2 STRUCTURES AND COMPONENTS SUBJECT TO AN AGING MANAGEMENT REVIEW

This section of the SER describes the staff's review of the methodology used by Exelon to implement the scoping and screening requirements of 10 CFR Part 54 (the license renewal rule), and the staff's evaluation of Exelon's scoping and screening results.

By letter dated July 2, 2001, Exelon submitted its request and application for renewal of the operating licenses for the Peach Bottom Atomic Power Station, Units 2 and 3. As an aid to the NRC staff during the review, Exelon provided evaluation boundary drawings that identify the functional boundaries for systems and components within the scope of license renewal. These evaluation boundary drawings are not part of the license renewal application.

On January 23 and March 12, 2002, the staff issued requests for additional information (RAIs) regarding the applicant's methodology for identifying structures, systems, and components (SSCs) at Peach Bottom that are within the scope of license renewal and subject to an aging management review (AMR) and regarding the results of the applicant's scoping and screening process. On February 28 and May 22, 2002, the applicant provided responses to the RAIs.

2.1 Scoping and Screening Methodology

2.1.1 Introduction

Title 10 of the Code of Federal Regulations, Part 54 (10 CFR Part 54), "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," Section 54.21, "Contents of Application—Technical Information," requires that each application for license renewal contain an integrated plant assessment (IPA). The IPA must list and identify those structures and components (SCs) that are subject to an AMR from among the systems, structures, and components (SSCs) that are within the scope of license renewal in accordance with 10 CFR 54.4.

In Section 2.1, "Scoping and Screening Methodology," of the Peach Bottom Atomic Power Station (PBAPS), Unit 2 and 3, license renewal application (LRA), the applicant described the scoping and screening methodology used to identify SSCs that are within the scope of license renewal and SCs that are subject to an AMR. The staff reviewed the applicant's scoping and screening methodology to determine if it met the scoping requirements set forth in 10 CFR 54.4(a) and the screening requirements set forth in 10 CFR 54.21. In developing the scoping and screening methodology, the applicant considered the requirements of the rule, the statements of consideration for the rule, and the guidance provided by the Nuclear Energy Institute (NEI), "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal rule," Revision 3, March 2001 (NEI 95-10). The applicant also considered the NRC staff's correspondence with other applicants and the NEI regarding the development of this methodology.

2.1.2 Summary of Technical Information in the Application

In LRA Sections 2.0 and 3.0, the applicant provides the technical information required by 10 CFR 54.21(a). In LRA Section 2.1, "Scoping and Screening Methodology," the applicant describes the process used to identify the SSCs that meet the license renewal scoping criteria

under 10 CFR 54.4(a) and the process used to identify the SCs that are subject to an AMR in accordance with 10 CFR 54.21(a)(1).

LRA Sections 2.2 “Plant Level Scoping Results,” 2.3 “Scoping and Screening Results: Mechanical,” 2.4 “Scoping and Screening Results: Structures and Component Supports,” and 2.5 “Scoping and Screening Results: Electrical and Instrumentation and Controls,” further describe the process that the applicant used to identify the SCs that are subject to an AMR. LRA aging management review results (Section 3.0), contains information on aging management of the reactor coolant system (Section 3.1), engineered safety features systems (Section 3.2), auxiliary systems (Section 3.3), steam and power conversion systems (Section 3.4), structures and component supports (Section 3.5), and electrical and instrumentation and controls (Section 3.6). Chapter 4 of the LRA, “Time-Limited Aging Analyses,” contains the applicant’s evaluation of time-limited aging analyses.

2.1.2.1 Scoping Methodology

Scoping has been performed to identify the plant systems and structures within the scope of the license renewal rule. In LRA Section 2.1.2, “Scoping Methodology,” the applicant discussed the scoping methodology as it related to the safety-related criteria in accordance with 10 CFR 54.4(a)(1), the non-safety-related criteria in 10 CFR 54.4(a)(2), and the scoping criteria in 10 CFR 54.4(a)(3) for regulated events.

