Job No. 24590

Bechtel National, Inc.

SUPPLIER DOCUMENT STATUS

1. [X] **Work may proceed.**
2. [ ] **Revise and resubmit. Work may proceed subject to resolution of indicated comments.**
3. [ ] **Revise and resubmit. Work may not proceed.**
4. [ ] **Review not required. Work may proceed.**

Permission to proceed does not constitute acceptance or approval of design details, calculations, analyses, test methods, or materials developed or selected by the supplier and does not relieve supplier from full compliance with contractual obligations.

REVIEWED									E&NS AML

G-321 Document Category N/A
[From Supplement A to G-321-E (E) or G-321-V (V), as applicable, or "N/A" if SSRS is used]

Supersedes BNI Document No. N/A Rev. _____
[When applicable]

Accepted by DC Pflueger DC Pflueger 12/4/03
Print Name Signature Date

Released by _____ _____ _____
[When applicable] Print Name Signature Date

416 GP&S 7-03

24590-CM-HC4-HXYG-00138-02-07

REV. 00A

SUBCONTRACT SUBMITTAL

R10173474

IQRPE REVIEW
Of
LOW ACTIVITY WASTE (LAW) VITRIFICATION FACILITY
RADIOACTIVE LIQUID WASTE DISPOSAL SYSTEM (RLD) VESSELS
(RLD-VSL-00003 and RLD-VSL-00005)

"I, Tarlok S. 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 Low Activity Waste (LAW), Radioactive Liquid Waste Disposal System (RLD) Vessels (Plant Wash Vessel, RLD-VSL-00003 and SBS Condensate Vessel, RLD-VSL-00005) as required by The Dangerous Waste Regulations, namely, WAC 173-303-640(3) applicable paragraphs [i.e., (a) through (g)]."

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

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

The attached review is six (6) pages numbered one (1) through six (6) for Vessel, RLD-VSL-00003 and seven (7) pages numbered one (1) through seven (7) for Vessel, RLD-VSL-00005.

EXPIRES: 02/15/04

T S Hundal
Signature

12/02/03
Date

Best Available Copy

24590-CM-HC4-HXYG-00138-02-07, Rev. 0cA

STRUCTURAL INTEGRITY ASSESSMENT OF LOW ACTIVITY WASTE (LAW) VITRIFICATION FACILITY RADIOACTIVE LIQUID WASTE DISPOSAL SYSTEM (RLD) VESSELS (RLD-VSL-00003 and RLD-VSL-00005)

COGEMA-IA-026, Rev. 0

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.

Scope	Scope of this Integrity Assessment	This integrity assessment includes: One RLD Plant Wash Vessel: RLD-VSL-00003 including its appurtenances or offspring items, located in cell L-0126 at Elevation 3'-0" in the LAW Vitrification Building.
References	Specifications, Drawings and Mechanical Data Sheets	The following Specifications are listed in Material Requisition No. 24590-CM-MRB-MVA0-00001, Rev. 1 Engineering Specification for Pressure Vessel Design and Fabrication; Engineering Specification for Seismic Qualification Criteria for Pressure Vessels; Specification for Welding of Pressure Vessels, Heat Exchangers and Boilers; General Specification for Supplier Quality Assurance Program Requirements; Specification for Positive Material Identification (PMI); General Specification for Packing, Shipping, Handling, and Storage; Engineering Specification for Seismic Qualification Criteria for Pressure Vessels; Engineering Specification for Structural Design Loads for Seismic Category III and IV Equipment and Tanks. Drawings: 24590-LAW-MV-RLD-P0002, Rev. 1, Equipment Assembly Plant Wash Vessel, (RLD-VSL-00003); 24590-LAW-M6-RLD-P0001, Rev. 1, P & ID-LAW Radioactive Liquid Waste Disposal System Plant Wash & SBS Condensate Collection; 24590-LAW-P1-P01T-P0002, Rev. 2, LAW Vitrification Building General Arrangement Plan at El. 3'-0"; 24590-LAW-P1-P01T-P0007, Rev. 3, LAW Vitrification Building General Arrangement Section C-C; 24590-LAW-P1-P01T-P0010, Rev. 3, LAW Vitrification Building General Arrangement Section K-K and L-L; 24590-LAW-M5-V17T-P0014, Rev. 1, Process Flow Diagram LAW Liquid Effluent (System RLD & NLD). Mechanical Data Sheet: 24590-LAW-MVD-RLD-P0007, Rev.2, Plant Wash Vessel (RLD-VSL-00003).
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 controls and requirements to ensure the design intent fully satisfies the requirements of Washington Administrative Code, WAC-173-303-640, *Dangerous Waste Regulations*.

