STRUCTURAL INTEGRITY ASSESSMENT OF THE PRETREATMENT FACILITY (PTF) VESSEL VENT PROCESS SYSTEM (PVP) VESSEL PVP-VSL-00001, HEME DRAIN COLLECTION VESSEL, AND MTU PVP-SCB-00002, VESSEL VENT CAUSTIC SCRUBBER

BECHTEL

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								ENS DMZ		

G-321 Document Category N/A
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Supersedes BNI Document No. N/A Rev. _____
[When applicable]

Accepted by DC Pflinger (Print Name) [signature] (Signature) 11/18/04 (Date)

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[When applicable]

416 GP&S 7-03

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-00138-02-00051, REV. 00A

R10437431

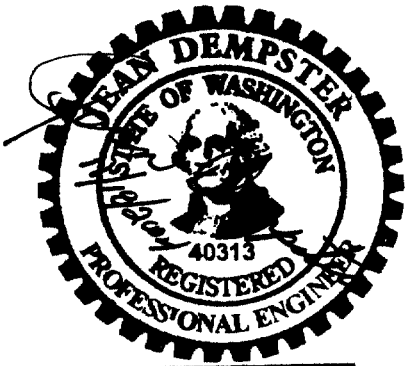
IQRPE REVIEW
OF
THE PRETREATMENT FACILITY (PTF) VESSEL VENT PROCESS SYSTEM (PVP) VESSEL PVP-VSL-00001, HEME DRAIN COLLECTION VESSEL, AND MTU PVP-SCB-00002, VESSEL VENT CAUSTIC SCRUBBER

"I, Jean Dempster, 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 Pretreatment Facility (PTF) Vessel Vent Process System (PVP) Vessel PVP-VSL-00001, HEME Drain Collection Vessel, and MTU PVP-SCB-00002, Vessel Vent Caustic Scrubber, as required by the Washington Administrative Code, *Dangerous Waste Regulations,* Section WAC 173-303-640(3) (a) through (g) applicable components."

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

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

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



EXPIRES: 7-30-2006

Signature

11/18/2004
Date

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Scope	Scope of this Integrity Assessment	The scope of this integrity assessment includes the Pretreatment Facility (PTF) HEME Drain Collection Vessel (PVP-VSL-00001) and the PTF Vessel Vent Caustic Scrubber (PVP-SCB-00002). The primary function of the HEME Drain Collection Vessel is to receive washings from the HEMEs via a drain seal leg. Periodically the accumulated drains and washings are transferred to the Plant Wash Vessel, PWD-VSL-00044 in the PWD system. The Caustic Scrubber provides confinement of the exhaust gases, absorbs soluble NO_x/acid gases and removes large solid particulates from the PTF vessel vent exhaust gases.
References	Drawings and Material Requisitions	24590-PTF-P1-P01T-P0001, Rev. 3, Pretreatment Facility General Arrangement Plan at EL. 0'-0" 24590-PTF-M5-V17T-P0021001, Rev. 0, Process Flow Diagram – Pretreatment Vessel Vents Process (PVP/PVV) Systems PVP/PVV/PJV 24590-PTF-M6-PVP-P0018, Rev. 0, P&ID – PTF Pretreatment Vessel Vent Process System (PVP) HEMEs to VOC Oxidation Unit 24590-PTF-M6-PVP-P0017, Rev. 0, P&ID – PTF Pretreatment Vessel Vent Process System (PVP) Caustic Scrubber to HEMEs 24590-PTF-MV-PVP-P0002, Rev. 0, Equipment Assembly Drawing – HEME Drain Collection Vessel PVP-VSL-00001 24590-QL-MRF-MVA0-00003, Rev. 1, Pressure Vessels, Shop Fabricated, Small MR Section 2 – Technical Specifications 24590-QL-MRA-MKAS-00002, Rev. 1, PTF Vessel Vent Caustic Scrubber MR Section 2 – Technical Specifications
References	Mechanical Data Sheets, Plant Item Material Selection Data Sheets and System Description	Mechanical Data Sheet: Vessel, 24590-PTF-MVD-PVP-00001, Rev. 1, HEME Drain Collection Vessel Plant Item Number 24590-PTF-MV-PVP-VSL-00001 Mechanical Data Sheet: Vessel, 24590-PTF-MKD-PVP-00002, Rev. 4, Vessel Vent Caustic Scrubber Plant Item Number 24590-PTF-MK-PVP-SCB-00002 Plant Item Material Selection Data Sheet, 24590-PTF-N1D-PVP-P0002, Rev. 0, HEME Drain Collection Vessel PVP-VSL-00001 (PTF) Plant Item Material Selection Data Sheet, 24590-PTF-N1D-PVP-P0001, Rev. 0, Vessel Vent Caustic Scrubber PVP-SCB-00002 (PTF) 24590-PTF-3YD-PVP-00001, Rev. 0, System Description for Pretreatment Vessel Vent Process System, PVP System Description Change Notice (SDCN) No. 24590-PTF-3YN-PVP-00001 for System Description Number 24590-PTF-3YD-PVP-00001, Rev. 0
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 assure the design intent fully satisfies the WAC requirements.