2.1.2.1.1 Safety-Related Systems, Structures, and Components

Figure 2.1-1 of the LRA presents a broad overview of the scoping and screening process and identifies the basic steps. Some steps are previously completed evaluations and form part of the current licensing basis (CLB). These steps are documented in the PBAPS maintenance rule (MR) system scoping results, the component record list (CRL), the updated final safety analysis report (UFSAR), and other plant design documentation which is consistent with NUREG-1800, “Standard Review Plan for Review of License Renewal Application for Nuclear Power Plants.” The previously completed MR scoping evaluations were performed on a system basis for each mechanical and electrical system identified in the CRL. The scoping and screening methodology used by Exelon is described in Sections 2.1.1, 2.1.2, and 2.1.3 of the LRA.

With respect to the safety-related criteria in 10 CFR 54.4(a)(1), the applicant stated that the SSCs within the scope of license renewal include safety-related SSCs, which are those relied on to remain functional during and following design basis events (as defined in 10 CFR 50.49(b)(1)(i)) to ensure the following functions: (i) the integrity of the reactor coolant pressure boundary; (ii) the capability to shut down the reactor and maintain it in a safe shutdown condition; or (iii) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11, as applicable.

The applicant relied on the UFSAR, plant design drawings, MR bases documents, plant equipment lists, the CRL, design baseline documents (DBDs), and other design documents from previously completed evaluations in the CLB, such as the results of the MR system scoping, to identify SSCs and their functions in accordance with the criteria in 10 CFR 54.4(a)(1). The CRL is a verified and controlled database of plant systems and equipment

(e.g., mechanical and electrical systems and components). The CRL gives the quality classification of each component and is used to identify the safety-related components in the plant. The UFSAR includes information on the plant, presents the design bases and the limits on the plant's operation, presents the safety analyses of the SSCs and of the facility as a whole, and identifies the intended functions of structures. DBDs are comprehensive system-level documents that provide the design bases and include system functions, controlling parameters, and design features for various operating and accident conditions. In addition, DBDs discuss the regulatory requirements, commitments, codes and standards, and system configuration changes that are reflected in the design basis of the system. The evaluation against license renewal scoping criterion 54.4(a)(1) for mechanical and electrical systems is taken from the evaluation against the corresponding MR scoping criterion described in the LRA. The applicant then performed additional scoping activities to identify systems and structures within the scope of license renewal. For structure-level scoping, a comprehensive list of plant structures to be evaluated for license renewal scoping was produced from the MR bases documentation, the UFSAR and other plant design documentation. Seismic Class I structures were included within the scope of license renewal under scoping criterion 10 CFR 54.4(a)(1). Structural component listings were downloaded from the CRL and added to the license renewal database. Certain types of structural components and commodity items are not identified in the CRL (e.g., equipment pads and pedestals and equipment supports). Such components and commodity items were identified by review of design drawings and plant walkdowns and added to the license renewal database. Some structural components may also be listed as components of mechanical and electrical systems in the CRL.

The scoping results are documented, reviewed, and approved on a license renewal scoping form and entered in the license renewal database. The format of the scoping form is defined in Exhibit LR-C-14-3 of PBAPS procedure LR-C-14, "License Renewal Process." A scoping form is prepared for each system and structure and includes references to the applicable UFSAR sections, design drawings, and DBDs. The form also includes answers to several scoping questions related to system intended functions, applicable supporting systems, and whether any components were realigned into or out of the system (the system boundary realignment methodology is discussed in Section 2.1.2.1.4 of this report). The scoping form is generated as a report from the license renewal database into which the scoping data is entered during the review process. Boundary drawings for the various disciplines in the form of marked-up piping and instrumentation drawings (P&IDs), electrical single-line drawings, and site plan drawings were prepared to identify the major electrical systems and plant structures within the scope of license renewal. The documents are also reviewed and approved by both the license renewal team and PBAPS system managers.