	Information Assessed	Source of Information	Assessment
Design	Vessel design standards are appropriate and adequate for the vessel's intended use.	Specifications listed under Material Requisition, Drawings, and Mechanical Data Sheet listed above under References; 24590-LAW-3YD-20-00001, Rev. 0, System Description for LAW Virtification Liquid Effluent Systems (RLD and NLD); SDCN No. 24590-LAW-3YN-20-00001, System Description for LAW Virtification Liquid Effluent Systems (RLD and NLD).	The RLD system Plant Wash Vessel, RLD-VSL-00003 vessel and all appurtenances are to be designed to the ASME Section VIII, Division 1 rules which are appropriate for pressure vessels operating with mixed waste solutions over the pressure and temperature ranges specified for this vessel. Supplementary requirements are specified in the Engineering Specification for Pressure Vessel Design and Fabrication. Supplementary requirements address pressure vessel fatigue analysis, positive material identification, lifting attachment design, equipment drop evaluation, fabrication tolerances, acceptable welding procedures for the vessel and appurtenances, welder qualifications and testing records, NDE inspections and records, and lifting, packaging, shipping, handling and storage requirements. These are adequate and acceptable design standards. The LAW Plant Wash Vessel, RLD-VSL-00003 is a vertical vessel with a 192 in. ID and a height of 185 in. from bottom tangent line to top of its head. It is supported on a cylindrical skirt (1" thick by approx. 3'-0" high) which in turn is supported on a base plate anchored to the concrete floor at Elev. 3'-0". The vessel top head is flat, built with 2.5" thick plate and the bottom is a Flanged & Dished (F & D) head with minimum thickness of 3/4". The shell is specified to be made of 3/4" thick plate. The vessel has internal equipment such as an agitator, pump, thermocouples etc. supported from the tank top or from top and bottom or both. Material for the shell, bottom head and the vessel's internal equipment is UNS N08367 (6% Molybdenum stainless steel alloy, grade AL6XN), and will hereafter be referred to as 6% Mo. The SA-240 316L stainless steel (0.030% maximum carbon content, dual certified) is specified for the top head and sprayers. The supporting skirt is specified as SA-240 304L stainless steel (0.030% maximum carbon content, dual certified). Both preceding listed stainless steel materials will hereafter be referred to as 316L and 304L, respectively. The operating volume is to be about 23,400 gallons and the total internal volume is to be about 25,800 gallons.

	Information Assessed	Source of Information	Assessment
Design	If a non-standard vessel is to be used, the design calculations demonstrate sound engineering principles of construction.	Specifications listed under Material Requisition, Drawings, and Mechanical Data Sheet listed above under References; 24590-CM-MRB-MVA0-00001-S02, Rev.0, Material Requisition Supplement.	The RLD Plant Wash Vessel, RLD-VSL-00003 is a standard ASME Section VIII vessel. The Mechanical Data Sheet requires that the ASME Section VIII, Division 1 vessels be delivered after design, fabrication, inspection and testing with an ASME code stamp and that the vessels be nationally registered. Supplemental design information is provided by the reference documents listed in the Source of Information column for utilizing sound engineering principles of construction of the vessels. As discussed above, the vessel design standards are appropriate and adequate for the vessel's intended use.
	Vessel has adequate strength, after consideration of the corrosion allowance, to withstand the operating pressure, operating temperature, and seismic loads.	Specifications listed under Material Requisition, Drawings, and Mechanical Data Sheet listed above under References; 24590-LAW-3YD-20-00001, Rev. 0, System Description for LAW Vitrification Liquid Effluent Systems (RLD and NLD).	The Mechanical Data Sheet identifies the vessel's operating pressure and temperature ranges, the materials selected for the vessel, the corrosion allowance(s), and the vessel quality level which determines the requirements for seismic design. The design specification for the vessel requires specific consideration of the operating pressures and temperatures and seismic loads in the design process. ASME Section VIII, Div. 1 requires that corrosion allowance thickness shall be excluded from nominal vessel thickness when evaluating the adequacy of vessel components for these loads at end of life. The Engineering Specification for Seismic Qualification Criteria for Pressure Vessels adopts ASME Section VIII, Div. 2 design rules to address seismic design and analysis of the vessel and ASME Section VIII, Div. 1 for vessel supports. Detailed requirements for seismic load determination are furnished in the specification for Seismic Category III/IV Equipment and Tanks. These codes and standards are adequate and appropriate for design of the RLD vessel to withstand operating pressure and temperature loads and seismic loads for the specified design life.