	Information Assessed	Source of Information	Discussion
Design	Vessel design standards are appropriate and adequate for the vessel's intended use.	Material Requisition and Mechanical Data Sheet listed above under References 24590-WTP-3PS-MV00-T0001, Rev. 1, Engineering Specification for Pressure Vessel Design and Fabrication SCN No. 24590-WTP-3PN-MV00-00006 for Spec. No. 24590-WTP-3PS-MV00-T0001, Rev. 1 ASME Boiler and Pressure Vessel Code (B&PV), Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers 24590-WTP-3PS-SS90-T0001, Rev 0, Engineering Specification for Seismic Qualification of Seismic Category I/II Equipment and Tanks	Material Requisition 24590-QL-MRF-MVA0-00003 lists specifications required for the design and fabrication of PVP-VSL-00001, the HEME Drain Collection Vessel, including 24590-WTP-3PS-MV00-T0001, Engineering Specification for Pressure Vessel Design and Fabrication. This specification requires that the vessel be designed and fabricated in accordance with ASME B&PV Code, Section VIII, Division 1. The Mechanical Data Sheet identifies vessel PVP-VSL-00001 as Quality Level QL-2 and Seismic Category SC-II equipment Design requirements for QL-2 pressure vessels are described in 24590-WTP-3PS-MV00-T0001. Seismic qualification requirements are contained in 24590-WTP-3PS-SS90-T0001, Rev 0, Engineering Specification for Seismic Qualification of Seismic Category I/II Equipment and Tanks. Additional requirements included in the specification for Pressure Vessel Design and Fabrication are: • positive material identification • standard fabrication tolerances • acceptable welding procedures for the vessel and appurtenances • welder qualifications and testing records • NDE inspections and records • quality assurance requirements • packaging, shipping, handling, and storage requirements. These are appropriate and adequate codes and standards for design and fabrication of the subject vessel.

