



R11474330

ISSUED BY
RPP-WTP PDC

24590-CM-HC4-HXYG-00240-02-00003

REV 00A

**SUBCONTRACT SUBMITTAL
REVIEW NOT REQUIRED**



AFS-12-0060

March 7, 2012

Ms. Trina A. Howard
Subcontracts Administrator
Bechtel National RPP-WTP Project
2435 Stevens Center Place
Richland, Washington 99354

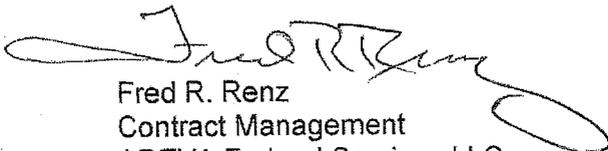
Dear Ms. Howard:

**BECHTEL NATIONAL, INC. CONTRACT NO. 24590-CM-HC4-HXYG-00240
IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT FOR HLW ASX
SECONDARY CONTAINMENT (SAMPLER CABINETS) – IA-3006928-000**

The structural integrity assessment of the subject secondary containment 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 secondary containment is 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@areva.com.

Sincerely,



Fred R. Renz
Contract Management
AREVA Federal Services LLC
Richland Office

llm

Enclosure (1)

cc: D. C. Pfluger, MS 5-1 w/enclosures (2)

AREVA Federal Services LLC

2101 Horn Rapids Road, RC-19, Richland, WA 99354, P. O. Box 840, Richland, WA 99352
Tel.: 509 375 8096 - Fax: 509 375 8495 - www.areva.com

02-00003
24590-CM-HC4-HXYG-00240-~~01-00008~~ REJ004

**IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT
FOR
HLW ASX SECONDARY CONTAINMENT (SAMPLER CABINETS)**

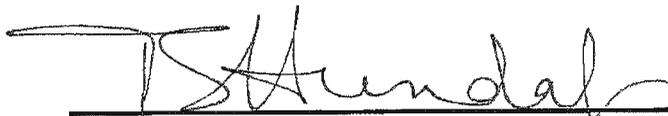
"I, Tarlok Singh Hundal, have reviewed and certified a portion of the design of a new tank system or component located at the Hanford Waste Treatment Plant, owned/operated by Department of Energy, Office of River Protection, Richland, Washington. My duties were independent review of the current design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

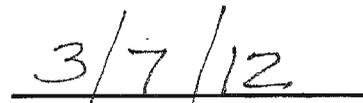
"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, 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 thirteen (13) pages numbered one (1) through thirteen (13).




Signature


Date

**IQRPE Structural Integrity Assessment Report for HLW ASX
Secondary Containment (Sampler Cabinets)**

IA-3006928-000

Scope	Scope of this Integrity Assessment	This assessment addresses the structural integrity of HLW ASX Secondary Containment provided by a sampler cabinet housed in each Autosampler Unit (ASX-SMPLR-00028, -00029, and -00042). These autosampler units are located in Room H-0305A, H-0315, and H-0318 respectively, at Elevation 37'-0" of the HLW building as shown on the General Arrangement Plan drawing 24590-HLW-P1-P01T-00004.
Summary of Assessment		For each item of "Information Assessed" (i.e., Criteria) on the following pages, the items 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, WAC-173-303-640, Tank Systems.</i>

