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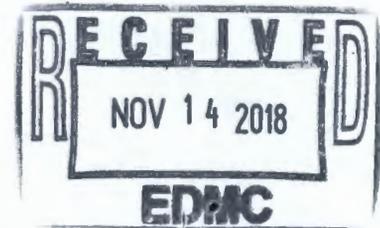
OFFICE OF RIVER PROTECTION

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

NOV 09 2018

18-ECD-0072

Ms. Alexandra K. Smith, Program Manager
Nuclear Waste Program
Washington State
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354



Ms. Smith:

SUBMITTAL OF HANFORD FACILITY RESOURCE CONSERVATION AND RECOVERY ACT PERMIT MODIFICATION NOTIFICATION FORM 24590-LAW-PCN-ENV-18-004, INDEPENDENT QUALIFIED REGISTERED PROFESSIONAL ENGINEER REPORT

- References:
1. WA7890008967, "Dangerous Waste Portion of the Hanford Facility Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste, Part III, Operating Unit 10, "Waste Treatment and Immobilization Plant."
 2. BNI letter from B. P. Reilly to Mr. Vance, Office of River Protection, "Submittal of Hanford Facility Resource Conservation and Recovery Act Permit Modification Notification Form 24590-LAW-PCN-ENV-18-004," CCN: 308752, dated October 4, 2018.

This letter transmits Hanford Facility Resource Conservation and Recovery Act Permit Modification Notification Forms 24590-LAW-PCN-ENV-18-004, attached, for the Washington State Department of Ecology review and approval. The forms describe Class 1 modifications to Reference 1.

The permit modification provides Independent Qualified Registered Professional Engineer (IQRPE) Report 24590-CM-HC4-HXYG-00240-02-00014, Rev. 00B, IQRPE Structural Integrity Assessment Report for LAW LMP Miscellaneous Unit Melter (IA-3014936-001), to replace the revision currently contained in Appendix 9.11 of Reference 1.

Washington State Department of Ecology comments resulting from review of this modification notification form and the associated information have been dispositioned.

**Attachment
18-ECD-0072
(20 Pages Excluding Cover Sheet)**

**Hanford Facility RCRA Permit Modification Notification
Form 24590-LAW-PCN-ENV-18-004**

Quarter Ending Dec. 31, 2018

24590-LAW-PCN-ENV-18-004

Hanford Facility RCRA Permit Modification Notification Form
Part III, Operating Unit 10
Waste Treatment and Immobilization Plant

Index

Page 2 of 2: Hanford Facility RCRA Permit, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant

This IQRPE Structural Integrity Assessment Report 24590-CM-HC4-HXYG-00240-02-00014, Rev. 00B (IA-3014936-001), is a revision of the previous report 24590-CM-HC4-HXYG-00240-02-00014, Rev. 00A (IA-3014936-000).

Submitted by Co-Operator:

Roger J. Landon 9/27/18
Roger J. Landon Date

Reviewed by ORP Program Office:

[Signature] acting for 11/6/2018
Thomas W. Fletcher Date

Quarter Ending Dec. 31, 2018

24590-LAW-PCN-ENV-18-004

Hanford Facility RCRA Permit Modification Notification Form					
Unit: Waste Treatment and Immobilization Plant		Permit Part: Part III, Operating Unit 10			
<u>Description of Modification:</u>					
This Class 11 modification requests Ecology approval and incorporation into the permit the below referenced structural integrity assessment report. The report has been updated by the Independent Qualified Registered Professional Engineer (IQRPE).					
<u>Appendix 9.11</u>					
Replace	24590-CM-HC4-HXYG-00240-02-00014, Rev. 00A IQRPE Structural Integrity Assessment Report for LAW LMP Miscellaneous Unit Melters (LMP-MLTR-00001/2) (IA-3014936-000)	With	24590-CM-HC4-HXYG-00240-02-00014, Rev. 00B IQRPE Structural Integrity Assessment Report for LAW LMP Miscellaneous Unit Melters (LMP-MLTR-00001/2) (IA-3014936-001)		
This Integrity Assessment includes the evaluation of two LAW Melters (LMP-MLTR-00001/2), including their appurtenances located at Elevation 3'-0" in Room L-0112 of the LAW Vitrification Building as shown on plant General Arrangement Plan drawing 24590-LAW-P1-P01T-00002. In this report, the Melters are also interchangeably referred to be as miscellaneous units, vessels, or plant items.					
For each item of "Information Assessed" (i.e., Criteria) on the following pages, the documents listed under "Source of Information" were reviewed and found to furnish adequate design requirements and controls to ensure that the design fully satisfies the requirements of Washington Administrative Code (WAC), Chapter 173-303 WAC, Dangerous Waste Regulations, Section WAC-173-303-640 (3) (a) through (g) applicable elements of the Tank Systems.					
This PCN updates information in Appendix 9.11 to reflect current design. This DWP component may be re-evaluated to confirm design adequacy. If the re-evaluation results in future design changes, the changes will be reviewed by Ecology in subsequent permit modifications.					
In accordance with Permit Condition III.10.C.2.e, this permit modification includes an updated IQRPE Structural Integrity Assessment Report for inclusion in Appendix 9.11.					
WAC 173-303-830 Modification Class:		Class 1	Class 11	Class 2	Class 3
Please mark the Modification Class:			X		
Enter relevant WAC 173-303-830, Appendix I Modification citation number:					
Enter wording of WAC 173-303-830, Appendix I Modification citation:					
In accordance with WAC 173-303-830(4)(d)(i), this modification notification is requested to be reviewed and approved as a Class '1 modification. WAC 173-303-830(4)(d)(ii)(A) states: "Class 1 modifications apply to minor changes that keep the permit current with routine changes to the facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the director may require prior approval."					
Modification Approved/Concur:	<input type="checkbox"/> Yes	<input type="checkbox"/> Denied (state reason below)	Reviewed by Ecology:		
<u>Reason for denial:</u>			S. Dahl	Date	

orano

24590-CM-HC4-HXYG-00240-02-00014
Rev. 00B


R11908010

FS-18-0174

ISSUED BY
RPP-WTP PDC

July 16, 2018

Ms. Andrea Dorsey
Subcontractor Administrator
Bechtel National, Inc.
2435 Stevens Center Place
Richland, WA 99354

Orano Federal
Services LLC

9530 Bedford St
Pasco, WA 99301

Tel: +1 509 862 4747

Dear Ms. Dorsey,

**BECHTEL NATIONAL, INC. CONTRACT NO. 24590-CM-HC4-HXYG-00240
IQRPE Structural Integrity Assessment Report for LAW LMP
Miscellaneous Unit Melters (LMP-MLTR-00001/2) (IA-3014936-001)**

The integrity assessment of the subject melters has been completed per the contract requirements and is enclosed for your use. The assessment found that the design is sufficient to ensure that the melters are adequately designed and has sufficient structural strength, compatibility with the waste(s) to be processed/stored/treated, and corrosion protection to ensure that it will not collapse, rupture, or fail.

If you have any questions, please contact Tarlok Hundal at (509) 371-1975, or via email at tarlok.hundal@orano.group.

Sincerely,



Tess Klatt
Contract Administrator
Orano Federal Services LLC
Richland Office

lap
cc: J.S. Evans, w/Enclosure (1)

**IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT
FOR
LAW LMP MISCELLANEOUS UNIT MELTERS (LMP-MLTR-00001/2)**

Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

**IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT
FOR
LAW LMP MISCELLANEOUS UNIT MELTERS (LMP-MLTR-00001/2)**

"I, Tarlok Singh Hundal, have reviewed and certified a portion of the design of a new tank system component located at the Hanford Waste Treatment Plant, owned/operated by Department of Energy, Office of River Protection, Richland, Washington. My duties were independent review of the current design for the LAW LMP Miscellaneous Unit Melters as required by the Washington Administrative Code, *Dangerous Waste Regulations*, Section WAC-173-303-640(3) (a) through (g) applicable components."

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

The documentation reviewed indicates that the design fully satisfies the requirements of the WAC.

The attached review is fifteen (15) pages numbered one (1) through fifteen (15).



T. Hundal

Signature

7/16/18

Date

Scope	Scope of this Integrity Assessment	<p>This Integrity Assessment includes the evaluation of two LAW Melters (LMP-MLTR-00001/2), including their appurtenances located at Elevation 3'-0" in Room L-0112 of the LAW Vitrification Building as shown on plant general arrangement plan drawing 24590-LAW-P1-P01T-00002. In this report, the Melters are also interchangeably referred to be as miscellaneous units, vessels, or plant items.</p> <p>Note: This report (IA-3014936-001) is a revision of the previous report (IA-3014936-000; BNI # 24590-CM-HC4-HXYG-00240-02-00014, Rev. 00A).</p>
Summary of Assessment	<p>For each item of "Information Assessed" (i.e., Criteria) on the following pages, the documents listed under "Source of Information" were reviewed and found to furnish adequate design requirements and controls to ensure that the design fully satisfies the requirements of Washington Administrative Code (WAC), Chapter 173-303 WAC, <i>Dangerous Waste Regulations</i>, Section WAC-173-303-640 (3) (a) through (g) applicable elements of the <i>Tank Systems</i>.</p>	

References	Material Requisitions and Specifications	<p><u>Material Requisitions (MRs):</u></p> <p>24590-QL-MRA-MEEM-00001, Rev. 10, Melter, Fabrication and Assembly, LAW (ML007), including SDDR No. 24590-WTP-ML-SDDR-10-00091; 24590-CM-MRA-MEEM-00001, Rev. 5, Melter, Cooling Panels (ML008).</p> <p><u>Specifications Listed in MRs:</u></p> <p>The following Specifications with their respective revision and change documents are listed in the above listed MRs:</p> <p>24590-WTP-3PS-G000-T0002, Engineering Specification for Positive Material Identification (PMI); 24590-WTP-3PS-G000-T0003, Engineering Specification for Packaging, Handling, and Storage Requirements; 24590-WTP-3PS-G000-T0006, Engineering Specification for Preserving and Preparing Melter and Melter Components for Shipping, Handling, and Storage; 24590-WTP-3PS-G000-T0019, Engineering Specification for Acquisition of Commercial Items and Services for use in Safety Application at WTP; 24590-QL-HC4-W000-00011-03-00505, Cooling Panel Procurement Specification for HLW and LAW Melters.</p> <p><u>Specifications:</u></p> <p>24590-LAW-3PS-AE00-T0001, Rev. 6, Engineering Specification for Low Activity Waste Melters, including 24590-LAW-3PN-AE00-00008; 24590-WTP-3PS-MQR0-T0004, Rev. 1, Engineering Specification for LAW Facility Melter Rails, including 24590-WTP-3PN-MQR0-00033, 24590-WTP-FC-M-08-0114, 24590-WTP-SDDR-MH-07-00014, and 24590-WTP-SDDR-MH-08-00011; 24590-LAW-3PS-M000-T0001, Rev. 1, Engineering Specification for LAW Pour Spout and Seal Head, including 24590-WTP-SDDR-M-05-00601; 24590-WTP-3PS-FB01-T0001, Rev. 6, Engineering Specification for Structural Design Loads for Seismic Category III & IV Equipment and Tanks, including 24590-WTP-3PN-FB01-00012, 24590-WTP-SDDR-E-15-00002, -00004, -00011, and 24590-WTP-SDDR-J-15-00003, and 24590-WTP-SDDR-J-17-00035.</p>
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References (cont'd)	Plant Drawings	<p><u>Plant Drawings including Drawing Change Notices (DCNs) listed in the above listed Material Requisitions</u></p> <p>24590-LAW-P1-P01T-00002, Rev. 7, LAW Vitrification Building General Arrangement Plan at El. 3'-0"; 24590-LAW-M6-LMP-00001001, Rev. 0, P & ID-LAW Melter Process System Melter 1 Agitation Zone 1 & Zone 2 LMP-RK-0040A/B; 24590-LAW-M6-LMP-00031001, Rev. 0, P & ID-LAW Melter Process System Melter 2 Agitation Zone 1 & Zone 2; 24590-LAW-M6-LMP-00002001, Rev. 1, P & ID-LAW Melter Process System Melter 1 Agitation Zone 3 and Level Detection LMP-RK-00040B and PPJ-RK-00001; 24590-LAW-M6-LMP-00002002, Rev. 0, P & ID-LAW Melter Process System Melter 1 Agitation Zone 3 and Level Detection LMP-RK-00040C; 24590-LAW-M6-LMP-00032001, Rev. 1, P & ID-LAW Melter Process System Melter 2 Agitation Zone 3 & Level Detection LMP- RK-00041B and PPJ-RK-00002; 24590-LAW-M6-LMP-00032002, Rev. 0, P & ID-LAW Melter Process System Melter 2 Agitation Zone 3 & Level Detection LMP- RK-00041C; 24590-LAW-M5-V17T-00004, Rev. 4, Process Flow Diagram LAW Vitrification Melter 1 (System LMP & LOP); 24590-LAW-M5-V17T-00005, Rev. 4, Process Flow Diagram LAW Vitrification Melter 2 (System LMP & LOP); 24590-LAW-DB-S13T-00158, Rev. 3, LAW Vitrification Building Main Building Melter Rail Anchorage Enlarged Plan; 24590-LAW-DB-S13T-00014, Rev. 7, LAW Vitrification Building Main Building Partial Conc. Forming Plan Zone 1 @ El (+) 3'-0"; 24590-WTP-DD-S13T-00004, Rev. 5, Civil/Structural Standards Standard Embedded Anchor Bolt Details. 24590-LAW-DB-S13T-00018, Rev. 5, LAW Vitrification Building Main Building Partial Conc. Forming Plan Zone 5 @ El (+) 3'-0"; 24590-LAW-M0-LMH-00002001, Rev. 3, Vitrification System LMH Design Proposal Drawing LSM Rail Assembly; 24590-LAW-M0-LMH-00002002, Rev. 3, Vitrification System LMH Design Proposal Drawing LSM Rail Assembly Details; 24590-LAW-M0-LMH-00002003, Rev. 2, Vitrification System LMH Design Proposal Drawing LSM Rail Assembly Details; 24590-LAW-MF-LMP-00001, Rev. 0, LAW Melter Assembly-LAW-MLTR-00001/00002 Isometric View; 24590-LAW-MF-LMP-00002, Rev. 0, LAW Melter Assembly-LAW-MLTR-00001/00002 Plan View; 24590-LAW-MF-LMP-00003, Rev. 0, LAW Melter Assembly-LAW-MLTR-00001/00002 East, West and North Elevation; 24590-LAW-MF-LMP-00004, Rev. 0, LAW Melter Assembly-LAW-MLTR-00001/00002 Section A-A.</p>
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References (cont'd)

