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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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 Flugger [signature] 3/23/04
Print Name Signature Date

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24590-CM-HC4-HXYG-00138-02-00019
REV. 00A

PURCHASE ORDER SUBMITTAL

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R10273683

IQRPE REVIEW – PRETREATMENT FACILITY WASTE FEED EVAPORATION PROCESS (FEP) SYSTEM VESSELS AND MISCELLANEOUS TREATMENT UNITS ANCILLARY EQUIPMENT

"I, John T. Baxter, 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 Waste Feed Evaporation Process (FEP) System Vessels and Miscellaneous Treatment Units Ancillary Equipment 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).

JOHN T. BAXTER
STATE OF WASHINGTON
18978
REGISTERED
PROFESSIONAL ENGINEER

John Baxter 03/22/04

EXPIRES: 10/28/04

24590-CM-HXYG-00138-02-00019, REV. 00A

John T. Baxter
Signature

03/22/04
Date

STRUCTURAL INTEGRITY ASSESSMENT OF THE PRETREATMENT FACILITY WASTE FEED EVAPORATION PROCESS (FEP) SYSTEM VESSELS AND MISCELLANEOUS TREATMENT UNITS ANCILLARY EQUIPMENT

COGEMA-IA-043
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 ancillary equipment associated with the vessels and miscellaneous treatment units that comprise the Waste Feed Evaporation Process (FEP) system as shown on the drawings listed below.
References	Drawings, System Description, Engineering Specification and Specification Change Notice	24590-PTF-M5-V17T-P0004001, Rev. 0, Process Flow Diagram Waste Feed Evaporation Sheet 1 of 2 System FEP; 24590-PTF-M5-V17T-P0004002, Rev. 0, Process Flow Diagram Waste Feed Evaporation Sheet 2 of 2 System FEP; 24590-PTF-M6-FEP-P0001, Rev. 0, P&ID – PTF Waste Feed Evaporation Process System Evaporator Feed Vessels FEP-VSL-00017A/B; 24590-PTF-M6-FEP-P0002, Rev. 0, P&ID – PTF Waste Feed Evaporation Process System Separator FEP-SEP-00001A; 24590-PTF-M6-FEP-P0003, Rev. 0, P&ID – PTF Waste Feed Evaporation Process System Condensers & Condensate Collection FEP-VSL-00005; 24590-PTF-M6-FEP-P0004, Rev. 0, P&ID – PTF Waste Feed Evaporation Process System Separator FEP-SEP-00001B; 24590-PTF-M6-FEP-P0005, Rev. 0, P&ID – PTF Waste Feed Evaporation Process System Condensers; 24590-PTF-M6-FEP-P0006, Rev. 0, P&ID – PTF Waste Feed Evaporation Utility Services PSA Rack (Q); 24590-PTF-M6-FEP-P0007, Rev. 0, P&ID – PTF Waste Feed Evaporation Utility Services PSA Rack (Q); 24590-PTF-M6-FEP-P0008, Rev. 0, P&ID – PTF Waste Feed Evaporation Utility Services Plant Wash Rack; 24590-PTF-3YD-FEP-00001, Rev. 0, System Description for Waste Feed Evaporation Process (FEP); System Description Change Notice (SDCN) No. 24590-PTF-3YN-FEP-00001 for 24590-PTF-3YD-FEP-00001, Rev. 0, System Description for Waste Feed Evaporation Process (FEP); 24590-PTF-WTP-3PS-MEVV-T0001, Rev. 0, Engineering Specification for Forced Circulation Vacuum Evaporator System; Specification Change Notice (SCN) No. 24590-PTF-3PN-MEVV-00001 to Specification No. 24590-PTF-3PS-MEVV-T0001, Rev. 0, Engineering Specification for Forced Circulation Vacuum Evaporator System

