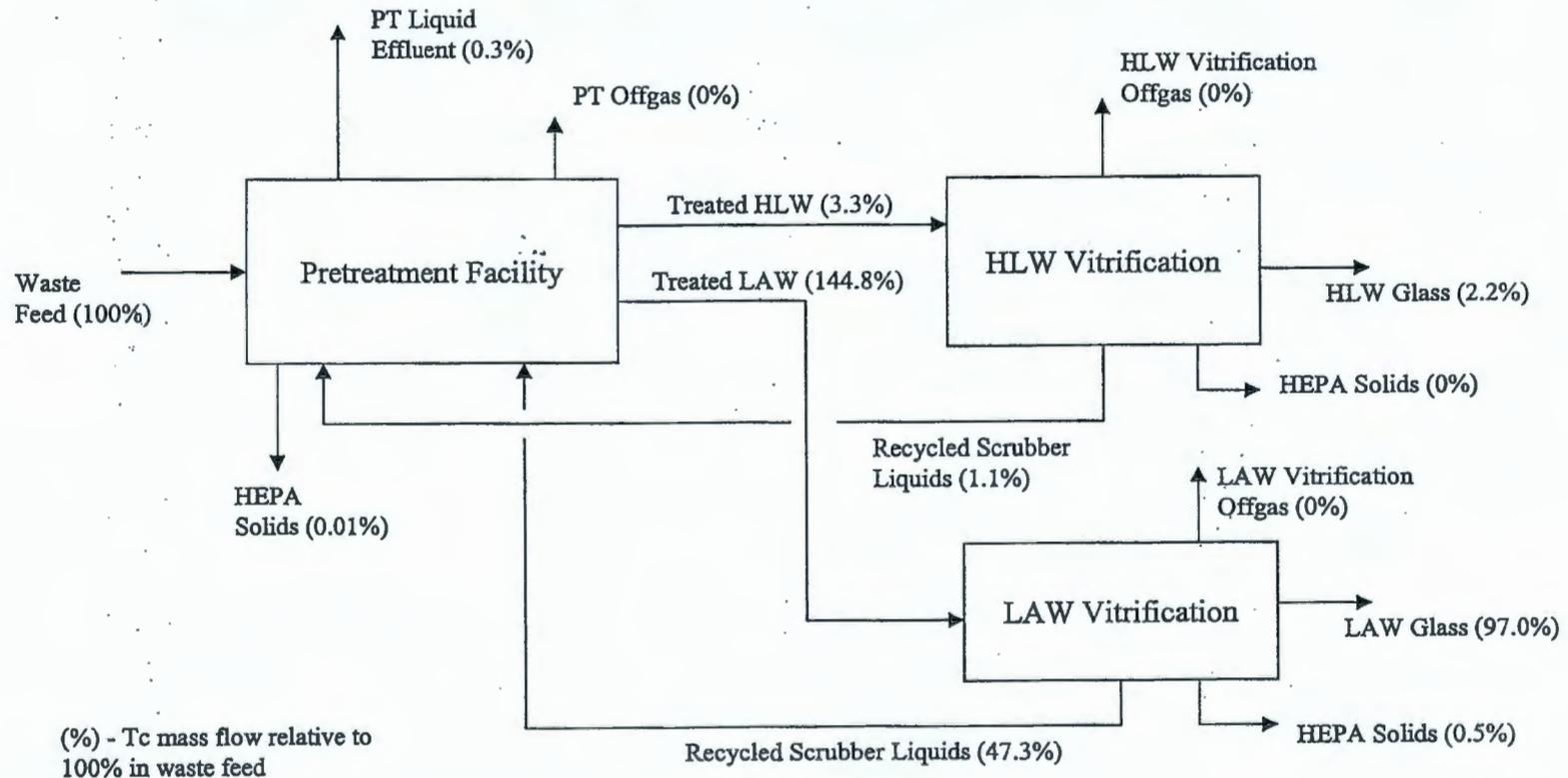


Figure 3

Overall Technetium Balance System Plan (Rev. 2) Target Case

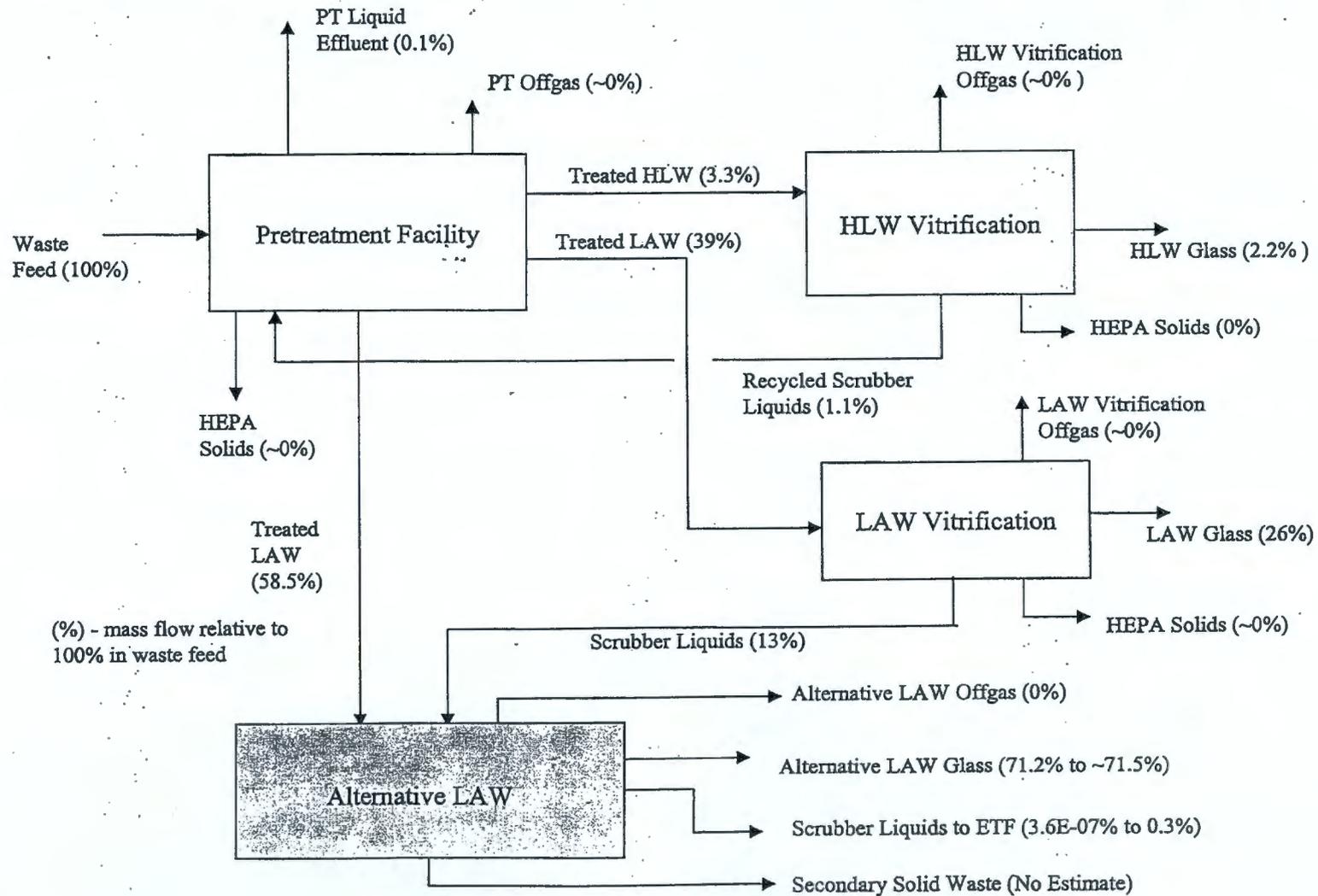


Figure 4

U.S. Department of Energy



P.O. Box 450, MSIN H6-60
Richland, Washington 99352

143634

AUG 03 2006



06-WTP-106

Ms. Jane Hedges, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354

**RPP-WTP
RECEIVED**

AUG 03 2006

BY PDC

Dear Ms. Hedges:

**WEAR ALLOWANCES AND INTEGRITY ASSESSMENT FOR WASTE TREATMENT
AND IMMOBILIZATION PLANT (WTP) VESSELS WITH PULSE JET MIXERS**

- References:
1. Ecology letter, from S. Dahl, to R. J. Schepens, ORP and W. S. Elkins, BNI, "Wear Allowance and Integrity Assessment for Vessels with Pulse Jet Mixers," dated June 8, 2006.
 2. BNI letter, from J. P. Henschel, to R. J. Schepens, ORP, Report of External Flowsheet Review Team for the Hanford Tank Waste Treatment and Immobilization Plant - Final Report Titled: "Comprehensive Review of the Hanford Waste Treatment Plant Flowsheet and Throughput," CCN: 132846, dated March 17, 2006.