	Information Assessed	Source of Information	Discussion
	If a non-standard vessel is to be used, the design calculations demonstrate sound engineering principles of construction.	Material Requisition and Mechanical Data Sheet listed above under References 24590-WTP-3PS-MV00-T0001, Rev. 1, Engineering Specification for Pressure Vessel Design and Fabrication; SCN No. 24590-WTP-3PN-MV00-00006 for Spec. No. 24590-WTP-3PS-MV00-T0001, Rev. 1	The Engineering Specification for Pressure Vessel Design and Fabrication requires that WTP vessels shall be designed and fabricated in accordance with ASME Section VIII, Div. 1 Material Requisition 24590-QL-MRF-MVA0-00003, Rev. 1 imposes this specification for the design and fabrication of PVP-VSL-00001. The Mechanical Data Sheet requires a code stamp and National Board Registration. Therefore, this is a standard vessel and the referenced codes and standards are adequate and acceptable for design and fabrication.
Design	Vessel has adequate strength, after consideration of the corrosion allowance, to withstand the operating pressure, operating temperature, and seismic loads.	Mechanical Data Sheet and Plant Item Material Selection Data Sheet listed above under References 24590-WTP-3PS-MV00-T0001, Rev. 1, Engineering Specification for Pressure Vessel Design and Fabrication SCN No. 24590-WTP-3PN-MV00-00006 for Spec. No. 24590-WTP-3PS-MV00-T0001, Rev. 1 24590-WTP-3PS-SS90-T0001, Rev. 0, Engineering Specification for Seismic Qualification of Seismic Category I/II Equipment and Tanks 24590-WTP-3PS-MV00-T0002, Rev. 2, Engineering Specification for Seismic Qualification Criteria for Pressure Vessels	The Engineering Specification for Pressure Vessel Design and Fabrication requires that WTP vessels, which includes PVP-VSL-00001, are to be designed and fabricated in accordance with ASME B&PV Code, Section VIII, Division 1. This code requires specific consideration of operating pressures, temperatures, seismic loads, and corrosion allowances in the design process. The Mechanical Data Sheet identifies the operating pressure and temperature ranges for the subject vessel, the materials and the corrosion allowance as identified in the Plant Item Material Selection Data Sheet, and references 24590-WTP-3PS-SS90-T0001 and 24590-WTP-3PS-MV00-T0002 for seismic design requirements. The Mechanical Data Sheet indicates that vessel PVP-VSL-00001 is seismic category SC-II. The Engineering Specification for Seismic Qualification of Seismic Category I/II Equipment and Tanks provides detailed guidance for the required seismic analyses. These are appropriate codes and standards to ensure the vessel has adequate strength to withstand expected operating pressure, operating temperature, and seismic loads.
Foundation	Vessel foundation will maintain the load of a full vessel.	Equipment Assembly Drawing and Mechanical Data Sheet listed above under References Engineering Specification for Pressure Vessel Design and Fabrication; SCN No. 24590-WTP-3PN-MV00-00006 for Spec. No. 24590-WTP-3PS-MV00-T0001, Rev. 1	The Equipment Assembly drawing shows the support arrangements for vessel PVP-VSL-00001. The support consists of a cylindrical skirt with a base ring beam to provide for bearing on concrete or support rings and anchorage. The Engineering Specification for Pressure Vessel Design and Fabrication requires vessel supports as illustrated on the referenced drawing. The drawing indicates it is to be read in conjunction with the Mechanical Data Sheet which provides the estimated weight of the full vessel.