Vendor Fabrication
Drawings

Vendor Fabrication Drawings (* Bechtel Status Code 1 Drawings):

Background of the Melter Design Evolution: Initial issue of Melter Calculation 24590-LAW-M2C-LMP-00002, Rev. A, identified numerous modification in its Attachment L, which depicted the red lined changes per various listed design change documents affecting the associated drawings. Additional changes were recommended and incorporated as listed in Vendor Design Change Notice (VDCN) # 24590-LAW-VDCN-ML-15-00016. Subsequent revision, Rev. B of the calculation incorporated further modifications as listed in its Attachment H as shown in 24590-LAW-VDCN-ML-16-00008. Rev. 0 essentially re-evaluated and referenced the new drawings where changes were incorporated and pulled in some methodology from other calculations it replaced. Rev. 0 also changed the lid loss of cooling thermal profile and performed additional base beam analysis in order to roll in and supersede two calculations that were performed after Rev. B. Additionally, substantial percentage of original drawing set was re-issued under new numbers to incorporate the changes. All of these things are summarized as "Incorporated all Outstanding Design Modifications" in the "Reason for Revision" column of Rev. 0 of the Melter Calculation (24590-LAW-M2C-LMP-00002).

The drawings listed below as LAW-MX-LMP are Bechtel generated drawings from the Vendor Submitted Bechtel Status Code 1 Drawings. The numbers in the parenthesis are corresponding vendor internal drawing numbers.

24590-LAW-MX-LMP-00051001, Rev. 0, South Wall Module Assembly (WTP-M-11605-1);
24590-LAW-MX-LMP-00051003, Rev. 0, South Wall Module Assembly (WTP-M-11605-2);
24590-LAW-MX-LMP-00051004, Rev. 0, South Wall Module Assembly (WTP-M-11605-3);
24590-LAW-MX-LMP-00051005, Rev. 0, South Wall Module Assembly (WTP-M-11605-4);
24590-LAW-MX-LMP-00051006, Rev. 0, South Wall Module Assembly (WTP-M-11605-5);
24590-LAW-MX-LMP-00051007, Rev. 0, South Wall Module Assembly (WTP-M-11605-6);
24590-LAW-MX-LMP-00051010, Rev. 0, South Wall Module Assembly (WTP-M-11605-9);
24590-LAW-MX-LMP-00051011, Rev. 0, South Wall Module Assembly (WTP-M-11605-10);
24590-LAW-MX-LMP-00051012, Rev. 0, South Wall Module Assembly (WTP-M-11605-11);
24590-LAW-MX-LMP-00211005, Rev. 0, South Wall Module Details (WTP-M-11601-5);
24590-LAW-MX-LMP-00211006, Rev. 0, South Wall Module Details (WTP-M-11601-6);
24590-LAW-MX-LMP-00211007, Rev. 0, South Wall Module Details (WTP-M-11601-7);
24590-LAW-MX-LMP-00211008, Rev. 0, South Wall Module Details (WTP-M-11601-8);
24590-LAW-MX-LMP-00031001, Rev. 0, North Wall Module Assembly (WTP-M-11610-1);
24590-LAW-MX-LMP-00031002, Rev. 0, North Wall Module Assembly (WTP-M-11610-2);
24590-LAW-MX-LMP-00031003, Rev. 0, North Wall Module Assembly (WTP-M-11610-3);
24590-LAW-MX-LMP-00031004, Rev. 0, North Wall Module Assembly (WTP-M-11610-4);
24590-LAW-MX-LMP-00031005, Rev. 0, North Wall Module Assembly (WTP-M-11610-5);
24590-LAW-MX-LMP-00031006, Rev. 0, North Wall Module Assembly (WTP-M-11610-6);
24590-LAW-MX-LMP-00031007, Rev. 0, North Wall Module Assembly (WTP-M-11610-7);
24590-LAW-MX-LMP-00032001, Rev. 0, North Wall Module Service Routing (WTP-M-11642-1);
24590-LAW-MX-LMP-00032003, Rev. 0, North Wall Module Service Routing (WTP-M-11642-3);