The U.S. Department of Energy (DOE), Office of River Protection, has reviewed the letter from the Department of Ecology (Ecology) (Reference 1) which proposes two options for the resolution of the Ecology determination that the vessel wear allowances are inadequate and the wear allowance features are disapproved for nine WTP vessels mixed with Pulse Jet Mixers.

DOE has reviewed the proposed options, suggested by Ecology, and is not able to respond at this time because of ongoing activities, described below, to address the stated issue.

As your letter acknowledges, the External Flowsheet Review Team (EFRT), chartered by DOE, identified issues associated with the erosion wear estimates for the WTP vessels (Reference 2). At present, DOE, Bechtel National, Inc., and key EFRT Team members are finalizing the set of activities required to resolve the erosion wear issues. These activities will include: an independent expert review of the method and data used to estimate erosion wear, a reassessment of tank waste particulate characteristics, and a determination if additional testing is required.

AUG 03 2006

Ms. Jane Hedges
06-WTP-106

-2-

DOE will forward the approved issue resolution plans and resulting documentation as they become available to Ecology for review and approval. It is anticipated that these issues will be resolved and recommendations made by February 28, 2007.

DOE is requesting an extension to respond to the Reference 1, letter to February 28, 2007. We believe that this approach is compliant with the dangerous waste regulations and appropriately balances project risk.

If you have any questions, please contact me or your staff may contact Bill Hamel, Director, WTP Engineering Division, (509) 373-1569.



Roy J. Schepens, Manager
Office of River Protection



W. S. Elkins, Project Director
Bechtel National, Inc.

WED:WFH

- cc: G. Duncan, BNI
- W. S. Elkins, BNI
- B. G. Erlandson, BNI
- J. Hill, BNI
- J. Cox, CTUIR
- B. Becker-Khaleel, Ecology
- S. L. Dahl, Ecology
- K. Elsethagen, Ecology
- E. Fredenburg, Ecology
- P. Sobotta, NPT
- L. K. Holton, Jr., PNNL
- A. C. McKarns, RL
- R. Jim, YN
- Environmental Portal, LMSI
- Administrative Record
- BNI Correspondence

February 2, 1994

Initial Responsiveness Summary
Permit Number: WA7890008967
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This Condition correctly reflects the requirements of Chapter 173-303 WAC, specifically WAC 173-303-340.

Permit Change:

No change required.

II.L.3.a.) Comment (25.235):

It was suggested that Condition II.L.3.a be deleted from the Permit because it is unreasonable and interferes with the Permittees' ability to design and construct or modify units. It is claimed that this is an unprecedented regulatory requirement, is not authorized in the regulations, and will result in management inefficiency and poor uses of resources.

Department Response:

The Department clearly has the authority to review and approve the Permit application as well as other reports including engineering reports, plans, and specifications as allowed in WAC 173-303-390 and WAC 173-303-800. Changes to the design, plans or specifications require that the Permit be modified as set forth in WAC 173-303-830. As-built drawings will be included in the final permit modification and will replace all drawings previously submitted and later changed. Reviewing the Permit and approving permit modifications in no way affects the Permittees' ability to design or construct a project. The Permittees submit their designs, plans and specifications as part of a permit application, if the Permittees chose to change the items they have submitted in the Permit application, a permit modification may be required. The Permittees are responsible for their designs, plans and specifications. The Permittees should inform the Department as soon as possible when a change is required, the Department will determine whether a permit modification is required and inform the Permittees. This procedure will not unnecessarily impact construction schedules, in fact it will help insure that facilities constructed are in compliance with the appropriate regulations so that a final permit may be issued. The Permit will be modified to clarify the procedures of this Condition.

Also, original Condition II.L.2. will be deleted because it is redundant with Condition I.E.7.

Permit Change:

Delete the original Conditions II.L.3., II.L.3.a., II.L.3.b., II.L.3.c., and II.L.3.d. Replace these Conditions with revised Conditions II.L.2., II.L.2.a., II.L.2.b., II.L.2.c., and II.L.2.d.

In addition, a definition for "critical systems" has been added to the Definition section of the Permit.

II.L.3.b.) Comment (25.236):

See comment 25.235.

Department Response:

See the response to comment 25.235.

Permit Change:

See the Permit change for comment 25.235.

II.L.3.c.) Comment (25.237):

See comment 25.235.

Department Response:

See the response to comment 25.235.

Permit Change:

See the Permit change to comment 25.235.

II.L.3.d.) Comment (25.238):

See comment 25.235.

Department Response:

See the response to comment 25.235.