	Information Assessed	Source of Information	Discussion
	If in an area subject to flooding, the vessel is anchored.	General Arrangement Drawing and Equipment Assembly Drawing listed above under References 24590-PTF-PER-M-02-005, Rev. 8, Flooding Volume for Below Grade and 0 Ft. Level in PT Facility	The HEME Drain Collection Vessel is located in a PT facility black cell at the 0'0" elevation. Per 24590-PTF-PER-M-02-005, the maximum fluid elevation in these cells is approximately 24.7 in. Vessel PVP-VSL-00001 is elevated by its support structure to 8'8 ½". Therefore, flooding is not a consideration for this vessel.
Frost Heave	Vessel system will withstand the effects of frost heave.	PTF General Arrangement Drawing listed above under References 24590-WTP-DC-ST-01-001, Rev. 3, Structural Design Criteria	As shown on the PTF General Arrangement Plan, 24590-PTF-P1-P01T-P0001, the HEME Drain Collection Vessel, PVP-VSL-00001, is installed at elevation 0'-0"in an inaccessible process cell. These cells are supported by the PTF mat foundation. The Structural Design Criteria requires that all structural foundations extend into the surrounding soil below the frost line in order to preclude frost heave. The frost line is located 30 in. below finished grade. The PTF mat foundation is not subject to frost heave and, therefore, the HEME Drain Collection Vessel, which is supported by the PTF mat foundation, will not be 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)	System Description, Mechanical Data Sheet, Plant Items Material Selection Data Sheet and listed above under References 24590-WTP-PER-PR-03-002, Rev. 1, Toxic Vapors and Emissions from WTP Tank Systems and Miscellaneous Treatment Unit System; 24590-WTP-PER-PR-03-001, Rev. 1, Prevention of Hydrogen Accumulation in WTP Tank Systems and Miscellaneous Treatment Unit Systems	Per the referenced System Description, the function of vessel PVP-VSL-00001 is to provide confinement, collection, and storage of drains from PVP-HEME-00001A/B/C. Report 24590-WTP-PER-PR-03-002 discusses control of toxic vapors and emissions from WTP tank systems and MTUs and identifies control equipment. Report 24590-WTP-PER-PR-03-001 identifies PT vessels which provide primary containment of wastes that pose a hydrogen accumulation hazard. The HEME Drain Collection Vessel is not included in either of these discussions. The contents of the HEME Drain Collection Vessel are identified on the Plant Items Material Selection Data Sheet as generally neutral with the possibility of acidic conditions due to acid wash of the HEME elements. The Mechanical Data Sheet provides the temperature, pressure, and specific gravity of the contained liquid. The referenced documents identify all characteristics of the waste that impact vessel design.

	Information Assessed	Source of Information	Discussion
	Vessel is designed to store or treat the wastes with the characteristics defined above and any treatment reagents.	Plant Item Material Selection Data Sheet and System Description listed above under References	The Plant Item Material Selection Data Sheet documents the material selection for the HEME Drain Collection based upon the chemistry, pH, and temperature of the collected waste and the operating environment of the vessel. Additional reagents are not added to this vessel during normal operations. The Material Data Sheet lists 304 stainless steel (maximum 0.030% Carbon, dual certified), hereinafter referred to as 304L stainless steel, as the material selected for vessel PVP-VSL-00001.
Compatibility	The waste types are compatible with each other.	System Description listed above under References	The HEME Drain Collection Vessel receives a single waste stream, the PVP HEME Drains. Therefore, there are no waste type compatibility considerations.
	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)	Plant Item Material Selection Data Sheet, Mechanical Data Sheets, and System Description listed above under References 24590-WTP-DB-ENG-01-001, Rev. 1b, Basis of Design.	The material selection process included internal corrosion considerations relevant to the operating conditions of the HEME Drain Collection Vessel. Based upon those considerations, the material chosen was 304L stainless steel as documented on the Plant Item Material Selection Data Sheet. This selection was based upon a design life of 40 years per 24590-WTP-DB-ENG-01-001, Basis of Design. This material selection is listed on the Mechanical Data Sheet under materials of construction. The HEME Drain Collection Vessel is located inside a WTP black cell. These cells normally operate in dry conditions with active ventilation, therefore, external corrosion is not considered to be an issue. Therefore, the materials selected are adequate to provide the required 40 year service life for these vessels.
Corrosion Allowance	Corrosion allowance is adequate for the intended service life of the vessel.	Plant Item Material Selection Data Sheet and System Description listed above under References 24590-WTP-DB-ENG-01-001, Rev. 1b, Basis of Design.	The Plant Item Material Selection Data Sheet indicates a recommended corrosion allowance of 0.04 inch. This recommendation is based upon corrosion rates of 304L stainless steel and a design life of 40 years per the WTP Basis of Design. The material selection and recommended corrosion allowance are adequate for the service life for the vessel.