References	<p><u>Service Requisition:</u></p> <p>24590-QL-SRA-HAHH-00001, Rev. 15, Autosampling (ASX) Technical Services Contract (N191).</p> <p><u>Specifications:</u></p> <p>Following specifications along with their respective revision numbers and change notices are included in the SR document listed above:</p> <p>24590-WTP-3PS-MHSS-T0002, Engineering Specification for Autosampling System (ASX); 24590-WTP-3PS-G000-T0001, Engineering Specification for Supplier Quality Assurance Program Requirements; 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-T0014, Engineering Specification for Supplier Design Analysis; 24590-WTP-3PS-MV00-T0003, Engineering Specification for Pressure Vessel Fatigue Analysis; 24590-WTP-3PS-G000-T0015, Engineering Specification for Environmental Qualification of Mechanical Equipment; 24590-WTP-3PS-SS90-T0001, Engineering Specification for Seismic Qualification of Seismic Category I/II Equip. and Tanks; 24590-WTP-3PS-FB01-T0001, Engineering Specification for Structural Design Loads for Seismic Category III/IV Equip. and Tanks; 24590-WTP-3PS-SS00-T0001, Engineering Specification for Welding of Structural Steel Carbon; 24590-WTP-3PS-SS00-T0002, Engineering Specification for Welding of Structural Stainless Steel and Welding of Structural Carbon Steel to Structural Stainless Steel; 24590-WTP-3PS-AFPS-T0001, Engineering Specification for Shop Applied Special Protective Coatings for Steel Items and Equipment.</p> <p><u>Vendor Drawings (Bechtel Status Code 1 & 2 Drawings *):</u></p> <p>24590-QL-HC4-HAHH-00001-06-00051, Rev. 00H, Autosampling System ASX-SMPLR-00028, Outline Dim & Mtg Dets Sheet 1 of 3; 24590-QL-HC4-HAHH-00001-06-00052, Rev. 00G, Autosampling System ASX-SMPLR-00028, Outline Dim & Mtg Dets Sheet 2; 24590-QL-HC4-HAHH-00001-06-01763, Rev. 00D, Autosampling System ASX-SMPLR-00028, Outline Dim & Mtg Dets Sheet 3; 24590-QL-HC4-HAHH-00001-06-00053, Rev. 00G, Autosampling System ASX-SMPLR-00029, Outline Dim & Mtg Dets Sheet 1 of 3; 24590-QL-HC4-HAHH-00001-06-00054, Rev. 00H, Autosampling System ASX-SMPLR-00029, Outline Dim & Mtg Dets Sheet 2; 24590-QL-HC4-HAHH-00001-06-01960, Rev. 00D, Autosampling System ASX-SMPLR-00029, Outline Dim & Mtg Dets Sheet 3; 24590-QL-HC4-HAHH-00001-06-00055, Rev. 00G, Autosampling System ASX-SMPLR-00042, Outline Dim & Mtg Det Sheet 1 of 3; 24590-QL-HC4-HAHH-00001-06-00056, Rev. 00H, Autosampling System ASX-SMPLR-00042, Outline Dim & Mtg Dets Sheet 2; 24590-QL-HC4-HAHH-00001-06-01961, Rev. 00D, Autosampling System ASX-SMPLR-00042, Outline Dim & Mtg Dets Sheet 3; 24590-QL-HC4-HAHH-00001-06-01178, Rev. 00F, Autosampling System HLW and PTF Internal Base Table Assembly Sheet 1 of 2; 24590-QL-HC4-HAHH-00001-06-01179, Rev. 00F, Autosampling System HLW and PTF Internal Base Table Upper Plate Subassembly Sheet 1 of 4; 24590-QL-HC4-HAHH-00001-06-01275, Rev. 00J, Autosampling System PTF/HLW Shielding Sprt Frame Assy Sheet 1 of 4; 24590-QL-HC4-HAHH-00001-06-01276, Rev. 00I, Autosampling System PTF/HLW Shielding Sprt Frame Assy Sheet 2; 24590-QL-HC4-HAHH-00001-06-01277, Rev. 00E, Autosampling System PTF/HLW Shielding Sprt Frame Assy Sheet 3; 24590-QL-HC4-HAHH-00001-06-01794, Rev. 00E, Autosampling System PTF/HLW Shielding Sprt Frame Assy Sheet 4;</p>
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References (cont'd)	Vendor Drawings	<p><u>Vendor Drawings (Bechtel Status Code 1 & 2 Drawings *) (cont'd):</u></p> <p>24590-QL-HC4-HAHH-00001-06-00517, Rev. 00H, Autosampling System ASX-SMPLR-00028, Glovebox Subassembly Sheet 1 of 5; 24590-QL-HC4-HAHH-00001-06-00518, Rev. 00D, Autosampling System ASX-SMPLR-00028, Glovebox Subassembly Sheet 2; 24590-QL-HC4-HAHH-00001-06-00719, Rev. 00D, Autosampling System ASX-SMPLR-00028, Glovebox Subassembly Sheet 3; 24590-QL-HC4-HAHH-00001-06-01311, Rev. 00C, Autosampling System ASX-SMPLR-00028, Glovebox Subassembly Sheet 4; 24590-QL-HC4-HAHH-00001-06-01312, Rev. 00C, Autosampling System ASX-SMPLR-00028, Glovebox Subassembly Sheet 5; 24590-QL-HC4-HAHH-00001-06-01143, Rev. 00E, Autosampling System ASX-SMPLR-00017, 19, 20, 25, & 28 Glovebox Shell Assembly Sheet 1 of 3; 24590-QL-HC4-HAHH-00001-06-01144, Rev. 00C, Autosampling System ASX-SMPLR-00017, 19, 20, 25, & 28 Glovebox Shell Assembly Sheet 2; 24590-QL-HC4-HAHH-00001-06-01145, Rev. 00D, Autosampling System ASX-SMPLR-00017, 19, 20, 25, & 28 Glovebox Shell Assembly Sheet 3; 24590-QL-HC4-HAHH-00001-06-00720, Rev. 00E, Autosampling System ASX-SMPLR-00029 & 42, Glovebox Subassembly Sheet 1 of 5; 24590-QL-HC4-HAHH-00001-06-00721, Rev. 00E, Autosampling System ASX-SMPLR-00029 & 42, Glovebox Subassembly Sheet 2; 24590-QL-HC4-HAHH-00001-06-00722, Rev. 00E, Autosampling System ASX-SMPLR-00029 & 42, Glovebox Subassembly Sheet 3; 24590-QL-HC4-HAHH-00001-06-01980, Rev. 00C, Autosampling System ASX-SMPLR-00029 & 42, Glovebox Subassembly Sheet 4; 24590-QL-HC4-HAHH-00001-06-01981, Rev. 00B, Autosampling System ASX-SMPLR-00029 & 42, Glovebox Subassembly Sheet 5; 24590-QL-HC4-HAHH-00001-06-02067, Rev. 00E, Autosampling System ASX-SMPLR-00029 & 42, Glovebox Shell Subassembly Sheet 1 of 3; 24590-QL-HC4-HAHH-00001-06-02068, Rev. 00C, Autosampling System ASX-SMPLR-00029 & 42, Glovebox Shell Subassembly Sheet 2; 24590-QL-HC4-HAHH-00001-06-02069, Rev. 00C, Autosampling System ASX-SMPLR-00029 & 42, Glovebox Shell Subassembly Sheet 3.</p> <p>* Bechtel Status Code 1 Drawing: Bechtel National Inc.'s Code indicates that BNI has "reviewed and approved the drawing for fabrication." Bechtel Status Code 2 Drawing: Bechtel National Inc.'s Code indicates that BNI has "reviewed and approved the drawing for fabrication, with comments."</p>
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References (cont'd)	<p>Plant Drawings:</p> <p>24590-HLW-P1-P01T-00004, Rev. 7, HLW Vitrification Building General Arrangement Plan at El. 37'-0"; 24590-HLW-P1-P01T-00008, Rev. 11, HLW Vitrification Building General Arrangement Sections A-A, B-B, & C-C; 24590-HLW-P1-P01T-00009, Rev. 11, HLW Vitrification Building General Arrangement Sections D-D, E-E, & F-F; 24590-HLW-DB-S13T-00072, Rev. 2, HLW Vitrification Building Structural Concrete Forming Partial Plan at El. 37'-0" Area 2; 24590-HLW-DB-S13T-00075, Rev. 2, HLW Vitrification Building Structural Concrete Forming Partial Plan at El. 37'-0", Area 5; 24590-HLW-DB-S13T-00076, Rev. 2, HLW Vitrification Building Structural Concrete Forming Partial Plan at El. 37'-0", Area 6; 24590-WTP-DD-S13T-00002, Rev. 7, Civil/Structural Standards, Standard Embed Plates; 24590-PTF-DD-S13T-00201, Rev. 10, Pretreatment Facility Structural Concrete Wall Embeds Details-Sh. 2; 24590-PTF-DD-S13T-00202, Rev. 8, Pretreatment Facility Structural Concrete Wall Embeds Details-Sh. 3; 24590-HLW-M6-ASX-00003, Rev. 1, P&ID HLW Auto Sampling System Sample Cabinets ASX-SMPLR-00028; 24590-HLW-M6-ASX-00004, Rev. 1, P&ID HLW Auto Sampling System Sample Cabinets ASX-SMPLR-00029; 24590-HLW-M6-ASX-00005, Rev. 1, P&ID HLW Auto Sampling System Sample Cabinets ASX-SMPLR-00042;</p> <p><u>Data Sheet:</u></p> <p>24590-HLW-M2D-ASX-00001, Rev. 3, HLW Autosampling System (ASX) Data Sheet for Autosamplers (ASX-SMPLR-00028, -00029, and -00042).</p> <p><u>System Description:</u></p> <p>24590-WTP-3YD-ASX-00001, Rev. 1, System Description for the Autosampling System (ASX), including SDCN # 00004 & 00005.</p> <p><u>Permit Document:</u></p> <p>24590-WTP-PER-CSA-02-001, Rev. 10, Secondary Containment Design.</p>
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Information Assessed	Source of Information	Assessment
<p style="text-align: center;">Design</p> <p>The sampler cabinets secondary containment design standards and codes used are appropriate and adequate for their intended use.</p>	<p>Drawings, Specifications, Service Requisition, and Data Sheet listed above under References;</p> <p>ANSI/AISC N690-1994, Specification for the Design, Fabrication, and Erection of Safety Related Structures for Nuclear Facilities, American National Standards Institute;</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>ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers;</p> <p>ASME B31.3, Pressure Piping, American Society of Mechanical Engineers;</p> <p>ASME AG-1-1997 (including AG-1a-2000 Addenda), Code on Nuclear Air and Gas Treatment, American Society of Mechanical Engineers;</p> <p>AGS-G001-1998, Guidelines for Gloveboxes, 2nd Edition.</p>	<p>The Specification for Autosampling System and the Service Requisition documents require that the sampler cabinets be designed, fabricated, tested, and delivered in accordance with the requirements specified in the codes and standards listed in the Source of Information column in this section. The Data Sheet for Autosampler Units (ASX-SMPLR-00028, -00029, and -00042) requires and lists that each unit be designed with specific ranges of temperature varying from 40° F to 138° F and pressure [(-) 6.7 in. w.g. to (+) 4 in. w.g.] application. The Data Sheet also provides applicable nozzle and fatigue loads. The drawings show that overall dimensions of shielded autosampler unit (ASX-SMPLR-00028) is about 82” wide x 59” deep x 96” high and that of units (ASX-SMPLR-00029 and -00042) are about 82” wide x 101” deep x 96” high. Each autosampler unit houses the upper and lower secondary containment components (liner plates, leak collection trough, leak detector inside the glovebox). The approximate dimensions of each glovebox are about 68” wide x 43” deep x 42” high. The autosampler gloveboxes are built with varying thicknesses of 304L or 316L stainless steel plates, 3/16” being the minimum thickness. The codes and standards listed in the Source of Information column are appropriate and adequate to provide secondary containment for the intended use of collecting and transporting samples of HLW process waste.</p>