References (cont'd)	Vendor Fabrication Drawings	<p><u>Vendor Fabrication Drawings (cont'd):</u> 24590-LAW-MX-LMP-00036001, Rev. 0, North Wall Module Assembly (WTP-M-11612-1); 24590-LAW-MX-LMP-00036002, Rev. 0, North Wall Module Assembly (WTP-M-11612-2); 24590-LAW-MX-LMP-00036003, Rev. 0, North Wall Module Assembly (WTP-M-11612-3); 24590-LAW-MX-LMP-00037001, Rev. 0, North Wall Module Details (WTP-M-11613-1); 24590-LAW-MX-LMP-00037002, Rev. 0, North Wall Module Details (WTP-M-11613-2); 24590-LAW-MX-LMP-00037004, Rev. 0, North Wall Module Details (WTP-M-11613-4); 24590-LAW-MX-LMP-00037006, Rev. 0, North Wall Module Details (WTP-M-11613-6); 24590-LAW-MX-LMP-00215003, Rev. 0, South Wall Module Gas Barrier Assembly (WTP-M-11606-2); 24590-LAW-MX-LMP-00215011, Rev. 0, South Wall Module Gas Barrier Assembly (WTP-M-11606-12); 24590-LAW-MX-LMP-00080001, Rev. 0, South Wall Module Shielding Assembly (WTP-M-11607-1); 24590-LAW-MX-LMP-00080002, Rev. 0, South Wall Module Shielding Assembly (WTP-M-11607-2); 24590-LAW-MX-LMP-00033001, Rev. 0, North Wall Module Gas Barrier Assembly (WTP-M-11611-1); 24590-LAW-MX-LMP-00033002, Rev. 0, North Wall Module Gas Barrier Assembly (WTP-M-11611-2); 24590-LAW-MX-LMP-00033003, Rev. 0, North Wall Module Gas Barrier Assembly (WTP-M-11611-3); 24590-LAW-MX-LMP-00029001, Rev. 0, West Wall Module Assembly (WTP-M-11615-1); 24590-LAW-MX-LMP-00029002, Rev. 0, West Wall Module Assembly (WTP-M-11615-2); 24590-LAW-MX-LMP-00029003, Rev. 0, West Wall Module Assembly (WTP-M-11615-3); 24590-LAW-MX-LMP-00029004, Rev. 0, West Wall Module Assembly (WTP-M-11615-4); 24590-LAW-MX-LMP-00029005, Rev. 0, West Wall Module Assembly (WTP-M-11615-5,7); 24590-LAW-MX-LMP-00029006, Rev. 0, West Wall Module Assembly (WTP-M-11615-8); 24590-LAW-MX-LMP-00034001, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-1); 24590-LAW-MX-LMP-00034002, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-2); 24590-LAW-MX-LMP-00034003, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-3); 24590-LAW-MX-LMP-00034004, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-4); 24590-LAW-MX-LMP-00034005, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-5,6); 24590-LAW-MX-LMP-00034006, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-7-10); 24590-LAW-MX-LMP-00034007, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-7-11,12); 24590-LAW-MX-LMP-00035001, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11617-1); 24590-LAW-MX-LMP-00035002, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11617-2); 24590-LAW-MX-LMP-00035003, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11617-3); 24590-LAW-MX-LMP-00035005, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11617-5,6);</p>
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References (cont'd)	Vendor Fabrication Drawings	<p><u>Vendor Fabrication Drawings (cont'd):</u> 24590-LAW-MX-LMP-00049001, Rev. 0, East Wall Module Assembly (WTP-M-11620-1); 24590-LAW-MX-LMP-00049002, Rev. 0, East Wall Module Assembly (WTP-M-11620-2); 24590-LAW-MX-LMP-00049003, Rev. 0, East Wall Module Assembly (WTP-M-11620-3); 24590-LAW-MX-LMP-00049004, Rev. 0, East Wall Module Assembly (WTP-M-11620-4); 24590-LAW-MX-LMP-00049005, Rev. 0, East Wall Module Assembly (WTP-M-11620-5,6,7); 24590-LAW-MX-LMP-00050001, Rev. 0, East Wall Module Service Routing (WTP-M-11644-1); 24590-LAW-MX-LMP-00050003, Rev. 0, East Wall Module Service Routing (WTP-M-11644-3); 24590-LAW-MX-LMP-00053001, Rev. 0, East Wall Module Gas Barrier Assembly (WTP-M-11621-1); 24590-LAW-MX-LMP-00053002, Rev. 0, East Wall Module Gas Barrier Assembly (WTP-M-11621-2); 24590-LAW-MX-LMP-00053003, Rev. 0, East Wall Module Gas Barrier Assembly (WTP-M-11621-3); 24590-LAW-MX-LMP-00053004, Rev. 0, East Wall Module Gas Barrier Assembly (WTP-M-11621-4); 24590-LAW-MX-LMP-00218005, Rev. 0, West and East Wall Module Details (WTP-M-11618-5); 24590-LAW-MX-LMP-00218009, Rev. 0, West and East Wall Module Details (WTP-M-11618-9); 24590-LAW-MX-LMP-00218014, Rev. 0, West and East Wall Module Details (WTP-M-11618-14); 24590-LAW-MX-LMP-00218015, Rev. 0, West and East Wall Module Details (WTP-M-11618-15); 24590-LAW-MX-LMP-00018001, Rev. 0, Base Assembly (WTP-M-11700-1); 24590-LAW-MX-LMP-00018002, Rev. 0, Base Assembly (WTP-M-11700-2); 24590-LAW-MX-LMP-00018003, Rev. 0, Base Assembly (WTP-M-11700-3); 24590-LAW-MX-LMP-00018004, Rev. 0, Base Assembly (WTP-M-11700-4); 24590-LAW-MX-LMP-00018005, Rev. 0, Base Assembly (WTP-M-11700-5); 24590-LAW-MX-LMP-00018006, Rev. 0, Base Assembly (WTP-M-11700-6); 24590-LAW-MX-LMP-00018007, Rev. 0, Base Assembly (WTP-M-11700-7); 24590-LAW-MX-LMP-00019001, Rev. 0, Base Frame Assembly (WTP-M-11701-1); 24590-LAW-MX-LMP-00019002, Rev. 0, Base Frame Assembly (WTP-M-11701-2); 24590-LAW-MX-LMP-00019003, Rev. 0, Base Frame Assembly (WTP-M-11701-3); 24590-LAW-MX-LMP-00019004, Rev. 0, Base Frame Assembly (WTP-M-11701-4); 24590-LAW-MX-LMP-00019005, Rev. 0, Base Frame Assembly (WTP-M-11701-5); 24590-LAW-MX-LMP-00019014, Rev. 0, Base Frame Assembly (WTP-M-11701-14); 24590-LAW-MX-LMP-00019015, Rev. 0, Base Frame Assembly (WTP-M-11701-15); 24590-LAW-MX-LMP-00240001, Rev. 0, Base Frame Details (WTP-M-11702-1); 24590-LAW-MX-LMP-00240002, Rev. 0, Base Frame Details (WTP-M-11702-2,3); 24590-LAW-MX-LMP-00248, Rev. 0, Base Seismic Clamp Frame (WTP-M-11716-1); 24590-LAW-MX-LMP-00063, Rev. 1, Base Seismic Clamp Assembly (WTP-M-11715-1); 24590-LAW-MX-LMP-00064, Rev. 1, Base Seismic Clamp Details (WTP-M-11717-1); 24590-LAW-MX-LMP-00159, Rev. 0, Seismic Pin Support Frame (WTP-M-11718-1);</p>
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References (cont'd)	Vendor Fabrication Drawings	<p><u>Vendor Fabrication Drawings (cont'd):</u> 24590-LAW-MX-LMP-00264001, Rev. 0, Rail Guide Details (WTP-M-11719-1); 24590-LAW-MX-LMP-00264002, Rev. 0, Rail Guide Details (WTP-M-11719-2); 24590-LAW-MX-LMP-00244, Rev. 0, Base Roller Assembly (WTP-M-11706); 24590-LAW-MX-LMP-00245, Rev. 0, Roller Frame Details (WTP-M-11707-1); 24590-LAW-MX-LMP-00266, Rev. 0, Pulley Assembly (WTP-M-11720); 24590-LAW-MX-LMP-00078001, Rev. 0, Base Gas Barrier Plate Detail (WTP-M-11708-1); 24590-LAW-MX-LMP-00078002, Rev. 0, Base Gas Barrier Plate Detail (WTP-M-11708-2); 24590-LAW-MX-LMP-00026001, Rev. 0, Base Center Assembly (WTP-M-11709-1-2); 24590-LAW-MX-LMP-00026002, Rev. 0, Base Center Assembly (WTP-M-11709-1-2); 24590-LAW-MX-LMP-00026003, Rev. 0, Base Center Assembly (WTP-M-11709-3); 24590-LAW-MX-LMP-00026004, Rev. 0, Base Center Assembly (WTP-M-11709-4); 24590-LAW-MX-LMP-00026009, Rev. 0, Base Center Assembly (WTP-M-11709-4); 24590-LAW-MX-LMP-00026010, Rev. 0, Base Center Assembly (WTP-M-11709-4); 24590-LAW-MX-LMP-00026011, Rev. 0, Base Center Assembly (WTP-M-11709-4); 24590-LAW-MX-LMP-00026012, Rev. 0, Base Center Assembly (WTP-M-11709-4); 24590-LAW-MX-LMP-00062001, Rev. 0, Melter Assembly Base and Wall Modules (WTP-M-11990-1); 24590-LAW-MX-LMP-00062002, Rev. 0, Melter Assembly Base and Wall Modules (WTP-M-11990-2); 24590-LAW-MX-LMP-00062003, Rev. 0, Melter Assembly Base and Wall Modules (WTP-M-11990-3); 24590-LAW-MX-LMP-00062008, Rev. 0, Melter Assembly Base and Wall Modules (WTP-M-11990-8); 24590-LAW-MX-LMP-00062010, Rev. 0, Melter Assembly Base and Wall Modules (WTP-M-11990-10); 24590-LAW-MX-LMP-00062011, Rev. 0, Melter Assembly Base and Wall Modules (WTP-M-11990-6,8); 24590-101-TSA-W000-0010-409-651, Rev. 00B, Refractory Assembly (WTP-M-11050-1); 24590-101-TSA-W000-0010-409-652, Rev. 00B, Refractory Assembly (WTP-M-11050-2); 24590-LAW-MX-LMP-00047001, Rev. 2, LAW Melter Jackbolt Assembly (WTP-M-11625); 24590-LAW-MX-LMP-00047002, Rev. 2, LAW Melter Jackbolt Assembly (WTP-M-11625); 24590-LAW-MX-LMP-00047003, Rev. 1, LAW Melter Jackbolt Assembly (WTP-M-11625); 24590-LAW-MX-LMP-00056001, Rev. 0, Melter Assembly Glass Pool (WTP-M-11980-1); 24590-LAW-MX-LMP-00056014, Rev. 0, Melter Assembly Glass Pool (WTP-M-11980-13); 24590-LAW-MX-LMP-00025001, Rev. 0, Melter Assembly Shielded Lid (WTP-M-11960-1); 24590-LAW-MX-LMP-00025003, Rev. 0, Melter Assembly Shielded Lid (WTP-M-11960-2); 24590-LAW-MX-LMP-00025004, Rev. 0, Melter Assembly Shielded Lid (WTP-M-11960-3); 24590-LAW-MX-LMP-00025005, Rev. 0, Melter Assembly Shielded Lid (WTP-M-11960-4); 24590-LAW-MX-LMP-00025010, Rev. 0, Melter Assembly Shielded Lid (WTP-M-11960-9);</p>
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<p style="writing-mode: vertical-rl; transform: rotate(180deg);">References (cont'd)</p> <p>Vendor Fabrication Drawings, Mechanical Data Sheets, and System Design Description</p>	<p><u>Vendor Fabrication Drawings (cont'd):</u> 24590-LAW-MX-LMP-00011001, Rev. 1, Shielded Lid Support Structure Assembly (WTP-M-11751-1); 24590-LAW-MX-LMP-00011003, Rev. 0, Shielded Lid Support Structure Assembly (WTP-M-11751-2); 24590-LAW-MX-LMP-00011004, Rev. 1, Shielded Lid Support Structure Assembly (WTP-M-11751-3); 24590-LAW-MX-LMP-00011007, Rev. 1, Shielded Lid Support Structure Assembly (WTP-M-11751-6); 24590-LAW-MX-LMP-00011017, Rev. 0, Shielded Lid Support Structure Assembly (WTP-M-11751-16); 24590-LAW-MX-LMP-00009001, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009002, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009003, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009004, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009005, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009006, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009007, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009008, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009009, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00010001, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010002, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010003, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010004, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010005, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010006, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010007, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010008, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010009, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010010, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010011, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010012, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806).</p> <p>* <u>Bechtel Status Code 1 Drawing</u> is an "as fabricated vendor drawing" approved/accepted by Bechtel.</p> <p><u>Mechanical Data Sheets:</u> 24590-LAW-M0D-LMP-00001, Rev. 4, LAW Melter 1 (LMP-MLTR-00001); 24590-LAW-M0D-LMP-00002, Rev. 4, LAW Melter 2 (LMP-MLTR-00002).</p> <p><u>System Design Description:</u> 24590-LAW-3ZD-LMP-00001, Rev. 1, Low-Activity Waste Melter Process System Design Description.</p>
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Information Assessed	Source of Information	Assessment
<p style="text-align: center;">Design</p> <p>Vessel design standards are appropriate and adequate for the vessel's intended use.</p>	<p>Material Requisitions, Mechanical Data Sheets, Specifications, and Drawings listed above under References;</p> <p>ASME Boiler and Pressure Vessel Code (BPV), Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers;</p> <p>ASME Boiler and Pressure Vessel Code (BPV), Section VIII, Division 2, Alternate Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers;</p> <p>ASME Boiler and Pressure Vessel Code (BPV), Section II, Part D, Materials Properties, American Society of Mechanical Engineers;</p> <p>ASME NQA-1, Quality Assurance Requirements for Nuclear Facilities, American Society of Mechanical Engineers;</p> <p>ASME B31.3 Code, Process Piping, American Society of Mechanical Engineers;</p> <p>AISC N690-1994, Specification for the Design, Fabrication, and Erection of the Steel Safety-Related Structures for Nuclear Facilities, American Institute of Steel Construction;</p> <p>AISC M016-89, Manual of Steel Construction-Allowable Stress Design, 9th Edition, American Institute of Steel Construction;</p> <p>AWS D1.1, Structural Welding Code-Steel, American Welding Society;</p> <p>AWS D1.6, Structural Welding Code-Stainless Steel, American Welding Society;</p> <p>ASCE-7, Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers;</p> <p>UBC 1997, Uniform Building Code, International Conference of Building Officials.</p>	<p>The Mechanical Data Sheets and Engineering Specification for LAW Melters require that LMP Melter 1 and Melter 2 (LMP-MLTR-00001/2) and their appurtenances are to be designed for the design parameters listed therein and to be in compliance with the applicable requirements of various codes and standards listed in the Source of Information column. The requirements of the listed codes and standards are appropriate for these plant items operating with mixed waste solutions over the pressure and temperature ranges specified for them. Additional supplementary requirements are also specified in Material Requisitions and other listed Specifications. Supplementary requirements address vessels' positive material identification, lifting attachment design, acceptable welding procedures for the vessel and appurtenances, welder qualifications and testing records, NDE inspections and records, packaging, handling and storage requirements. The Mechanical Data Sheets and drawings show that the overall dimensions of LMP-MLTR-00001/2 outer shell are 256" W x 367" L x 190" H. Each vessel is supported on 12 wheel assemblies which roll on two carbon steel rails anchored to the concrete floor slab. Each plant item has internal equipment such as a bubbler and thermal couple wells that are supported from the top lid are made of Inconel 690 (Alloy 690) material. The Mechanical Data Sheets list the materials for the shell comprising of base, external walls, lid and lid cover as a mixture of various types such as A36, A500, Hastelloy C276 (Alloy C276), Alloy 690, Alloy 625, and 316L stainless steel. The design standards and codes listed in the Source of Information column are appropriate and adequate for the design, construction, and intended use of the Melters.</p>

	Information Assessed	Source of Information	Assessment
Design (cont'd)	<p>If a non-standard vessel is to be used, the design calculations demonstrate sound engineering principles of construction.</p>	<p>Specifications, Mechanical Data Sheets, Material Requisitions, and Drawings listed above under References;</p> <p>ASME B31.3 Code, Process Piping, American Society of Mechanical Engineers; ASME Boiler and Pressure Vessel Code (BPV), Section II, Part D, Materials Properties, American Society of Mechanical Engineers; UBC 1997, Uniform Building Code, International Conference of Building Officials; ASCE 7, Minimum Design Loads in Building and Other Structures (1998), American Society of Civil Engineers; AISC 1989, Manual of Steel Construction ADS, Ninth Edition, American Institute of Steel Construction; AISC N690-1994, Specification for the Design, Fabrication, and Erection of the Steel Safety-Related Structures for Nuclear Facilities, American Institute of Steel Construction; 24590-LAW-M2C-LMP-00001, Rev. 0, Thermal Analysis of Gas Barrier Lid: Law Melter Lid CFD Analysis; 24590-LAW-M2C-M807-00003, Rev. 0, LAW Melter Lid Refractory Thermal/Structural Finite Element Analysis Using ANSYS; 24590-LAW-M2C-LMP-00002, Rev. 0, LMP-MLTR-00001 & LMP-MLTR-00002, LAW Melter Units, Structural and Seismic Analysis with ANSYS; CCN 159372, ISM Review-Revised LAW Melter Lid Cooling Design; 24590-QL-HC4-W000-00094-05-00001, Rev. 00C, LAW Melter Thermal Profile Analysis; 24590-QL-HC4-W000-00011-03-00647, Rev. 00A, Seismic Analysis of LAW Pour Spout; 24590-QL-HC4-W000-00011-03-00257, Rev. 00B, LAW Pour Spout Bolted and Welded Connection Structural Analysis; 24590-QL-HC4-W000-00011-03-00258, Rev. 00B, LAW Pour Spout Thermal Stress Calculation; 24590-WTP-DC-PS-01-001, Rev. 9, Pipe Stress Design Criteria; 24590-LAW-P61C-LMP-00002, Rev. 0, LAW Melter Process Piping and Discharge Chamber Vent Piping Analysis with ANSYS; 24590-LAW-P61C-LOP-00002, Rev. 0, LAW Main/Standby Offgas Piping; 24590-LAW-M2C-LMP-00012, Rev. 0, LAW Melter Jackbolt Load and Stress Calculation; 24590-LAW-M2C-LMP-00007, Rev. 0, LAW Melter Shield Lid Drop Load Analysis with ANSYS.</p>	<p>The LAW Melter 1 and Melter 2 (LMP-MLTR-00001/2) are unique non-standard vessels. The Specification for LAW Melters states that these plant items are to be designed to the applicable requirements of the combination of various codes and standards listed in the Source of Information column. The Mechanical Data Sheets refer to use Specification for LAW Melters that requires these miscellaneous units and their components to be delivered after design, fabrication, inspection, and testing. Review of the Design Calculation documents of these Melters including its components show that they have been designed as required per above listed codes and standards and other documents listed in the Material Requisitions for these units. The aforementioned statements and the vendor fabrication drawings reviewed demonstrate that sound engineering principles of construction and fabrication have been used for these Melters.</p>