	Information Assessed	Source of Information	Discussion
Pressure Controls	Pressure controls (vents and relief valves) are adequately designed to ensure pressure relief if normal operating pressures in the vessel are exceeded.	P&ID and System Description listed above under References	Normal operation of the HEME Drain Collection Vessel is transfer of collected liquid twice a week or on high level indication to PWD-VSL-00044. The vessel is instrumented with a level monitor and control to start the transfer of fluid at the high set point. The vessel also has an overflow line to vessel PWD-VSL-00033, the PWD plant overflow vessel. Additionally, the HEME Drain Collection vessel is vented to the HEME inlet line. This configuration is considered adequate to ensure relief if normal operating pressure is exceeded.

	Information Assessed	Source of Information	
Design	Vessel design standards are appropriate and adequate for the vessel's intended use.	Material Requisition and Mechanical Data Sheet listed above under References 24590-WTP-3PS-MV00-T0001, Rev. 1, Engineering Specification for Pressure Vessel Design and Fabrication SCN No. 24590-WTP-3PN-MV00-00006 for Spec. No. 24590-WTP-3PS-MV00-T0001, Rev. 1 ASME Boiler and Pressure Vessel Code (B&PV), Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers 24590-WTP-3PS-FB01-T0001, Rev 1, Structural Design Loads for Seismic Category III and IV Equipment and Tanks	Material Requisition 24590-QL-MRA-MKAS-00002 lists specifications required for the design and fabrication of PVP-SCB-00002, including 24590-WTP-3PS-MV00-T0001, Engineering Specification for Pressure Vessel Design and Fabrication. This specification requires that design and fabrication be in accordance with ASME B&PV Code, Section VIII, Division 1. The Mechanical Data Sheet identifies Scrubber PVP-SCB-00002 as Quality Level QL-2 and Seismic Category SC-III equipment. Design requirements for QL-2 pressure vessels are described in 24590-WTP-3PS-MV00-T0001. Seismic load requirements are contained in 24590-WTP-3PS-FB01-T0001, Rev 1, Structural Design Loads for Seismic Category III and IV Equipment and Tanks. Additional requirements included in the specification for Pressure Vessel Design and Fabrication are: • positive material identification • standard fabrication tolerances • acceptable welding procedures for the vessel and appurtenances • welder qualifications and testing records • NDE inspections and records • quality assurance requirements • packaging, shipping, handling and storage requirements. These are appropriate and adequate codes and standards for design and fabrication of the subject equipment.
	If a non-standard vessel is to be used, the design calculations demonstrate sound engineering principles of construction	Material Requisition listed above under References 24590-WTP-3PS-MV00-T0001, Rev. 1, Engineering Specification for Pressure Vessel Design and Fabrication; SCN No. 24590-WTP-3PN-MV00-00006 for Spec. No. 24590-WTP-3PS-MV00-T0001, Rev. 1	The Engineering Specification for Pressure Vessel Design and Fabrication requires that WTP vessels shall be designed and fabricated in accordance with ASME Section VIII, Div. 1 Material Requisition 24590-QL-MRA-MKAS-00002, Rev. 1 imposes this specification for the design and fabrication of PVP-SCB-00002. The Mechanical Data Sheet requires a code stamp and National Board Registration. Therefore, this is a standard vessel and the referenced codes and standards are adequate and acceptable for design and fabrication.