References	Mechanical Data Sheets and Plant Item Material Selection Data Sheets	Material Requisition No. 24590-QL-MRA-MEVV-00001, Rev. 2, MR Section 2 – Technical Specifications (Rev. 0, May 2002), Evaporators (Forced Recirculation) QL-1, including Supplement S01; Mechanical Data Sheet Shell and Tube Heat Exchanger, 24590-PTF-MED-FEP-00003, Rev. 0, Waste Feed Evaporator Primary Condenser FEP-COND-00001A; Mechanical Data Sheet Shell and Tube Heat Exchanger, 24590-PTF-MED-FEP-00004, Rev. 0, Waste Feed Evaporator Primary Condenser FEP-COND-00001B; Mechanical Data Sheet Shell and Tube Heat Exchanger, 24590-PTF-MED-FEP-00005, Rev. 0, Waste Feed Evaporator Inter-Condenser FEP-COND-00002A; Mechanical Data Sheet Shell and Tube Heat Exchanger, 24590-PTF-MED-FEP-00006, Rev. 0, Waste Feed Evaporator Inter-Condenser FEP-COND-00002B; Mechanical Data Sheet Shell and Tube Heat Exchanger, 24590-PTF-MED-FEP-00007, Rev. 0, Waste Feed Evaporator After-Condenser FEP-COND-00003A; Mechanical Data Sheet Shell and Tube Heat Exchanger, 24590-PTF-MED-FEP-00008, Rev. 0, Waste Feed Evaporator After-Condenser FEP-COND-00003B; Plant Item Material Selection Data Sheet, 24590-PTF-N1D-FEP-P0013, Rev. 0, Waste Feed Evaporator Primary Condenser FEP-COND-00001A/B (PTF); Plant Item Material Selection Data Sheet, 24590-PTF-N1D-FEP-P0009, Rev. 0, Waste Feed Evaporator Intercondensers FEP-COND-00002A/B (PTF); Plant Item Material Selection Data Sheet, 24590-PTF-N1D-FEP-P0010, Rev. 0, Waste Feed Evaporator Aftercondensers FEP-COND-00003A/B (PTF)

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	Ancillary equipment design standards are appropriate and adequate for the equipment's intended use.	Material Requisition and Mechanical Data Sheets listed above under References; 24590-WTP-DC-PS-01-001, Rev 2, Pipe Stress Design Criteria including "Pipe Stress Criteria" and "Span Method Criteria"; Drawings listed above under References; ASME B31.3 Code, Process Piping, 1996 Edition, American Society of Mechanical Engineers; 24590-WTP-3PS-MV00-T0001, Rev. 1, Engineering Specification for Pressure Vessel Design and Fabrication; 24590-WTP-3PS-MES0-T0001, Rev. 0, Engineering Specification for Shell and Tube Heat Exchangers; ASME Boiler and Pressure Vessel (B&PV) Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers; 24590-WTP-PSAR-ESH-01-002-02, Rev. 1a, Preliminary Safety Analysis Report (PSAR) to Support Construction Authorization; PT Facility Specific Information	The Pipe Stress Design Criteria document identifies ASME B31.3 as the design code for piping systems of the WTP. The P&ID drawings show there is a range of Quality Levels and Seismic Categories for the ancillary equipment. Ancillary equipment shown on the P&ID drawing for the Evaporator Feed Vessels is to be designed and fabricated to Quality Level (QL-1) and Seismic Category (SC-1) requirements. The Material Requisition and Mechanical Data Sheets indicate that the FEP System condensers are to be designed and fabricated to Quality Level (QL-1) and Seismic Category (SC-I) requirements. They are to be designed and fabricated in accordance with the requirements of the ASME B&PV Code, Section VIII, Division 1 as specified in the Engineering Specification for Pressure Vessel Design and Fabrication supplemented by the requirements in the Engineering Specification for Shell and Tube Heat Exchangers. Ancillary equipment shown on the P&ID for the Plant Wash Rack is to be designed and fabricated to Quality Level (CM) (Commercial Grade) and Seismic Category (SC-III) requirements. Requirements associated with Quality Levels are explained in the PSAR. Requirements associated with the different Seismic Categories are discussed in detail in the Pipe Stress Design Criteria document. These codes and standards are acceptable and adequate for the design of the FEP system ancillary equipment for the intended service.

