Bechtel National, Inc.

Job No. 24590

SUPPLIER DOCUMENT STATUS

1. **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										

G-321 Document Category N/A
[From Supplement A to G-321 (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 DCPfluger (Print Name) DCPfluger (Signature) 2/6/04 (Date)

Released by N/A (Print Name) _____ (Signature) _____ (Date)
[When applicable]

416 GP&S 6-03

24590-CM-HC4-HXYG-00138-02-00011
REV. 00A

PURCHASE ORDER SUBMITTAL

Best Available Copy

R10201161

IQRPE REVIEW
OF
THE LOW ACTIVITY WASTE FACILITY OFFGAS PROCESS (LOP) SYSTEM SUBMERGED BED SCRUBBERS (LOP-SCB-00001/2) AND WET ELECTROSTATIC PRECIPITATORS (LOP-WESP-00001/2)

"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 Facility (LAW) Offgas Process (LOP) System Submerged Bed Scrubbers (LOP-SCB-00001/2) and Wet Electrostatic Precipitators (LOP-WESP-00001/2) 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 12 pages numbered one (1) through twelve (12).

TARLOK SINGH HUNDAL
STATE OF WASHINGTON
20213
REGISTERED
PROFESSIONAL ENGINEER

EXPIRES: 02/15/06

Signature

2-4-04
Date

RPP-WTP
RECEIVED
FEB 05 2004
BY PDC

STRUCTURAL INTEGRITY ASSESSMENT OF THE LOW ACTIVITY WASTE FACILITY OFFGAS PROCESS (LOP) SYSTEM SUBMERGED BED SCRUBBERS (LOP-SCB-00001/2) AND WET ELECTROSTATIC PRECIPITATORS (LOP-WESP-00001/2)