Information Assessed	Source of Information	Assessment
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Design (cont'd)</p> <p>The sampler cabinets component enclosure, supports, and foundation design include full weight of sampler cabinets.</p>	<p>Specifications, Data Sheet, and Drawings listed above under References;</p> <p>24590-WTP-DC-ST-01-001, Rev. 13, Structural Design Criteria; 24590-WTP-DB-ENG-01-001, Rev. 1Q, Basis of Design; 24590-WTP-DC-ENG-06-001, Rev. 1, Design Criteria for Equipment Seismic and Environmental Qualification; 24590-HLW-U0D-W16T-00001, Rev. 1, HLW Room Environment Data Sheet; 24590-QL-HC4-HAHH-00001-11-00037, Rev. 00C, Structural Analysis of ASX-SMPLR-00028; 24590-QL-HC4-HAHH-00001-11-00058, Rev. 00B, Structural Analysis of ASX-SMPLR-00029 & -00042.</p>	<p>The Specification for Autosampling System (ASX) identifies the secondary containments enclosure, shielding, and supporting steel framing components to be Safety Significant (SS) of Quality Level (Q) and the Seismic Category (SC-II). The drawings show that the secondary containment enclosure components (the sampler cabinet) are an integral part of or are located within the bounds of a glovebox structure of each autosampler unit. All secondary containment liners and components within the glovebox are fully welded to confine any waste spillage within the enclosed sampler cabinet which has the leak detection device to alarm any spillage incidents. The leak detection alarm components are SS/Q/SC-III or SC/Q/SC-I categories are also housed in each glovebox. The glovebox structure is attached to and supported by structural steel framing members. The framing members are enclosed in shielding steel plates around them on top and three sides except the rear side that faces the concrete wall. The Structural Design Criteria uses appropriate applicable standards to define design loads and load combinations. The Specification for the Autosampling System, the Design Criteria for Equipment Seismic and Environmental Qualification, and the Data Sheet require that along with dead weights of the components, the weight of the glovebox filled with water, and the specified temperature and pressure environmental conditions be appropriately included in the loads and load combinations. The Structural Analysis documents and drawings reviewed show that the secondary containment components of the sampler cabinets have been adequately designed to provide the required containment for any spilled waste fluids. Review of the autosampler units Structural Analysis documents also show that the support system for each unit has adequate strength to sustain the aforementioned loads and is in turn anchored (welded) to the steel embed plates in the concrete floor slab. Furthermore, Chapter 14 of the Basis of Design document requires that the foundation underlying the autosampler units' supports must be adequate to sustain the full load of the units, which is out of scope of this assessment. The assessment of the adequacy of the underlying foundation slab is part of a separate integrity assessment report for the secondary containment of the plant items on this floor (Elevation 37'-0").</p>