	Information Assessed	Source of Information	Assessment
Foundation	Vessel foundation will maintain the load of a full vessel.	Specifications listed under Material Requisition above under References; 24590-WTP-DB-ENG-01-001, Rev. 1, Basis of Design.	The Engineering Specification for Pressure Vessel Design and Fabrication requires the use of ASME B&PV Code, Section VIII, Division 1 for design of the vessel supports. This code ensures an adequate design for the vessel supports. Chapter 14 of the Basis of Design document requires that vessel foundations design must be adequate to support the loads from full vessels.
	If in an area subject to flooding, the vessel is anchored.	Specifications listed under Material Requisition under References.	Buoyant forces of an empty vessel in a flooded room are a mandatory standard design load case in the Specification for Pressure Vessel Design and Fabrication.
	Vessel system will withstand the effects of frost heave.	24590-WTP-DB-ENG-01-001, Rev. 1, Basis of Design.	The Basis of Design document requires that all structural foundations extend a distance below grade that exceeds the depth of the frost line. The vessel is located inside/interior of the building at above grade (Elevation 3'-0" level), therefore, the vessel foundation is not subject to frost heave.

	Information Assessed	Source of Information	Assessment
Waste Characteristics	Characteristics of the waste to be stored or treated have been identified (ignitable, reactive, toxic, specific gravity, vapor pressure, flash point, storage temperature)	Mechanical Data Sheet listed above under References; Plant Item Material Selection Data Sheet, 24590-LAW-N1D-RLD-P0005, Rev. 0, RLD-VSL-00003 (LAW) Plant Wash Vessel; 24590-WTP-PSAR-ESH-01-002-03, Rev. 0a, Preliminary Safety Analysis Report: LAW Facility Specific Information; 24590-WTP-DWPA-ENV-01-001, Rev. 1, WTP Dangerous Waste Permit Application.	The Mechanical Data Sheet presents the waste specific gravity, storage temperatures and pressures. The Plant Item Material Selection Data Sheet addresses the pH range and chemical composition of the waste to select appropriate vessel materials and specify the corrosion allowance. Other waste characteristics that are hazardous, such as ignitability, reactivity, and toxicity are addressed by the Preliminary Safety Analysis Report for the LAW Vitrification Building and in Part A of the Permit Application as an integral part of the design process. The RLD vessels provide primary confinement of the waste during normal operations, abnormal operations and during and after a Design Basis Earthquake. The vessel has a continually operating agitator to mitigate any sludge buildup and the vessel is actively vented via the LAW vent system to prevent any build-up of flammable gases. The vessel is grounded to control ignition sources.
	Vessel is designed to store or treat the wastes with the characteristics defined above and any treatment reagents.	Plant Item Material Selection Data Sheet, 24590-LAW-N1D-RLD-P0005, Rev. 0, RLD-VSL-00003 (LAW) Plant Wash Vessel; 24590-LAW-3YD-20-00001, Rev. 0, System Description for LAW Vitrification Liquid Effluent Systems (RLD and NLD).	The Plant Item Material Selection Data Sheet demonstrates that the vessel is designed to process the wastes discussed above. The System Description discusses normal and abnormal operations for the RLD vessels. Compatible chemicals may be added to the vessels to maintain sodium molarity of 5M. Acid or water will be used for flushing/rinsing.
	The waste types are compatible with each other.	24590-LAW-3YD-20-00001, Rev. 0, System Description for LAW Virtification Liquid Effluent Systems (RLD and NLD).	The System Description for the LAW (RLD) does not describe any operations where incompatible wastes are mixed in these vessels for processing. The RLD vessels function primarily to collect/store secondary effluent waste from various LAW facility systems, mix, and then transfer it to the Pretreatment facility for further processing.