COGEMA-IA-033
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 two LOP Submerged Bed Scrubbers (SBS): LOP-SCB-00001/2 including their appurtenances, located in cells L-0123/L0124 respectively, at Elevation 3'-0" in the LAW Vitrification Building.
References	Specifications, Drawings and Mechanical Data Sheet	The following Specifications are listed in Material Requisition No. 24590-QL-MRA-MKAS-00001, Rev. 5 Engineering Specification for Pressure Vessel Design and Fabrication; Engineering Specification for Pressure Vessel Fatigue Analysis; 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 Requirements; Engineering Specification for Seismic Qualification Criteria for Pressure Vessels; Engineering Specification for Structural Design Loads for Seismic Category III & IV Equipment and Tanks. Drawings: 24590-LAW-MK-LOP-00001001,-00001002, -00001003, all Rev. 0, Equipment Assembly LAW Submerged Bed Scrubber (LOP-SCB-00001/2) Q (including Drawing Change Notices listed in the above referenced Material Requisition No.); 24590-LAW-P1-P01T-P0002, Rev. 2, LAW Vitrification Building General Arrangement Plan at El. 3'-0"; 24590-LAW-P1-P01T-P0007, Rev. 2, LAW Vitrification Building General Arrangement Section A-A, B-B, and C-C; 24590-LAW-P1-P01T-P0010, Rev. 3, LAW Vitrification Building General Arrangement Section K-K and L-L; 24590-LAW-M5-V17T-P0007, Rev. 0, Process Flow Diagram LAW Melter 1 Primary Offgas Treatment System (System LOP); 24590-LAW-M5-V17T-P0008, Rev. 0, Process Flow Diagram LAW Melter 2 Primary Offgas Treatment System (System LOP); 24590-LAW-M6-LOP-00001, Rev. 1, P & ID-LAW Primary Offgas Process System Melter 1 (Q); 24590-LAW-M6-LOP-00002, Rev. 1, P & ID-LAW Primary Offgas Process System Melter 2 (Q). Mechanical Data Sheet: 24590-LAW-MKD-LOP-00008, Rev.1, Melter 1 and 2 Submerged Bed Scrubbers (LOP-SCB-00001/2).
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-LAW-3YD-LOP-00001, Rev. 0, System Description for LOP and LVP: LAW Melter Offgas.	The LOP system Submerged Bed Scrubbers, LOP-SCB-00001/2 and their 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 these plant items. Supplementary requirements are specified in the Engineering Specification for Pressure Vessel Design and Fabrication. Supplementary requirements address pressure vessel, 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. The vessels are subjected to cyclic loading. The Specification for Fatigue Analysis requires the use of ASME Section VIII, Division 2 rules for vessel components with a high number of load cycles. These are adequate and acceptable design standards for the intended use of these SBSs. The LAW Submerged Bed Scrubbers, LOP-SCB-00001/2 are vertical with a 120 in. ID and a height of 78 in. from bottom tangent line to top tangent line. The top and bottom Flanged & Dished (F & D) heads and shell are built with minimum 5/8" thick plate. Each SBS is supported on a cylindrical skirt (1/2" minimum thick plate by approx. 5'-7" high) which in turn is supported on a base plate anchored to the concrete floor at Elev. 3'-0". The SBSs have internal equipment such as coil and scrubber bed supported from the top head. Material for the shell, top and bottom heads, and internal equipment is Hastelloy C-22 (SB-575 N06022) and is hereafter referred to as C-22. The vessel's shell and bottom head has an external cooling coil jacket made of SA-312 304 stainless steel half-pipe section. 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 3,690 gallons and the total internal volume is to be about 4,950 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 LOP Submerged Bed Scrubbers, LOP-SCB-00001/2 are standard ASME Section VIII vessels. The Mechanical Data Sheet requires that the ASME Section VIII, Division 1 plant items be delivered after design, fabrication, inspection and testing with an ASME code stamp and 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.
			The Mechanical Data Sheet identifies SBSs' (including appurtenances) operating pressure and temperature ranges, the materials selected for the vessel, the corrosion allowance, and the vessel quality level which determines the requirements for seismic design. The specifications require specific consideration of the operating pressures and temperatures and
	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-LOP-00001, Rev. 0, System Description for LOP and LVP: LAW Melter Offgas.	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 SBS and ASME Section VIII, Div.1 for supports. Detailed requirements for seismic load determination are furnished in the Specification for Structural Design Loads for Seismic Category III & IV Equipment and Tanks. These codes and standards are adequate and appropriate for design of the SBS 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 BPV Code, Section VIII, Division 1 for the design of the SBS supports. This code ensures an adequate design for the SBS supports. Chapter 14 of the Basis of Design document requires that the foundation for each plant item 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. 1A, Basis of Design.	The Basis of Design document requires that all structural foundations for outdoor equipment to extend a distance below grade that exceeds the 30" depth of the frost line. The SBSs are located inside/interior of the building at Elev. 3'-0" level, and the building's lower level floor is at Elev. (-) 21'-0", therefore, the foundations are 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-LOP-P0001, Rev. 0, LOP-SCB-00001/2 (LAW) Melter 1 and Melter 2 Submerged Bed Scrubbers (SBS); 24590-WTP-PSAR-ESH-01-002-03, Rev. 1, Preliminary Safety Analysis Report to Support Construction Authorization: LAW Facility Specific 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."	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 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 as an integral part of the design process. The SBSs provide primary confinement of the waste during normal operations, abnormal operations and during and after a Design Basis Earthquake. Each vessel continually discharges offgas through the outlet line at its top and the liquid circulation helps prevent the build-up of any flammable gases. These plant items are 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-LOP-P0001, Rev. 0, LOP-SCB-00001/2 (LAW) Melter 1 and Melter 2 Submerged Bed Scrubbers (SBS); 24590-LAW-3YD-LOP-00001, Rev. 0, System Description for LOP and LVP: LAW Melter Offgas.	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 SBSs. To help remove the solids the re-circulated stream is pumped through 8 lances that agitate the bottom of the SBS column and consolidate the solids near the pump suction.
	The waste types are compatible with each other.	24590-LAW-3YD-LOP-00001, Rev. 0, System Description for LOP and LVP: LAW Melter Offgas.	The System Description for the LAW (LOP) does not describe any operations where incompatible wastes are mixed in the SBSs for processing. They function primarily to process byproduct offgas from the LAW melters concentrated feed waste received from the Pretreatment Facility (PTF).

