ArevaEPRDCPEm Resource

From: DUNCAN Leslie E (AREVA NP INC) [Leslie.Duncan@areva.com]
Sent: Monday, January 18, 2010 3:05 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 292, FSAR Ch. 14, Supplement 1
Attachments: RAI 292 Supplement 1 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 4 questions of RAI No. 292 on October 19, 2009. The attached file, "RAI 292 Supplement 1 Response US EPR DC.pdf," provides technically correct and complete responses to 2 of the remaining 3 questions. AREVA NP is unable to provide a response to RAI 292 Question 14.03-12 at this time because the U.S. EPR FSAR Tier 2 information may be revised due to other RAIs and upcoming testing related to GSI 191.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 292 Questions 14.03.07-33 and 14.03.07-34.

The following table indicates the respective pages in the response document, "RAI 292 Supplement 1 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 292 — 14.03-12	2	2
RAI 292 — 14.03.07-33	3	9
RAI 292 — 14.03.07-34	10	10

The schedule for a technically correct and complete response to the remaining question has been changed and is provided below:

Question #	Response Date
RAI 292 — 14.03-12	April 9, 2010

Sincerely,

Les Duncan
Licensing Engineer
AREVA NP Inc.
An AREVA and Siemens Company
Tel: (434) 832-2849
Leslie.Duncan@areva.com

From: Pederson Ronda M (AREVA NP INC)
Sent: Monday, October 19, 2009 7:00 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); DUNCAN Leslie E (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 292, FSAR Ch. 14

Getachew,

Attached please find AREVA NP Inc.'s (AREVA NP's) response to the subject request for additional information (RAI). The attached file, "RAI 292 Response US EPR DC.pdf," provides technically correct and complete responses to 1 of the 4 questions.

The following table indicates the respective page(s) in the response document, "RAI 292 Response US EPR DC.pdf," that contain(s) AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 292 — 14.03-12	2	2
RAI 292 — 14.03-13	3	3
RAI 292 — 14.03.07-33	4	6
RAI 292 — 14.03.07-34	7	7

A complete answer is not provided for the 3 of the 4 questions. The schedule for technically correct and complete responses to these questions is provided below.

Question #	Response Date
RAI 292 — 14.03-12	January 18, 2010
RAI 292 — 14.03.07-33	January 18, 2010
RAI 292 — 14.03.07-34	January 18, 2010

Sincerely,

Ronda Pederson
ronda.pederson@areva.com
Licensing Manager, U.S. EPR Design Certification
AREVA NP Inc.
An AREVA and Siemens company
3315 Old Forest Road
Lynchburg, VA 24506-0935
Phone: 434-832-3694
Cell: 434-841-8788

From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Friday, September 18, 2009 3:05 PM
To: ZZ-DL-A-USEPR-DL
Cc: Ashley, Clinton; Jackson, Christopher; Snodderly, Michael; Dehmel, Jean-Claude; Frye, Timothy; Jennings, Jason; Miernicki, Michael; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 292 (3724, 3718),FSAR Ch. 14

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on September 11, 2009, and on September 17, 2009, you informed us that the RAI is clear and no further clarification is needed. As a result, no change is made to the draft RAI, except a typographical error correction identified by you. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs. For any RAIs that cannot be answered within 30 days, it is expected that a date for receipt of this information will be provided to the staff within the 30 day period so that the staff can assess how this information will impact the published schedule.

Thanks,
Getachew Tesfaye

Sr. Project Manager
NRO/DNRL/NARP
(301) 415-3361

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 1090

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Created By: Leslie.Duncan@areva.com

Recipients:
"BENNETT Kathy A (OFR) (AREVA NP INC)" <Kathy.Bennett@areva.com>
Tracking Status: None
"DELANO Karen V (AREVA NP INC)" <Karen.Delano@areva.com>
Tracking Status: None
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

Post Office: AUSLYNCMX01.adom.ad.corp

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Response to

Request for Additional Information No. 292, Supplement 1

9/18/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 14.03 - Inspections, Tests, Analyses, and Acceptance Criteria
SRP Section: 14.03.07 - Plant Systems - Inspections, Tests, Analyses, and Acceptance Criteria
Application Section: 2.1.1, Table 2.1.1-8; 2.2.2, Table 2.2.2-3

QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)
QUESTIONS for Health Physics Branch (CHPB)

Question 14.03-12:

Follow-up to Question 14.03-7

RAI Question 14.03-7 notes that the debris source term is a key design feature and identifies that there is no ITAAC to inspect containment materials to ensure as-built is consistent with as analyzed/tested. In response, AREVA made the following change to ITAAC for the reactor building (See Table 2.1.1-8 Rev 1):

> "The reactor pressure vessel, reactor coolant pumps, pressurizer, steam generators, and interconnecting RCS piping are insulated with reflective metallic insulation."

US EPR is not an all RMI plant and there are other insulating materials that will make up the debris source term, and are more likely to result in consequential head loss, namely particulate and fibrous insulation. Please explain why all source term materials such as fiber and particulate insulation, as well as coatings, are not included in the proposed ITAAC?

Response to Question 14.03-12:

A response to this question will be provided by April 9, 2010.

Question 14.03.07-33:

A review of FSAR Tier 2, Rev. 1, Section 14.3.2; FSAR Section 11.5; and FSAR Tier 1, Rev. 1, Section 2.0, indicates that the treatment of ITAACs has been divided in two groups, certified design material (CDM), and Inspection, Test, Analysis, and Acceptance Criteria (ITAAC). CDM binds the design commitment of structure, system, and components for the lifetime of the facility; and ITAACs are used to verify the as-built features of the plant. FSAR Tier I, Rev. 1, Section 14.3.2 assigns ITAACs based on (a) the classification of systems and equipments, and (b) on systems identified during key safety and integrated plant safety analyses for the purpose of preserving specific design features in the as-built facility. Systems described in FSAR, Tier 2 sections that have no safety significant features or that were not identified as part of the "key safety and integrated plant safety analyses" process are listed in Tier 1 as "No entry for this system." Although the selection process identifies pertinent NRC regulations for safety related design features, FSAR Tier 1, Section 2.9 does not identify ITAACs associated with plant systems and components used to monitor and/or control radioactivity releases in the environment in demonstrating compliance with 10 CFR Part 20, Appendix B, Table 2 liquid and gaseous effluent concentration limits; and doses to members of the public under 10 CFR Parts 20.1301 and 20.1302, as well as avoiding unmonitored and uncontrolled radioactive releases to the environment in response to Part 20.1406(b).

Plant systems described in FSAR Tier 2, that are used to demonstrate compliance with Part 20 requirements, include the liquid waste management system (LWMS, Section 11.2), the gaseous waste management system (GWMS, Section 11.3), and the process and effluent radiological monitoring and sampling systems (PERMSS, Section 11.5). FSAR Tier 1, Section 2.9 places the LWMS and GWMS in the "No entry for this system" category, and the PERMSS is not identified in FSAR Tier 1, Section 2.9. The ITAACs assigned to the radiation monitoring systems, FSAR Tier 1, Rev. 1, Section 2.4.22, are for safety-related functions in protecting control room personnel, and for isolating the containment on a receipt of signals from the containment high range radiation monitor. The ITAACs assigned to the steam generator blowdown system (SGBS), FSAR Tier 1, Rev. 1, Section 2.8.7, do not identify the isolation features of the system in the event that elevated radiation levels are detected in the SG blowdown. The ITAACs assigned to the sampling activity monitoring systems, FSAR Tier 1, Rev. 1, Section 2.9.4, are safety-related functions for the protection of personnel in the control room and its isolation upon receipt of high radiation signals by the control room air intake radiation monitor. This ITAAC is also used to confirm the alarm functions of the plant stack radiation monitor in the control room upon receipt of high radiation signals.

A review indicates that ITAACs are inconsistent with respect to Tier 2 design features as they do not address the automatic isolation or termination control features of the PERMSS, as described in FSAR Tier 2, Section 11.5. FSAR Tier 2, Section 11.5.1 states that PERMSS subsystems are design to process liquid and gaseous effluents in accordance with 10 CFR Part 20. For example, compliance with Part 20 requirements for LWMS effluent releases depends on the automatic termination control features of a radiation monitor located on its discharge line. However, the liquid effluent radiation monitor and the associated isolation valve on the LWMS discharge line are not included in FSAR Tier 1, Section 2.9.

The ITAACs were also found to be incomplete with respect to Tier 2 design features as they do not address the initial introduction of absorbent and filtration media in systems that rely on such media to successfully process and treat liquid and gaseous wastes before being discharged into the environment. For example, if the LWMS were properly built with all mechanical components

in place, but without confirming the initial introduction of the proper types and amounts of filtration and adsorbent media, the LWMS would be totally ineffective and would fail to meet the performance parameters stated in FSAR, Tier 1, Rev. 1, Section 11.2.1 and decontamination factors listed in Table 11.2-3. As a result, such liquid effluent releases could exceed the concentration limits of 10 CFR Part 20, Appendix B, Table 2.

Accordingly, the applicant is requested to:

a. review PERMSS subsystems described in FSAR Sections 11.5.3 and 11.5.4 and Table 11.5-1 and assign ITAACs to systems that used to demonstrate compliance with 10 CFR Part 20, Appendix B, Table 2 liquid and gaseous effluent concentration limits and doses to members of the public under 10 CFR Parts 20.1301 and 20.1302.

b. review the design features of the LWMS, GWMS, and SGBS and assign ITAACs to confirm the proper operations of all automatic control features used to divert process streams and terminate effluent releases in meeting design descriptions and parameters given in FSAR Tier 2, Rev. 1, Sections 11.2 (LWMS), 11.3 (GWMS), and 10.4.8 (SGBS).

c. review the design features of the LWMS and SGBS and assign ITAACs to confirm the initial loading of the proper types and amounts of ion-exchange resins and filtration or absorption media in vessels and tanks in meeting design descriptions and parameters given in FSAR Tier 2, Rev. 1. For the LWMS and SGBS, the design performance parameters are expressed as decontamination factors in FSAR Table 11.2-3, which are used to demonstrate compliance with Part 20, Appendix B liquid effluent concentration limits and offsite doses to members of the public, as shown in FSAR Tier 2, Tables 11.2-6, 11.2-7, and 11.2-8.

d. review the design features of the GWMS and assign ITAACs in confirming the initial loading of the proper types and amounts of charcoal media and dessicant for the GWMS in meeting the design descriptions and parameters described in FSAR Tier 2, Rev. 1, Section 11.3. For the GWMS, the design commitments are expressed as retention times for noble gases in FSAR Tier 2, Rev. 1, Table 11.3-1, which are used to demonstrate compliance with Part 20 Appendix B, gaseous effluent concentration limits and offsite doses to members of the public, as shown in FSAR Tier 2, Tables 11.3-5 and 11.3-6.

e. review system design descriptions and address internal inconsistencies in the presentation of information presented under the headings of “I&C Design Features, Displays and Controls,” and “Equipment and System Performance,” and ITAAC tabulations. For example, such inconsistencies include listing radiation monitors in equipment description tabulations but not including the operational functions of radiation monitors in subsections on “I&C Design Features, Displays and Controls,” and “Equipment and System Performance.” Another type of inconsistencies includes differences in the functional arrangements of systems presented between Tier 1 and Tier 2 figures. For example, FSAR Tier 1, Figure 2.6.4-1 does not show the radiation monitor as compared to FSAR Tier 2, Figure 9.4.2-1, even though the radiation monitor has been assigned ITAACs in FSAR Tier 1, Table 2.6.4-3. The systems for which such inconsistencies were noted include the component cooling water system (CCWS), fuel building ventilation system (FBVS), safeguard building controlled-area ventilation system, containment building ventilation system, steam generator blowdown system, and the sampling activity monitoring system.

Without such clarifications and corrections, the staff cannot complete its evaluation and conclude, with reasonable assurance, that if the tests and inspections were performed and acceptance criteria were met, that all design commitments will be fulfilled and that the plant will be built and operated in accordance with the design certification and comply with applicable NRC regulations.