	Information Assessed	Source of Information	Assessment
Corrosion Protection	Vessel material and protective coatings ensure the vessel structure is adequately protected from the corrosive effects of the waste stream and external environments (expected to not leak or fail for the design life of the system)	Drawings and Mechanical Data Sheet listed above under References; Plant Item Material Selection Data Sheet; 24590-LAW-N1D-RLD-P0005, Rev. 0, RLD-VSL-00003 (LAW) Plant Wash Vessel; 24590-LAW-3YD-20-00001, Rev. 0, System Description for LAW Vitrification Liquid Effluent Systems (RLD and NLD).	The Plant Item Material Selection Data Sheet shows that the LAW Plant Wash Vessel, RLD-VSL-00003 normally operates at atmospheric pressure, pH 3 to 14.7, and at 68 °F temperature. The vessel is designed for 15 psig pressure and 200 °F maximum temperature. Potential acid cleaning operations of the vessel were also considered. The materials selected are 6 % Mo and 316L and a corrosion allowance of 0.04 in. The RLD vessel is located in the LAW effluent cell (L-0126) at elevation 3'-0". The vessel's support skirt material is 304L. This cell is equipped with sump to pump out any leaks. Therefore, the cell should remain dry during normal operations which will limit external corrosion of the vessel over the facility design life. The RLD vessel receives waste from various LAW facility systems, drains, and sumps, which includes vessel wash liquid, condensate, and effluent. This vessel's effluent is sent to Pretreatment Facility's Plant Wash Vessel (PWD-VSL-00044) for further processing.
Corrosion Allowance	Corrosion allowance is adequate for the intended service life of the vessel.	Mechanical Data Sheet listed above under References; Plant Item Material Selection Data Sheet; 24590-LAW-N1D-RLD-P0005, Rev. 0, RLD-VSL-00003 (LAW) Plant Wash Vessel.	The bases for the RLD vessel's material selection and corrosion allowance are furnished in the Plant Item Material Selection Data Sheet. Selection of 6% Mo, 316L, and 304L materials with a corrosion allowance of 0.04 in. for a service life of 40 years is adequate and appropriate. The material selections and corrosion allowances are carried forward to the Mechanical Data Sheet consistently and correctly.
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 listed above under References; 24590-LAW-3YD-20-00001, Rev. 0, System Description for LAW Vitrification Liquid Effluent Systems (RLD and NLD).	The RLD Plant Wash Vessel, RLD-VSL-00003 is designed to unrestricted overflow through 6" diameter line to the C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004) located at Elevation (-) 21'-0", as shown on the drawings and described in the System Description document. The vessel is also connected to the LAW vessel vent system to prevent over pressurization of the vessel.

Scope	Scope of this Integrity Assessment	This integrity assessment includes: One RLD SBS Condensate Collection Vessel: RLD-VSL-00005 including its appurtenances or offspring items, located in cell L-0126 at Elevation 3'-0" in the LAW Vitrification Building.
References	Specifications, Drawings and Mechanical Data Sheets	The following Specifications are listed in Material Requisition No. 24590-QL-MRB-MVA0-00001, Rev. 3 Engineering Specification for Pressure Vessel Design and Fabrication; Engineering Specification for Seismic Qualification Criteria for Pressure Vessels; Specification for Welding of Pressure Vessels, Heat Exchangers and Boilers; General Specification for Supplier Quality Assurance Program Requirements; Specification for Positive Material Identification (PMI); General Specification for Packing, Shipping, Handling, and Storage; Engineering Specification for Seismic Qualification Criteria for Pressure Vessels; Engineering Specification for Structural Design Loads for Seismic Category III and IV Equipment and Tanks. Drawings: 24590-LAW-MV-RLD-P0003, Rev. 1, Equipment Assembly SBS Condensate Collection Vessel, (RLD-VSL-00005); 24590-LAW-M6-RLD-P0001, Rev. 1, P & ID-LAW Radioactive Liquid Waste Disposal System Plant Wash & SBS Condensate Collection; 24590-LAW-P1-P01T-P0002, Rev. 2, LAW Vitrification Building General Arrangement Plan at El. 3'-0"; 24590-LAW-P1-P01T-P0007, Rev. 3, LAW Vitrification Building General Arrangement Section C-C; 24590-LAW-P1-P01T-P0010, Rev. 3, LAW Vitrification Building General Arrangement Section K-K and L-L; 24590-LAW-M5-V17T-P0014, Rev. 1, Process Flow Diagram LAW Liquid Effluent (System RLD & NLD). Mechanical Data Sheet: 24590-LAW-MVD-RLD-P0006, Rev.1, SBS Condensate Collection Vessel (RLD-VSL-00005).
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 controls and requirements to ensure the design intent fully satisfies the requirements of Washington Administrative Code, WAC-173-303-640, *Dangerous Waste Regulations*.