Information Assessed	Source of Information	Assessment
<p style="text-align: center;">Design (cont'd)</p> <p>Design calculation approach and design basis of support and foundation with design standard and codes references such as AISC code, are adequate.</p>	<p>Drawings listed above under References;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 1Q, Basis of Design;</p> <p>24590-WTP-DC-ST-01-001, Rev. 13, Structural Design Criteria;</p> <p>24590-WTP-DC-ENG-06-001, Rev. 1, Design Criteria for Equipment Seismic and Environmental Qualification;</p> <p>ANSI/AISC N690-1994, Specification for the Design, Fabrication, and Erection of Steel Safety Related Structures for Nuclear Facilities, American National Standards Institute;</p> <p>24590-QL-HC4-HAHH-00001-11-00037, Rev. 00C, Structural Analysis of ASX-SMPLR-00028;</p> <p>24590-QL-HC4-HAHH-00001-11-00058, Rev. 00B, Structural Analysis of ASX-SMPLR-00029 & -00042.</p>	<p>The Basis of Design document provides many fundamental general requirements for support and foundation design. The Structural Design Criteria document references adequate detailed design criteria for the design of support steel framing and concrete foundations and footings and Appendix A of Specification for Autosampling System recommends incorporating some amended requirements while using the ANSI/AISC N690-1994 code for support design of SC-II structural steel components. The Structural Analysis documents and drawings reviewed show that the upper and lower secondary containment components housed in the gloveboxes are adequately designed and supported to meet the applicable code requirements.</p>
<p style="text-align: center;">Foundation Design</p> <p>Foundation material is compatible with the support structure.</p>	<p>Specification and Drawings listed in above under References.</p>	<p>Specification for Autosampling System requires that stainless steel material be used for the ASX sampler cabinet confinement enclosure components including upper and lower liner plates. The drawings show that the ASX Autosampler Units (ASX-SMPLR-00028, -00029, and -00042) are located at Elevation 37'-0" level of the HLW building. The carbon steel support structure frame base plates and top plates of the autosampler units are welded (anchored) to the carbon steel plates embedded in concrete floor slab and wall respectively. The top and base plates and embed plates are compatible with each other.</p>