Response to Question 14.03.07-33:

a) U.S. EPR structures, systems, and components (SSC) are listed in U.S. EPR FSAR Tier 2, Table 14.3-8. The process and effluent radiological monitoring and sampling systems (PERMSS) described in U.S. EPR FSAR Tier 2, Section 11.5 are not a single U.S. EPR system, but a collection of items from other systems. The following items are discussed in U.S. EPR FSAR Tier 2, Section 11.5.3 and Section 11.5.4:

   - U.S. EPR FSAR Tier 2, Section 11.5.3.1, gaseous effluents.
   - U.S. EPR FSAR Tier 2, Section 11.5.3.2, liquid effluents.
   - U.S. EPR FSAR Tier 2, Section 11.5.4.1, main steam (MS) radiation monitoring.
   - U.S. EPR FSAR Tier 2, Section 11.5.4.2, condenser air removal radiation monitoring.
   - U.S. EPR FSAR Tier 2, Section 11.5.4.3, steam generator (SG) blowdown radiation monitoring.
   - U.S. EPR FSAR Tier 2, Section 11.5.4.4, component cooling water (CCW) radiation monitoring.
   - U.S. EPR FSAR Tier 2, Section 11.5.4.5, gaseous waste disposal radiation monitoring.
   - U.S. EPR FSAR Tier 2, Section 11.5.4.6, reactor coolant radiation monitoring.
   - U.S. EPR FSAR Tier 2, Section 11.5.4.7, chilled water supply for the gaseous waste disposal sampling.

   ITAAC either already exist or will be added as a part of this response to address the safety-significant features of U.S. EPR FSAR Tier 2, Section 11.5.3 and Section 11.5.4:

   - The following ITAAC exist and address some of the safety-significant features of gaseous effluent monitoring of U.S. EPR FSAR Tier 2, Section 11.5.3.1:

     1) Containment high range dose rate monitors (tag numbers JYK15CR101, JYK15CR102, JYK15CR103, and JYK28CR101) are addressed by ITAAC in U.S. EPR FSAR Tier 1, Table 2.4.22-3, Item 7.1: “Containment High Range Dose Rate Monitors listed in Table 2.4.22-1 initiates Reactor Building air filtration isolation upon receipt of high radioactivity levels.”

     2) Annulus ventilation being diverted through iodine filtration trains during accident conditions is addressed by ITAAC in U.S. EPR FSAR Tier 1, Table 2.6.3-3, Item 7.2.

     3) Fuel building ventilation system (FBVS) gamma activity monitors (tag numbers KLK38CR001 and KLK38CR002) are addressed by ITAAC in U.S. EPR FSAR Tier 1, Table 2.6.4-3, Item 7.2: “Upon receipt of a containment isolation signal or high radiation alarm signal in the Reactor Building, the FB is isolated from the NABVS by automatically closing the air supply and exhaust isolation dampers listed in Table 2.6.4-1 for Fuel Building Isolation.”

4) The Safeguard Building (controlled-area) ventilation system (SBVS) is addressed by ITAAC in U.S. EPR FSAR Tier 1, Table 2.6.6-3, Item 7.2: "Upon receipt of a high radiation signal in the hot mechanical area of a Safeguard Building division during normal operation, supply and exhaust air flow is configured such that the SBVS exhaust is directed automatically to the NABVS iodine exhaust filters."

5) The SBVS is also addressed in U.S. EPR FSAR Tier 1, Table 2.6.6-3, Item 7.3: "Upon receipt of a high radiation signal in the Fuel Building, or the Reactor Building, both SBVS iodine filtration trains start automatically, the isolation dampers open to the building where the high radiation signal is initiated (either the Fuel Building or the Reactor Building), and the accident air is directed through the SBVS iodine filtration trains."

6) The SBVS is also addressed in U.S. EPR FSAR Tier 1, Table 2.6.6-3, Item 7.4: "Upon receipt of a containment isolation signal or high radiation signal in the Reactor Building, the SBVS is isolated from the SBVSE and NABVS by automatically closing the air supply and exhaust isolation dampers, both SBVS iodine filtration trains start automatically, and the FB and SB exhaust air is directed through the iodine filtration trains to maintain a negative pressure inside the FB and SB."

7) Ventilation stack radioactivity monitors (tag numbers 30KLK95CR001 and 30KLK95CR002) are addressed by ITAAC in U.S. EPR FSAR Tier 1, Table 2.9.4-3, Item 4.1 and Item 4.2.

8) Reactor Building radioactivity monitors (tag numbers 30KLK05CR001, 30KLK05CR031, 30KLK05CR071, and 30KLK05CR561) are addressed by ITAAC in U.S. EPR FSAR Tier 1, Table 2.9.4-3, Item 4.1 and Item 4.3.

- U.S. EPR FSAR Tier 1, Section 2.9.3 will be revised to add ITAAC to address safety-significant features of gaseous effluent monitoring (U.S. EPR FSAR Tier 2, Section 11.5.3.1) not already covered by the ITAAC described above. U.S. EPR FSAR Tier 2, Section 14.3.2 will be revised to provide additional details on the ITAAC selection criteria for radiation protection features, and U.S. EPR FSAR Tier 2, Table 14.3-8 will be revised to indicate that the gaseous waste processing system (GWPS) has ITAAC. U.S. EPR FSAR Tier 1, Table 3.5-1 and Table 3.5-2 will be revised to delete GWPS containment isolation valves (CIVs) (tag numbers KPL84AA003, KPL84AA002, KPL85AA003, KPL85AA004) because these valves are now covered by U.S. EPR FSAR Tier 1, Section 2.9.3. U.S. EPR FSAR Tier 1, Table 1.3-1 will be revised to add the acronym GWPS.

- U.S. EPR FSAR Tier 1, Section 2.9.1 will be revised to add ITAAC to address the safety-significant features of liquid effluent monitoring (U.S. EPR FSAR Tier 2, Section 11.5.3.2). U.S. EPR FSAR Tier 2, Table 14.3-8 will be revised to indicate that the liquid waste management system (LWMS) has ITAAC. U.S. EPR FSAR Tier 1, Table 1.3-1 will be revised to add the acronym LWMS.

- MS radiation monitoring described in U.S. EPR FSAR Tier 2, Section 11.5.4.1 is addressed by the main steam line (MSL) activity sensors (tag numbers 30LBA10/20/30/40CR811, 30LBA10/20/30/40CR821, 30LBA10/20/30/40CR831, and 30LBA10/20/30/40CR841) listed in U.S. EPR FSAR Tier 1, Table 2.8.2-2. These MSL activity monitors are input variables for SG isolation by the protection system (PS) per ITAAC in U.S. EPR FSAR Tier 1, Table 2.4.1-3. The Response to RAI 78, Supplement

2, Question 14.03.05-4 clarified the engineered safety features (ESF) and associated input variables listed in U.S. EPR FSAR Tier 1, Table 2.4.1-3.

- ITAAC for condenser air removal radiation monitoring described in U.S. EPR FSAR Tier 2, Section 11.5.4.2 are not required because no automatic features are provided for system isolation upon receipt of a high radiation signal. As described in U.S. EPR FSAR Tier 2, Section 11.5.4.2, the condenser air removal radiation monitoring system (RMS) "does not initiate automatic actions." U.S. EPR FSAR Tier 2, Section 11.5.4.2 will be revised to clarify the system names and figures being described. Although the main condenser evacuation system (MCES) does not contain ITAAC in U.S. EPR FSAR Tier 1, Section 2.8.10, the system exhaust discharges to the nuclear auxiliary building ventilation system (NABVS), which is monitored by the ventilation stack radioactivity monitors (tag numbers 30KLK95CR001 and 30KLK95CR002) and the associated ITAAC in U.S. EPR FSAR Tier 1, Table 2.9.4-3.
- U.S. EPR FSAR Tier 1, Section 2.8.7, Item 4.4 will be revised to address steam generator blowdown system (SGBS) isolation. This revised ITAAC, along with the existing ITAAC in U.S. EPR FSAR Tier 1, Section 2.8.7, address the safety-significant features of steam generator blowdown (SGB) radiation monitoring (U.S. EPR FSAR Tier 2, Section 11.5.4.3).
- CCW radiation monitoring (U.S. EPR FSAR Tier 2, Section 11.5.4.4) does not require ITAAC because the monitors are not 1E powered. Per the Response to RAI 182, Supplement 4, Question 14.03-10, Part G, U.S. EPR FSAR Tier 1, Table 2.7.1-2 was "revised to remove non-1E powered radiation monitors and temperature control equipment for consistency with other U.S. EPR FSAR Tier 1 sections and SRP 14.3 guidance for safety significance determination."
- Gaseous waste disposal radiation monitoring described in U.S. EPR FSAR Tier 2, Section 11.5.4.5 is included in the new GWPS ITAAC in U.S. EPR FSAR Tier 1, Section 2.9.3.
- ITAAC for the reactor coolant radiation monitoring described in U.S. EPR FSAR Tier 2, Section 9.3.2 and Section 11.5.4.6 are not required because no automatic features are provided for system isolation upon receipt of a high radiation signal. Effluents from the nuclear sampling system (NSS) discharge to the LWMS and are covered by the new LWMS system isolation ITAAC in U.S. EPR FSAR Tier 1, Section 2.9.1, Item 4.2.
- ITAAC for the sampling of the chilled water supply serving the gaseous waste processing system (GWPS) described in U.S. EPR FSAR Tier 2, Section 11.5.4.7 are not required because no automatic features are provided for system isolation upon receipt of a high radiation signal. The chilled water supply radiation monitoring is not safety-significant because the probability of a radioactive leak into the chill water supply is unlikely. As explained in U.S. EPR FSAR Tier 2, Section 11.5.4.7, "the radioactive sides of these operational components are separated from the chilled water system by means of both material and pressure barriers. The higher pressure on the non-contaminated side prevents radioactivity from escaping to the chilled water system except in the event of coincident failure of both of these barriers."

b) ITAAC either already exists or will be added to U.S. EPR FSAR Tier 1 for the automatic control features used to divert or terminate effluent releases of the LWMS, GWPS, and SGBS:

- U.S. EPR FSAR Tier 1, Section 2.9.1 was revised in part a) of this response to add ITAAC for the automatic control features used to terminate LWMS effluent releases.
- U.S. EPR FSAR Tier 1, Section 2.9.3 was revised in part a) of this response to add ITAAC for the automatic closing of the GWPS discharge valve upon receipt of a high-radiation signal.
- U.S. EPR FSAR Tier 1, Table 2.8.7-3, Item 4.4 was revised in part a) of this response to address SGBS isolation.

c) The safety-significant filter or treatment media of the LWMS are addressed by U.S. EPR FSAR Tier 1, Table 2.9.1-3, Item 4.1 added in part a) of this response.

Effluents releases from the SGBS are discharged to the LWMS. ITAAC in U.S. EPR FSAR Tier 1, Section 2.9.1 added in part a) of this response address the SGBS effluents.

d) The safety-significant filter media (activated charcoal) of the GWPS are addressed by U.S. EPR FSAR Tier 1, Table 2.9.1-3, Item 7.1 added in part a) of this response.

e) Functional arrangement drawings have different purposes in U.S. EPR FSAR Tier 1 than in U.S. EPR FSAR Tier 2. U.S. EPR FSAR Tier 1 figures provide inspectors a tool for verifying equipment location per functional arrangement ITAAC and a tool to specify ASME Code Section III piping boundaries. Equipment not requiring its specific location to be verified is typically not shown in U.S. EPR FSAR Tier 1 functional arrangement drawings. For example, the specific location of a radiation monitor may not be safety-significant because its location relative to other components and valves is not important and does not need to be certified in U.S. EPR FSAR Tier 1. ITAAC that apply to the safety-significant features of the radiation monitors, such as closing a discharge valve upon receipt of a high radiation alarm, can be verified by ITAAC without showing the monitors on a functional arrangement drawing. Figures in U.S. EPR FSAR Tier 2 provide design information or demonstrate how the subject systems and components perform their functions.