Information Assessed	Source of Information	Assessment
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Design (cont'd)</p> <p>Vessel has adequate strength, after consideration of the corrosion allowance, to withstand the operating pressure, operating temperature, and seismic loads.</p>	<p>Specifications, Mechanical Data Sheets, and Material Requisitions, listed above under References;</p> <p>ASME Boiler & Pressure Vessel Code (BPV), Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers; UBC 1997, Uniform Building Code, International Conference of Building Officials; ASCE 7, Minimum Design Loads in Building and Other Structures (1998), American Society of Civil Engineers; 24590-WTP-DC-ST-04-001, Rev. 4A, Seismic Analysis and Design Criteria; AISC 1989, Manual of Steel Construction ADS, Ninth Edition, American Institute of Steel Construction; 24590-LAW-M2C-M80T-00003, Rev. 0, LAW Melter Lid Refractory Thermal/Structural Finite Element Analysis Using ANSYS; 24590-LAW-M2C-LMP-00002, Rev. 0, LMP-MLTR-00001 & LMP-MLTR-00002, LAW Melter Units, Structural and Seismic Analysis with ANSYS; CCN 159372, ISM Review-Revised LAW Melter Lid Cooling Design; 24590-LAW-M2C-LMP-00001, Rev. 0, Thermal Analysis of Gas Barrier Lid; Law Melter Lid CFD Analysis.</p>	<p>The Specification for LAW Melters identifies their operating pressure and temperature ranges, the materials selected, the melter quality level, and its seismic category. The Mechanical Data Sheets refer to use Specification for LAW Melters that requires these Melters to be delivered after design, fabrication, inspection, and testing. Review of the Design Calculation documents of these melters show that they have been designed as required per above listed documents and specifications listed in the Material Requisitions document and additional Specifications. The Mechanical Data Sheets list LAW Melters' Seismic Category as SC- III. For SC-III plant items, the detailed requirements for seismic load determination (per UBC 1997) are furnished in the Specification for Structural Design Loads for Seismic Category III & IV Equipment and Tanks to provide for the seismic design analysis. The outer Melter enclosure structure is not exposed to any corrosive environment inside or outside, therefore, no corrosion allowance is required for it. However, some other components have been evaluated for corrosion as reported below in the Corrosion Protection and Corrosion Allowance sections. The Engineering Specification for Seismic Qualification Criteria for Pressure Vessels provides pertinent requirements for determination of seismic loads, analysis, and acceptance criteria for the vessels and their supports. Review of the Design Calculation documents demonstrates that all components of the Melter units after consideration of applicable corrosion allowances have adequate strength to withstand the applicable operating pressure, temperature, and seismic loads for the specified design life of the vessels. Furthermore, approval and acceptance of the vendor fabrication drawings by Bechtel National Inc. (BNI) is an added assurance that all applicable requirements stated above and as described in documents (including daughter documents) listed in Material Requisitions and various Specifications for the plant items have been met.</p>

Information Assessed	Source of Information	Assessment
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Foundation</p> <p>Vessel foundation will maintain the load of a full vessel.</p>	<p>Specifications listed above under References; 24590-WTP-DC-ST-04-001, Rev. 4A, Seismic Analysis and Design Criteria; 24590-WTP-DC-ST-01-001, Rev. 14, Structural Design Criteria. 24590-WTP-DB-ENG-01-001, Rev. 6, Basis of Design; 24590-LAW-M2C-LMP-00003, Rev. 1, LAW Melter Seismic Restraint Capacity; 24590-LAW-S0C-S15T-00032, Rev. 0, LAW Melter Rail Seismic Anchor Pin Analysis; 24590-LAW-DDC-S13T-00014, Rev. 0A, Melter Seismic Restraint; 24590-LAW-S0C-S15T-00031, Rev. 1, Seismic Qualification of the LAW Facility Melter Rails; 24590-LAW-M2C-LMP-00002, Rev. 0, LMP-MLTR-00001 & LMP-MLTR-00002, LAW Melter Units, Structural and Seismic Analysis with ANSYS.</p>	<p>The Engineering Specification for LAW Melters provides the structural requirements for the design of Melter shell components inclusive of supports that they will be designed per Seismic Analysis and Design Criteria and Structural Design Criteria documents, ensuring an adequate design for the Melter supports. Review of the Design Calculation documents of the vessels show that the plant items supports have adequate strength to maintain the loads of full Melters. Furthermore, Chapter 14 of the Basis of Design document requires that the foundation underlying the vessel support must be adequate to support the loads from full vessel, which is out of scope of this assessment. The assessment of the adequacy of the underlying foundation is part of a separate integrity assessment report for the Secondary Containment of the vessels.</p>
<p>If in an area subject to flooding, the vessel is anchored.</p>	<p>Drawings, Mechanical Data Sheets listed under References; 24590-LAW-PER-M-02-002, Rev. 7, Dangerous Waste Permit (DWP) Liner Heights in LAW Facility.</p>	<p>Drawings show that the Melters are located in Room L-0112 at floor Elev. 3'-0" of the LAW facility building. The Mechanical Data Sheets and the Liner Heights documents do not list any flooding in Room L-0112; therefore, the flooding consideration does not apply.</p>
<p>Vessel system will withstand the effects of frost heave.</p>	<p>24590-WTP-DC-ST-01-001, Rev. 14, Structural Design Criteria.</p>	<p>The Structural Design Criteria document requires that all structural foundations for outdoor equipment extend a distance below grade that exceeds the 30" depth of the frost line. The vessels are located inside/interior of the building at Elev. 3'-0" level, and the building's lower level floor is at Elev. (-) 21'-0", therefore, the melters' foundations are not subject to frost heave.</p>

	Information Assessed	Source of Information	Assessment
Waste Characteristics	<p>Characteristics of the waste to be stored or treated have been identified (dangerous waste characteristics, specific gravity, vapor pressure, flash point, storage temperature).</p>	<p>System Design Description and Specifications listed above under References;</p> <p>24590-LAW-N1D-LMP-00001, Rev. 2, Corrosion Evaluation of LAW Melter 1 and Melter 2 Gas Barrier and Cooling Panels Inside of Gas Barrier (LMP-MLTR-00001 & LAW-MLTR-00002); 24590-101-TSA-W000-0010-42-02, Rev. 00B, LAW Melter Materials Selection Report; 24590-WTP-PER-PR-03-002, Rev. 4, Control of Toxic Vapors and Emissions from WTP Tank and Miscellaneous Unit Systems; CCN 280210, LAW Miscellaneous Treatment Unit Hydrogen Accumulation Documentation for the DWP Administrative Record.</p>	<p>The System Design Description, Specification for Melters, Corrosion Evaluation, and Melter Materials Selection Report documents identify the process conditions and design parameters of the melters, such as the waste chemical composition, temperatures, and pressures. The Melter Materials Selection Report document evaluates numerous material used for various components of the Melter units. The Corrosion Evaluation document appropriately addresses the pH value and chemical composition of the condensate and selects appropriate material for the melter gas barrier shell and cooling panels. Waste characteristics that are hazardous, such as ignitability, reactivity, toxicity, and hydrogen accumulation are appropriately addressed in the Control of Toxic Vapors and Emissions and CCN 280210 documents.</p>
	<p>Vessel is designed to store or treat the wastes with the characteristics defined above and any treatment reagents.</p>	<p>System Design Description listed above under References;</p> <p>24590-101-TSA-W000-0010-42-02, Rev. 00B, LAW Melter Materials Selection Report.</p>	<p>The Melter Materials Selection Report demonstrates that the Melter units are designed to treat and store the process wastes discussed in the System Design Description. The System Design Description discusses the normal and off-normal operations for the Melter units. The System Design Description document describes that the Melter system is designed to convert the mixture of pretreated LAW and glass-forming chemicals into glass or immobilized low activity waste (ILAW).</p>
	<p>The waste types are compatible with each other.</p>	<p>System Design Description listed above under References.</p>	<p>The System Design Description for the LAW LMP system does not describe any operations where incompatible wastes are mixed in these Melters for processing. These Melters are part of LAW LMP system for producing the LAW waste containers.</p>

Information Assessed	Source of Information	Assessment
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Corrosion Protection</p> <p>Vessel material and protective coatings ensure the vessel structure is adequately protected from the corrosive effects of the waste stream and external environments (expected to not leak or fail for the design life of the system).</p>	<p>Mechanical Data Sheets and Drawings listed above under References;</p> <p>24590-101-TSA-W000-0010-42-02, Rev. 00B, LAW Melter Materials Selection Report; 24590-LAW-NID-LMP-00001, Rev. 2, Corrosion Evaluation of LAW Melter 1 and Melter 2 Gas Barrier and Cooling Panels Inside of Gas Barrier (LMP-MLTR-00001 & LAW-MLTR-00002); 24590-LAW-PER-M-02-002, Rev. 7, Dangerous Waste Permit (DWP) Liner Heights in LAW Facility.</p>	<p>The Melter Materials Selection Report extensively evaluates the selects various corrosion resistant material for the Melter and its components. The five-sided glass pool open top box is lined with refractory to withstand molten glass corrosion. The gas space plenum above the glass pool is also a five-side open bottom box is also lined with refractory to withstand hot corrosive gases, thermal shock, and glass splatter. The Metallic Gas-barrier and Cooling Panels are evaluated in Corrosion Evaluation document which recommends 0.125" corrosion allowance for components within the Gas-barrier and 0.031" for the Cooling Panels inside the Gas-barrier. The other pertinent Melter operation and design information is provided in the Mechanical Data Sheets and Specification for LAW Melters. Each Melter is built up with a mix of Inconel 690, Hastelloy C-276, 316L stainless steel, and A36/A500 carbon steel materials. The Liner Heights document does not indicate any flooding problem in the Melters room area (Room L-0112); therefore, it should remain dry during normal operations which will prevent external corrosion of the Melters for their service life of 5 years. Careful selection of internal and external materials, provide adequate protection from waste stream and external environment.</p>

	Information Assessed	Source of Information	Assessment
Corrosion Allowance	Corrosion allowance is adequate for the intended service life of the vessel.	<p>Mechanical Data Sheets listed above under References;</p> <p>24590-101-TSA-W000-0010-42-02, Rev. 00B, LAW Melter Materials Selection Report; 24590-LAW-N1D-LMP-00001, Rev. 2, Corrosion Evaluation of LAW Melter 1 and Melter 2 Gas Barrier and Cooling Panels Inside of Gas Barrier (LMP-MLTR-00001 & LAW-MLTR-00002).</p>	<p>The Melter Materials Selection Report evaluates numerous components materials of the Melter in detail and it recommends specific type of corrosion resistant material for specific component, compartment or area. The areas included are glass pool, cold cap, plenum, discharge chamber, gas-barrier annulus, and shielding annulus areas. The Corrosion Evaluation, Melter Materials Selection Report, and Mechanical Data Sheets documents list the Cooling Panels are made up of Alloy 276 (UNS N10276) material and the Gas-barrier components are made up of Alloy 690 (UNS N10690). The Corrosion Evaluation report recommends 0.125" corrosion allowance for components within the Gas-barrier and 0.031" for the Cooling Panels inside the Gas-barrier. Based on the review of Corrosion Evaluation and Melter Materials Selection Report, the corrosion allowance for materials selected for various components are adequate for their intended service during the 5-year design life of the Melters.</p>
Pressure Relief	Pressure controls (vents and relief valves) are adequately designed to ensure pressure relief if normal operating pressures in the vessel are exceeded.	Drawings and System Design Description listed above under References.	<p>The LMP Melter 1 and Melter 2 (LMP-MLTR-00001/2) receive blend of LAW concentrate and glass former additives from the LFP system. The drawings show that the Melters are fed from the top. To avoid the pressurization and high level in the Melters, appropriate controls are provided at the control station in addition to exhaust vent and overflow through spout. The System Design Description document also describes that the pressure relief valves are provided for each Melter, which will prevent their over pressurization.</p>



U.S. Department of Energy
Office of River Protection
Mr. Brian T. Vance
Manager
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

CCN: 308752

Oct 4, 2018

Dear Mr. Vance:

**CONTRACT NO. DE-AC27-01RV14136 – SUBMITTAL OF HANFORD FACILITY
RESOURCE CONSERVATION AND RECOVERY ACT PERMIT MODIFICATION
NOTIFICATION FORM 24590-LAW-PCN-ENV-18-004**

Reference: WA7890008967, Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit, Dangerous Waste Portion, for the Treatment, Storage, and Disposal of Dangerous Waste, Part III, Operating Unit Group 10 (Waste Treatment and Immobilization Plant)

BNI submits for transmittal by ORP to the Washington State Department of Ecology (Ecology) Hanford Facility Resource Conservation and Recovery Act Permit Modification Notification Form 24590-LAW-PCN-ENV-18-004 (Attachment). This form is required under the terms of the permit (Reference), requiring approval by Ecology.

Appendix 9.11 of the Reference currently includes independent qualified registered professional engineer (IQRPE) report 24590-CM-HC4-HXYG-00240-02-00014, Rev 00A, *IQRPE Structural Integrity Assessment Report for LAW LMP Miscellaneous Unit Melters (LMP-MLTR-00001/2) (IA-3014936-000)*. This Class 1 prime permit modification submits IQRPE report 24590-CM-HC4-HXYG-00240-02-00014, Rev 00B, *IQRPE Structural Integrity Assessment Report for LAW LMP Miscellaneous Unit Melters (LMP-MLTR-00001/2) (IA-3014936-001)*, to replace the revision currently contained in the Reference.