	Information Assessed	Source of Information	Assessment
Design	Vessel design standards are appropriate and adequate for the vessel's intended use.	Specifications listed under Material Requisition, Drawings, and Mechanical Data Sheet listed above under References; 24590-LAW-3YD-20-00001, Rev. 0, System Description for LAW Virtification Liquid Effluent Systems (RLD and NLD); SDCN No. 24590-LAW-3YN-20-00001, System Description for LAW Virtification Liquid Effluent Systems (RLD and NLD).	The RLD system SBS Condensate Collection Vessel, RLD-VSL-00005 vessel and all appurtenances are to be designed to the ASME Section VIII, Division 1 rules which are appropriate for pressure vessels operating with mixed waste solutions over the pressure and temperature ranges specified for this vessel. Supplementary requirements are specified in the Engineering Specification for Pressure Vessel Design and Fabrication. Supplementary requirements address pressure vessel fatigue analysis, positive material identification, lifting attachment design, equipment drop evaluation, fabrication tolerances, acceptable welding procedures for the vessel and appurtenances, welder qualifications and testing records, NDE inspections and records, and lifting, packaging, shipping, handling and storage requirements. These are adequate and acceptable design standards. The LAW SBS Condensate Collection Vessel, RLD-VSL-00005 is a vertical vessel with a 192 in. ID and a height of 185 in. from bottom tangent line to top of its head. It is supported on a cylindrical skirt (3/8" thick by approx. 3'-0" high) which in turn is supported on a base plate anchored to the concrete floor at Elev. 3'-0". The vessel head is flat, built with 2.75" thick plate and the bottom is Flanged & Dished (F & D) head with minimum thickness of 3/4". The shell is specified to be made of 3/4" thick plate. The vessel has internal equipment such as an agitator, pump, thermocouples etc. supported from the tank top or from top and bottom or both. Material for the shell, bottom head and the vessel's internal equipment is UNS N08367 (6% Molybdenum stainless steel alloy, grade AL6XN), will hereafter be referred to as 6% Mo. The SA-240 316L stainless steel (0.030% maximum carbon content, dual certified) is specified for the top head and sprayers. The supporting skirt is specified as SA-240 304L stainless steel (0.030% maximum carbon content, dual certified). Both preceding listed stainless steel materials will hereafter be referred to as 316L and 304L, respectively. The operating volume is to be about 23,400 gallons and the total internal volume is to be about 25,800 gallons.

	Information Assessed	Source of Information	Assessment
Design	If a non-standard vessel is to be used, the design calculations demonstrate sound engineering principles of construction.	Specifications listed under Material Requisition, Drawings, and Mechanical Data Sheet listed above under References; 24590-QL-MRB-MVA0-00001-S01, Rev.003, Material Requisition Supplement; 24590-QL-MRB-MVA0-00001-S02, Rev.003, Material Requisition Supplement; 24590-QL-MRB-MVA0-00001-S03, Rev.003, Material Requisition Supplement; 24590-QL-MRB-MVA0-00001-S04, Rev.003, Material Requisition Supplement. 24590-QL-MRB-MVA0-00001-S05, Rev.003, Material Requisition Supplement.	The RLD SBS Condensate Collection Vessel, RLD-VSL-00005 is a standard ASME Section VIII vessel. The Mechanical Data Sheet requires that the ASME Section VIII, Division 1 vessels be delivered after design, fabrication, inspection and testing with an ASME code stamp and that the vessels be nationally registered. Supplemental design information is provided by the reference documents listed in the Source of Information column for utilizing sound engineering principles of construction of the vessels. As discussed above, the vessel design standards are appropriate and adequate for the vessel's intended use.