The FBVS is addressed in U.S. EPR FSAR Tier 1, Section 2.6.4. FBVS monitors (tag numbers KLK38CR001 and KLK38CR002) are not listed in U.S. EPR FSAR Tier 1, Table 2.6.4-1 (Fuel Building Ventilation System Equipment Mechanical Design) because these monitors are not classified as ASME Code Section AG-1 or Seismic Category I. The specific location of the monitors is not safety-significant, so they are not shown on the functional arrangement drawing U.S. EPR FSAR Tier 1, Figure 2.6.4-1. The safety-significant feature of the monitors is that they provide input for system isolation upon receipt of a signal, which is addressed by ITAAC in U.S. EPR FSAR Tier 1, Table 2.6.4-3, Item 7.2.

The SBVS is addressed in U.S. EPR FSAR Tier 1, Section 2.6.6. SBVS monitors are not listed in U.S. EPR FSAR Tier 1, Table 2.6.4-1 because these monitors are not classified as ASME Code AG-1 or Seismic Category I. The radiation monitors are not listed on U.S. EPR FSAR Tier 1, Table 2.6.4-2 because these monitors are not powered from IEEE Class 1E or environmentally qualified for a harsh environment. The safety-significant feature of the radiation monitors to provide input for system isolation upon receipt of a signal is addressed by U.S. EPR FSAR Tier 1, Table 2.6.4-3, Item 7.2, Item 7.3, and Item 7.4. Because the ITAAC for these radiation monitors can be performed without a functional arrangement drawing, no functional arrangement drawing is provided for U.S. EPR FSAR Tier 1, Section 2.6.6. No revisions are necessary for U.S. EPR FSAR Tier 1, Section 2.6.6.

The containment building ventilation system (CBVS) is addressed in U.S. EPR FSAR Tier 1, Section 2.6.8. Monitors associated with the CBVS are addressed by ITAAC for the containment high range dose rate monitors (tag numbers JYK15CR101, JYK15CR102, JYK15CR103, and JYK28CR101) in U.S. EPR FSAR Tier 1, Table 2.4.22-3 (RMS). These radiation monitors are listed on U.S. EPR FSAR Tier 1, Table 2.4.22-1 because they are classified as Seismic Category I. They are listed in U.S. EPR FSAR Tier 1, Table 2.4.22-2 because they are powered from IEEE Class 1E and will be environmentally qualified for a harsh environment. The ITAAC listed in U.S. EPR FSAR Tier 1, Table 2.4.22-3 can be performed without a functional arrangement drawing, so no functional arrangement drawing is provided for U.S. EPR FSAR Tier 1, Section 2.4.22. No revisions are necessary for U.S. EPR FSAR Tier 1, Section 2.4.22.

The component cooling water system (CCWS) is addressed in U.S. EPR FSAR Tier 1, Section 2.7.1. Radiation monitors are shown on U.S. EPR FSAR Tier 1, Figure 2.7.1-1, but without identifying information, such as tag numbers, because the ITAAC in U.S. EPR FSAR Tier 1, Table 2.7.1-3 do not apply to these components. The radiation monitors were deleted from U.S. EPR FSAR Tier 1, Table 2.7.1-2 in the Response to RAI 182, Supplement 4, Question 14.03-10, Part G “to remove non-1E powered radiation monitors and temperature control equipment for consistency with other U.S. EPR FSAR Tier 1 sections and SRP 14.3 guidance for safety significance determination.” U.S. EPR FSAR Tier 1, Figure 2.7.1-1 will be revised to delete the radiation monitors.

As described in part a) of this response, U.S. EPR FSAR Tier 1, Section 2.8.7 will be revised to address SGBS isolation. ITAAC in U.S. EPR FSAR Tier 1, Table 2.8.7-3, Item 4.4 can be performed without a functional arrangement drawing, so the radiation monitors are not shown on the functional arrangement drawing U.S. EPR FSAR Tier 1, Figure 2.8.7-1.

The sampling activity monitoring system (SAMS) is addressed in U.S. EPR FSAR Tier 1, Section 2.9.4. The radiation monitors are listed in U.S. EPR FSAR Tier 1, Table 2.9.4-1 because they are classified as Seismic Category I. The radiation monitors are listed in U.S. EPR FSAR Tier 1, Table 2.9.4-2 because they are not powered from IEEE Class 1E. Because the radiation monitors are key to the functioning of the SAMS, these monitors were included in the functional arrangement drawing U.S. EPR FSAR Tier 1, Figure 2.9.4-1. No revisions are necessary for U.S. EPR FSAR Tier 1, Section 2.9.4 or Figure 2.9.4-1.

FSAR Impact:

U.S. EPR FSAR Tier 1, Table 1.3-1, Figure 2.7.1-1, Section 2.8.7, Section 2.9.1, Section 2.9.3, Table 3.5-1, and Table 3.5-2 will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR FSAR Tier 2, Section 11.5.4.2, Section 14.3.2, and Table 14.3-8 will be revised as described in the response and indicated on the enclosed markup.

Question 14.03.07-34:

A review of FSAR Tier 1, Rev. 1, Section 5.0 (Site Parameters for the U.S. EPR Design) indicates that the inventory of radioactive materials presented in Table 5.0-1 (third sheet) is not supported with information contained in FSAR Tier 2 sections. This portion of Table 5.0-1 lists radionuclides that could potentially migrate into ground or surface waters in the event of a tank failure and provides concentrations for the listed radionuclides. As such, Table 5.0-1 presents an inventory of radionuclides and their corresponding concentrations (uCi/g) and not an inventory of total radioactivity summed over all radionuclides (uCi) for a given tank volume assumed to have failed. A review of FSAR Tier 2, Sections 2.4.12 (Groundwater), 2.4.13 (Pathways of liquid effluents in ground and surface waters), 11.2.3.7 (Postulated radioactive releases due to liquid-containing tank failures), and 12.2.1 (Contained sources) indicates that there is no basis and technical information supporting the listing of radionuclides and concentrations shown in FSAR Tier 1, Table 5.0-1.

Accordingly, the applicant is requested to provide the basis and technical information supporting the listing of radionuclides and concentrations shown in FSAR Tier 1, Table 5.0-1, and confirm whether the information presented in Table 5.0-1 needs to be expanded by including the total inventory of radioactivity for each radionuclide (uCi) in addition to concentrations (uCi/g). Also, the applicant is requested include descriptions of the methodology, assumptions, and parametric values used in the calculations and their bases, and references to enable the staff to conduct an independent evaluation of the radioactive inventory and radiological impacts of such releases on and use of ground or surface waters, given Part 20, Appendix B effluent concentration limits.

Response to Question 14.03.07-34:

The information in U.S. EPR FSAR Tier 1, Table 5.0-1 (third sheet) is a repeat of the information in U.S. EPR FSAR Tier 2, Table 2.1-2.

Standard Review Plan (SRP) 14.3.1 provides guidance on Tier 1 site parameters. As a result of the 2007 revision of the SRP, information in SRP 14.3.1 was relocated to SRP 2.0, “Site Characteristics and Site Parameters.” SRP 2.0 does not identify the inventory of radionuclides which could potentially seep into the groundwater as a significant site parameter required to be certified in Tier 1. Therefore, U.S. EPR FSAR Tier 1, Table 5.0-1 will be revised to delete the third sheet (“Inventory of Radionuclides which Could Potentially Seep into the Groundwater”).

FSAR Impact:

U.S. EPR FSAR Tier 1, Table 5.0-1 (third sheet) will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups

Table 1.3-1—Abbreviations and Acronyms List (6 Sheets)

Term	Definition
FWDS	Fire Water Distribution System
GFES	Gaseous Fire Extinguishing System
gpm	Gallons per Minute
GWPS	Gaseous Waste Processing System
HA	Human Action
HCPL	High Core Power Level
HFE	Human Factors Engineering
HL	Hot Leg
HLPD	High Linear Power Density
HMI	Human Machine Interface
HMS	Hydrogen Monitoring System
HP	High Pressure
hr	Hour
HRA	Human Reliability Analyses
HSI	Human-System Interfaces
HVAC	Heating, Ventilation and Air Conditioning
HX	Heat Exchanger
Hz	Hertz
I&C	Instrumentation and Control
ICIS	Incore Instrumentation System
ICSC	Instrumentation and Control Service Center
IEEE	Institute of Electrical and Electronic Engineers
in	Inches
IR	Intermediate Range
IRD	Intermediate Range Detector
IRWST	In-containment Refueling Water Storage Tank
ITA	Inspections, Tests, or Analyses
ITAAC	Inspections, Tests, Analyses, and Acceptance Criteria
ITP	Initial Test Program
LBB	Leak Before Break
LFCP	Local Fire Control Panel
LGT	Lighting and Small Power System
LHSI	Low Head Safety Injection
LOCA	Loss of Coolant Accident

Table 1.3-1—Abbreviations and Acronyms List (6 Sheets)

14.03.07-33

Term	Definition
LOOP	Loss of Offsite Power
LP	Low Pressure
LWMS	Liquid Waste Management System
MCC	Motor Control Center
MCR	Main Control Room
MFW	Main Feedwater
MFWCKV	Main Feedwater Check Valves
MFWFLCV	Main Feedwater Full Load Control Valve
MFWFLIV	Main Feedwater Full Load Isolation Valve
MFWIV	Main Feedwater Isolation Valve
MFWLLCV	Main Feedwater Low Load Control Valve
MFWLLIV	Main Feedwater Low Load Isolation Valve
MFWVLLCV	Main Feedwater Very Low Load Control Valve
MFWS	Main Feedwater System
MFWSVS	Main Feedwater System Valve Station
MHSI	Medium Head Safety Injection
MMC	Metal Matrix Composite
MS or MSS	Main Steam System
MSI	Monitoring and Service Interface
MSIV	Main Steam Isolation Valve
MSRT	Main Steam Relief Train
MSSV	Main Steam Safety Valve
MSV	Main Steam Valve
MSVS	Main Steam Valve Station
MSU	Main Setup Transformer
MW	Megawatt
MWt	Megawatts Thermal
N/A	Not Applicable
NAB	Nuclear Auxiliary Building
NABVS	Nuclear Auxiliary Building Ventilation System
NAT	Normal Auxiliary Transformer
NDE	Nondestructive Examination
NI	Nuclear Island
NPSH	Net Positive Suction Head

Figure 2.7.1-1—Component Cooling Water System Functional Arrangement
Sheet 1 of 24