	Information Assessed	Source of Information	Discussion
Design	If the ancillary equipment to be used is not built to a design standard, the design calculations demonstrate sound engineering principles of construction.	Material Requisition and Mechanical Data Sheets listed above under References; 24590-WTP-DC-PS-01-001, Rev 2, Pipe Stress Design Criteria including "Pipe Stress Criteria" and "Span Method Criteria"; ASME B31.3 Code, Process Piping, 1996 Edition, American Society of Mechanical Engineers; 24590-WTP-3PS-MV00-T0001, Rev. 1, Engineering Specification for Pressure Vessel Design and Fabrication; 24590-WTP-3PS-MES0-T0001, Rev. 0, Engineering Specification for Shell and Tube Heat Exchangers; ASME Boiler and Pressure Vessel (B&PV) Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers	The ancillary equipment is built to design standards. The Pipe Stress Design Criteria document specifies that the ancillary equipment will be designed in accordance with ASME B31.3. The Material Requisition and Mechanical Data Sheets indicate that the FEP System condensers are to be designed and fabricated in accordance with the requirements of the ASME B&PV Code, Section VIII, Division 1 as specified in the Engineering Specification for Pressure Vessel Design and Fabrication supplemented by the requirements in the Engineering Specification for Shell and Tube Heat Exchangers.

	Information Assessed	Source of Information	Discussion
Design	Ancillary equipment has adequate strength at the end of its design life to withstand the operating pressure, operating temperature, thermal expansion, and seismic loads. Equipment is protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.	24590-WTP-DB-ENG-01-001, Rev 1A, Basis of Design; 24590-WTP-PER-M-02-002, Rev 0, Materials for Ancillary Equipment; 24590-WTP-DC-PS-01-001, Rev 2, Pipe Stress Design Criteria including "Pipe Stress Criteria" and "Span Method Criteria"; ASME B31.3 Code, Process Piping, 1996 Edition, American Society of Mechanical Engineers; ASME Boiler and Pressure Vessel (B&PV) Code, Section III, Rules for Construction of Nuclear Facility Components, Division 1, Subsection NC, Appendix N and Appendix F, 1995; Uniform Building Code (UBC), 1997 Edition, International Conference of Building Officials; 24590-WTP-3PS-MV00-T0001, Rev. 1, Engineering Specification for Pressure Vessel Design and Fabrication; 24590-WTP-3PS-MV00-T0002, Rev. 1, Engineering Specification for Seismic Qualification Criteria for Pressure Vessels; 24590-WTP-3PI-SS90-T0001, Rev. 0, Engineering Specification for Seismic Qualification of Seismic Category I/II Equipment and Tanks	The Basis of Design document specifies that mechanical equipment is to be designed for a nominal plant life of 40 years. The Materials for Ancillary Equipment document specifies that ancillary equipment downstream of a waste source vessel or miscellaneous treatment unit is to be constructed of the same or better material and with the same corrosion allowance as the source vessel or miscellaneous treatment unit. The Pipe Stress Design Criteria document requires the use of the ASME B31.3 Code for design of ancillary equipment. ASME B31.3 requires explicit consideration of operating pressure, operating temperature, thermal expansion/contraction, settlement, vibration, and corrosion allowance in the design of ancillary equipment. Elements of the ASME B&PV Code, Section III, Division1, Subsection NC, Appendix N and Appendix F are used to supplement the requirements of ASME B31.3 for seismic design of SC-I/SC-II ancillary equipment. Similarly, ASME B&PV Code, Section III, Division 1, Subsection NC and Appendix F, and the Uniform Building Code (UBC) are used to supplement the requirements of ASME B31.3 for seismic design of SC-III/SC-IV piping. Details of the seismic design methods are discussed in the Pipe Stress Design Criteria document. The Engineering Specification for Pressure Vessel Design and Fabrication addresses the same load cases and corrosion allowance in the design and fabrication process for the FEP Condensers. Supplementary seismic design criteria are specified in the Engineering Specification for Seismic Qualification Criteria for Pressure Vessels to provide for the condensers seismic design analysis. Additional details of the seismic analysis methodology (ASME B&PV Code, Section VIII, Division 2) are furnished in the Engineering Specification for Seismic Qualification of Seismic Category I/II Equipment and Tanks. These are adequate and acceptable codes and standards to assure the ancillary equipment has adequate strength at the end of its design life.