Comments resulting from informal review of this modification notification form and the associated information have been resolved. Ms. Mary E. Burandt, ORP-ECD, coordinated the review of the attached permit modification. BNI requests that ORP sign and transmit this permit modification to Ecology at the earliest opportunity.

I certify this document was prepared in accordance with requirements in WTP Contract [DE-AC27-01RV14136], Contract Clause Section H.26, Environmental Permits, paragraph (g).

Mr. Brian T. Vance
Page 2 of 3

CCN: 308752

Contact Donna Yasek at (509) 371-2278 or Roger Landon at (509) 371-2154 for further information related to this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "B. P. Reilly", written over a white background.

B. P. Reilly
Project Director

BDP/dec

Attachment: 24590-LAW-PCN-ENV-18-004, *Hanford Facility RCRA Permit Modification Notification Form, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant*

cc:

Binns, C. K.	BNI	
Burandt, M. E.	ORP-ECD	H6-60
Cone, R. E.	ORP	
Dawson, R. L.	ORP	
Dobson, A. J.	BNI	
Dunkirk, J. H.	BNI	
Fletcher, T. W.	ORP-WTP	
Fritz, L. L.	BNI	
Harp, B. J.	ORP	
Irwin, K. D.	BNI	
Jackson, P. W.	BNI	
Kemp, C. J.	ORP-ECD	H6-60
Landon, R. J.	BNI	
Mair, K. A.	ORP	
Monson, S. K.	BNI	
Neath, G. M.	ORP-ECD	H6-60
Peck, B. D.	BNI	
Ponte, B. D.	BNI	
Presti, F.	BNI	
Reagan, T. K.	BNI	
Reilly, B. P. w/a (hard copy)	BNI	MS14-3C
Robertson, D. C.	BNI	
Yasek, D. M.	BNI	
DOE Correspondence Control	ORP	
PADC w/a	BNI	

Attachment

24590-LAW-PCN-ENV-18-004

**Hanford Facility RCRA Permit Modification Notification Form, Part III, Operating Unit
10, Waste Treatment and Immobilization Plant**

21 Pages

(including coversheet)

Quarter Ending Dec. 31, 2018

24590-LAW-PCN-ENV-18-004

Hanford Facility RCRA Permit Modification Notification Form
Part III, Operating Unit 10
Waste Treatment and Immobilization Plant

Index

Page 2 of 2: Hanford Facility RCRA Permit, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant

This IQRPE Structural Integrity Assessment Report 24590-CM-HC4-HXYG-00240-02-00014, Rev. 00B (IA-3014936-001), is a revision of the previous report 24590-CM-HC4-HXYG-00240-02-00014, Rev. 00A (IA-3014936-000).

Submitted by Co-Operator:

Reviewed by ORP Program Office:

Roger J. Landon 9/27/18
Roger S. Landon Date

Thomas W. Fletcher Date

Quarter Ending Dec. 31, 2018

24590-LAW-PCN-ENV-18-004

Hanford Facility RCRA Permit Modification Notification Form					
Unit: Waste Treatment and Immobilization Plant	Permit Part: Part III, Operating Unit 10				
Description of Modification:					
<p>This Class 11 modification requests Ecology approval and incorporation into the permit the below referenced structural integrity assessment report. The report has been updated by the Independent Qualified Registered Professional Engineer (IQRPE).</p>					
Appendix 9.11					
Replace	24590-CM-HC4-HXYG-00240-02-00014, Rev. 00A IQRPE Structural Integrity Assessment Report for LAW LMP Miscellaneous Unit Melters (LMP-MLTR-00001/2) (IA-3014936-000)	With	24590-CM-HC4-HXYG-00240-02-00014, Rev. 00B IQRPE Structural Integrity Assessment Report for LAW LMP Miscellaneous Unit Melters (LMP-MLTR-00001/2) (IA-3014936-001)		
<p>This Integrity Assessment includes the evaluation of two LAW Melters (LMP-MLTR-00001/2), including their appurtenances located at Elevation 3'-0" in Room L-0112 of the LAW Vitrification Building as shown on plant General Arrangement Plan drawing 24590-LAW-P1-P01T-00002. In this report, the Melters are also interchangeably referred to be as miscellaneous units, vessels, or plant items.</p> <p>For each item of "Information Assessed" (i.e., Criteria) on the following pages, the documents listed under "Source of Information" were reviewed and found to furnish adequate design requirements and controls to ensure that the design fully satisfies the requirements of Washington Administrative Code (WAC), Chapter 173-303 WAC, Dangerous Waste Regulations, Section WAC-173-303-640 (3) (a) through (g) applicable elements of the Tank Systems.</p> <p>This PCN updates information in Appendix 9.11 to reflect current design. This DWP component may be re-evaluated to confirm design adequacy. If the re-evaluation results in future design changes, the changes will be reviewed by Ecology in subsequent permit modifications.</p> <p>In accordance with Permit Condition III.10.C.2.e, this permit modification includes an updated IQRPE Structural Integrity Assessment Report for inclusion in Appendix 9.11.</p>					
WAC 173-303-830 Modification Class:		Class 1	Class 11	Class 2	Class 3
Please mark the Modification Class:			X		
<p>Enter relevant WAC 173-303-830, Appendix I Modification citation number:</p> <p>Enter wording of WAC 173-303-830, Appendix I Modification citation:</p> <p>In accordance with WAC 173-303-830(4)(d)(i), this modification notification is requested to be reviewed and approved as a Class 11 modification. WAC 173-303-830(4)(d)(ii)(A) states, "Class 1 modifications apply to minor changes that keep the permit current with routine changes to the facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the director may require prior approval."</p>					
Modification Approved/Concur:	<input type="checkbox"/> Yes	<input type="checkbox"/> Denied (state reason below)		Reviewed by Ecology:	
Reason for denial:				S. Dahl	Date

orano

24590-CM-HC4-HXYG-00240-02-00014
Rev. 00B



FS-18-0174

ISSUED BY
RPP-WTP PDC

July 16, 2018

Ms. Andrea Dorsey
Subcontractor Administrator
Bechtel National, Inc.
2435 Stevens Center Place
Richland, WA 99354

Orano Federal
Services LLC

9530 Bedford St
Pasco, WA 99301

Tel: +1 509 862 4747

Dear Ms. Dorsey,

**BECHTEL NATIONAL, INC. CONTRACT NO. 24590-CM-HC4-HXYG-00240
IQRPE Structural Integrity Assessment Report for LAW LMP
Miscellaneous Unit Melters (LMP-MLTR-00001/2) (IA-3014936-001)**

The integrity assessment of the subject melters has been completed per the contract requirements and is enclosed for your use. The assessment found that the design is sufficient to ensure that the melters are adequately designed and has sufficient structural strength, compatibility with the waste(s) to be processed/stored/treated, and corrosion protection to ensure that it will not collapse, rupture, or fail.

If you have any questions, please contact Tarlok Hundal at (509) 371-1975, or via email at tarlok.hundal@orano.group.

Sincerely,

Tess Klatt
Contract Administrator
Orano Federal Services LLC
Richland Office

lap
cc: J.S. Evans, w/Enclosure (1)

**IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT
FOR
LAW LMP MISCELLANEOUS UNIT MELTERS (LMP-MLTR-00001/2/)**

Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

**IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT
FOR
LAW LMP MISCELLANEOUS UNIT MELTERS (LMP-MLTR-00001/2)**

"I, Tarlok Singh Hundal, have reviewed and certified a portion of the design of a new tank system component located at the Hanford Waste Treatment Plant, owned/operated by Department of Energy, Office of River Protection, Richland, Washington. My duties were independent review of the current design for the LAW LMP Miscellaneous Unit Melters as required by the Washington Administrative Code, *Dangerous Waste Regulations*, Section WAC-173-303-640(3) (a) through (g) applicable components."

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

The documentation reviewed indicates that the design fully satisfies the requirements of the WAC.

The attached review is fifteen (15) pages numbered one (1) through fifteen (15).



T. Hundal
Signature

7/16/18
Date

Scope	Scope of this Integrity Assessment	<p>This Integrity Assessment includes the evaluation of two LAW Melters (LMP-MLTR-00001/2), including their appurtenances located at Elevation 3'-0" in Room L-0112 of the LAW Vitrification Building as shown on plant general arrangement plan drawing 24590-LAW-P1-P01T-00002. In this report, the Melters are also interchangeably referred to be as miscellaneous units, vessels, or plant items.</p> <p>Note: This report (IA-3014936-001) is a revision of the previous report (IA-3014936-000; BNI # 24590-CM-HC4-HXYG-00240-02-00014, Rev. 00A).</p>
Summary of Assessment	<p>For each item of "Information Assessed" (i.e., Criteria) on the following pages, the documents listed under "Source of Information" were reviewed and found to furnish adequate design requirements and controls to ensure that the design fully satisfies the requirements of Washington Administrative Code (WAC), Chapter 173-303 WAC, <i>Dangerous Waste Regulations</i>, Section WAC-173-303-640 (3) (a) through (g) applicable elements of the <i>Tank Systems</i>.</p>	