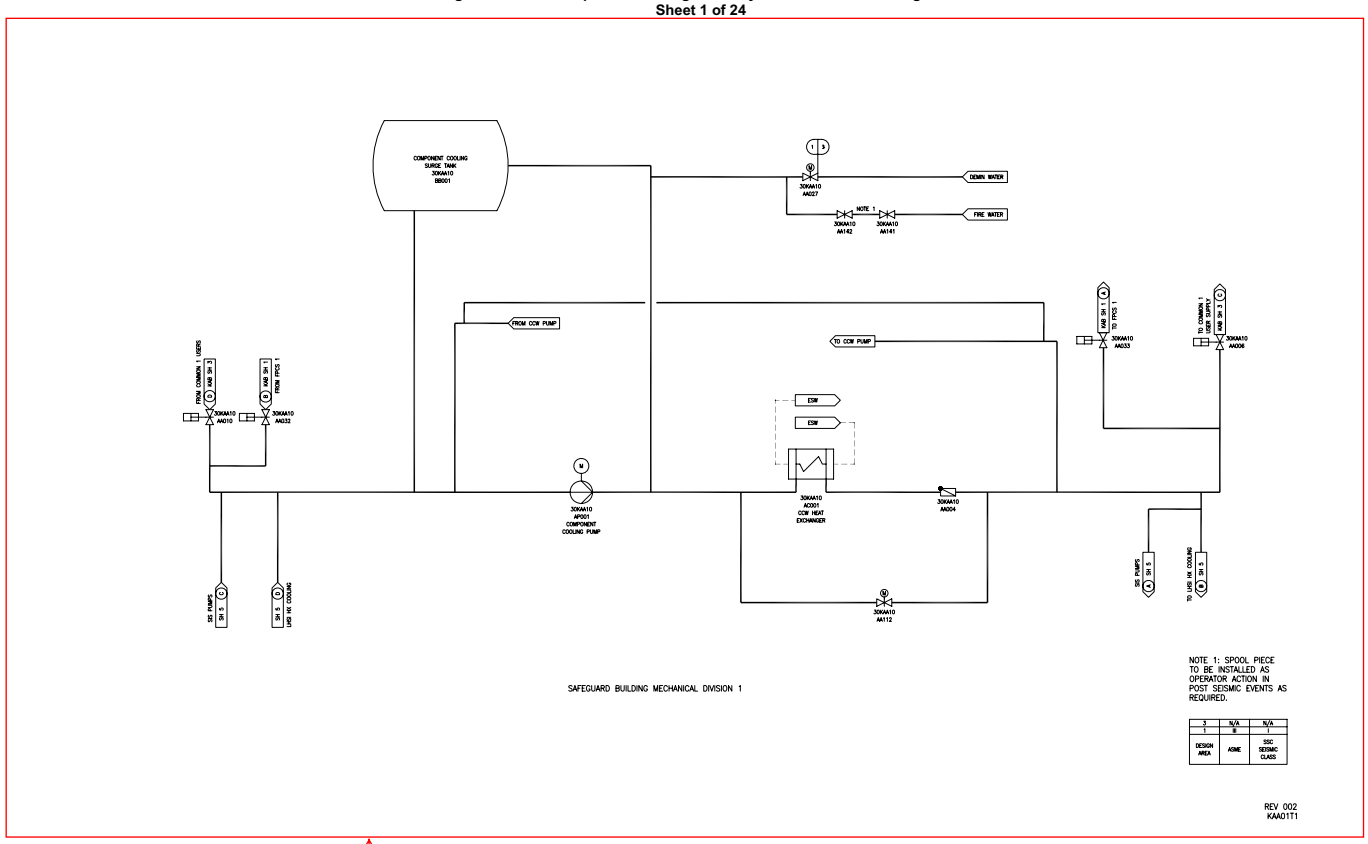

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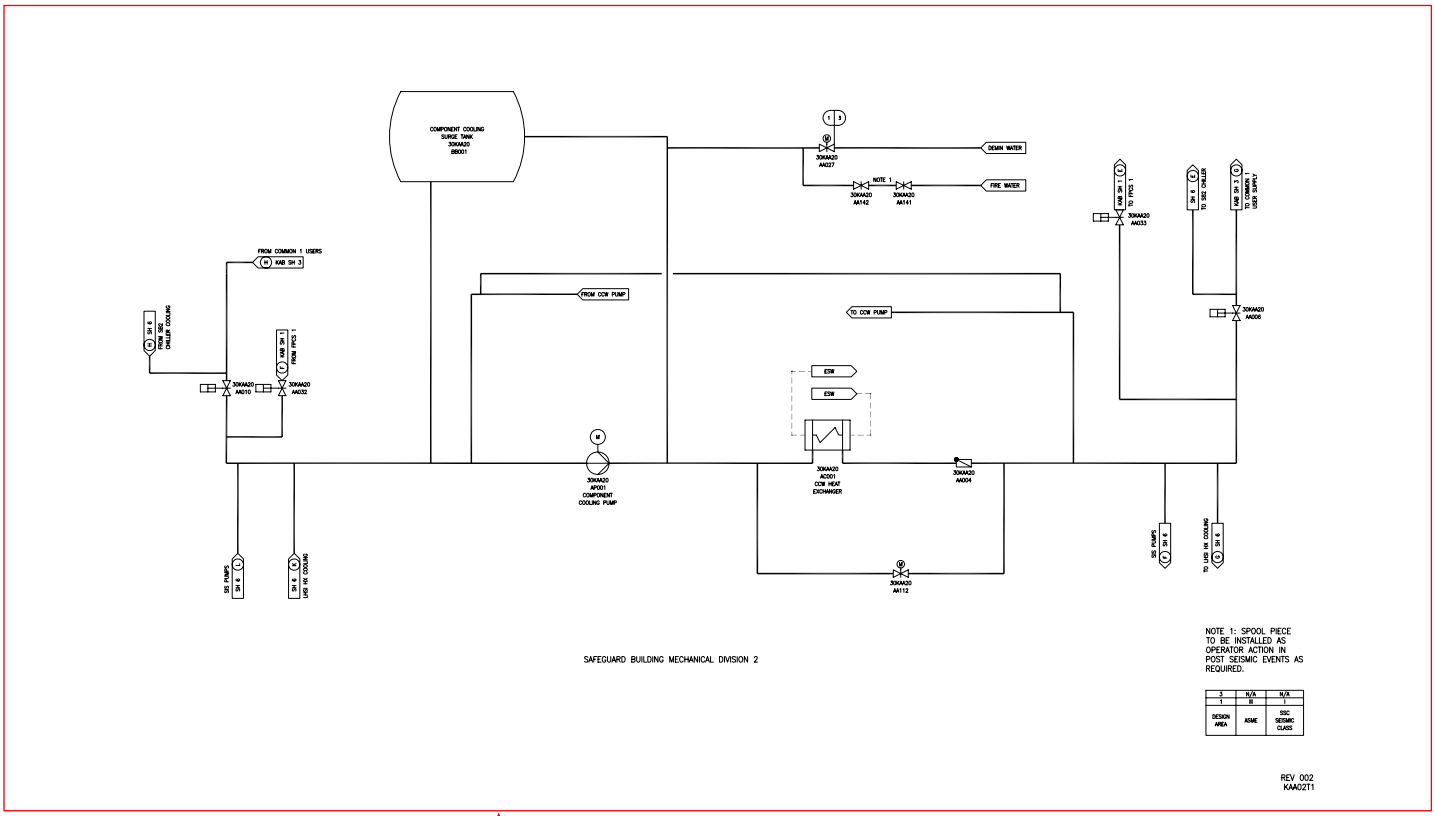
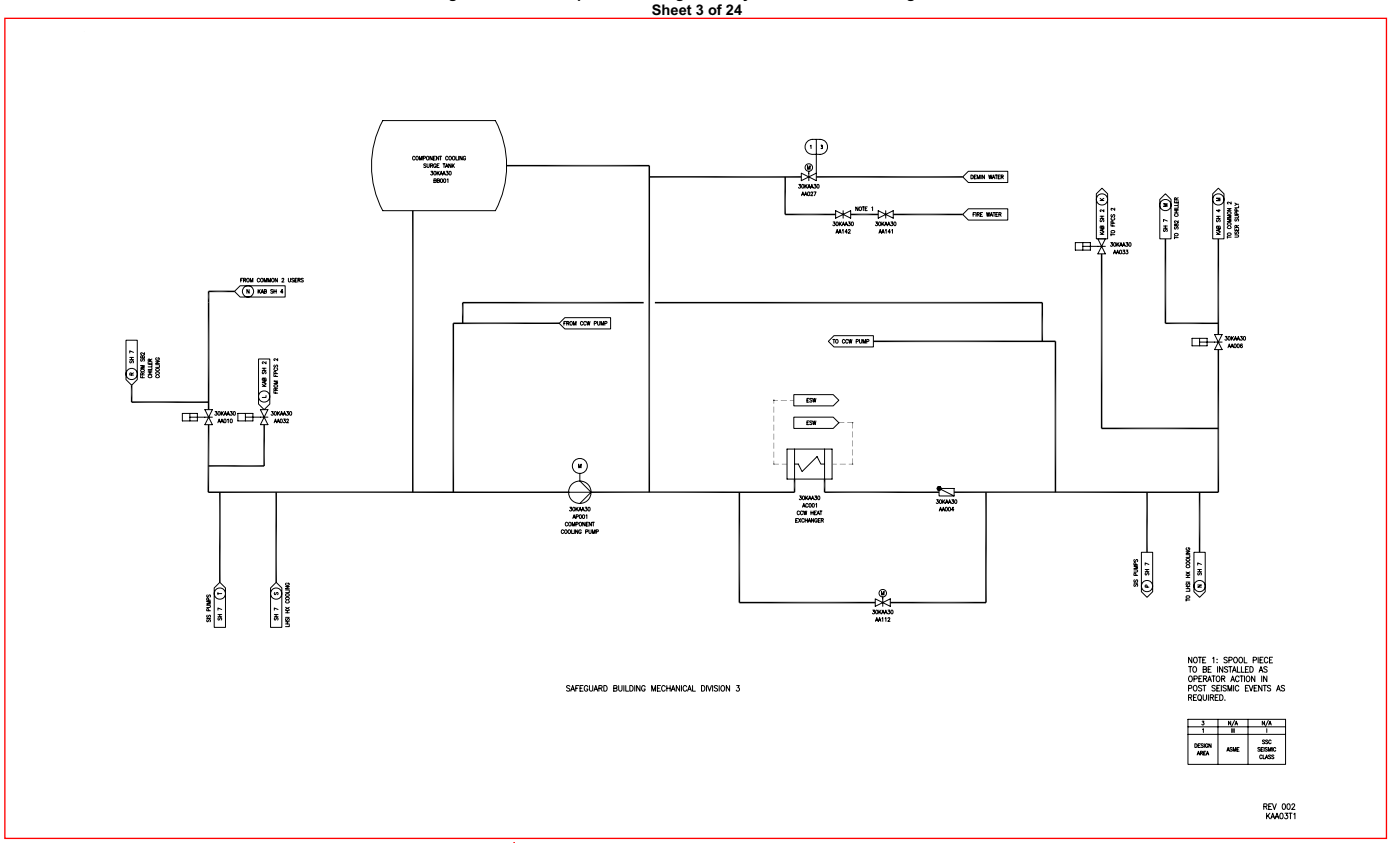
Figure 2.7.1-1—Component Cooling Water System Functional Arrangement
Sheet 2 of 24



14.03.07-33

Figure 2.7.1-1—Component Cooling Water System Functional Arrangement
Sheet 3 of 24



14.03.07-33

Figure 2.7.1-1—Component Cooling Water System Functional Arrangement
Sheet 4 of 24

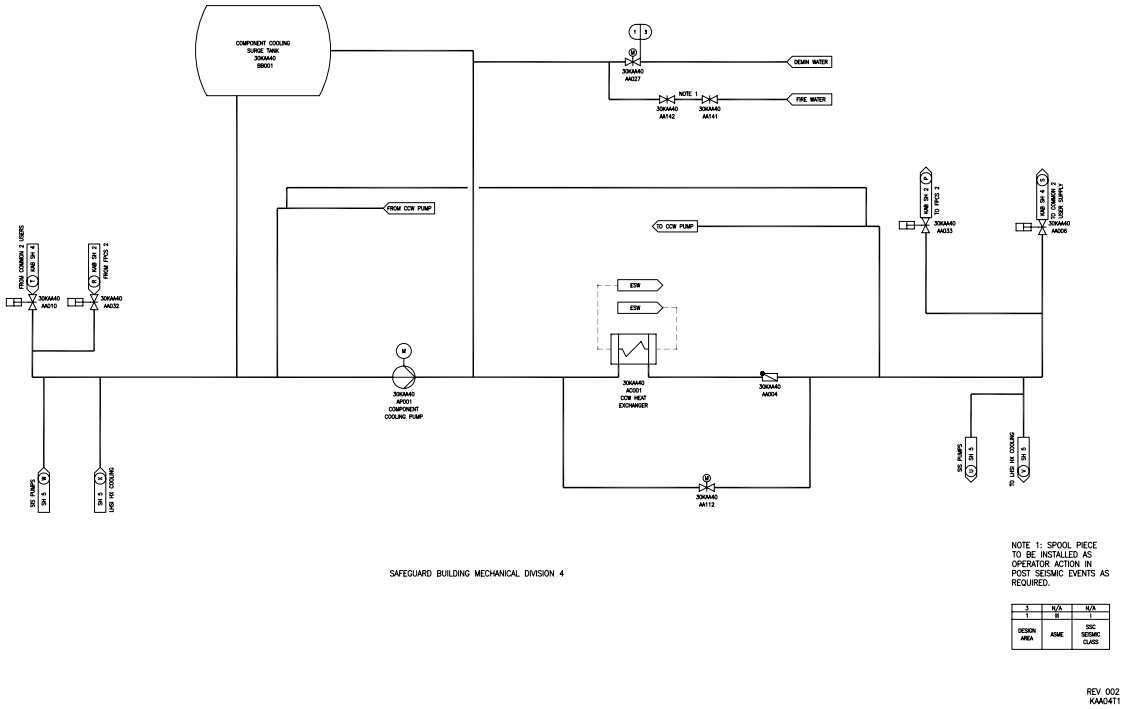


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Figure 2.7.1-1—Component Cooling Water System Functional Arrangement
Sheet 12 of 24