	Information Assessed	Source of Information	Assessment
Design	Vessel has adequate strength, after consideration of the corrosion allowance, to withstand the operating pressure, operating temperature, and seismic loads.	Specifications listed under Material Requisition, Drawings, and Mechanical Data Sheet listed above under References; 24590-LAW-3YD-20-00001, Rev. 0, System Description for LAW Vitrification Liquid Effluent Systems (RLD and NLD).	The Mechanical Data Sheet identifies the vessel's operating pressure and temperature ranges, the materials selected for the vessel, the corrosion allowance(s), and the vessel quality level which determines the requirements for seismic design. The design specification for the vessels require specific consideration of the operating pressures and temperatures and seismic loads in the design process. ASME Section VIII, Div. 1 requires that corrosion allowance thickness shall be excluded from nominal vessel thickness when evaluating the adequacy of vessel components for these loads at end of life. The Engineering Specification for Seismic Qualification Criteria for Pressure Vessels adopts ASME Section VIII, Div. 2 design rules to address seismic design and analysis of the vessel and ASME Section VIII, Division 1 for vessel supports. Detailed requirements for seismic load determination are furnished in the specification for Seismic Category III/IV Equipment and Tanks. These codes and standards are adequate and appropriate for design of the RLD vessel to withstand operating pressure and temperature loads and seismic loads for the specified design life.

	Information Assessed	Source of Information	Assessment
Foundation	Vessel foundation will maintain the load of a full vessel.	Specifications listed under Material Requisition above under References; 24590-WTP-DB-ENG-01-001, Rev. 1, Basis of Design.	The Engineering Specification for Pressure Vessel Design and Fabrication requires the use of ASME B&PV Code, Section VIII, Division 1 for design of the vessel supports. This code ensures an adequate design for the vessel supports. Chapter 14 of the Basis of Design document requires that vessel foundations design must be adequate to support the loads from full vessels.
	If in an area subject to flooding, the vessel is anchored.	Specifications listed under Material Requisition above under References.	Buoyant forces of an empty vessel in a flooded room are a mandatory standard design load case in the Specification for Pressure Vessel Design and Fabrication.
	Vessel system will withstand the effects of frost heave.	24590-WTP-DB-ENG-01-001, Rev. 1, Basis of Design.	The Basis of Design document requires that all structural foundations extend a distance below grade that exceeds the depth of the frost line. The vessel is located inside/interior of the building at above grade (Elevation 3'-0" level), therefore, the vessel foundation is not subject to frost heave.
Waste Characteristics	Characteristics of the waste to be stored or treated have been identified (ignitable, reactive, toxic, specific gravity, vapor pressure, flash point, storage temperature)	Mechanical Data Sheet listed above under References; Plant Item Material Selection Data Sheet, 24590-LAW-N1D-RLD-P0002, Rev. 0, RLD-VSL-00005 (LAW) SBS Condensate Collection Vessel; 24590-WTP-PSAR-ESH-01-002-03, Rev. 0a, Preliminary Safety Analysis Report: LAW Facility Specific Information; 24590-WTP-DWPA-ENV-01-001, Rev. 1, WTP Dangerous Waste Permit Application.	The Mechanical Data Sheet presents the waste specific gravity, storage temperatures and pressures. The Plant Item Material Selection Data Sheet addresses the pH range and chemical composition of the waste to select appropriate vessel materials and specify the corrosion allowance. Other waste characteristics that are hazardous, such as ignitability, reactivity, and toxicity are addressed by the Preliminary Safety Analysis Report for the LAW Vitrification Building and in Part A of the Permit Application as an integral part of the design process. The RLD vessels provide primary confinement of the waste during normal operations, abnormal operations and during and after a Design Basis Earthquake. The vessel has a continually operating agitator to mitigate any sludge buildup and the vessel is actively vented via the LAW vent system to prevent any build-up of flammable gases. The vessel is grounded to control ignition sources.