	Information Assessed	Source of Information	Discussion
Supports	Ancillary equipment supports are adequately designed.	24590-WTP-DC-PS-01-002, Rev 2, Pipe Support Design Criteria; ASME Boiler and Pressure Vessel (B&PV) Code, Section III, Rules for Construction of Nuclear Facility Components, Division 1, Subsection NF and Appendix F, 1995; 24590-WTP-3PS-MV00-T0001, Rev. 1, Engineering Specification for Pressure Vessel Design and Fabrication; ASME Boiler and Pressure Vessel (B&PV) Code, Section VIII, Division 1, Rules for Construction of Pressure Vessels, American Society of Mechanical Engineers; 24590-WTP-PER-PS-02-001, Rev. 4, Ancillary Equipment Pipe Support Design; 24590-WTP-PL-PS-01-001, Rev 1, Verification and Validation Test Plan for Bechtel's ME150 Pipe Support Family of Programs (PCFAPPS)	The Pipe Support Design Criteria document considers all loadings identified in ASME B31.3 and utilizes ASME Section III, Division 1, Subsection NF and Appendix F to supplement the requirements of ASME B31.3 for seismic design of SC-I/II and SC-III/IV pipe supports. Loads are evaluated against the design criteria provided in ASME Section III as discussed in the Pipe Support Design Criteria document. Supports for the FEP Condensers are to be designed in accordance with the requirements in ASME B&PV Code, Section VIII, Division 1 as specified in the Engineering Specification for Pressure Vessel Design and Fabrication. Bounding load cases are passed to the pipe support designers from the results of the ancillary equipment piping stress analyses. Analysis is by manual calculation or approved computer programs that have been verified and validated. These are appropriate codes and standards that assure adequate design of ancillary equipment supports for the FEP system. Design standards for vessel internal equipment supports are discussed in the integrity assessment for the FEP system vessels.
Connections	Seams and connections are adequately designed.	24590-WTP-DB-ENG-01-001, Rev 1A, Basis of Design; 24590-WTP-DC-PS-01-001, Rev 2, Pipe Stress Design Criteria including "Pipe Stress Criteria" and "Span Method Criteria"; 24590-WTP-3PS-MV00-T0001, Rev. 1, Engineering Specification for Pressure Vessel Design and Fabrication; ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications; ASME/ANSI B16.5 1988 Edition, Piping Flanges and Flanged Fittings; 24590-WTP-3PS-PF00-T0001, Rev. 1, Engineering Specification for Process Jumper Fabrication for PT and HLW	The Basis of Design specifies that in-cell piping that is non-maintainable will be fully welded. The Pipe Stress Design Criteria specifies the ASME B31.3 Process Piping design code for the piping systems. Welding is to be performed in accordance with the requirements of ASME B31.3 and the ASME B&PV Code, Section IX. Welding for the FEP Condensers is to be performed in accordance with ASME B&PV Code, Section VIII, Division 1 and ASME B&PV Code, Section IX. ANSI B 16.5 requirements are specified for ancillary equipment flange connections. Remote handled piping connections in the central hot cell are made using jumpers fabricated in accordance with the Engineering Specification for Process Jumper Fabrication for PT and HLW. These are adequate and appropriate codes and standards for design and fabrication of the FEP system ancillary equipment seams and connections.