	Information Assessed	Source of Information	
	Vessel has adequate strength, after consideration of the corrosion allowance, to withstand the operating pressure, operating temperature, and seismic loads.	Material Requisition, Mechanical Data Sheet and Plant Item Material Selection Data Sheet listed above under References Engineering Specification for Pressure Vessel Design and Fabrication SCN No. 24590-WTP-3PN-MV00-00006 for Spec. No. 24590-WTP-3PS-MV00-T0001, Rev. 1 24590-WTP-3PS-FB01-T0001, Rev 1, Structural Design Loads for Seismic Category III and IV Equipment and Tanks 24590-WTP-3PS-MV00-T0002, Rev. 1, Engineering Specification for Seismic Qualification Criteria for Pressure Vessels;	The Engineering Specification for Pressure Vessel Design and Fabrication requires that WTP vessels are to be designed and fabricated in accordance with ASME B&PV Code, Section VIII, Division 1. Material Requisition 24590-QL-MRA-MKAS-00002 imposes these requirements upon the Scrubber. Section VIII requires specific consideration of operating pressures, temperatures, seismic loads, and corrosion allowance in the design process. The Mechanical Data Sheet identifies the operating pressure and temperature ranges for the scrubber, the materials and the corrosion allowance identified in the Plant Item Material Selection Data Sheet, and references 24590-WTP-3PS-MV00-T0002 for seismic design requirements. The Mechanical Data Sheet indicates that Scrubber PVP-SCB-00002 is seismic category SC-III. The Material Requisition imposes the requirements of 24590-WTP-3PS-FB01-T0001 for structural seismic design loads. These are appropriate codes and standards to ensure the tanks have adequate strength to withstand expected operating pressure, operating temperature, and seismic loads.
Foundation	Vessel foundation will maintain the load of a full vessel.	Mechanical Data Sheet listed above under References Engineering Specification for Pressure Vessel Design and Fabrication; SCN No. 24590-WTP-3PN-MV00-00006 for Spec. No. 24590-WTP-3PS-MV00-T0001, Rev. 1	The Outline Profile of the PTF Vessel Vent Caustic Scrubber included in the Mechanical Data Sheet shows the support arrangements for Scrubber PVP-SCB-00002. The support consists of a cylindrical skirt with a base ring beam to provide for bearing on concrete or support rings and anchorage. The Engineering Specification for Pressure Vessel Design and Fabrication requires vessel supports as illustrated on the Outline Profile. The Mechanical Data Sheet provides the estimated weight of the full vessel.

	Information Assessed	Source of Information	
	If in an area subject to flooding, the vessel is anchored.	General Arrangement Drawing listed above under References 24590-PTF-3PS-MKAS-T0001, Rev. 0, Engineering Specification for PTF Vessel Vent Caustic Scrubber 24590-PTF-PER-M-02-005, Rev. 8, Flooding Volume for Below Grade and 0 Ft. Level in PT Facility	The Vessel Vent Caustic Scrubber is located in room number P-0104, a PT facility black cell at the 0'0" elevation. Per 24590-PTF-PER-M-02-005, the maximum fluid elevation in these cells is approximately 24.7 in. The scrubber is elevated by its support structure to 108". Therefore, flooding is not a consideration for this equipment.
Frost Heave	Vessel system will withstand the effects of frost heave.	PTF General Arrangement Drawing listed above under References 24590-PTF-3PS-MKAS-T0001, Rev. 0, Engineering Specification for PTF Vessel Vent Caustic Scrubber 24590-WTP-DC-ST-01-001, Rev. 3, Structural Design Criteria	As shown on the PTF General Arrangement Plan, 24590-PTF-P1-P01T-P0001 and described in the PTF Vessel Vent Caustic Scrubber Engineering Specification, the scrubber is installed at elevation 0'-0"in an inaccessible process cell. These cells are supported by the PTF mat foundation. The Structural Design Criteria requires that all structural foundations extend into the surrounding soil below the frost line in order to preclude frost heave. The frost line is located 30 in. below finished grade. The PTF mat foundation is not subject to frost heave and therefore, the scrubber, which is supported by the PTF mat foundation, will not be subject to frost heave.