	Information Assessed	Source of Information	Assessment
Foundation Design (cont'd)	Foundation will withstand the effects of frost heave.	24590-WTP-DC-ST-01-001, Rev. 13, Structural Design Criteria.	The Structural Design Criteria requires all structural foundations for outdoor components to extend below the 30" frost line from the finished grade (Elevation 0'-0"). Rooms housing the ASX Autosampler Units are inside/interior of the HLW building at Elevation 37'-0", therefore, they are not subjected to the detrimental effects of frost heave.
Seismic	Seismic considerations have been adequately addressed.	Specifications, and Drawings listed above under References; 24590-WTP-PER-CSA-02-001, Rev. 10, Secondary Containment Design; 24590-WTP-DC-ST-01-001, Rev. 13, Structural Design Criteria; 24590-WTP-DC-ENG-06-001, Rev. 1, Design Criteria for Equipment Seismic and Environmental Qualification; ANSI/AISC N690-1994, Specification for the Design, Fabrication, and Erection of Steel Safety Related Structures for Nuclear Facilities, American National Standards Institute; 24590-HLW-S0C-S15T-00009, Rev. 0E, HLW Vitrification Building Seismic Analysis- In-Structure Response Spectra (ISRS); 24590-QL-HC4-HAHH-00001-11-00037, Rev. 00C, Structural Analysis of ASX-SMPLR-00028; 24590-QL-HC4-HAHH-00001-11-00058, Rev. 00B, Structural Analysis of ASX-SMPLR-00029 & -00042.	The Secondary Containment Design, Structural Design Criteria, and Design Criteria for Seismic and Environmental Qualification documents provide detailed information of design methodology, materials, loads, and load combinations applicable for the sampler cabinets. The Specification for Autosampling System identifies the subject containment components of the system to be Safety Class SS, Quality Level Q, and the Seismic Category as SC-II. The ASX system design loads combinations are taken from ANSI/AISC N 690-1994 and analysis for SC-II secondary containment enclosure is performed in accordance with the Specification for Seismic Qualification of Seismic Category I/II Equip. and Tanks document. The secondary containment enclosure and support frame structures are designed in accordance with the requirement of ANSI/AISC N460-1994 code and of the Specification for Autosampling System. The frame structure is designed to sustain all applicable loads including seismic and its vertical frame and bases are adequately welded to the embedded steel plates in the wall and concrete floor slab supporting the autosampler units. The Structural Analysis documents and drawings reviewed show that the sound engineering techniques are used for the analyses purposes.