	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-LOP-P0001, Rev. 0, LOP-SCB-00001/2 (LAW) Melter 1 and Melter 2 Submerged Bed Scrubbers (SBS); 24590-LAW-3YD-LOP-00001, Rev. 0, System Description for LOP and LVP: LAW Melter Offgas.	The Plant Item Material Selection Data Sheet shows that the LAW Submerged Bed Scrubbers, LOP-SCB-00001/2 normally operate at a pH range of 3 to 8 and at a temperature of about 122°F. They are designed for 15 psig pressure and a temperature of 237 °F. Other pertinent vessel operation and design information is provided in the Mechanical Data Sheet. The material selected is C-22 and a corrosion allowance of 0.04 in. The SBSs are located in the LAW cells (L-0123/L-0124) at Elevation 3'-0". The vessel's support skirt material is 304. This cell is equipped with a 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.
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-LOP-P0001, Rev. 0, LOP-SCB-00001/2 (LAW) Melter 1 and Melter 2 Submerged Bed Scrubbers (SBS).	The bases for the SBSs' material selection and corrosion allowance are furnished in the Plant Item Material Selection Data Sheet. Selection of C-22 and 304 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-LOP-00001, Rev. 0, System Description for LOP and LVP: LAW Melter Offgas.	The LOP Submerged Bed Scrubbers , LOP-SCB-00001/2 are designed for unrestricted continuous liquid overflow through two 4" diameter lines to the SBS Condensate Vessels (LOP-VSL-00001/2) which are also located at Elevation 3'-0", as shown on the drawings and described in the System Description document. The offgas also flows unrestrictedly via the 10" diameter outlet lines to the LAW Wet Electrostatic Precipitators (LOP-WESP-00001/2). The unrestricted liquid overflow and offgas discharge prevent the over pressurization of the Scrubbers.

Scope	Scope of this Integrity Assessment	This Integrity Assessment includes two LOP Wet Electrostatic Precipitators: LOP-WESP-00001/2 including their appurtenances, located in cells L-0123/L0124 respectively, at Elevation 3'-0" in the LAW Vitrification Building.
References	Specifications and Drawings	The following Specifications are listed in Material Requisition No. 24590-QL-MRA-MKE0-00001, Rev. 4 (including MRS No. S001 to Rev. 4): Engineering Specification for Pressure Vessel Design and Fabrication; 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 Requirements; Engineering Specification for Seismic Qualification Criteria for Pressure Vessels; Engineering Specification for Structural Design Loads for Seismic Category III & IV Equipment and Tanks. Engineering Specification for Wet Electrostatic Precipitators (WESPs), (including SCN No. 24590-WTP-3PN-MKE0-00001). Drawings: 24590-LAW-P1-P01T-P0002, Rev. 2, LAW Vitrification Building General Arrangement Plan at El. 3'-0"; 24590-LAW-P1-P01T-P0007, Rev. 2, LAW Vitrification Building General Arrangement Section A-A, B-B, and C-C; 24590-LAW-P1-P01T-P0010, Rev. 3, LAW Vitrification Building General Arrangement Section K-K and L-L; 24590-LAW-M5-V17T-P0007, Rev. 0, Process Flow Diagram LAW Melter 1 Primary Offgas Treatment System (System LOP); 24590-LAW-M5-V17T-P0008, Rev. 0, Process Flow Diagram LAW Melter 2 Primary Offgas Treatment System (System LOP); 24590-LAW-M6-LOP-00001, Rev. 1, P & ID-LAW Primary Offgas Process System Melter 1 (Q); 24590-LAW-M6-LOP-00002, Rev. 1, P & ID-LAW Primary Offgas Process System Melter 2 (Q);
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 and Drawings listed above under References; 24590-LAW-3YD-LOP-00001, Rev. 0, System Description for LOP and LVP: LAW Melter Offgas.	The LOP system Wet Electrostatic Precipitators, LOP-WESP-00001/2 including 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 these plant items. Supplementary requirements are specified in the Engineering Specification for Pressure Vessel Design and Fabrication. Supplementary requirements address pressure vessel, 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 these plant items. The Specification for the LAW Wet Electrostatic Precipitators show that the LOP-WESP-00001/2 are vertical with a 8'-0" OD and a height of 21'-6" from bottom of skirt to the top. Each WESP is to be supported on a skirt which in turn is to be supported on a base plate anchored to the concrete floor at Elev. 3'-0". Material specified for the vessel is 6% Molybdenum stainless steel alloy (e.g., AL-6XN) with 0.04" corrosion allowance and is hereafter referred to as 6% Mo. The material for supporting skirt plate is specified as SA-240 304 or 316 stainless steel (0.030% maximum carbon content) and is hereafter referred to as 304 or 316.