References	Material Requisitions and Specifications	<p><u>Material Requisitions (MRs):</u></p> <p>24590-QL-MRA-MEEM-00001, Rev. 10, Melter, Fabrication and Assembly, LAW (ML007), including SDDR No. 24590-WTP-ML-SDDR-10-00091; 24590-CM-MRA-MEEM-00001, Rev. 5, Melter, Cooling Panels (ML008).</p> <p><u>Specifications Listed in MRs:</u> The following Specifications with their respective revision and change documents are listed in the above listed MRs:</p> <p>24590-WTP-3PS-G000-T0002, Engineering Specification for Positive Material Identification (PMI); 24590-WTP-3PS-G000-T0003, Engineering Specification for Packaging, Handling, and Storage Requirements; 24590-WTP-3PS-G000-T0006, Engineering Specification for Preserving and Preparing Melter and Melter Components for Shipping, Handling, and Storage; 24590-WTP-3PS-G000-T0019, Engineering Specification for Acquisition of Commercial Items and Services for use in Safety Application at WTP; 24590-QL-HC4-W000-00011-03-00505, Cooling Panel Procurement Specification for HLW and LAW Melters.</p> <p><u>Specifications:</u></p> <p>24590-LAW-3PS-AE00-T0001, Rev. 6, Engineering Specification for Low Activity Waste Melters, including 24590-LAW-3PN-AE00-00008; 24590-WTP-3PS-MQR0-T0004, Rev. 1, Engineering Specification for LAW Facility Melter Rails, including 24590-WTP-3PN-MQR0-00033, 24590-WTP-FC-M-08-0114, 24590-WTP-SDDR-MH-07-00014, and 24590-WTP-SDDR-MH-08-00011; 24590-LAW-3PS-M000-T0001, Rev. 1, Engineering Specification for LAW Pour Spout and Seal Head, including 24590-WTP-SDDR-M-05-00601; 24590-WTP-3PS-FB01-T0001, Rev. 6, Engineering Specification for Structural Design Loads for Seismic Category III & IV Equipment and Tanks, including 24590-WTP-3PN-FB01-00012, 24590-WTP-SDDR-E-15-00002, -00004, -00011, and 24590-WTP-SDDR-J-15-00003, and 24590-WTP-SDDR-J-17-00035.</p>
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References (cont'd)	Plant Drawings	<p><u>Plant Drawings including Drawing Change Notices (DCNs) listed in the above listed Material Requisitions</u></p> <p>24590-LAW-P1-P01T-00002, Rev. 7, LAW Vittrification Building General Arrangement Plan at El. 3'-0"; 24590-LAW-M6-LMP-00001001, Rev. 0, P & ID-LAW Melter Process System Melter 1 Agitation Zone 1 & Zone 2 LMP-RK-0040A/B; 24590-LAW-M6-LMP-00031001, Rev. 0, P & ID-LAW Melter Process System Melter 2 Agitation Zone 1 & Zone 2; 24590-LAW-M6-LMP-00002001, Rev. 1, P & ID-LAW Melter Process System Melter 1 Agitation Zone 3 and Level Detection LMP-RK-00040B and PPJ-RK-00001; 24590-LAW-M6-LMP-00002002, Rev. 0, P & ID-LAW Melter Process System Melter 1 Agitation Zone 3 and Level Detection LMP-RK-00040C; 24590-LAW-M6-LMP-00032001, Rev. 1, P & ID-LAW Melter Process System Melter 2 Agitation Zone 3 & Level Detection LMP- RK-00041B and PPJ-RK-00002; 24590-LAW-M6-LMP-00032002, Rev. 0, P & ID-LAW Melter Process System Melter 2 Agitation Zone 3 & Level Detection LMP- RK-00041C; 24590-LAW-M5-V17T-00004, Rev. 4, Process Flow Diagram LAW Vittrification Melter 1 (System LMP & LOP); 24590-LAW-M5-V17T-00005, Rev. 4, Process Flow Diagram LAW Vittrification Melter 2 (System LMP & LOP); 24590-LAW-DB-S13T-00158, Rev. 3, LAW Vittrification Building Main Building Melter Rail Anchorage Enlarged Plan; 24590-LAW-DB-S13T-00014, Rev. 7, LAW Vittrification Building Main Building Partial Conc. Forming Plan Zone 1 @ El (+) 3'-0"; 24590-WTP-DD-S13T-00004, Rev. 5, Civil/Structural Standards Standard Embedded Anchor Bolt Details. 24590-LAW-DB-S13T-00018, Rev. 5, LAW Vittrification Building Main Building Partial Conc. Forming Plan Zone 5 @ El (+) 3'-0"; 24590-LAW-M0-LMH-00002001, Rev. 3, Vittrification System LMH Design Proposal Drawing LSM Rail Assembly; 24590-LAW-M0-LMH-00002002, Rev. 3, Vittrification System LMH Design Proposal Drawing LSM Rail Assembly Details; 24590-LAW-M0-LMH-00002003, Rev. 2, Vittrification System LMH Design Proposal Drawing LSM Rail Assembly Details; 24590-LAW-MF-LMP-00001, Rev. 0, LAW Melter Assembly-LAW-MLTR-00001/00002 Isometric View; 24590-LAW-MF-LMP-00002, Rev. 0, LAW Melter Assembly-LAW-MLTR-00001/00002 Plan View; 24590-LAW-MF-LMP-00003, Rev. 0, LAW Melter Assembly-LAW-MLTR-00001/00002 East, West and North Elevation; 24590-LAW-MF-LMP-00004, Rev. 0, LAW Melter Assembly-LAW-MLTR-00001/00002 Section A-A.</p>
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References (cont'd)	Vendor Fabrication Drawings	<p><u>Vendor Fabrication Drawings (* Bechtel Status Code 1 Drawings):</u></p> <p>Background of the Melter Design Evolution: Initial issue of Melter Calculation 24590-LAW-M2C-LMP-00002, Rev. A, identified numerous modification in its Attachment L, which depicted the red lined changes per various listed design change documents affecting the associated drawings. Additional changes were recommended and incorporated as listed in Vendor Design Change Notice (VDCN) # 24590-LAW-VDCN-ML-15-00016. Subsequent revision, Rev. B of the calculation incorporated further modifications as listed in its Attachment H as shown in 24590-LAW-VDCN-ML-16-00008. Rev. 0 essentially re-evaluated and referenced the new drawings where changes were incorporated and pulled in some methodology from other calculations it replaced. Rev. 0 also changed the lid loss of cooling thermal profile and performed additional base beam analysis in order to roll in and supersede two calculations that were performed after Rev. B. Additionally, substantial percentage of original drawing set was re-issued under new numbers to incorporate the changes. All of these things are summarized as "Incorporated all Outstanding Design Modifications" in the "Reason for Revision" column of Rev. 0 of the Melter Calculation (24590-LAW-M2C-LMP-00002).</p> <p>The drawings listed below as LAW-MX-LMP are Bechtel generated drawings from the Vendor Submitted Bechtel Status Code 1 Drawings. The numbers in the parenthesis are corresponding vendor internal drawing numbers.</p> <p>24590-LAW-MX-LMP-00051001, Rev. 0, South Wall Module Assembly (WTP-M-11605-1); 24590-LAW-MX-LMP-00051003, Rev. 0, South Wall Module Assembly (WTP-M-11605-2); 24590-LAW-MX-LMP-00051004, Rev. 0, South Wall Module Assembly (WTP-M-11605-3); 24590-LAW-MX-LMP-00051005, Rev. 0, South Wall Module Assembly (WTP-M-11605-4); 24590-LAW-MX-LMP-00051006, Rev. 0, South Wall Module Assembly (WTP-M-11605-5); 24590-LAW-MX-LMP-00051007, Rev. 0, South Wall Module Assembly (WTP-M-11605-6); 24590-LAW-MX-LMP-00051010, Rev. 0, South Wall Module Assembly (WTP-M-11605-9); 24590-LAW-MX-LMP-00051011, Rev. 0, South Wall Module Assembly (WTP-M-11605-10); 24590-LAW-MX-LMP-00051012, Rev. 0, South Wall Module Assembly (WTP-M-11605-11); 24590-LAW-MX-LMP-00211005, Rev. 0, South Wall Module Details (WTP-M-11601-5); 24590-LAW-MX-LMP-00211006, Rev. 0, South Wall Module Details (WTP-M-11601-6); 24590-LAW-MX-LMP-00211007, Rev. 0, South Wall Module Details (WTP-M-11601-7); 24590-LAW-MX-LMP-00211008, Rev. 0, South Wall Module Details (WTP-M-11601-8); 24590-LAW-MX-LMP-00031001, Rev. 0, North Wall Module Assembly (WTP-M-11610-1); 24590-LAW-MX-LMP-00031002, Rev. 0, North Wall Module Assembly (WTP-M-11610-2); 24590-LAW-MX-LMP-00031003, Rev. 0, North Wall Module Assembly (WTP-M-11610-3); 24590-LAW-MX-LMP-00031004, Rev. 0, North Wall Module Assembly (WTP-M-11610-4); 24590-LAW-MX-LMP-00031005, Rev. 0, North Wall Module Assembly (WTP-M-11610-5); 24590-LAW-MX-LMP-00031006, Rev. 0, North Wall Module Assembly (WTP-M-11610-6); 24590-LAW-MX-LMP-00031007, Rev. 0, North Wall Module Assembly (WTP-M-11610-7); 24590-LAW-MX-LMP-00032001, Rev. 0, North Wall Module Service Routing (WTP-M-11642-1); 24590-LAW-MX-LMP-00032003, Rev. 0, North Wall Module Service Routing (WTP-M-11642-3);</p>
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References (cont'd)	Vendor Fabrication Drawings	<p><u>Vendor Fabrication Drawings (cont'd):</u> 24590-LAW-MX-LMP-00036001, Rev. 0, North Wall Module Assembly (WTP-M-11612-1); 24590-LAW-MX-LMP-00036002, Rev. 0, North Wall Module Assembly (WTP-M-11612-2); 24590-LAW-MX-LMP-00036003, Rev. 0, North Wall Module Assembly (WTP-M-11612-3); 24590-LAW-MX-LMP-00037001, Rev. 0, North Wall Module Details (WTP-M-11613-1); 24590-LAW-MX-LMP-00037002, Rev. 0, North Wall Module Details (WTP-M-11613-2); 24590-LAW-MX-LMP-00037004, Rev. 0, North Wall Module Details (WTP-M-11613-4); 24590-LAW-MX-LMP-00037006, Rev. 0, North Wall Module Details (WTP-M-11613-6); 24590-LAW-MX-LMP-00215003, Rev. 0, South Wall Module Gas Barrier Assembly (WTP-M-11606-2); 24590-LAW-MX-LMP-00215011, Rev. 0, South Wall Module Gas Barrier Assembly (WTP-M-11606-12); 24590-LAW-MX-LMP-00080001, Rev. 0, South Wall Module Shielding Assembly (WTP-M-11607-1); 24590-LAW-MX-LMP-00080002, Rev. 0, South Wall Module Shielding Assembly (WTP-M-11607-2); 24590-LAW-MX-LMP-00033001, Rev. 0, North Wall Module Gas Barrier Assembly (WTP-M-11611-1); 24590-LAW-MX-LMP-00033002, Rev. 0, North Wall Module Gas Barrier Assembly (WTP-M-11611-2); 24590-LAW-MX-LMP-00033003, Rev. 0, North Wall Module Gas Barrier Assembly (WTP-M-11611-3); 24590-LAW-MX-LMP-00029001, Rev. 0, West Wall Module Assembly (WTP-M-11615-1); 24590-LAW-MX-LMP-00029002, Rev. 0, West Wall Module Assembly (WTP-M-11615-2); 24590-LAW-MX-LMP-00029003, Rev. 0, West Wall Module Assembly (WTP-M-11615-3); 24590-LAW-MX-LMP-00029004, Rev. 0, West Wall Module Assembly (WTP-M-11615-4); 24590-LAW-MX-LMP-00029005, Rev. 0, West Wall Module Assembly (WTP-M-11615-5-7); 24590-LAW-MX-LMP-00029006, Rev. 0, West Wall Module Assembly (WTP-M-11615-8); 24590-LAW-MX-LMP-00034001, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-1); 24590-LAW-MX-LMP-00034002, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-2); 24590-LAW-MX-LMP-00034003, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-3); 24590-LAW-MX-LMP-00034004, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-4); 24590-LAW-MX-LMP-00034005, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-5,6); 24590-LAW-MX-LMP-00034006, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-7-10); 24590-LAW-MX-LMP-00034007, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11616-7-11,12); 24590-LAW-MX-LMP-00035001, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11617-1); 24590-LAW-MX-LMP-00035002, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11617-2); 24590-LAW-MX-LMP-00035003, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11617-3); 24590-LAW-MX-LMP-00035005, Rev. 0, West Wall Module Gas Barrier Assembly (WTP-M-11617-5,6);</p>
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References (cont'd)	Vendor Fabrication Drawings	<p><u>Vendor Fabrication Drawings (cont'd):</u> 24590-LAW-MX-LMP-00049001, Rev. 0, East Wall Module Assembly (WTP-M-11620-1); 24590-LAW-MX-LMP-00049002, Rev. 0, East Wall Module Assembly (WTP-M-11620-2); 24590-LAW-MX-LMP-00049003, Rev. 0, East Wall Module Assembly (WTP-M-11620-3); 24590-LAW-MX-LMP-00049004, Rev. 0, East Wall Module Assembly (WTP-M-11620-4); 24590-LAW-MX-LMP-00049005, Rev. 0, East Wall Module Assembly (WTP-M-11620-5,6,7); 24590-LAW-MX-LMP-00050001, Rev. 0, East Wall Module Service Routing (WTP-M-11644-1); 24590-LAW-MX-LMP-00050003, Rev. 0, East Wall Module Service Routing (WTP-M-11644-3); 24590-LAW-MX-LMP-00053001, Rev. 0, East Wall Module Gas Barrier Assembly (WTP-M-11621-1); 24590-LAW-MX-LMP-00053002, Rev. 0, East Wall Module Gas Barrier Assembly (WTP-M-11621-2); 24590-LAW-MX-LMP-00053003, Rev. 0, East Wall Module Gas Barrier Assembly (WTP-M-11621-3); 24590-LAW-MX-LMP-00053004, Rev. 0, East Wall Module Gas Barrier Assembly (WTP-M-11621-4); 24590-LAW-MX-LMP-00218005, Rev. 0, West and East Wall Module Details (WTP-M-11618-5); 24590-LAW-MX-LMP-00218009, Rev. 0, West and East Wall Module Details (WTP-M-11618-9); 24590-LAW-MX-LMP-00218014, Rev. 0, West and East Wall Module Details (WTP-M-11618-14); 24590-LAW-MX-LMP-00218015, Rev. 0, West and East Wall Module Details (WTP-M-11618-15); 24590-LAW-MX-LMP-00018001, Rev. 0, Base Assembly (WTP-M-11700-1); 24590-LAW-MX-LMP-00018002, Rev. 0, Base Assembly (WTP-M-11700-2); 24590-LAW-MX-LMP-00018003, Rev. 0, Base Assembly (WTP-M-11700-3); 24590-LAW-MX-LMP-00018004, Rev. 0, Base Assembly (WTP-M-11700-4); 24590-LAW-MX-LMP-00018005, Rev. 0, Base Assembly (WTP-M-11700-5); 24590-LAW-MX-LMP-00018006, Rev. 0, Base Assembly (WTP-M-11700-6); 24590-LAW-MX-LMP-00018007, Rev. 0, Base Assembly (WTP-M-11700-7); 24590-LAW-MX-LMP-00019001, Rev. 0, Base Frame Assembly (WTP-M-11701-1); 24590-LAW-MX-LMP-00019002, Rev. 0, Base Frame Assembly (WTP-M-11701-2); 24590-LAW-MX-LMP-00019003, Rev. 0, Base Frame Assembly (WTP-M-11701-3); 24590-LAW-MX-LMP-00019004, Rev. 0, Base Frame Assembly (WTP-M-11701-4); 24590-LAW-MX-LMP-00019005, Rev. 0, Base Frame Assembly (WTP-M-11701-5); 24590-LAW-MX-LMP-00019014, Rev. 0, Base Frame Assembly (WTP-M-11701-14); 24590-LAW-MX-LMP-00019015, Rev. 0, Base Frame Assembly (WTP-M-11701-15); 24590-LAW-MX-LMP-00240001, Rev. 0, Base Frame Details (WTP-M-11702-1); 24590-LAW-MX-LMP-00240002, Rev. 0, Base Frame Details (WTP-M-11702-2,3); 24590-LAW-MX-LMP-00248, Rev. 0, Base Seismic Clamp Frame (WTP-M-11716-1); 24590-LAW-MX-LMP-00063, Rev. 1, Base Seismic Clamp Assembly (WTP-M-11715-1); 24590-LAW-MX-LMP-00064, Rev. 1, Base Seismic Clamp Details (WTP-M-11717-1); 24590-LAW-MX-LMP-00159, Rev. 0, Seismic Pin Support Frame (WTP-M-11718-1);</p>
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References (cont'd)	Vendor Fabrication Drawings	<p><u>Vendor Fabrication Drawings (cont'd):</u> 24590-LAW-MX-LMP-00264001, Rev. 0, Rail Guide Details (WTP-M-11719-1); 24590-LAW-MX-LMP-00264002, Rev. 0, Rail Guide Details (WTP-M-11719-2); 24590-LAW-MX-LMP-00244, Rev. 0, Base Roller Assembly (WTP-M-11706); 24590-LAW-MX-LMP-00245, Rev. 0, Roller Frame Details (WTP-M-11707-1); 24590-LAW-MX-LMP-00266, Rev. 0, Pulley Assembly (WTP-M-11720); 24590-LAW-MX-LMP-00078001, Rev. 0, Base Gas Barrier Plate Detail (WTP-M-11708-1); 24590-LAW-MX-LMP-00078002, Rev. 0, Base Gas Barrier Plate Detail (WTP-M-11708-2); 24590-LAW-MX-LMP-00026001, Rev. 0, Base Center Assembly (WTP-M-11709-1-2); 24590-LAW-MX-LMP-00026002, Rev. 0, Base Center Assembly (WTP-M-11709-1-2); 24590-LAW-MX-LMP-00026003, Rev. 0, Base Center Assembly (WTP-M-11709-3); 24590-LAW-MX-LMP-00026004, Rev. 0, Base Center Assembly (WTP-M-11709-4); 24590-LAW-MX-LMP-00026009, Rev. 0, Base Center Assembly (WTP-M-11709-4); 24590-LAW-MX-LMP-00026010, Rev. 0, Base Center Assembly (WTP-M-11709-4); 24590-LAW-MX-LMP-00026011, Rev. 0, Base Center Assembly (WTP-M-11709-4); 24590-LAW-MX-LMP-00026012, Rev. 0, Base Center Assembly (WTP-M-11709-4); 24590-LAW-MX-LMP-00062001, Rev. 0, Melter Assembly Base and Wall Modules (WTP-M-11990-1); 24590-LAW-MX-LMP-00062002, Rev. 0, Melter Assembly Base and Wall Modules (WTP-M-11990-2); 24590-LAW-MX-LMP-00062003, Rev. 0, Melter Assembly Base and Wall Modules (WTP-M-11990-3); 24590-LAW-MX-LMP-00062008, Rev. 0, Melter Assembly Base and Wall Modules (WTP-M-11990-8); 24590-LAW-MX-LMP-00062010, Rev. 0, Melter Assembly Base and Wall Modules (WTP-M-11990-10); 24590-LAW-MX-LMP-00062011, Rev. 0, Melter Assembly Base and Wall Modules (WTP-M-11990-6,8); 24590-101-TSA-W000-0010-409-651, Rev. 00B, Refractory Assembly (WTP-M-11050-1); 24590-101-TSA-W000-0010-409-652, Rev. 00B, Refractory Assembly (WTP-M-11050-2); 24590-LAW-MX-LMP-00047001, Rev. 2, LAW Melter Jackbolt Assembly (WTP-M-11625); 24590-LAW-MX-LMP-00047002, Rev. 2, LAW Melter Jackbolt Assembly (WTP-M-11625); 24590-LAW-MX-LMP-00047003, Rev. 1, LAW Melter Jackbolt Assembly (WTP-M-11625); 24590-LAW-MX-LMP-00056001, Rev. 0, Melter Assembly Glass Pool (WTP-M-11980-1); 24590-LAW-MX-LMP-00056014, Rev. 0, Melter Assembly Glass Pool (WTP-M-11980-13); 24590-LAW-MX-LMP-00025001, Rev. 0, Melter Assembly Shielded Lid (WTP-M-11960-1); 24590-LAW-MX-LMP-00025003, Rev. 0, Melter Assembly Shielded Lid (WTP-M-11960-2); 24590-LAW-MX-LMP-00025004, Rev. 0, Melter Assembly Shielded Lid (WTP-M-11960-3); 24590-LAW-MX-LMP-00025005, Rev. 0, Melter Assembly Shielded Lid (WTP-M-11960-4); 24590-LAW-MX-LMP-00025010, Rev. 0, Melter Assembly Shielded Lid (WTP-M-11960-9);</p>
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References (cont'd)	Vendor Fabrication Drawings, Mechanical Data Sheets, and System Design Description	<p><u>Vendor Fabrication Drawings (cont'd):</u> 24590-LAW-MX-LMP-00011001, Rev. 1, Shielded Lid Support Structure Assembly (WTP-M-11751-1); 24590-LAW-MX-LMP-00011003, Rev. 0, Shielded Lid Support Structure Assembly (WTP-M-11751-2); 24590-LAW-MX-LMP-00011004, Rev. 1, Shielded Lid Support Structure Assembly (WTP-M-11751-3); 24590-LAW-MX-LMP-00011007, Rev. 1, Shielded Lid Support Structure Assembly (WTP-M-11751-6); 24590-LAW-MX-LMP-00011017, Rev. 0, Shielded Lid Support Structure Assembly (WTP-M-11751-16); 24590-LAW-MX-LMP-00009001, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009002, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009003, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009004, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009005, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009006, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009007, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009008, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00009009, Rev. 0, LAW Melter Shield Lid Assembly (WTP-M-11750); 24590-LAW-MX-LMP-00010001, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010002, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010003, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010004, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010005, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010006, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010007, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010008, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010009, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010010, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010011, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806); 24590-LAW-MX-LMP-00010012, Rev. 0, LAW Melter Gas Barrier Lid Frame Assembly (WTP-M-11806).</p> <p>* <u>Bechtel Status Code 1 Drawing</u> is an "as fabricated vendor drawing" approved/accepted by Bechtel.</p> <p><u>Mechanical Data Sheets:</u> 24590-LAW-MOD-LMP-00001, Rev. 4, LAW Melter 1 (LMP-MLTR-00001); 24590-LAW-MOD-LMP-00002, Rev. 4, LAW Melter 2 (LMP-MLTR-00002).</p> <p><u>System Design Description:</u> 24590-LAW-3ZD-LMP-00001, Rev. 1, Low-Activity Waste Melter Process System Design Description.</p>
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Information Assessed	Source of Information	Assessment
<p>Design</p> <p>Vessel design standards are appropriate and adequate for the vessel's intended use.</p>	<p>Material Requisitions, Mechanical Data Sheets, Specifications, and Drawings listed above under References;</p> <p>ASME Boiler and Pressure Vessel Code (BPV), Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers;</p> <p>ASME Boiler and Pressure Vessel Code (BPV), Section VIII, Division 2, Alternate Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers;</p> <p>ASME Boiler and Pressure Vessel Code (BPV), Section II, Part D, Materials Properties, American Society of Mechanical Engineers;</p> <p>ASME NQA-1, Quality Assurance Requirements for Nuclear Facilities, American Society of Mechanical Engineers;</p> <p>ASME B31.3 Code, Process Piping, American Society of Mechanical Engineers;</p> <p>AISC N690-1994, Specification for the Design, Fabrication, and Erection of the Steel Safety-Related Structures for Nuclear Facilities, American Institute of Steel Construction;</p> <p>AISC M016-89, Manual of Steel Construction-Allowable Stress Design, 9th Edition, American Institute of Steel Construction;</p> <p>AWS D1.1, Structural Welding Code-Steel, American Welding Society;</p> <p>AWS D1.6, Structural Welding Code-Stainless Steel, American Welding Society;</p> <p>ASCE-7, Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers;</p> <p>UBC 1997, Uniform Building Code, International Conference of Building Officials.</p>	<p>The Mechanical Data Sheets and Engineering Specification for LAW Melters require that LMP Melter 1 and Melter 2 (LMP-MLTR-00001/2) and their appurtenances are to be designed for the design parameters listed therein and to be in compliance with the applicable requirements of various codes and standards listed in the Source of Information column. The requirements of the listed codes and standards are appropriate for these plant items operating with mixed waste solutions over the pressure and temperature ranges specified for them. Additional supplementary requirements are also specified in Material Requisitions and other listed Specifications. Supplementary requirements address vessels' positive material identification, lifting attachment design, acceptable welding procedures for the vessel and appurtenances, welder qualifications and testing records, NDE inspections and records, packaging, handling and storage requirements. The Mechanical Data Sheets and drawings show that the overall dimensions of LMP-MLTR-00001/2 outer shell are 256" W x 367" L x 190" H. Each vessel is supported on 12 wheel assemblies which roll on two carbon steel rails anchored to the concrete floor slab. Each plant item has internal equipment such as a bubbler and thermal couple wells that are supported from the top lid are made of Inconel 690 (Alloy 690) material. The Mechanical Data Sheets list the materials for the shell comprising of base, external walls, lid and lid cover as a mixture of various types such as A36, A500, Hastelloy C276 (Alloy C276), Alloy 690, Alloy 625, and 316L stainless steel. The design standards and codes listed in the Source of Information column are appropriate and adequate for the design, construction, and intended use of the Melters.</p>