Information Assessed	Source of Information	Assessment
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Compatibility</p> <p>The stored waste is compatible with its secondary containment and leak detection hardware based on a detailed chemical and physical analysis of the wastes used and other information sources.</p>	<p>Drawings listed above under References;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 1Q, Basis of Design;</p> <p>24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection;</p> <p>24590-WTP-PER-CSA-02-001, Rev. 10, Secondary Containment Design;</p> <p>24590-WTP-PER-J-02-002, Rev. 4, Leak Detection in Secondary Containment Systems;</p> <p>24590-QL-HC4-HAHH-00001-11-00037, Rev. 00C, Structural Analysis of ASX-SMPLR-00028;</p> <p>24590-QL-HC4-HAHH-00001-11-00058, Rev. 00B, Structural Analysis of ASX-SMPLR-00029 & -00042.</p>	<p>The Basis of Design document states that the secondary containment components are to be appropriately lined and any leaks or spills will be removed within 24 hours of a leak detection or in as timely a manner as possible. Based on a detailed chemical and physical analysis of the wastes and other process information sources, the Material Selections document identifies appropriate corrosion resistant materials (stainless steel) for the ASX Autosampler Units' secondary containment components and leak detection hardware. The drawings and Structural Analysis reviewed show that the 304L stainless steel or better material as recommended in Material Selections document is used for the fabrication of the ASX sampler cabinets. The Secondary Containment Design document provides adequate typical construction details including attachment details for the leak detection equipment to be used for secondary containment where required.</p>

