Bechtel National, Inc.

Job No. 24590

SUPPLIER DOCUMENT STATUS

1. [X] **Work may proceed.**
2. [ ] **Revise and resubmit. Work may proceed subject to resolution of indicated comments.**
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24590-CM-HC4-HXYG-00138-00020
REV. 00A

3/11/2004

SUBCONTRACT SUBMITTAL

Best Available Copy

STRUCTURAL INTEGRITY ASSESSMENT OF THE ANALYTICAL LABORATORY (LAB) RADIOACTIVE LIQUID WASTE DISPOSAL SYSTEM (RLD) LAB AREA SINK DRAIN COLLECTION VESSEL (RLD-VSL-00164) AND HOT CELL DRAIN COLLECTION VESSEL (RLD-VSL-00165)

COGEMA-IA-040

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.

24590-CM-HC4-HXYG-00138-01-00020, REV. 00A

IQRPE REVIEW
ANALYTICAL LABORATORY (LAB) RADIOACTIVE LIQUID WASTE DISPOSAL SYSTEM (RLD) LAB AREA SINK DRAIN COLLECTION VESSEL (RLD-VSL-00164) AND HOT CELL DRAIN COLLECTION VESSEL (RLD-VSL-00165)

"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 Analytical Laboratory (LAB) Radioactive Liquid Waste Disposal System (RLD) Lab Area Sink Drain Collection vessel, RLD-VSL-00164 & Hot Cell Drain Collection Vessel, RLD-VSL-00165 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 indicates that the design intent fully satisfies the requirements of the WAC.

The attached review is eleven (11) sheets numbered one (1) through eleven (11).

TARLOK SINGH HUNDAL
STATE OF WASHINGTON
20213
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES: 02/15/06

T S Hundal
Signature

3/10/04
Date

Scope	Scope of this Integrity Assessment	This Integrity Assessment includes following two vessels located in the Analytical Laboratory Building: Lab Area Sink Drain Collection Vessel (RLD-VSL-00164), located in cell A-B003 at Elevation (-) 18'-7" (pages 2-6) & Hot Cell Drain Collection Vessel (RLD-VSL-00165), located in cell A-B004 at Elevation (-) 19'-2" (pages 7-11).
References	Specifications, Drawings and Mechanical Data Sheets	The Specifications listed below are included in: Material Requisition No. 24590-CM-MRA-MVA0-00010, Rev. 1, for vessel RLD-VSL-00164; Material Requisition No. 24590-QL-MRA-MVA0-00008, Rev. 0, for vessel RLD-VSL-00165; - 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 Structural Design Loads for Seismic Category III & IV Equipment and Tanks. Drawings: 24590-LAB-MV-RLD-00001, Rev. 1, Equipment Assembly Lab Area Sink Drain Collection Vessel, (RLD-VSL-00164); 24590-LAB-MV-RLD-00003, Rev. 0, Equipment Assembly Hot Cell Drain Collection Vessel, (RLD-VSL-00165); 24590-LAB-M6-RLD-P0001, Rev. 0, P & ID-LAB Radioactive Liquid Waste Disposal System - C5 Collection & Transfer; 24590-LAB-M6-RLD-P0002, Rev. 0, P & ID-LAB Radioactive Liquid Waste Disposal System - C3 Collection & Transfer; 24590-LAB-M6-RLD-P0006, Rev. 0, P & ID-LAB Radioactive Liquid Waste Disposal System - C3 Rad Lab Collection; 24590-LAB-M6-RLD-P0007, Rev. 0, P & ID-LAB Radioactive Liquid Waste Disposal System - C3 Collection & Leak Detection; 24590-LAB-M6-RLD-P0008, Rev. 0, P & ID-LAB Radioactive Liquid Waste Disposal System – C5 Collection & Leak Detection; 24590-LAB-P1-60-P0007, Rev. 1, Analytical Laboratory General Arrangement Plan at El. (-) 19'-2", Sections E-E, F-F, & G-G; 24590-LAB-P1-60-P0010, Rev. 0, Analytical Laboratory General Arrangement Sections A-A, B-B, C-C, & D-D; 24590-LAB-M5-V17T-P0029, Rev. 0, WTP Analytical Laboratory Process Flow Diagram Radioactive Liquid Disposal. Mechanical Data Sheets: 24590-LAB-MVD-RLD-00164, Rev. 0, Lab Area Sink Drain Collection Vessel (RLD-VSL-00164); 24590-LAB-MVD-RLD-00165, Rev. 0, Hot Cell Drain Collection Vessel (RLD-VSL-00165).
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* for Tank Systems.