	Information Assessed	Source of Information	Discussion
Frost Heave	The system will withstand the effects of frost heave.	System Description listed under References above; 24590-WTP-DC-ST-01-001, Rev. 1, Structural Design Criteria	The FEP system ancillary equipment considered in this assessment is located in a central hot cell, adjacent process cells, and surrounding process areas which are located inside the Pretreatment Facility. The Structural Design Criteria requires that all structural foundations shall extend into the surrounding soil below the frost line in order to preclude frost heave. The frost line is 30 in. below grade. Therefore the FEP system ancillary equipment is not subject to the effects of 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, temperature)	Drawings and System Description listed above under references; 24590-WTP-PSAR-ESH-01-002-02, Rev. 1a, Preliminary Safety Analysis Report (PSAR) to Support Construction Authorization; PT Facility Specific Information	The FEP system vessels and miscellaneous treatment units provide for receipt and concentration of waste feed from the DOE and recycle streams from within the PTF Facility. The PSAR provides a summary of potential hazardous conditions associated with the PTF FEP system vessels, miscellaneous treatment units, and ancillary equipment. The System Description identifies the main important-to-safety function for the ancillary equipment to be provide primary confinement of the wastes during normal operations, abnormal operations and during and after a SC-I/II or SC-III Design Earthquake. Ancillary equipment integrity is also necessary to provide continued important-to-safety functions for Waste Feed Evaporator Feed vessels FEP-VSL-00017A/B and the Waste Feed Separator Vessels FEP-SEP-00001A/B. These functions include hydrogen dilution and primary waste containment. Plant Service Air must function to operate Pulse Jet Mixers for hydrogen control in the system vessels. Plant Service Air must be available for continued operation of the Pretreatment Vessel Vent Process System (PVP). This system must be available for control of vessel offgas and hydrogen buildup. The PVP system includes the important-to-safety air supply for the Passive Air Purge hydrogen control system used during post Design Earthquake conditions. The rest of the ancillary equipment provides a primary containment function to protect facility workers and co-located workers from the hazardous wastes.

	Information Assessed	Source of Information	Discussion
Waste Char.	Ancillary equipment is designed to handle the wastes with the characteristics defined above and any treatment reagents.	System Description listed above under References	The System Description indicates that the FEP vessels and miscellaneous treatment units are used primarily for concentration of waste feed streams and recycle streams. Treatment reagents are not normally used in these vessels, miscellaneous treatment units and ancillary equipment during normal operations.
Compatibility	The pH range of the waste, waste temperature and the corrosion behavior of the structural materials are adequately addressed. Ancillary equipment material and protective coatings ensure the ancillary equipment structure is adequately protected from the corrosive effects of the waste stream and external environments. The protection is sufficient to ensure the equipment will not leak or fail for the design life of the system.	24590-WTP-DB-ENG-01-001, Rev 1A, Basis of Design; System Description listed above under References; 24590-WTP-PER-M-02-002, Rev 1, Materials for Ancillary Equipment; Plant Item Material Data Sheets listed above under References; 24590-WTP-3PS-NN00-T0001, Rev 0, Engineering Specification for Hot and Anti-Sweat Thermal Insulation	The Basis of Design identifies a service design life of 40 years for the ancillary equipment. All non-maintainable items will be designed to last the life of the facility. The System Description identifies that the waste to be handled in the FEP system vessels, miscellaneous treatment units, and ancillary equipment is waste feed or recycle streams from elsewhere in the PTF being treated for a primary concentration to about 5 molar Na content. This process step occurs prior to ultrafiltration to remove solids. The Materials for Ancillary Equipment document requires that the material selection and corrosion/erosion allowances for ancillary equipment in contact with the waste will be equal to or better than the material and corrosion allowance of the waste source vessels/ miscellaneous treatment units except as noted therein. The Plant Item Material Data Sheets provide the information used to select the materials for the FEP system condensers and the corrosion allowance. The condensers are to be fabricated using 316 stainless steel (maximum 0.030% Carbon, dual certified) which is hereinafter referred to as 316L stainless steel. The Thermal Insulation specification requires that all insulating materials used on the outside of ancillary equipment be pre-approved for use on austenitic stainless steel in accordance with applicable ASTM procedures and tests to preclude external corrosion of ancillary equipment. Because both internal and external corrosion have been considered in the design and fabrication, the ancillary equipment will provide the expected design service life.