	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 and Drawings listed above under References.	The LOP Wet Electrostatic Precipitators, LOP-WESP-00001/2 are standard ASME Section VIII, Division 1 vessels. The Specification for the WESPs requires that the ASME Section VIII, Division 1 plant items be delivered after design, fabrication, inspection and testing with an ASME code stamp and 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 WESPs.
	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 and Drawings listed above under References; 24590-LAW-3YD-LOP-00001, Rev. 0, System Description for LOP and LVP: LAW Melter Offgas.	The Specification for the WESPs identifies their operating pressure and temperature ranges, the materials selected for the vessel, the corrosion allowance, and the vessel quality level which determines the requirements for seismic design. The specifications 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 WESP and ASME Section VIII, Div.1 for the design of the vessel supports. Detailed requirements for seismic load determination are furnished in the Specification for Structural Design Loads for Seismic Category III & IV Equipment and Tanks. These codes and standards are adequate and appropriate for design of the WESP 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 BPV Code, Section VIII, Division 1 for the design of the WESP supports. This code ensures an adequate design for the WESP supports. Chapter 14 of the Basis of Design document requires that the foundation for each plant item 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. 1A, Basis of Design.	The Basis of Design document requires that all structural foundations for outdoor equipment to extend a distance below grade that exceeds the 30" depth of the frost line. The WESPs are located inside/interior of the building at Elev. 3'-0" level, and the building's lower level floor is at Elev. (-) 21'-0", therefore, the foundations are 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)	Specification for WESPs listed above under References; 24590-WTP-PSAR-ESH-01-002-03, Rev. 1, Preliminary Safety Analysis Report to Support Construction Authorization: LAW Facility Specific Information; 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."	The Specification for WESPs presents the offgas temperatures, pressures, and chemical composition to select appropriate 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, as an integral part of the design process. The WESPs provide primary confinement of the waste during normal operations, abnormal operations and during and after a Design Basis Earthquake. These plant items are grounded to control ignition sources.
	Vessel is designed to store or treat the wastes with the characteristics defined above and any treatment reagents.	24590-LAW-3YD-LOP-00001, Rev. 0, System Description for LOP and LVP: LAW Melter Offgas.	The System Description discusses normal and abnormal operations for the WESPs. Water will be used for flushing/rinsing or wash downs.
	The waste types are compatible with each other.	24590-LAW-3YD-LOP-00001, Rev. 0, System Description for LOP and LVP: LAW Melter Offgas.	The System Description for the LAW (LOP) does not describe any operations where incompatible wastes are mixed in the WESPs for processing. They function primarily to process byproduct offgas from the LAW melters concentrated feed waste received from the Pretreatment facility (PTF).

	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 Specifications listed above under References; 24590-LAW-N1D-LOP-P0003, Rev. 0 Plant Item Material Selection Data Sheet, Melter 1 and Melter 2 Wet Electrostatic Precipitator (WESP), LOP-WESP-00001/2 (LAW); 24590-LAW-3YD-LOP-00001, Rev. 0, System Description for LOP and LVP: LAW Melter Offgas.	The Engineering Specification for WESPs and Plant Item Material Selection Data Sheet show that the WESPs, LOP-WESP-00001/2 normally operate at a pH range of 0.71 to 1.57 and at a temperature of 121°F (+/- 15°F). They are designed for a range of + 1 atmospheric to (-1) atmospheric pressure and for 170°F temperature. The material selected is 6% Mo alloy and a corrosion allowance of 0.04 in. The WESPs are located in the LAW cells (L-0123/L-0124) at Elevation 3'-0". The WESPs' support skirt material is 304 or 316. Each cell is equipped with a 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.
Corrosion Allowance	Corrosion allowance is adequate for the intended service life of the vessel.	Specification for WESPs listed above under References; 24590-LAW-N1D-LOP-P0003, Rev. 0 Plant Item Material Selection Data Sheet, Melter 1 and Melter 2 Wet Electrostatic Precipitator (WESP), LOP-WESP-00001/2 (LAW).	The material selection and corrosion allowance are furnished in the Plant Item Material Selection Data Sheet and Specification for WESPs. Selection of 6% Mo alloy with a corrosion allowance of 0.04 in. for a service life of 40 years, appear to be adequate and appropriate.
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-LOP-00001, Rev. 0, System Description for LOP and LVP: LAW Melter Offgas.	The LOP Wet Electrostatic Precipitators , LOP-WESP-00001/2 are inline vessels designed for unrestricted upward continuous flow of offgas to the HEPA pre-heaters for further processing and for the unrestricted condensate gravity flow down into the C3/C5 drain/sump collection vessel (RLD-VSL-00004), as shown on the drawings and described in the System Description document.