	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-LAB-3YD-RLD-00001, Rev. 1, System Description for the Radioactive Liquid Waste Disposal System for the Analytical Laboratory.	The RLD system Lab Area Sink Drain Collection Vessel, RLD-VSL-00164 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 for the intended use of the vessel. The RLD-VSL-00164 is a vertical vessel with a 102 in. ID and a height of 69 in. from the bottom tangent line to the top tangent line. The vessel's top and bottom Flanged & Dished (F & D) heads and shells are built with 3/8" thick plate. The vessel is supported on a cylindrical skirt (approx. 1'-10" high) which in turn is supported on a base plate anchored to the concrete floor at Elev. (-) 18'-7". The vessel has internal equipment such as eductors, spray nozzles, and piping that are supported from the vessel's top head. Material for the shell, bottom and top head, and the vessel's internal equipment is UNS N08367 (6% Molybdenum stainless steel alloy) and hereafter referred to as 6% Mo. The supporting skirt is specified as SA-240 304 stainless steel plate (0.030% maximum carbon content) and is hereafter referred to as 304. The operating volume is to be about 2,700 gallons and the total internal volume is to be about 3,200 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.	The RLD system Lab Area Sink Drain Collection Vessel, RLD-VSL-00164 is a standard ASME Section VIII, Division 1 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.
	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-LAB-3YD-RLD-00001, Rev. 1, System Description for the Radioactive Liquid Waste Disposal System for the Analytical Laboratory.	The Mechanical Data Sheet identifies the vessel's operating pressure and temperature ranges, the materials selected for the vessel, the corrosion allowance, and the vessel quality level, and requirements for seismic design. The specifications 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 the 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. 1A, 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 the 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 the vessel foundation design must be adequate to support the loads from full vessel.
	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. 1A, Basis of Design.	The Basis of Design document requires that all structural foundations extend a distance below grade that exceeds the depth of the 30" frost line. The vessel is located inside/interior of the building at below grade elevation {(-) 18'-7"}, 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-LAB-N1D-RLD-P0002, Rev. 0, RLD-VSL-00164 (LAB) Lab Area Sink Drain Collection Vessel (RLD C3 Vessel); 24590-WTP-PSAR-ESH-01-002-01, Rev. 1, Preliminary Safety Analysis Report to Support Construction Authorization: General Information; Ecology Permit # WA7890008967, *Dangerous Waste Portion of the Hanford Facility Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste,* Chapter 10, and Attachment 51, "Waste Treatment and Immobilization Plant."; 24590-WTP-PER-PR-03-001, Rev. 1, Prevention of Hydrogen Accumulation in WTP Tank Systems And Miscellaneous Treatment Unit Systems; 24590-LAB-M0C-RLD-00003, Hydrogen Gas Generation in RLD Vessels (RLD-VSL-00164 and RLD-VSL-00165).	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 and in Part A of the Permit, 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 mixing eductors to mitigate any sludge buildup and the vessel is actively vented via the LAB vent system to prevent any build-up of flammable gases. Prevention of Hydrogen Accumulation and Hydrogen Gas Generation in RLD Vessels documents show that the contents of the vessels are not expected to generate hydrogen gas that would accumulate 1% by volume (i.e., 25% of the LFL) in the headspace. Therefore, this vessel does not pose hydrogen accumulation hazard. The vessel is also 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-LAB-N1D-RLD-P0002, Rev. 0, RLD-VSL-00164 (LAB) Lab Area Sink Drain Collection Vessel (RLD C3 Vessel); 24590-LAB-3YD-RLD-00001, Rev. 1, System Description for the Radioactive Liquid Waste Disposal System for the Analytical Laboratory.	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. Diluted acid or water will be used for flushing/rinsing.
	The waste types are compatible with each other.	24590-LAB-3YD-RLD-00001, Rev. 1, System Description for the Radioactive Liquid Waste Disposal System for the Analytical Laboratory.	The System Description for the LAB (RLD) does not describe any operations where incompatible wastes are mixed in these vessels for processing. The RLD vessel's primary function is to collect, contain, and transfer liquid streams.