	Information Assessed	Source of Information	Assessment
<p>Design (cont'd)</p>	<p>If a non-standard vessel is to be used, the design calculations demonstrate sound engineering principles of construction.</p>	<p>Specifications, Mechanical Data Sheets, Material Requisitions, and Drawings listed above under References;</p> <p>ASME B31.3 Code, Process Piping, American Society of Mechanical Engineers; ASME Boiler and Pressure Vessel Code (BPV), Section II, Part D, Materials Properties, American Society of Mechanical Engineers; UBC 1997, Uniform Building Code, International Conference of Building Officials; ASCE 7, Minimum Design Loads in Building and Other Structures (1998), American Society of Civil Engineers; AISC 1989, Manual of Steel Construction ADS, Ninth Edition, American Institute of Steel Construction; AISC N690-1994, Specification for the Design, Fabrication, and Erection of the Steel Safety-Related Structures for Nuclear Facilities, American Institute of Steel Construction; 24590-LAW-M2C-LMP-00001, Rev. 0, Thermal Analysis of Gas Barrier Lid: Law Melter Lid CFD Analysis; 24590-LAW-M2C-M80T-00003, Rev. 0, LAW Melter Lid Refractory Thermal/Structural Finite Element Analysis Using ANSYS; 24590-LAW-M2C-LMP-00002, Rev. 0, LMP-MLTR-00001 & LMP-MLTR-00002, LAW Melter Units, Structural and Seismic Analysis with ANSYS; CCN 159372, ISM Review-Revised LAW Melter Lid Cooling Design; 24590-QL-HC4-W000-00094-05-00001, Rev. 00C, LAW Melter Thermal Profile Analysis; 24590-QL-HC4-W000-00011-03-00647, Rev. 00A, Seismic Analysis of LAW Pour Spout; 24590-QL-HC4-W000-00011-03-00257, Rev. 00B, LAW Pour Spout Bolted and Welded Connection Structural Analysis; 24590-QL-HC4-W000-00011-03-00258, Rev. 00B, LAW Pour Spout Thermal Stress Calculation; 24590-WTP-DC-PS-01-001, Rev. 9, Pipe Stress Design Criteria; 24590-LAW-P61C-LMP-00002, Rev. 0, LAW Melter Process Piping and Discharge Chamber Vent Piping Analysis with ANSYS; 24590-LAW-P61C-LOP-00002, Rev. 0, LAW Main/Standby Offgas Piping. 24590-LAW-M2C-LMP-00012, Rev. 0, LAW Melter Jackbolt Load and Stress Calculation; 24590-LAW-M2C-LMP-00007, Rev. 0, LAW Melter Shield Lid Drop Load Analysis with ANSYS.</p>	<p>The LAW Melter 1 and Melter 2 (LMP-MLTR-00001/2) are unique non-standard vessels. The Specification for LAW Melters states that these plant items are to be designed to the applicable requirements of the combination of various codes and standards listed in the Source of Information column. The Mechanical Data Sheets refer to use Specification for LAW Melters that requires these miscellaneous units and their components to be delivered after design, fabrication, inspection, and testing. Review of the Design Calculation documents of these Melters including its components show that they have been designed as required per above listed codes and standards and other documents listed in the Material Requisitions for these units. The aforementioned statements and the vendor fabrication drawings reviewed demonstrate that sound engineering principles of construction and fabrication have been used for these Melters.</p>