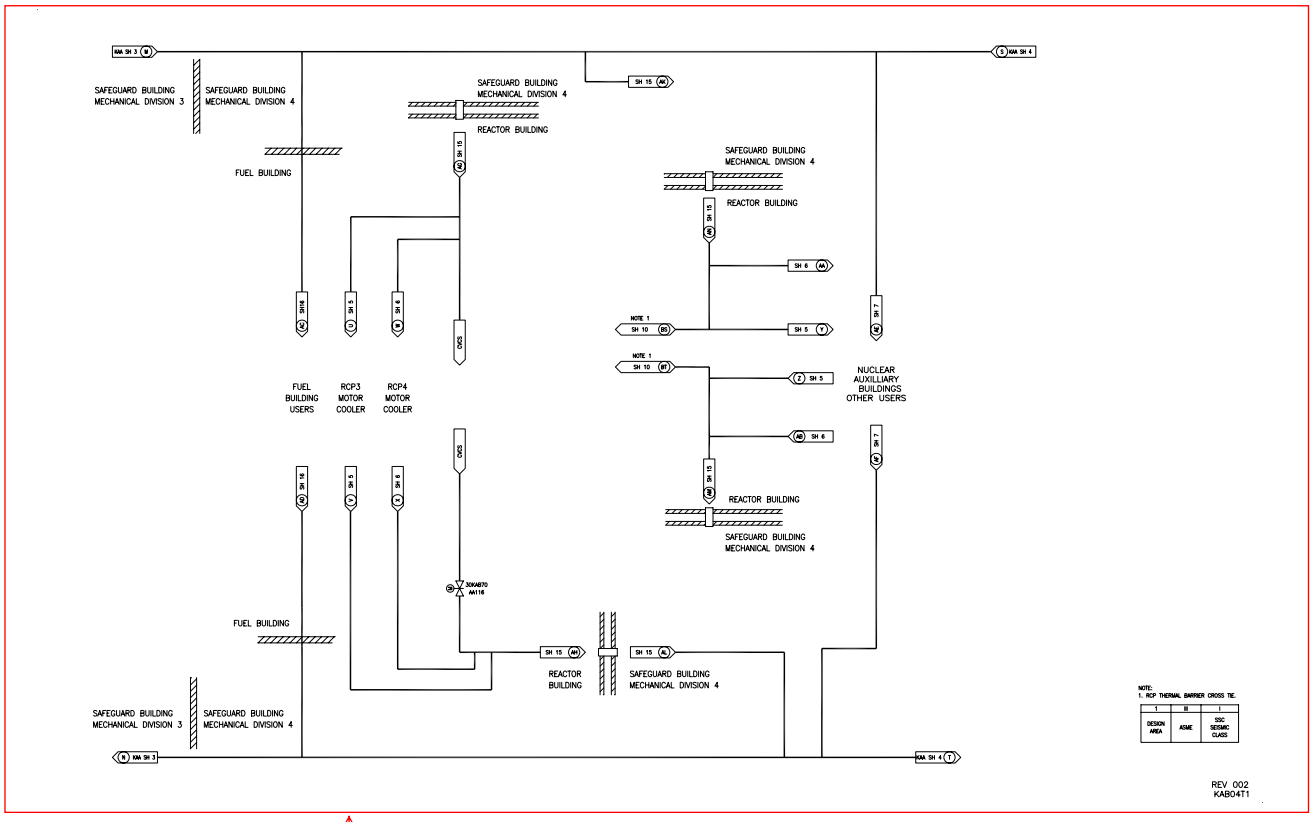

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Figure 2.7.1-1—Component Cooling Water System Functional Arrangement
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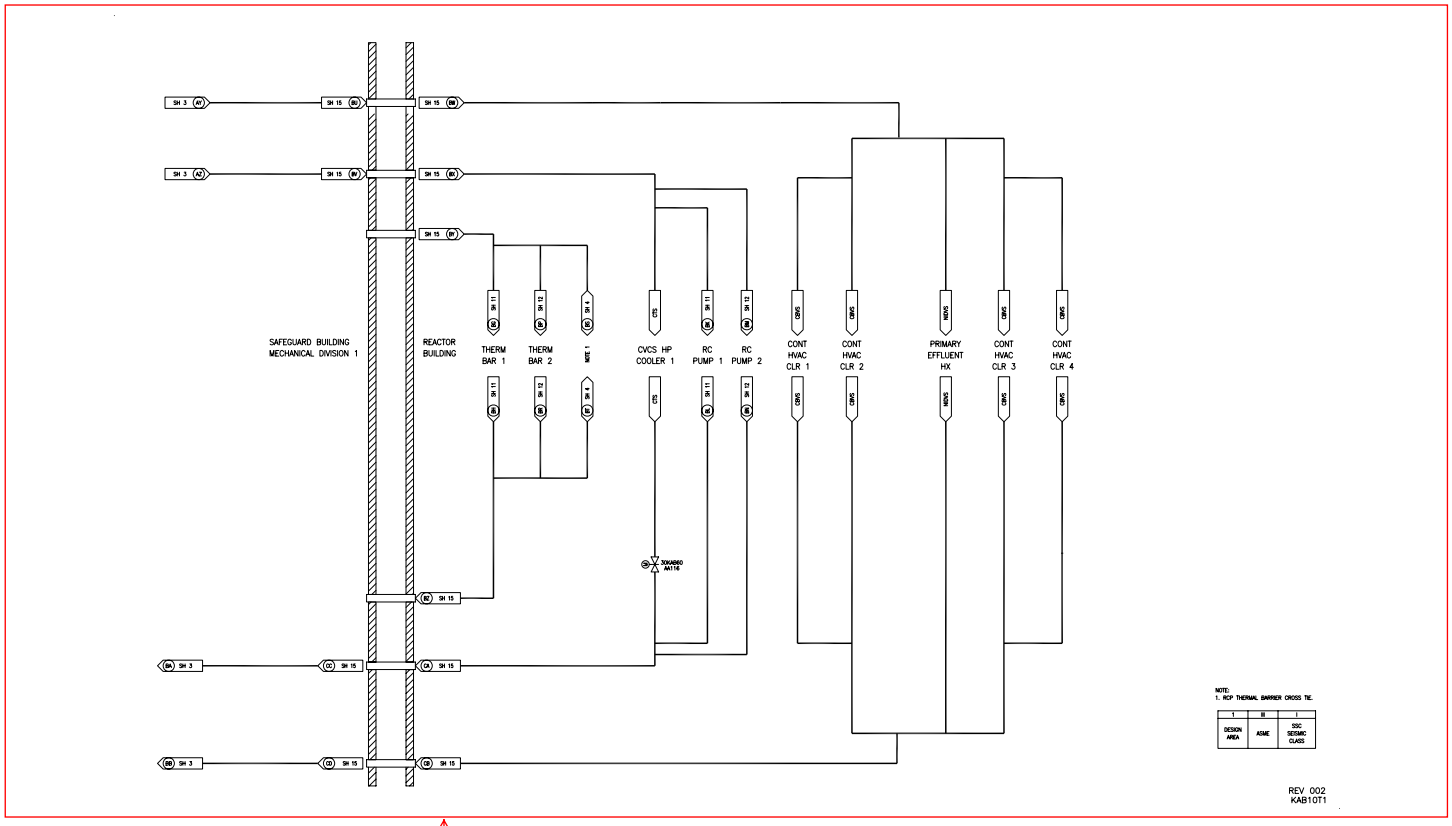

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2.8.7 Steam Generator Blowdown System

1.0 Description

The steam generator blowdown system (SGBS) is a non-safety-related system with safety-related portions. It assists in maintaining the chemical characteristics of the secondary water within permissible limits. The SGBS is safety related from its connections to the steam generators to the outer containment isolation valves. The remaining portion of the blowdown system downstream of the outer containment isolation valves is non-safety-related.

The SGBS provides the following safety-related functions:

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- Containment isolation.
- SG blowdown isolation (emergency feedwater (EFW) actuation signal, or high main steam activity signal with a partial cooldown signal, or high SG level signal with a partial cooldown signal).

The SGBS provides the following non-safety-related functions:

- SG blowdown isolation (high SGBS blowdown activity signal with a partial cooldown).

2.0 Arrangement

2.1 The functional arrangement of the SGBS is as shown in Figure 2.8.7-1—SGBS Functional Arrangement.

2.2 The location of the SGBS equipment is as listed in Table 2.8.7-1—SGBS Equipment Mechanical Design.

3.0 Mechanical Design Features

3.1 Deleted. ~~Equipment listed in Table 2.8.7-1 as ASME Code Section III is designed, welded, and hydrostatically tested in accordance with ASME Code Section III.~~

3.2 Deleted.

3.3 Components identified as Seismic Category I in Table 2.8.7-1 can withstand seismic design basis loads without a loss of the function listed in Table 2.8.7-1. ~~Equipment identified as Seismic Category I in Table 2.8.7-1 can withstand seismic design basis loads without loss of safety function as listed in Table 2.8.7-1.~~

3.4 Components listed in Table 2.8.7-1 as ASME Code Section III are designed in accordance with ASME Code Section III requirements. ~~Deleted.~~

3.5 Components listed in Table 2.8.7-1 as ASME Code Section III are fabricated in accordance with ASME Code Section III requirements. ~~Deleted.~~

3.6 Pressure boundary welds on components listed in Table 2.8.7-1 as ASME Code Section III are in accordance with ASME Code Section III requirements.~~Deleted.~~

3.7 Components listed in Table 2.8.7-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.~~Deleted.~~

3.8 Portions of the SGBS piping shown as ASME Code Section III in Figure 2.8.7-1 are designed in accordance with ASME Code Section III requirements.

3.9 Portions of the SGBS piping shown as ASME Code Section III in Figure 2.8.7-1 are installed in accordance with an ASME Code Section III Design Report.

3.10 Pressure boundary welds in portions of the SGBS piping shown as ASME Code Section III in Figure 2.8.7-1 are in accordance with ASME Code Section III.

3.11 Portions of the SGBS piping shown as ASME Code Section III in Figure 2.8.7-1 retain their pressure boundary integrity at their design pressure.

3.12 Portions of the SGBS piping shown as ASME Code Section III in Figure 2.8.7-1 are installed and inspected in accordance with ASME Code Section III requirements.

4.0 Instrumentation and Controls (I&C) Design Features, Displays, and Controls

4.1 Displays listed in Table 2.8.7-2—SGBS Equipment I&C and Electrical Design are retrievable in the main control room (MCR) and the remote shutdown station (RSS) as listed in Table 2.8.7-2.

4.2 SGBS equipment controls are provided in the MCR and the RSS as listed in Table 2.8.7-2.

4.3 Equipment listed as being controlled by a priority and actuator control system (PACS) module in Table 2.8.7-2 responds to the state requested by a test signal.

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4.4 SGBS blowdown isolation valves listed in Table 2.8.7-2 close for the affected SG under the following signals:

- EFW actuation signal, or
- High main steam activity signal with a partial cooldown signal, or,
- High SG level signal with a partial cooldown signal, or
- High SGBS blowdown activity signal with a partial cooldown signal.