	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-LAB-N1D-RLD-P0002, Rev. 0, RLD-VSL-00164 (LAB) Lab Area Sink Drain Collection Vessel (RLD C3 Vessel); 24590-LAB-3YD-RLD-00001, Rev. 1, System Description for the Radioactive Liquid Waste Disposal System for the Analytical Laboratory.	The Plant Item Material Selection Data Sheet shows that the Lab Area Sink Drain Collection Vessel, RLD-VSL-00164 normally operates at a pH range of 6 to 8 and at a temperature of 78°F. The vessel is designed for a 15 psig pressure and a temperature of 240°F. Other pertinent vessel operation and design information is provided in the Mechanical Data Sheet. Potential acid cleaning operations of the vessel were also considered. The materials selected are 6 % Mo and a corrosion allowance of 0.04 in. The RLD vessel is located in the LAB cell (A-B003) at Elevation (-) 18'-7". The vessel's support skirt material is 304. 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 Floor Drain Collection Vessel (RLD-VSL-00163) and various floor and sink drains in the LAB facility for short term storage, and transfers it to the LAB Hot Cell Drain Collection Vessel (RLD-VSL-00165) 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-LAB-N1D-RLD-P0002, Rev. 0, RLD-VSL-00164 (LAB) Lab Area Sink Drain Collection Vessel (RLD C3 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 material for the vessel 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-LAB-3YD-RLD-00001, Rev. 1, System Description for the Radioactive Liquid Waste Disposal System for the Analytical Laboratory.	The RLD system Lab Area Sink Drain Collection Vessel, RLD-VSL-00164 is designed to unrestricted overflow through an 8" diameter line to the cell sump (RLD-SUMP-00041) as shown on the drawings and described in the System Description document. The sump contents will be transferred via pump (RLD-PMP-00182A/B) to the LAB Hot Cell Drain Collection Vessel (RLD-VSL-00165) for further processing. The vessel is also connected to the LAB vent system to prevent its over pressurization.