	Information Assessed	Source of Information	Assessment
Design (cont'd)	<p>Vessel has adequate strength, after consideration of the corrosion allowance, to withstand the operating pressure, operating temperature, and seismic loads.</p>	<p>Specifications, Mechanical Data Sheets, and Material Requisitions, listed above under References;</p> <p>ASME Boiler & Pressure Vessel Code (BPV), Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers;</p> <p>UBC 1997, Uniform Building Code, International Conference of Building Officials;</p> <p>ASCE 7, Minimum Design Loads in Building and Other Structures (1998), American Society of Civil Engineers;</p> <p>24590-WTP-DC-ST-04-001, Rev. 4A, Seismic Analysis and Design Criteria;</p> <p>AISC 1989, Manual of Steel Construction ADS, Ninth Edition, American Institute of Steel Construction;</p> <p>24590-LAW-M2C-M80T-00003, Rev. 0, LAW Melter Lid Refractory Thermal/Structural Finite Element Analysis Using ANSYS;</p> <p>24590-LAW-M2C-LMP-00002, Rev. 0, LMP-MLTR-00001 & LMP-MLTR-00002, LAW Melter Units, Structural and Seismic Analysis with ANSYS;</p> <p>CCN 159372, ISM Review-Revised LAW Melter Lid Cooling Design;</p> <p>24590-LAW-M2C-LMP-00001, Rev. 0, Thermal Analysis of Gas Barrier Lid; Law Melter Lid CFD Analysis.</p>	<p>The Specification for LAW Melters identifies their operating pressure and temperature ranges, the materials selected, the melter quality level, and its seismic category. The Mechanical Data Sheets refer to use Specification for LAW Melters that requires these Melters to be delivered after design, fabrication, inspection, and testing. Review of the Design Calculation documents of these melters show that they have been designed as required per above listed documents and specifications listed in the Material Requisitions document and additional Specifications. The Mechanical Data Sheets list LAW Melters' Seismic Category as SC- III. For SC-III plant items, the detailed requirements for seismic load determination (per UBC 1997) are furnished in the Specification for Structural Design Loads for Seismic Category III & IV Equipment and Tanks to provide for the seismic design analysis. The outer Melter enclosure structure is not exposed to any corrosive environment inside or outside, therefore, no corrosion allowance is required for it. However, some other components have been evaluated for corrosion as reported below in the Corrosion Protection and Corrosion Allowance sections. The Engineering Specification for Seismic Qualification Criteria for Pressure Vessels provides pertinent requirements for determination of seismic loads, analysis, and acceptance criteria for the vessels and their supports. Review of the Design Calculation documents demonstrates that all components of the Melter units after consideration of applicable corrosion allowances have adequate strength to withstand the applicable operating pressure, temperature, and seismic loads for the specified design life of the vessels. Furthermore, approval and acceptance of the vendor fabrication drawings by Bechtel National Inc. (BNI) is an added assurance that all applicable requirements stated above and as described in documents (including daughter documents) listed in Material Requisitions and various Specifications for the plant items have been met.</p>

	Information Assessed	Source of Information	Assessment
Foundation	Vessel foundation will maintain the load of a full vessel.	Specifications listed above under References; 24590-WTP-DC-ST-04-001, Rev. 4A, Seismic Analysis and Design Criteria; 24590-WTP-DC-ST-01-001, Rev. 14, Structural Design Criteria. 24590-WTP-DB-ENG-01-001, Rev. 6, Basis of Design; 24590-LAW-M2C-LMP-00003, Rev. 1, LAW Melter Seismic Restraint Capacity; 24590-LAW-S0C-S15T-00032, Rev. 0, LAW Melter Rail Seismic Anchor Pin Analysis; 24590-LAW-DDC-S13T-00014, Rev. 0A, Melter Seismic Restraint; 24590-LAW-S0C-S15T-00031, Rev. 1, Seismic Qualification of the LAW Facility Melter Rails; 24590-LAW-M2C-LMP-00002, Rev. 0, LMP-MLTR-00001 & LMP-MLTR-00002, LAW Melter Units, Structural and Seismic Analysis with ANSYS.	The Engineering Specification for LAW Melters provides the structural requirements for the design of Melter shell components inclusive of supports that they will be designed per Seismic Analysis and Design Criteria and Structural Design Criteria documents, ensuring an adequate design for the Melter supports. Review of the Design Calculation documents of the vessels show that the plant items supports have adequate strength to maintain the loads of full Melters. Furthermore, Chapter 14 of the Basis of Design document requires that the foundation underlying the vessel support must be adequate to support the loads from full vessel, which is out of scope of this assessment. The assessment of the adequacy of the underlying foundation is part of a separate integrity assessment report for the Secondary Containment of the vessels.
	If in an area subject to flooding, the vessel is anchored.	Drawings, Mechanical Data Sheets listed under References; 24590-LAW-PER-M-02-002, Rev. 7, Dangerous Waste Permit (DWP) Liner Heights in LAW Facility.	Drawings show that the Melters are located in Room L-0112 at floor Elev. 3'-0" of the LAW facility building. The Mechanical Data Sheets and the Liner Heights documents do not list any flooding in Room L-0112; therefore, the flooding consideration does not apply.
	Vessel system will withstand the effects of frost heave.	24590-WTP-DC-ST-01-001, Rev. 14, Structural Design Criteria.	The Structural Design Criteria document requires that all structural foundations for outdoor equipment extend a distance below grade that exceeds the 30" depth of the frost line. The vessels are located inside/interior of the building at Elev. 3'-0" level, and the building's lower level floor is at Elev. (-) 21'-0", therefore, the melters' foundations are not subject to frost heave.

	Information Assessed	Source of Information	Assessment
Waste Characteristics	<p>Characteristics of the waste to be stored or treated have been identified (dangerous waste characteristics, specific gravity, vapor pressure, flash point, storage temperature).</p>	<p>System Design Description and Specifications listed above under References;</p> <p>24590-LAW-NID-LMP-00001, Rev. 2, Corrosion Evaluation of LAW Melter 1 and Melter 2 Gas Barrier and Cooling Panels Inside of Gas Barrier (LMP-MLTR-00001 & LAW-MLTR-00002); 24590-101-TSA-W000-0010-42-02, Rev. 00B, LAW Melter Materials Selection Report; 24590-WTP-PER-PR-03-002, Rev. 4, Control of Toxic Vapors and Emissions from WTP Tank and Miscellaneous Unit Systems; CCN 280210, LAW Miscellaneous Treatment Unit Hydrogen Accumulation Documentation for the DWP Administrative Record.</p>	<p>The System Design Description, Specification for Melters, Corrosion Evaluation, and Melter Materials Selection Report documents identify the process conditions and design parameters of the melters, such as the waste chemical composition, temperatures, and pressures. The Melter Materials Selection Report document evaluates numerous material used for various components of the Melter units. The Corrosion Evaluation document appropriately addresses the pH value and chemical composition of the condensate and selects appropriate material for the melter gas barrier shell and cooling panels. Waste characteristics that are hazardous, such as ignitability, reactivity, toxicity, and hydrogen accumulation are appropriately addressed in the Control of Toxic Vapors and Emissions and CCN 280210 documents.</p>
	<p>Vessel is designed to store or treat the wastes with the characteristics defined above and any treatment reagents.</p>	<p>System Design Description listed above under References;</p> <p>24590-101-TSA-W000-0010-42-02, Rev. 00B, LAW Melter Materials Selection Report.</p>	<p>The Melter Materials Selection Report demonstrates that the Melter units are designed to treat and store the process wastes discussed in the System Design Description. The System Design Description discusses the normal and off-normal operations for the Melter units. The System Design Description document describes that the Melter system is designed to convert the mixture of pretreated LAW and glass-forming chemicals into glass or immobilized low activity waste (ILAW).</p>
	<p>The waste types are compatible with each other.</p>	<p>System Design Description listed above under References.</p>	<p>The System Design Description for the LAW LMP system does not describe any operations where incompatible wastes are mixed in these Melters for processing. These Melters are part of LAW LMP system for producing the LAW waste containers.</p>

	Information Assessed	Source of Information	Assessment
Corrosion Protection	<p>Vessel material and protective coatings ensure the vessel structure is adequately protected from the corrosive effects of the waste stream and external environments (expected to not leak or fail for the design life of the system).</p>	<p>Mechanical Data Sheets and Drawings listed above under References;</p> <p>24590-101-TSA-W000-0010-42-02, Rev. 00B, LAW Melter Materials Selection Report; 24590-LAW-NID-LMP-00001, Rev. 2, Corrosion Evaluation of LAW Melter 1 and Melter 2 Gas Barrier and Cooling Panels Inside of Gas Barrier (LMP-MLTR-00001 & LAW-MLTR-00002); 24590-LAW-PER-M-02-002, Rev. 7, Dangerous Waste Permit (DWP) Liner Heights in LAW Facility.</p>	<p>The Melter Materials Selection Report extensively evaluates the selects various corrosion resistant material for the Melter and its components. The five-sided glass pool open top box is lined with refractory to withstand molten glass corrosion. The gas space plenum above the glass pool is also a five-side open bottom box is also lined with refractory to withstand hot corrosive gases, thermal shock, and glass splatter. The Metallic Gas-barrier and Cooling Panels are evaluated in Corrosion Evaluation document which recommends 0.125" corrosion allowance for components within the Gas-barrier and 0.031" for the Cooling Panels inside the Gas-barrier. The other pertinent Melter operation and design information is provided in the Mechanical Data Sheets and Specification for LAW Melters. Each Melter is built up with a mix of Inconel 690, Hastelloy C-276, 316L stainless steel, and A36/A500 carbon steel materials. The Liner Heights document does not indicate any flooding problem in the Melters room area (Room L-0112); therefore, it should remain dry during normal operations which will prevent external corrosion of the Melters for their service life of 5 years. Careful selection of internal and external materials, provide adequate protection from waste stream and external environment.</p>

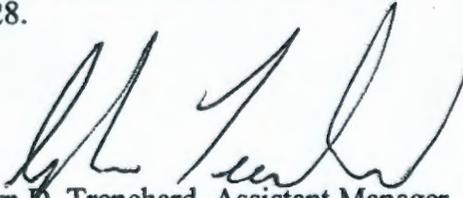
	Information Assessed	Source of Information	Assessment
Corrosion Allowance	Corrosion allowance is adequate for the intended service life of the vessel.	<p>Mechanical Data Sheets listed above under References;</p> <p>24590-101-TSA-W000-0010-42-02, Rev. 00B, LAW Melter Materials Selection Report; 24590-LAW-N1D-LMP-00001, Rev. 2, Corrosion Evaluation of LAW Melter 1 and Melter 2 Gas Barrier and Cooling Panels Inside of Gas Barrier (LMP-MLTR-00001 & LAW-MLTR-00002).</p>	<p>The Melter Materials Selection Report evaluates numerous components materials of the Melter in detail and it recommends specific type of corrosion resistant material for specific component, compartment or area. The areas included are glass pool, cold cap, plenum, discharge chamber, gas-barrier annulus, and shielding annulus areas. The Corrosion Evaluation, Melter Materials Selection Report, and Mechanical Data Sheets documents list the Cooling Panels are made up of Alloy 276 (UNS N10276) material and the Gas-barrier components are made up of Alloy 690 (UNS N10690). The Corrosion Evaluation report recommends 0.125" corrosion allowance for components within the Gas-barrier and 0.031" for the Cooling Panels inside the Gas-barrier. Based on the review of Corrosion Evaluation and Melter Materials Selection Report, the corrosion allowance for materials selected for various components are adequate for their intended service during the 5-year design life of the Melters.</p>
Pressure Relief	Pressure controls (vents and relief valves) are adequately designed to ensure pressure relief if normal operating pressures in the vessel are exceeded.	Drawings and System Design Description listed above under References.	<p>The LMP Melter 1 and Melter 2 (LMP-MLTR-00001/2) receive blend of LAW concentrate and glass former additives from the LFP system. The drawings show that the Melters are fed from the top. To avoid the pressurization and high level in the Melters, appropriate controls are provided at the control station in addition to exhaust vent and overflow through spout. The System Design Description document also describes that the pressure relief valves are provided for each Melter, which will prevent their over pressurization.</p>

Ms. Alexandra K. Smith
18-ECD-0072

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If you have any questions, please contact me, or your staff may contact Gae M. Neath,
Environmental Compliance Division, (509) 376-7828.



Glyn D. Trenchard, Assistant Manager
Technical and Regulatory Support

ECD:GMN

Attachment

cc w/attach:

D.E. Casey, BNI
R.J. Landon, BNI
V. McCain, BNI
D.C. Robertson, BNI
D.M. Yasek, BNI
J. Cantu, Ecology (7 hard copies & CD)
A.S. Carlson, Ecology
T.Z. Gao, Ecology
M.E. Jones, Ecology
J.K. Perry, MSA
A.C. McKarns, RL
J. Atwood, YN
Administrative Record (WTP H-0-8)
BNI Correspondence
Environmental Portal

cc w/o attach:

M. Johnson, CTUIR
S.L. Dahl, Ecology
D. McDonald, Ecology
J. Bell, NPT (Acting)
G.P. Bohnee, NPT
K. Niles, Oregon Energy
P.M. Pak, RL (Acting)
R. Longoria, YN (Acting)