~~The SGBS has an interlock to close the blowdown isolation valves if there is an EFW actuation signal.~~

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Table 2.8.7-3—Steam Generator Blowdown System ~~SGBS~~
ITAAC (5 Sheets)

	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
4.2	Controls exist in the MCR and the RSS as identified in Table 2.8.7-2.	Tests will be performed for the existence of control signals from the MCR and the RSS to the equipment listed in Table 2.8.7-2.	a. The controls listed in Table 2.8.7-2 as being in the MCR exist in the MCR. b. The controls listed in Table 2.8.7-2 as being in the RSS exist in the RSS.
4.3	Equipment listed as being controlled by a PACS module in Table 2.8.7-2 responds to the state requested by a test signal.	A test will be performed using test signals.	Equipment listed as being controlled by a PACS module in Table 2.8.7-2 responds to the state requested by the test signal.
4.4	SGBS blowdown isolation valves listed in Table 2.8.7-2 close for the affected SG under the following signals: • EFW actuation signal, or • High main steam activity signal with a partial cooldown signal, or, • High SG level signal with a partial cooldown signal, or • High SGBS blowdown activity signal with a partial cooldown signal. ~~The SGBS has an interlock to close the blowdown isolation valves if there is an EFW actuation signal.~~	Tests will be performed to verify SGBS blowdown isolation. ~~using test signals to verify the interlock.~~	Test results confirm that SGBS blowdown isolation valves listed in Table 2.8.7-2 close for the affected SG under the following signals: • EFW actuation signal, or • High main steam activity signal with a partial cooldown signal, or, • High SG level signal with a partial cooldown signal, or • High SGBS blowdown activity signal with a partial cooldown signal. ~~The following interlock responds as specified below when activated by a test signal:~~ ~~Blowdown isolation valves isolate on EFW actuation signal.~~
5.1	The components designated as Class 1E in Table 2.8.7-2 are powered from the Class 1E division as listed in Table 2.8.7-2 in a normal or alternate feed condition.	a. Testing will be performed for components designated as Class 1E in Table 2.8.7-2 by providing a test signal in each normally aligned division.	a. The test signal provided in the normally aligned division is present at the respective Class 1E component identified in Table 2.8.7-2.

2.9 Radioactive Waste Management

2.9.1 Liquid Waste Management System

1.0 Description

The liquid waste management system (LWMS) collects and treats radioactive liquid effluents from several systems throughout the plant. If the total activity indicated by activity sensors exceeds predetermined limits, the LWMS discharge valves automatically close.

2.0 Arrangement

2.1 The location of LWMS equipment is as listed in Table 2.9.1-1—LWMS Equipment Mechanical Design.

3.0 Instrumentation and Controls (I&C) Design Features, Displays, and Controls

3.1 LWMS displays listed in Table 2.9.1-2—LWMS Equipment I&C and Electrical Design are retrievable in the main control room (MCR) as listed in Table 2.9.1-2.

3.2 The LWMS equipment controls are provided in the MCR as listed in Table 2.9.1-2.

4.0 Equipment and System Performance

4.1 The LWMS processing equipment contains filter media or treatment media.

4.2 The LWMS discharge valves close upon receipt of a high-radiation signal from the activity monitors.

5.0 Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.9.1-3 lists the liquid waste management system ITAAC.

~~There are no Tier 1 entries for this system.~~

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Table 2.9.1-1—LWMS Equipment Mechanical Design

Description	Tag Number (1)	Location	ASME Code Section III	Function	Seismic Category I
Discharge valves	KPK29AA001 KPK29AA002	Radioactive Waste Processing Building	No	Close	No
Radiation monitors	KPK29CR001 KPK29CR002	Radioactive Waste Processing Building	No	Measure activity levels	No

1) Equipment tag numbers are provided for information only and are not part of the certified design.

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Table 2.9.1-2—LWMS Equipment I&C and Electrical Design

Description	Tag Number(1)	Location	IEEE Class 1E(2)	EQ – Harsh Env.	PACS	MCR Displays	MCR Controls
Discharge valves	KPK29AA001 KPK29AA002	Radioactive Waste Processing Building	No	No	No	Position	Open-Close
Radiation monitors	KPK29CR001 KPK29CR002	Radioactive Waste Processing Building	No	No	No	Radiation activity levels	N/A

1) Equipment tag numbers are provided for information only and are not part of the certified design.

2) ^{N} denotes the division the component is normally powered from. ^{A} denotes the division the component is powered from when alternate feed is implemented.

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Table 2.9.1-3— Liquid Waste Management System ITAAC

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
2.1	The location of LWMS equipment is as listed in Table 2.9.1-1.	Inspections will be performed to verify equipment locations.	The equipment listed in Table 2.9.1-1 is located as listed in Table 2.9.1-1.
3.1	LWMS displays listed in Table 2.9.1-2 are retrievable in the MCR as listed in Table 2.9.1-2.	Tests will be performed for the retrievability of the displays in the MCR as listed in Table 2.9.1-2.	The displays listed in Table 2.9.1-2 as being retrieved in the MCR can be retrieved in the MCR.
3.2	The LWMS equipment controls are provided in the MCR as listed in Table 2.9.1-2.	Tests will be performed for the existence of control signals from the MCR to the equipment listed in Table 2.9.1-2.	The controls listed in Table 2.9.1-2 as being in the MCR exist in the MCR.
4.1	The LWMS processing equipment contains filter media or treatment media.	Analyses and inspections will be performed to verify the LWMS processing equipment contains filter/treatment media capable of maintaining offsite doses to members of the public within 10 CFR 20 limits and effluent concentrations below the annual average concentration limits of 10 CFR 20.	Analyses and inspection reports indicate that the LWMS processing equipment contains filter/treatment media capable of maintaining offsite doses to members of the public within 10 CFR 20 limits and effluent concentrations below the annual average concentration limits of 10 CFR 20.
4.2	The LWMS discharge valves close upon receipt of a high-radiation signal from the activity monitors.	Tests of the discharge valves closure will be performed by simulating a high-radiation signal at each activity monitor (tag numbers KPK29CR001 and KPK29CR002) downstream of the delay beds.	The LWMS discharge valves (tag numbers KPK29AA001 and KPK29AA002) close upon receipt of a high-radiation signal from the activity monitors (tag number KPK29CR001 and KPK29CR002).

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Next File

2.9.3 Gaseous Waste ~~Management~~ Processing System

1.0 Description

The gaseous waste processing system (GWPS) is a non-safety system that utilizes delay beds containing activated carbon to reduce the activity of the waste gas before release to the Nuclear Auxiliary Building for additional processing and release through the vent stack. A high-radiation signal from the activity monitor downstream of the delay beds activates an alarm in the main control room (MCR) and terminates gaseous waste releases.

The only safety-related function of the GWPS is containment isolation.

2.0 Arrangement

2.1 The functional arrangement of the GWPS is as shown in Figure 2.9.3-1—Gaseous Waste Processing System Functional Arrangement.

2.2 The location of the GWPS equipment is as listed in Table 2.9.3-1— GWPS Equipment Mechanical Design.

3.0 Mechanical Design Features

3.1 Components identified as Seismic Category I in Table 2.9.3-1 can withstand seismic design basis loads without a loss of the function listed in Table 2.9.3-1.

3.2 Portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1 are designed in accordance with ASME Code Section III requirements.

3.3 Portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1 are installed in accordance with an ASME Code Section III Design Report.

3.4 Pressure boundary welds in portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1 are in accordance with ASME Code Section III.

3.5 Portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1 retain their pressure boundary integrity at their design pressure.

3.6 Portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1 are installed and inspected in accordance with ASME Code Section III requirements.

3.7 Components listed in Table 2.9.3-1 as ASME Code Section III are designed in accordance with ASME Code Section III requirements.

3.8 Components listed in Table 2.9.3-1 as ASME Code Section III are fabricated in accordance with ASME Code Section III requirements.

3.9 Pressure boundary welds on components listed in Table 2.9.3-1 as ASME Code Section III are in accordance with ASME Code Section III requirements.

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3.10 Components listed in Table 2.9.3-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.

4.0 Instrumentation and Controls (I&C) Design Features, Displays, and Controls

4.1 Displays listed in Table 2.9.3-2—GWPS Equipment I&C and Electrical Design are retrievable in the main control room (MCR) as listed in Table 2.9.3-2.

4.2 The GWPS equipment controls are provided in the MCR as listed in Table 2.9.3-2.

5.0 Electrical Power Design Features

5.1 The components designated as Class 1E in Table 2.9.3-2 are powered from the Class 1E division as listed in Table 2.9.3-2 in a normal or alternate feed condition.

6.0 Environmental Qualifications

6.1 Components in Table 2.9.3-2, that are designated as harsh environment, will perform the function listed in Table 2.9.3-1 in the environments that exist during and following design basis events.

7.0 Equipment and System Performance

7.1 The GWPS contains delay beds with activated charcoal.

7.2 The GWPS discharge valve closes upon receipt of a high-radiation signal from the activity monitor downstream of the delay beds.

8.0 Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.9.3-3 lists the gaseous waste processing system ITAAC.

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Table 2.9.3-1—GWPS Equipment Mechanical Design

Description	Tag Number (1)	Location	ASME Code Section III	Function	Seismic Category I
GWPS delay beds	KPL50AT001 KPL50AT002 KPL50AT003	Nuclear Auxiliary Building	No	Delay radioactive gas release to atmosphere	No
Discharge valve	KPL83AA005	Downstream of GWPS delay beds	No	Close	No
GWPS containment isolation valves	KPL84AA003 KPL85AA003	Reactor Building	Yes	Close (containment isolation)	I
GWPS containment isolation valves	KPL84AA002 KPL85AA004	Fuel Building	Yes	Close (containment isolation)	I

1) Equipment tag numbers are provided for information only and are not part of the certified design.

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Table 2.9.3-2—GWPS Equipment I&C and Electrical Design

Description	Tag Number(1)	Location	IEEE Class 1E(2)	EQ – Harsh Env.	PACS	MCR Displays	MCR Controls
GWPS containment isolation valve	KPL84AA003	Reactor Building	1^{N} 2^{A}	Yes	No	Position	Open-Close
GWPS containment isolation valve	KPL85AA003	Reactor Building	1^{N} 2^{A}	Yes	No	Position	Open-Close
GWPS containment isolation valve	KPL84AA002	Fuel Building	4^{N} 3^{A}	No	No	Position	Open-Close
GWPS containment isolation valve	KPL85AA004	Fuel Building	4^{N} 3^{A}	No	No	Position	Open-Close
Discharge valve	KPL83AA005	Downstream of GWPS delay beds	No	No	No	Position	Open-Close
Radiation monitor	KPL83CR001	Downstream of GWPS delay beds	No	No	No	Radiation level	N/A

1) Equipment tag numbers are provided for information only and are not part of the certified design.

2) ^{N} denotes the division the component is normally powered from. ^{A} denotes the division the component is powered from when alternate feed is implemented.

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Table 2.9.3-3—Gaseous Waste Processing System ITAAC (5 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
2.1	The functional arrangement of the GWPS is as shown in Figure 2.9.3-1.	Inspections of the as-built GWPS will be performed.	The as-built GWPS conforms with the functional arrangement as shown in Figure 2.9.3-1.
2.2	The location of the GWPS equipment is as listed in Table 2.9.3-1.	Inspections will be performed to verify equipment locations.	The equipment listed in Table 2.9.3-1 is located as listed in Table 2.9.3-1.
3.1	Components identified as Seismic Category I in Table 2.9.3-1 can withstand seismic design basis loads without a loss of the function listed in Table 2.9.3-1.	a. Type tests, analyses, or a combination of type tests and analyses will be performed on the components identified as Seismic Category I in Table 2.9.3-1 using analytical assumptions, or under conditions, which bound the Seismic Category I design requirements. b. Inspections will be performed of the Seismic Category I components identified in Table 2.9.3-1 to verify that the components, including anchorage, are installed as specified on the construction drawings and deviations have been reconciled to the seismic qualification reports (SQDP, EQDP, or analyses).	a. Seismic qualification reports (SQDP, EQDP, or analyses) exist and conclude that the Seismic Category I components identified in Table 2.9.3-1 can withstand seismic design basis loads without a loss of the function listed in Table 2.9.3-1. b. Inspection reports exist and conclude that the Seismic Category I components identified in Table 2.9.3-1, including anchorage, are installed as specified on the construction drawings and deviations have been reconciled to the seismic qualification reports (SQDP, EQDP, or analyses).
3.2	Portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1 are designed in accordance with ASME Code Section III requirements.	Inspections of the ASME Code Section III Design Reports (NCA-3550) and associated reference documents will be performed.	ASME Code Section III Design Reports (NCA-3550) exist and conclude that portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1 comply with ASME Code Section III requirements.