	Information Assessed	Source of Information	
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	System Description, Process Flow Diagram, P&ID No. 24590-PTF-M6-PVP-P0017, Mechanical Data Sheet, and Plant Items Material Selection Data Sheet and listed above under References. 24590-WTP-PER-PR-03-002, Rev. 1, Toxic Vapors and Emissions from WTP Tank Systems and Miscellaneous Treatment Unit System; 24590-WTP-PER-PR-03-001, Rev. 1, Prevention of Hydrogen Accumulation in WTP Tank Systems and Miscellaneous Treatment Unit Systems	Per the referenced System Description, the function of scrubber PVP-SCB-00002 is to provide confinement of the exhaust gases, absorb soluble NO_x/acid gases, and remove large solid particulates from the exhaust gases. Report 24590-WTP-PER-PR-03-002 discusses control of toxic vapors and emissions from WTP tank systems and MTUs and identifies control equipment. The caustic scrubber is identified as control equipment for toxic vapors and emissions. Report 24590-WTP-PER-PR-03-001 identifies PT MTUs which provide primary containment of wastes that pose a hydrogen accumulation hazard. The scrubber is not included in that list. A waste pH of approximately 7 is maintained by the addition of 5 molar caustic solution from the sodium hydroxide reagent system. The specific gravity and temperature of the contained fluid is identified on the Mechanical Data Sheet. The referenced documents identify all characteristics of the waste that impact vessel design..
	Vessel is designed to store or treat the wastes with the characteristics defined above and any treatment reagents.	Plant Item Material Selection Data Sheet and System Description listed above under References	The Plant Item Material Selection Data Sheet documents the material selection for the Caustic Scrubber based upon the chemistry, pH, and temperature of the collected waste and the operating environment of the equipment. The material selection also includes consideration of regular additions of 5 molar caustic solution to the scrubber sump vessel to control the pH of the scrubbing liquid The Material Data Sheet lists 316 stainless steel (maximum 0.030% Carbon, dual certified) for the column and UNS N08367 for the column and demister packing material.
Compatibility	The waste types are compatible with each other	System Description listed above under References	The Vessel Vent Caustic Scrubber receives a single waste stream from the PTF Vessel Vent Exhaust Header. Therefore, there are no waste type compatibility issues.

	Information Assessed	Source of Information	
	Vessel material and protective coatings ensure the vessel structure is adequately protected form the corrosive effects of the waste stream and external environments (expected to not leak or fail for the design life of the system)	Plant Item Material Selection Data Sheet, Mechanical Data Sheets, and System Description listed above under References 24590-PTF-3PS-MKAS-T0001, Rev. 0, Engineering Specification for PTF Vessel Vent Caustic Scrubber	The material selection process included internal corrosion considerations relevant to the operating conditions of the Caustic Scrubber. Based upon those considerations, the material chosen was 316 stainless steel (maximum 0.030% Carbon, dual certified) for the column and UNS N08367 for the column and demister packing. This selection was based upon a design life of 40 years per the Engineering Specification for PTF Vessel Vent Caustic Scrubber. This material selection is listed on the Mechanical Data Sheet under materials of construction. The Caustic Scrubber is located inside a WTP black cell. These cells normally operate in dry conditions with active ventilation, therefore, external corrosion is not considered to be an issue. Therefore, the materials selected are adequate to provide the required 40 year service life for these vessels.
Corrosion Allowance	Corrosion allowance is adequate for the intended service life of the vessel.	Plant Item Material Selection Data Sheet listed above under References 24590-PTF-3PS-MKAS-T0001, Rev. 0, Engineering Specification for PTF Vessel Vent Caustic Scrubber	The Plant Item Material Selection Data Sheet indicates a recommended corrosion allowance of 0.04 inch for the column and 0.0 inch for the column and demister packing. This recommendation is based upon corrosion rates of the selected materials and a required service life of 40 years without access for maintenance per the scrubber engineering specification. The material selection and recommended corrosion allowance are adequate for the service life for the vessel.
Pressure Controls	Pressure controls (vents and relief valves) are adequately designed to ensure pressure relief if normal operating pressures in the vessel are exceeded.	P&ID and System Description listed above under References	Normal operation of the Caustic Scrubber is transfer of collected condensate and scrubbing liquid from the sump vessel once a day or at high set point of the level indicator to PWD-VSL-00044. The sump vessel also has an overflow line to vessel PWD-VSL-00033, the PWD plant overflow vessel. As the overflow line is larger than the normal transfer line (6" versus 4"), this configuration is considered adequate to ensure relief if normal operating pressure is exceeded.