	Information Assessed	Source of Information	Discussion
Corrosion Allowance	Corrosion allowance is adequate for the intended service life of the ancillary equipment.	24590-WTP-DC-PS-01-001, Rev 2, Pipe Stress Design Criteria including "Pipe Stress Criteria" and "Span Method Criteria"; 24590-WTP-DB-ENG-01-001, Rev 1A, Basis of Design; 24590-WTP-PER-M-02-002, Rev 1, Materials for Ancillary Equipment; Plant Item Material Data Sheets listed above under References	The Pipe Stress Design Criteria requires use of the ASME B31.3 Code for ancillary equipment design. Consideration of corrosion, including corrosion allowance, is a mandatory requirement of ASME B31.3. A required service life of 40 years is identified in the Basis of Design for ancillary equipment located in inaccessible process cells. The Materials for Ancillary Equipment document requires that downstream ancillary equipment is to be constructed of equal or better materials than the source vessels/ miscellaneous treatment units. The downstream ancillary equipment is to be provided with the same corrosion allowance as the source vessels or miscellaneous treatment units including any additional erosion allowance where appropriate except as noted therein. The Plant Item Material Data Sheets provide the information used to select the materials for the FEP system condensers and the corrosion allowance. The condensers are to be fabricated using 316L stainless steel with a corrosion allowance of 0.04 in. for a 40 year design life. These requirements are adequate to assure the ancillary equipment provides the intended service life.

	Information Assessed	Source of Information	Discussion
Strength	Pressure controls (vents and relief valves) are adequately designed to ensure pressure relief if normal operating pressures in the vessels are exceeded.	P&ID drawings and Mechanical Data Sheets listed under references above. 24590-WTP-DC-PS-01-001, Rev 2, Pipe Stress Design Criteria including "Pipe Stress Criteria" and "Span Method Criteria"; 24590-WTP-3PS-MES0-T0001, Rev. 0, Engineering Specification for Shell and Tube Heat Exchangers 24590-WTP-PER-PL-02-001, Rev. 5, Piping Material Class Description	The Pipe Stress Design Criteria document specifies ASME B31.3 as the design code for the WTP ancillary equipment. ASME B31.3 requires provision be made to safely contain or relieve any pressure to which the ancillary equipment may be subjected. ASME B31.3 piping not protected by a pressure relieving device, or that can be isolated from a pressure relieving device must be designed for at least the highest pressure that can be developed. The Piping Material Class Description document provides bounding pressure and temperature limits for each of the piping material classes shown on the P&ID drawings. The Engineering Specification for Shell and Tube Heat Exchanges requires the design and fabrication of the FEP system condensers to meet ASME B&PV Code, Section VIII, Division 1 requirements. The Section VIII requirements for pressure relief are similar to those for ASME B31.3. Pressure relief provisions are adequate for the intended service.
	Maximum flows and any unusual operating stresses are identified	P&ID drawings listed under references above. 24590-WTP-DC-PS-01-001, Rev 2, Pipe Stress Design Criteria including "Pipe Stress Criteria" and "Span Method Criteria"; 24590-WTP-PER-PL-02-001, Rev. 5, Piping Material Class Description; 24590-WTP-3PS-MES0-T0001, Rev. 0, Engineering Specification for Shell and Tube Heat Exchangers	The expected flow paths for the ancillary equipment are shown on the P&ID drawings. The Pipe Stress Design Criteria document specifies the ASME B31.3 code for piping design. This code requires piping to be designed to the highest pressure that can be developed in a piping system assuring that maximum operating stresses remain within code allowables. Piping material classes are shown on the P&ID drawings. The Piping Material Class Description document lists the enveloping pressure and temperature limits for each piping material class. The Engineering Specification for Shell and Tube Heat Exchanges requires the design and fabrication of the FEP system condensers to meet ASME B&PV Code, Section VIII, Division 1 requirements. The Section VIII requirements also require that maximum operating stresses remain within code allowables

	Information Assessed	Source of Information	Discussion
Secondary Containment	Ancillary equipment is designed with secondary containment that is constructed of materials compatible with the waste and of sufficient strength to prevent failure (pressure gradients, waste, climatic conditions, daily operations), provided with a leak-detection system, and designed to drain and remove liquids.	Drawings and System Description listed under references above	The ancillary equipment considered in this assessment is located in a central hot cell, adjacent inaccessible process cells and surrounding process areas within the Pretreatment Facility. Secondary containment for ancillary equipment within the hot cell and inaccessible process cells is provided by the liners, sumps, and leak-detection systems within the cells which are outside the scope of this integrity assessment. Secondary containment in the surrounding process areas is provided by special protective coatings which are also outside the scope of this integrity assessment.