Table 2.9.3-3—Gaseous Waste Processing System ITAAC (5 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.3	Portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1 are installed in accordance with an ASME Code Section III Design Report.	Analyses to reconcile as-built deviations to the ASME Code Design Reports (NCA-3550) will be performed. Piping analyzed using time-history methods will be reconciled to the as-built information.	For portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1, ASME Code Data Reports (N-5) exist and conclude that design reconciliation (NCA-3554) has been completed in accordance with the ASME Code Section III for the as-built system. The report(s) document the as-built condition.
3.4	Pressure boundary welds in portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1 are in accordance with ASME Code Section III.	Inspections of pressure boundary welds verify that welding is performed in accordance with ASME Code Section III requirements.	ASME Code Section III Data Reports exist and conclude that pressure boundary welding for portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1 has been performed in accordance with ASME Code Section III.
3.5	Portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1 retain their pressure boundary integrity at their design pressure.	Hydrostatic tests will be performed on the system.	For portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1, ASME Code Section III Data Reports exist and conclude that hydrostatic test results comply with ASME Code Section III requirements.
3.6	Portions of the GWPS piping shown as ASME Code Section III in Figure 2.9.3-1 are installed and inspected in accordance with ASME Code Section III requirements.	An inspection of the as-built piping will be performed.	For portions of the as-built GWPS piping shown as ASME Code Section III in Figure 2.9.3-1, N–5 Data Reports exist and conclude that installation and inspection are in accordance with ASME Code Section III requirements.

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Table 2.9.3-3—Gaseous Waste Processing System ITAAC (5 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.7	Components listed in Table 2.9.3-1 as ASME Code Section III are designed in accordance with ASME Code Section III requirements.	Inspections will be performed for the existence of ASME Code Section III Design Reports.	ASME Code Section III Design Reports (NCA-3550) exist for components listed as ASME Code Section III in Table 2.9.3-1.
3.8	Components listed in Table 2.9.3-1 as ASME Code Section III are fabricated in accordance with ASME Code Section III requirements.	Inspections will be performed to verify that the design report has been revised to reflect as-built deviations from the design if applicable.	For components listed as ASME Code Section III in Table 2.9.3-1, the as-built component satisfies design requirements of ASME Code Section III as demonstrated in the Design Report (NCA-3550).
3.9	Pressure boundary welds on components listed in Table 2.9.3-1 as ASME Code Section III are in accordance with ASME Code Section III requirements.	Inspections of pressure boundary welds will be performed to verify that welding is performed in accordance with ASME Code Section III requirements.	For components listed as ASME Code Section III in Table 2.9.3-1, ASME Code Section III Data Reports (NCA-8000) exist and conclude that pressure boundary welding has been performed in accordance with ASME Code Section III.
3.10	Components listed in Table 2.9.3-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.	Hydrostatic tests will be performed on the components.	For components listed as ASME Code Section III in Table 2.9.3-1, ASME Code Section III Data Reports exist and conclude that hydrostatic test results comply with ASME Code Section III requirements.
4.1	Displays listed in Table 2.9.3-2 are retrievable in the MCR as listed in Table 2.9.3-2.	Tests will be performed for the retrievability of the displays in the MCR as listed in Table 2.9.3-2.	The displays listed in Table 2.9.3-2 as being retrieved in the MCR can be retrieved in the MCR.
4.2	The GWPS equipment controls are provided in the MCR as listed in Table 2.9.3-2.	Tests will be performed for the existence of control signals from the MCR to the equipment listed in Table 2.9.3-2.	The controls listed in Table 2.9.3-2 as being in the MCR exist in the MCR.

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Table 2.9.3-3—Gaseous Waste Processing System ITAAC (5 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
5.1	The components designated as Class 1E in Table 2.9.3-2 are powered from the Class 1E division as listed in Table 2.9.3-2 in a normal or alternate feed condition.	a. Testing will be performed for components designated as Class 1E in Table 2.9.3-2 by providing a test signal in each normally aligned division. b. Testing will be performed for components designated as Class 1E in Table 2.9.3-2 by providing a test signal in each division with the alternate feed aligned to the divisional pair.	a. The test signal provided in the normally aligned division is present at the respective Class 1E component identified in Table 2.9.3-2. b. The test signal provided in each division with the alternate feed aligned to the divisional pair is present at the respective Class 1E component identified in Table 2.9.3-2.
6.1	Components in Table 2.9.3-2, that are designated as harsh environment, will perform the function listed in Table 2.9.3-1 in the environments that exist during and following design basis events.	a. Type tests, analyses, or a combination of type tests and analyses will be performed to demonstrate the ability of the equipment listed as harsh environment in Table 2.9.3-2 to perform the function listed in Table 2.9.3-1 for the environmental conditions that could occur during and following design basis events.	a. Environmental Qualification Data Packages (EQDP) exist and conclude that the equipment listed as harsh environment in Table 2.9.3-2 can perform the function listed in Table 2.9.3-1 during and following design basis events.
		b. Equipment listed as harsh environment in Table 2.9.3-2 will be inspected to verify installation in accordance with the construction drawings including the associated wiring, cables and terminations. Deviations to the construction drawings will be reconciled to the EQDP.	b. Inspection reports exists and conclude that the equipment listed in Table 2.9.3-2 as harsh environment has been installed per the construction drawings and any deviations have been reconciled to the EQDP.

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Table 2.9.3-3—Gaseous Waste Processing System ITAAC (5 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
7.1	The GWPS contains delay beds with activated charcoal.	Inspections will be performed to verify the mass of activated charcoal loaded in each delay bed (tag numbers KPL50AT001, KPL50AT002, and KPL50AT003.)	Each delay bed (tag numbers KPL50AT001, KPL50AT002, and KPL50AT003) contains a minimum of 5,440 lbm of activated charcoal.
7.2	The GWPS discharge valve closes upon receipt of a high-radiation signal from the activity monitor downstream of the delay beds.	Tests of the discharge valve closure will be performed by simulating a high-radiation signal at the activity monitor (tag number KPL83CR001) downstream of the delay beds.	Discharge valve (tag number KPL83AA005) closes upon receipt of a high-radiation signal from the activity monitor (tag number KPL83CR001) downstream of the delay beds.

~~There are no Tier 1 entries for this system.~~

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Next File

Figure 2.9.3-1—Gaseous Waste Processing System Functional Arrangement

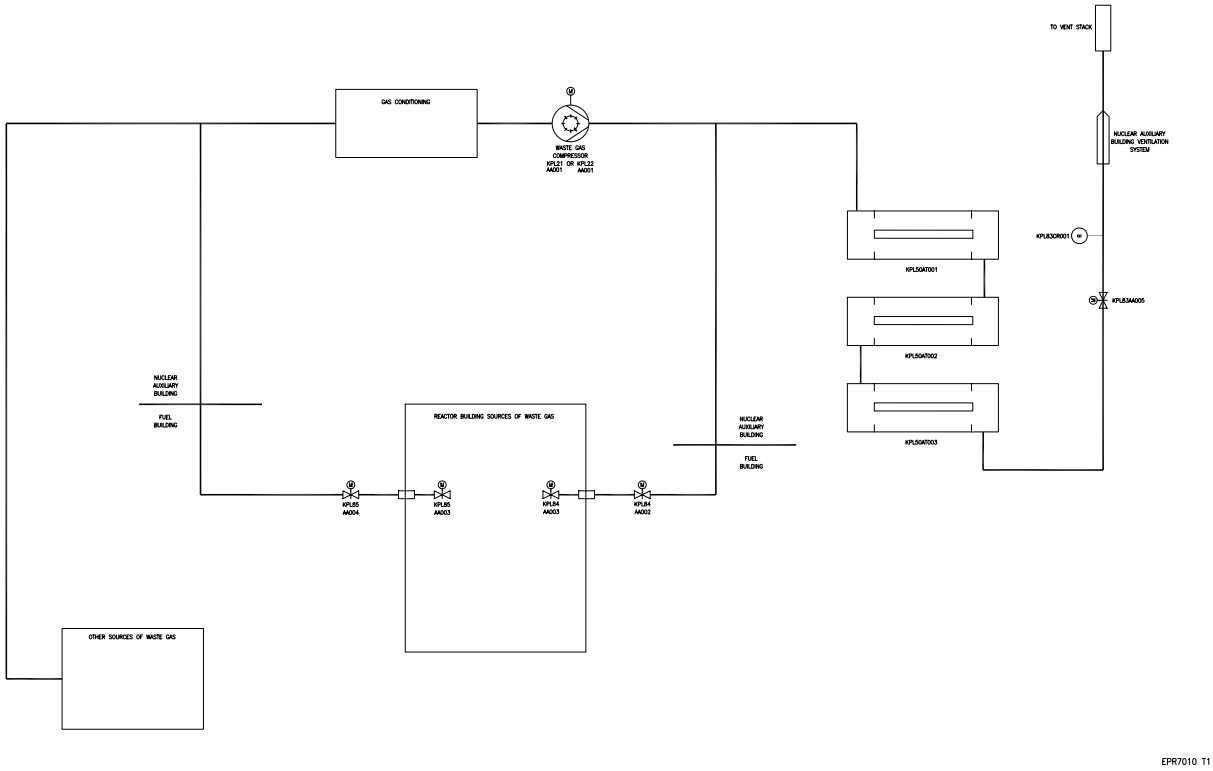

Table 3.5-1—Containment Isolation Equipment Mechanical Design (8 Sheets)

~~Equipment~~ Description	~~Equipment~~ Tag Number (1)	~~Equipment~~ Location	Figure 3.5-1 Configuration Type	ASME Code Section III	Function (2)	Seismic Category
Containment Service Compartment pressure – CIV	KLA70AA703	Fuel Building	1A	Yes	Open	I
Containment Service Compartment pressure – CIV	KLA70AA704	Fuel Building	1A	Yes	Open	I
Containment Service Compartment pressure – CIV	KLA70AA706	Safeguard Building	1A	Yes	Open	I
Containment Service Compartment pressure – CIV	KLA70AA707	Safeguard Building	1A	Yes	Open	I
Containment Service Compartment pressure – CIV	KLA70AA708	Fuel Building	1A	Yes	Open	I
Containment Service Compartment pressure – CIV	KLA70AA709	Fuel Building	1A	Yes	Open	I
~~Gaseous Waste Processing System - CIV~~	~~KPL84AA003~~	~~Reactor Building~~	~~5B~~	~~Yes~~	~~Close(a)~~	~~I~~
~~Gaseous Waste Processing System - CIV~~	~~KPL84AA002~~	~~Fuel Building~~	~~5A~~	~~Yes~~	~~Close(a)~~	~~I~~
~~Gaseous Waste Processing System - CIV~~	~~KPL85AA003~~	~~Reactor Building~~	~~5B~~	~~Yes~~	~~Close(a)~~	~~I~~
~~Gaseous Waste Processing System - CIV~~	~~KPL85AA004~~	~~Fuel Building~~	~~5A~~	~~Yes~~	~~Close(a)~~	~~I~~
Nuclear Island Drain & Vent System - CIV	KTA10AA017	Reactor Building	5B	Yes	Close(a)	I
Nuclear Island Drain & Vent System - CIV	KTA10AA018	Fuel Building	5A	Yes	Close(a)	I
Nuclear Island Drain & Vent System - CIV	KTC10AA005	Reactor Building	5B	Yes	Close(a)	I
Nuclear Island Drain & Vent System - CIV	KTC10AA006	Fuel Building	5A	Yes	Close(a)	I

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Table 3.5-2—Containment Isolation Equipment I&C and Electrical Design (5 Sheets)