Information Assessed	Source of Information	Assessment
<p>Strength</p> <p>The design shows that the secondary containment has sufficient strength and thickness to prevent failure owing to pressure gradients, static head during a release, physical contact with the waste, climatic conditions, and the stress of daily operations (e.g., vehicular traffic).</p>	<p>Drawings listed above under References;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 1Q, Basis of Design;</p> <p>24590-WTP-PER-CSA-02-001, Rev. 10, Secondary Containment Design;</p> <p>24590-QL-HC4-HAHH-00001-11-00037, Rev. 00C, Structural Analysis of ASX-SMPLR-00028;</p> <p>24590-QL-HC4-HAHH-00001-11-00058, Rev. 00B, Structural Analysis of ASX-SMPLR-00029 & -00042.</p>	<p>The HLW general arrangement drawings show ASX Autosampler Units are located inside the building. Pressure gradients, static head during a release, physical contact with the waste, climatic conditions, and the stresses of daily operations are adequately stated as design goals in the Basis of Design document. The Secondary Containment Design document describes and provides references to the design methodology, materials of construction, loads, and load combinations (including seismic loads) for the HLW facility secondary containment components. The secondary containment enclosures being considered are located in the room inside the HLW Vitrification Building rather than being directly buried in ground, therefore, pressure gradients and vehicular traffic are not considered applicable load cases. However, the Structural Analysis documents reviewed show that the strength of secondary containment enclosure components is sufficient to sustain applicable loads such as static, fluid, and seismic.</p>