	Information Assessed	Source of Information	Assessment
	Vessel is designed to store or treat the wastes with the characteristics defined above and any treatment reagents.	Plant Item Material Selection Data Sheet, 24590-LAW-N1D-RLD-P0002, Rev. 0, RLD-VSL-00005 (LAW) SBS Condensate Collection Vessel; 24590-LAW-3YD-20-00001, Rev. 0, System Description for LAW Vitrification Liquid Effluent Systems (RLD and NLD).	The Plant Item Material Selection Data Sheet demonstrates that the vessel is designed to process the wastes discussed above. The System Description discusses normal and abnormal operations for the RLD vessels. Compatible chemicals may be added to the vessels to maintain sodium molarity of 5M. Acid or water will be used for flushing/rinsing.
	The waste types are compatible with each other.	24590-LAW-3YD-20-00001, Rev. 0, System Description for LAW Virtification Liquid Effluent Systems (RLD and NLD).	The System Description for the LAW (RLD) does not describe any operations where incompatible wastes are mixed in these vessels for processing. The RLD vessels function primarily to collect/store secondary effluent waste from various LAW facility systems, mix, and then transfer it to the Pretreatment facility for further processing.
Corrosion Protection	Vessel material and protective coatings ensure the vessel structure is adequately protected from the corrosive effects of the waste stream and external environments (expected to not leak or fail for the design life of the system)	Drawings and Mechanical Data Sheet listed above under References; Plant Item Material Selection Data Sheet; 24590-LAW-N1D-RLD-P0002, Rev. 0, RLD-VSL-00005 (LAW) SBS Condensate Collection Vessel; 24590-LAW-3YD-20-00001, Rev. 0, System Description for LAW Vitrification Liquid Effluent Systems (RLD and NLD).	The Plant Item Material Selection Data Sheet shows that the LAW SBS Condensate Collection Vessel, RLD-VSL-00005 normally operates at atmospheric pressure, pH 1 to 7.83, and at 104 °F temperature. The vessel is designed for 15 psig pressure and 200 °F maximum temperature. Potential acid cleaning operations of the vessel were also considered. The materials selected are 6 % Mo and 316L and a corrosion allowance of 0.04 in. The RLD vessel is located in the LAW effluent cell (L-0126) at elevation 3'-0". The vessel's support skirt material is 304L. This cell is equipped with sump to pump out any leaks. Therefore, the cell should remain dry during normal operations which will limit external corrosion of the vessel over the facility design life. The RLD vessel receives condensate from various LAW facility systems for short term storage and transfers it to the LAW SBS Condensate Receipt Vessels (TLP-VSL-00009A/B) for further processing.
Corrosion Allowance	Corrosion allowance is adequate for the intended service life of the vessel.	Mechanical Data Sheet listed above under References; Plant Item Material Selection Data Sheet; 24590-LAW-N1D-RLD-P0002, Rev. 0, RLD-VSL-00005 (LAW) SBS Condensate Collection Vessel;	The bases for the RLD vessel's material selection and corrosion allowance are furnished in the Plant Item Material Selection Data Sheet. Selection of 6% Mo, 316L, and 304L materials with a corrosion allowance of 0.04 in. for a service life of 40 years is adequate and appropriate. The material selections and corrosion allowances are carried forward to the Mechanical Data Sheet consistently and correctly.

	Information Assessed	Source of Information	Assessment
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 listed above under References; 24590-LAW-3YD-20-00001, Rev. 0, System Description for LAW Vitrification Liquid Effluent Systems (RLD and NLD).	The RLD SBS Condensate Collection Vessel, RLD-VSL-00005 is designed to unrestricted overflow through 6" diameter line to the RLD Plant Wash Vessel (RLD-VSL-00003) co-located in the same cell (L-0126) at Elevation 3'-0", as shown on the drawings and described in the System Description document. The vessel is also connected to the LAW vessel vent system to prevent over pressurization of the vessel.