~~Equipment~~ Description	~~Equipment~~ Tag Number (1)	IEEE Class 1E (2)	EQ - Harsh Environment	PACS	MCR Displays	MCR Controls
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA087	$2^{(N)}$ $1^{(A)}$	Yes	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA088	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA089	$2^{(N)}$ $1^{(A)}$	Yes	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA090	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA091	$2^{(N)}$ $1^{(A)}$	Yes	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA092	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 Return to containment - CIV	JMU51AA093	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 Return to containment - CIV	JMU51AA094	$2^{(N)}$ $1^{(A)}$	Yes	Yes	Position	Open / Close
IRWST - Sump Suction SAHRS - CIV	JMQ40AA001	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
~~Gaseous Waste Processing System - CIV~~	~~KPL84AA003~~	~~$1^{(N)}$ $2^{(A)}$~~	~~Yes~~	~~Yes~~	~~Position~~	~~Open / Close~~
~~Gaseous Waste Processing System - CIV~~	~~KPL84AA002~~	~~$4^{(N)}$ $3^{(A)}$~~	~~No~~	~~Yes~~	~~Position~~	~~Open / Close~~
~~Gaseous Waste Processing System - CIV~~	~~KPL85AA003~~	~~$1^{(N)}$ $2^{(A)}$~~	~~Yes~~	~~Yes~~	~~Position~~	~~Open / Close~~
~~Gaseous Waste Processing System - CIV~~	~~KPL85AA004~~	~~$4^{(N)}$ $3^{(A)}$~~	~~No~~	~~Yes~~	~~Position~~	~~Open / Close~~
Nuclear Island Drain & Vent System – CIV	KTC10AA010	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - CIV	KTA10AA017	$4^{(N)}$ $3^{(A)}$	Yes	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - CIV	KTA10AA018	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - CIV	KTC10AA005	$1^{(N)}$ $2^{(A)}$	Yes	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - CIV	KTC10AA006	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - CIV	KTD10AA015	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - CIV	KTD10AA024	$1^{(N)}$ $2^{(A)}$	Yes	Yes	Position	Open / Close

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Table 5.0-1—Site Parameters for the U.S. EPR Design
(4 3 Sheets)

Inventory of Radionuclides which Could Potentially Seep Into the Groundwater							
Nuclide	**Activity (µCi/g)**	**Nuclide**	**Activity (µCi/g)**	**Nuclide**	**Activity (µCi/g)**	**Nuclide**	**Activity (µCi/g)**
Br-83	3.2E-02	Mn-54	1.0E-03	Y-91m	5.2E-04	TE-129	2.4E-03
Br-84	1.7E-02	Fe-55	7.6E-04	Y-91	8.1E-05	TE-131m	3.7E-03
Br-85	2.0E-03	Fe-59	1.9E-04	Y-92	1.4E-04	TE-131	2.6E-03
I-129	4.6E-08	Co-58	2.9E-03	Y-93	6.5E-05	TE-132	4.1E-02
I-130	5.0E-02	Co-60	3.4E-04	ZR-95	9.3E-05	TE-134	6.7E-03
I-131	7.4E-01	Na-24	3.7E-02	NB-95	9.3E-05	BA-137m	1.0E-01
I-132	3.7E-01	Zn-65	3.2E-04	MO-99	1.1E-01	BA-140	6.2E-04
I-133	1.3E+00	W-187	1.8E-03	TC-99m	4.6E-02	LA-140	1.6E-04
I-134	2.4E-01	Rb-88	1.0E+00	RU-103	7.7E-05	CE-141	8.9E-05
I-135	7.9E-01	Rb-89	4.7E-02	RU-106	2.7E-05	CE-143	7.6E-05
Cs-134	1.7E-01	Sr-89	6.3E-04	RH-103m	6.8E-05	CE-144	6.9E-05
Cs-136	5.3E-02	Sr-90	3.3E-05	RH-106	2.7E-05	PR-143	8.8E-05
Cs-137	1.1E-01	Sr-91	1.0E-03	AG-110m	2.0E-07	PR-144	6.9E-05
Cs-138	2.2E-01	Sr-92	1.7E-04	TE-127m	4.4E-04	NP-239	8.7E-04
Cr-51	2.0E-03	Y-90	7.7E-06	TE-129m	1.5E-03	H-3	1.0E+00

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the system. The gamma sensitive detectors are mounted adjacent to the main steam lines within the main steam and feedwater valve compartments. At low power levels, radioactivity is detected in the main steam due to the presence of noble gas. At high power levels, radiation is detected from the strong gamma from nitrogen-16. Shielding of detectors helps to prevent false readings from the detectors on the other main steam lines. The redundant measurement signals are processed, and provide alarm in the control room upon detection of radioactivity.

The main steam radiation monitoring system is also used in conjunction with the condenser air removal and steam generator blowdown radiation monitoring systems to identify a steam generator tube leak. The main steam radiation monitoring system provides alarms and signals to the protection system for automatic isolation of an affected steam generator. Measurement ranges of the main steam radiation monitoring system are shown in Table 11.5-1—Radiation Monitor Detector Parameters.

11.5.4.2 Condenser Air Removal Radiation Monitoring System

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Noncondensable gases (air and noble gases) in the secondary steam system are continuously removed during operation by the ~~condenser air removal system~~main condensor evacuation system (see Section 10.4.2). These gases discharge to the vent stack via a vent line. To monitor noble gas radioactivity, the ~~condenser air removal~~ monitoring system extracts part of the flow from the vent line (see Figure 10.4.2-2) and passes it through a measuring vessel with a beta-sensitive detector. If the monitoring system detects noble gas radioactivity in the secondary steam system, then it provides local and control room alarm. This alarm is an indication of breach of fuel cladding, primary coolant boundary, or containment leak. Table 11.5-1 shows the measurement ranges of the condenser air removal radiation monitoring system. This system does not initiate automatic actions.

11.5.4.3 Steam Generator Blowdown Radiation Monitoring System

The evaporation process within the steam generator results in the concentration of contaminants in the liquid phase. These contaminants include non-gaseous radioactive substances that have entered the secondary system from the RCS due to tube leakage in a steam generator.

Sampling lines extract blowdown water from the individual blowdown lines for chemical analysis. These lines are located ahead of the primary isolation valve within the reactor containment. Flow is continuously extracted from each of these lines and fed to gamma activity measurement equipment. This configuration allows each steam generator to be monitored separately and continuously for radioactivity carryover to the secondary side.

shown in the figures. A figure legend and a list of acronyms facilitate the use and interpretation of U.S. EPR design information. The technical terminology used in Tier 1 is consistent with Tier 2 terminology, industry standards, and regulatory documents.

The criteria for selecting definitions include those in Standard Review Plan (SRP) 14.3 (Reference 1) and any other terms in the FSAR that could be subject to interpretation. The selection process for determining which terms are to be defined begins with a review of the terms and definitions in Tier 2 and the guidance in SRP 14.3. Those terms that are important to Tier 1, potentially ambiguous, or unique to Tier 1 are selected.

The criteria for inclusion in the general provisions section includes those items needed to clarify the technical requirements that apply to multiple systems, provide guidance on ITAAC implementation, provide guidance on the interpretation of figures, provide guidance on operational considerations, and specify the U.S. EPR core thermal power level. Selecting the general provisions to be included in Tier 1 involves following the SRP 14.3 (Reference 1) guidance and reviewing Tier 2 against the specific criteria previously listed.

14.3.2 Tier 1, Chapter 2, System Based Design Descriptions and ITAAC

Tier 1, Chapter 2 contains CDM system design descriptions (SDD) and associated ITAAC. This chapter is the result of the process to determine which U.S. EPR design features addressed in Tier 2 should be addressed in the Tier 1 CDM SDDs, interface requirements, and site parameters. The selection process considers the U.S. EPR design philosophy of simple, redundant, and active systems coupled with advanced control technology, which reduces the frequency of transients and improves the reliability of the response to those transients. Given this design philosophy, the process of determining the safety-significant features uses the availability of probabilistic risk assessment (PRA) information to determine the significant design features and performance criteria that lead to safe operation. Using this process allows the top level Tier 1 information to be extracted from the more detailed Tier 2 design information. Tier 1, Chapter 2 provides no technical information not already presented in Tier 2.

The Tier 1 information selection process uses two distinct, parallel approaches: those based on equipment classification and those based on features credited in various analyses. The first approach uses specific equipment classification criteria derived from SRP 14.3, including the system checklists in Appendix C of SRP 14.3 (Reference 1). Examples of equipment selection criteria include ASME Code, Section III (Reference 2), Seismic Category I, and IEEE Class 1E. This selection process provides those safety significant features credited to comply with 10 CFR Parts 20, 50, 52, 73, or 100. For example, safety-significant radiation protection features credited to comply with 10 CFR Part 20 were selected that automatically terminate effluent

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releases to the environment or that significantly contribute to controlling effluent releases, such as delay beds with activated charcoal in the gaseous waste processing system (GWPS).

In keeping with the SRP guidance, features provided solely for equipment protection are not included in Tier 1 material.

Tier 1 SDDs developed during the first approach address each system identified in Tier 2. The amount of detail included in a Tier 1 SDD for a specific system is a function of the number and safety significance of the system design features. Systems addressed in Tier 2 that have no safety-significant features are listed in Tier 1 as 'No entry for this system.'

The second approach to develop Tier 1 material uses assumptions and insights from key safety and integrated plant safety analyses to identify Tier 1 material. Addressing these assumptions and insights in Tier 1 means the integrity of the fundamental analyses is preserved in the as-built facility referencing the U.S. EPR design. The various review teams for this approach were led by a subject matter expert and included, at a minimum, representatives from engineering integration, PRA, and licensing. The following areas were reviewed for safety-significant design features:

- Design Basis Accidents (DBA) — Analytical input summaries and key assumptions for the safety analyses were reviewed. Also, system engineers performing containment analyses and overpressure protection analyses identified items to be included as DBA safety-significant design features. The results are in Table 14.3-1—Design Basis Accident Analysis (Safety-Significant Features).

- Radiological Protection — The radiological engineering information record that summarizes the design input for radiological analyses was reviewed for safety-significant items. The results are in Table 14.3-2—Radiological Analysis (Safety-Significant Features).

- Fire Protection — Fire hazards analyses were reviewed for safety-significant design features. The results are in Table 14.3-3—Fire Protection (Safety-Significant Features).

- Flooding Protection — Flooding evaluations were reviewed for safety-significant design features. The results are in Table 14.3-4—Flooding Analysis (Safety-Significant Features).

- Anticipated Transient Without Scram (ATWS) —10 CFR 50.62 (the ATWS rule) and the engineering evaluation addressing ATWS were reviewed for safety-significant design features. The results are in Table 14.3-5—ATWS (Safety-Significant Features).

- PRA and Severe Accident — The PRA insights report and severe accident analyses were reviewed for safety-significant design features. Using the PRA insights report provided a process to identify non-safety-related features that are safety-

Table 14.3-8—ITAAC Screening Summary
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Structure, System, or Component	System KKS Code(s)	Within Scope of Tier 1	Has ITAAC in Tier 1	Tier 1 Section
Auxiliary Systems				
Emergency Diesel Generator 14.03.07-33	XJA, XKA, XJN, XJV, XJG, XJQ, XJR, XJX, ~~CXN~~	X	X	2.5.4
Gaseous Waste ~~Management~~Processing System	KPL	X	X	2.9.3
Leak-off System	JMM	X		2.7.7
Liquid Waste Management System	KPK, KPF	X	X	2.9.1
Nuclear Island Drain and Vent Systems	KT	X	X	2.9.5
Nuclear Sampling System	KU	X		2.9.6
Sampling Activity Monitoring Systems	KLK	X	X	2.9.4
Severe Accident Sampling System	KUL	X		2.3.4
Solid Waste Management System	KPC	X		2.9.2
Station Blackout Alternate AC Source	XJA, XKA, XJN, XJV, XJG, XJQ, XJR, XJX, ~~CXN~~	X	X	2.5.3
Electrical Systems				
12-Hour Uninterruptible Power Supply System	BRB, BRV, BRW, BRX, BUV, BUX, BRC, BRV03, BTB, BTM, BUD, BUE	X	X	2.5.11
Class 1E Uninterruptible Power Supply	BRA, BRU01, BRW, BTD, BTP, BUC, BUW, BGA	X	X	2.5.2
Class 1E Emergency Power Supply System	BD, BM, BN	X	X	2.5.1
Lighting System	BG, BJ, BL, BZL	X	X	2.5.9
Lightning Protection and Grounding	BAW	X	X	2.5.8