Information Assessed	Source of Information	Assessment
<p>Strength (cont'd)</p> <p>The secondary containment system has sufficient strength in the presence of operational stresses from site-specific conditions (i.e., frost, precipitation etc.).</p>	<p>Drawings listed above under References;</p> <p>24590-WTP-PER-CSA-02-001, Rev. 10, Secondary Containment Design;</p> <p>24590-WTP-3PS-NLLR-T0002, Rev. 1, Engineering Specification for Furnishing, Detailing, Fabrication, Delivery and Installation of Stainless Steel Liner Plates;</p> <p>24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection.</p> <p>24590-QL-HC4-HAHH-00001-11-00037, Rev. 00C, Structural Analysis of ASX-SMPLR-00028;</p> <p>24590-QL-HC4-HAHH-00001-11-00058, Rev. 00B, Structural Analysis of ASX-SMPLR-00029 & -00042.</p>	<p>The HLW facility drawings show that the secondary containment being considered is installed inside the building. Because it is located inside the building, precipitation and frost are not applicable load cases. The Secondary Containment Design document identifies the applicable load cases (operational stresses) from site specific conditions that must be considered in the design. The Engineering Specification for Furnishing Stainless Steel Liner Plates includes specific provisions for protection and repair of completed liners during the construction process. The Material Selections for Building Secondary Containment document addresses the potential effects of operations conditions on metal liner and the associated maintenance requirements. The Structural Analysis documents reviewed show that the secondary containment components are adequately designed and have sufficient strength to sustain the applicable design loads.</p>
<p>Foundation Integrity</p> <p>The secondary containment is adequately supported by the enclosure structure and foundation below has adequate strength</p>	<p>Drawings listed above under References;</p> <p>24590-QL-HC4-HAHH-00001-11-00037, Rev. 00C, Structural Analysis of ASX-SMPLR-00028;</p> <p>24590-QL-HC4-HAHH-00001-11-00058, Rev. 00B, Structural Analysis of ASX-SMPLR-00029 & -00042;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 1Q, Basis of Design.</p>	<p>Review of the Structural Analysis documents and drawings shows that the support system for each sampler cabinet has adequate strength to sustain the applicable design loads and is in turn anchored (welded) to the steel embed plates in the concrete floor slab. Chapter 14 of the Basis of Design document requires that the foundation underlying the cabinet support must be adequate to sustain the loads from the weight of the glovebox filled with water, which is out of scope of this assessment. The assessment of the adequacy of the underlying foundation slab is part of a separate integrity assessment report for the secondary containment for the plant items on this floor.</p>

Information Assessed		Source of Information	Assessment
Infiltration	The design or operation prevents run-on or infiltration of precipitation into the secondary containment.	Drawings listed above under References; 24590-WTP-DB-ENG-01-001, Rev. 1Q, Basis of Design.	The Basis of Design document requires the design to provide adequate measures to prevent run-on or infiltration of precipitation. The secondary containment is located inside the HLW Vitrification Building where it is protected from direct precipitation by the building structure as shown in the general arrangement drawings. Therefore, this section is not applicable to the secondary containment components being assessed.
	The design includes an external moisture barrier or other means to prevent moisture from entering the room.	Drawings listed above under References; 24590-WTP-DB-ENG-01-001, Rev. 1Q, Basis of Design.	The Basis of Design document requires the design include provisions to prevent external moisture intrusion. The ASX Autosampler Units shown on the General Arrangement drawings are inside the HLW Vitrification Building at floor Elevation 37'-0" which protects them from precipitation and surface water percolation, therefore, this section is not applicable to them.
Liner System	The containment area is free of cracks or gaps and the design discusses methods of their minimization.	24590-WTP-DB-ENG-01-001, Rev. 1Q, Basis of Design; 24590-WTP-PER-CSA-02-001, Rev. 10, Secondary Containment Design; 24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection.	The Basis of Design document requires the liner system to be free of cracks and gaps. The Secondary Containment Design document provides current adequate design requirements, and codes and standards to design leak tight liners. This document includes appropriate details for installation of stainless steel components free of cracks and gaps. The Material Selections document provides adequate requirements for the secondary containment components.

Information Assessed	Source of Information	Assessment
<p>Liner System (cont'd) The design has considered the compatibility of the secondary containment elements with the waste and for preventing it from migrating into the concrete slab below.</p>	<p>24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-WTP-PER-CSA-02-001, Rev. 10, Secondary Containment Design.</p>	<p>The Material Selections document contains information on the compatibility of secondary containment stainless steel material usage for containing the waste. The Secondary Containment Design document provides standard installation details for the secondary containment components of the sampler cabinets which ensure leak-tight connections that will prevent the migration of the waste onto the concrete slab below.</p>



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Subcontract Title:	IQRPE TANK INTEGRITY SUPPORT
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PDC Document Number	Rev	Document Title	Rev
24590-CM-HC4-HXYG-00240-02-00003		IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT FOR HLW ASX SECONDARY CONTAINMENT (SAMPLER CABINETS) IA-3006928-000	

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