	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-LAB-3YD-RLD-00001, Rev. 1, System Description for the Radioactive Liquid Waste Disposal System for the Analytical Laboratory.	The RLD system Hot Cell Drain Collection Vessel, RLD-VSL-00165 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 for the intended use of the vessel. The RLD-VSL-00165 is a vertical vessel with a 192 in. ID and a height of 33 in. from the bottom tangent line to the top tangent line. The vessel's top and bottom Flanged & Dished (F & D) heads are built with 5/8" thick plate. Vessel's shell is built with 1/2" thick plate. The vessel is supported on a cylindrical skirt (approx. 3'-1" high) which in turn is supported on a base plate anchored to the concrete floor at Elev. (-) 19'-2". The vessel has internal equipment such as eductors, spray nozzles, and piping that are supported from the vessel's top head. Material for the shell, bottom and top head, and the vessel's internal equipment is UNS N08367 (6% Molybdenum stainless steel alloy) and hereafter referred to as 6% Mo. The supporting skirt is specified as SA-240 304 stainless steel plate (0.030% maximum carbon content) and is hereafter referred to as 304. The operating volume is to be about 6,615 gallons and the total internal volume is to be about 9,100 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.	The RLD system Hot Cell Drain Collection Vessel, RLD-VSL-00165 is a standard ASME Section VIII, Division 1 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.
	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-LAB-3YD-RLD-00001, Rev. 1, System Description for the Radioactive Liquid Waste Disposal System for the Analytical Laboratory.	The Mechanical Data Sheet identifies the vessel's operating pressure and temperature ranges, the materials selected for the vessel, the corrosion allowance, and the vessel quality level, and requirements for seismic design. The design specifications 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. 1A, 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 the 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 the vessel foundation design must be adequate to support the loads from full vessel.
	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. 1A, Basis of Design.	The Basis of Design document requires that all structural foundations extend a distance below grade that exceeds the depth of the 30" frost line. The vessel is located inside/interior of the building at below grade elevation {(-) 19'-2"}, 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-LAB-N1D-RLD-P0003, Rev. 0, RLD-VSL-00165 (LAB) Hot Cell Drain Collection Vessel; 24590-WTP-PSAR-ESH-01-002-01, Rev. 1b, Preliminary Safety Analysis Report to Support Construction Authorization: General Information; Ecology Permit # WA7890008967, *Dangerous Waste Portion of the Hanford Facility Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste,* Chapter 10, and Attachment 51, "Waste Treatment and Immobilization Plant."; 24590-WTP-PER-PR-03-001, Rev. 1, Prevention of Hydrogen Accumulation in WTP Tank Systems And Miscellaneous Treatment Unit Systems; 24590-LAB-M0C-RLD-00003, Hydrogen Gas Generation in RLD Vessels (RLD-VSL-00164 and RLD-VSL-00165).	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 and in Part A of the Permit, 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 mixing eductors to mitigate any sludge buildup and the vessel is actively vented via the LAB vent system to prevent any build-up of flammable gases. Prevention of Hydrogen Accumulation and Hydrogen Gas Generation in RLD Vessels documents show that the contents of the vessels are not expected to generate hydrogen gas that would accumulate 1% by volume (i.e., 25% of the LFL) in the headspace. Therefore, this vessel does not pose hydrogen accumulation hazard. The vessel is also 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-LAB-N1D-RLD-P0003, Rev. 0, RLD-VSL-00165 (LAB) Hot Cell Drain Collection Vessel; 24590-LAB-3YD-RLD-00001, Rev. 1, System Description for the Radioactive Liquid Waste Disposal System for the Analytical Laboratory.	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. Diluted acid or water will be used for flushing/rinsing.
	The waste types are compatible with each other.	24590-LAB-3YD-RLD-00001, Rev. 1, System Description for the Radioactive Liquid Waste Disposal System for the Analytical Laboratory.	The System Description for the LAB (RLD) does not describe any operations where incompatible wastes are mixed in these vessels for processing. The RLD vessel's primary function is to collect, contain, and transfer liquid streams.

	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-LAB-N1D-RLD-P0003, Rev. 0, RLD-VSL-00165 (LAB) Hot Cell Drain Collection Vessel; 24590-LAB-3YD-RLD-00001, Rev. 1, System Description for the Radioactive Liquid Waste Disposal System for the Analytical Laboratory.	The Plant Item Material Selection Data Sheet shows that the Hot Cell Drain Collection Vessel, RLD-VSL-00165 normally operates at a pH range of 6 to 8 and at a temperature of 78°F. The vessel is designed for a 15 psig pressure and a temperature of 240°F. Other pertinent vessel operation and design information is provided in the Mechanical Data Sheet. Potential acid cleaning operations of the vessel were also considered. The material selected is 6 % Mo and a corrosion allowance of 0.04 in. The RLD vessel is located in the LAB cell (A-B004) at Elevation (-) 19'-2". The vessel's support skirt material is 304. 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 Floor Drain Collection Vessel (RLD-VSL-00163) and cell sump, Lab Area Sink Drain Collection Vessel (RLD-VSL-00164) and cell sump, and various floor and sink drains in the LAB facility for short term storage, and transfers it to the PTF plant wash disposal vessel (PWD-VSL-00044 or PWD-VSL-00033) 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-LAB-N1D-RLD-P0003, Rev. 0, RLD-VSL-00165 (LAB) Hot Cell Drain 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 material for the vessel 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-LAB-3YD-RLD-00001, Rev. 1, System Description for the Radioactive Liquid Waste Disposal System for the Analytical Laboratory.	The RLD system Hot Cell Drain Collection Vessel, RLD-VSL-00165 is designed to unrestricted overflow through a 6" dip pipe to the cell sump (RLD-SUMP-00042) as shown on the drawings and described in the System Description document. The sump contents will be transferred via pump (RLD-PMP-00183A/B) to the PTF plant wash disposal vessel (PWD-VSL-00044 or PWD-VSL-00033) for further processing. The vessel is also connected to the LAB vent system to prevent its over pressurization.