2.1.2.1.2 Non-safety-related Systems, Structures, and Components

With respect to the non-safety-related criteria in 10 CFR 54.4(a)(2), the applicant stated, that a review of the UFSAR and other CLB documents has been performed to identify the non-safety-related and non-safety-related quality SSCs whose failure could prevent satisfactory accomplishment of any of the functions identified in 54.4(a)(1)(i), (ii), or (iii). Component listings for non-safety-related systems were downloaded from the CRL and reviewed to check for any safety-related components. This review assured that safety-related components associated with system interfaces are captured regardless of which system they were assigned to in the CRL. Any safety-related components found in non-safety-related systems were included in the license renewal database. The specific functions of such components were determined by

review against the plant CLB on a case-by-case basis to identify the appropriate system and system intended functions the components are required to support, in accordance with 10 CFR 54.4(b). These component reviews are documented in the individual system scoping evaluation forms, and components are assigned to the appropriate in-scope system in the license renewal database. Component listings for systems in the scope of license renewal were also downloaded from the CRL and were included in the license renewal database. For systems in the scope of license renewal, the system intended functions are identified from the DBDs and the UFSAR.

For structures, the evaluation against license renewal scoping criteria 10 CFR 54.4(a)(2) is based on the UFSAR seismic classification which is either Class 1 or Class II. Seismic Class I structures are those required to remain functional and/or protect vital equipment and systems during and following postulated design basis events. Seismic Class II structures are those whose failure would not result in the release of significant radioactivity and would not prevent reactor shutdown. The applicant used the UFSAR and plant design drawings to generate a comprehensive list of plant structures. Walkdowns of non-safety-related mechanical and electrical systems were also performed by the applicant and the results reviewed to identify any structural components that needed to be included in the scope of license renewal. Any identified structural components were included with the structural system (System 70) in the license renewal database. The applicant also considered the structural integrity of non safety-related piping systems whose failure could adversely impact a safety-related SSC function, and the structural integrity of non-safety-related SSCs whose failure during a seismic event could cause an interaction with safety-related SSCs and potentially result in the failure of the safety-related SSCs to perform their intended function. (Referred to as the “Seismic II/I” issue)

With respect to the structural integrity of non-safety-related piping, the PBAPS scoping process identified non-safety-related piping, which is an extension of the safety-related piping beyond the functional boundary (beyond the pressure boundary valves). In cases where the non-safety-related system is required to structurally support the safety-related piping, the non-safety-related piping segments and supports, up to the seismic anchor (or equivalent), are categorized as in-scope for license renewal. Certain types of structural components and commodity items are not identified in the CRL (e.g., equipment pads and pedestals and equipment supports). Such components and commodity items were identified by review of design drawings and plant walkdowns and added to the license renewal database. Mechanical and electrical systems may also include some structural components as items in the CRL. The non-safety-related mechanical and electrical system walkdowns were reviewed to identify any structural components that needed to be included in the scope of license renewal. Any such identified structural components were included with the structural system (System 70) in the license renewal database.

2.1.2.1.3 Regulated Events

The SSCs required to maintain compliance with 10 CFR 54.4(a)(3) were determined through a review of the UFSAR, various PBAPS position papers, licensing correspondence files, and other appropriate design documents. At PBAPS, the SSCs required to demonstrate compliance with the rule are associated with 10 CFR 50.48 (fire protection), 10 CFR 50.49 (environmental qualification), 10 CFR 50.62 (anticipated transient without scram), and 10 CFR 50.63 (station blackout). The scoping review form also includes questions related to fire

protection, anticipated transient without scram, and station blackout to address license renewal scoping criterion 10 CFR 54.4(a)(3). For all other scoping criteria, the applicant reviewed all SSCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations. The answers to these scoping questions were transferred electronically from the MR scoping documentation to the license renewal database and then confirmed during the system scoping review.

Systems and structures that are in the scope of license renewal scoping criterion 10 CFR 54.4(a)(3) are identified by review of appropriate plant documentation. For 10 CFR 50.48 and 10 CFR 50.63, the review is documented in license renewal position papers. The reviewer uses the position papers and the CRL to answer the questions on the scoping and screening form. For 10 CFR 50.62, the required components are identified in the controlled CRL database. The equipment within the scope of 10 CFR 50.49 is identified by a controlled data field in the CRL and is addressed in LRA Section 4.4 under the time-limited aging analysis (TLAA) evaluations. For 10 CFR 50.61, no review is performed since it is not applicable to boiling water reactors.

2.1.2.1.4 System Boundary Realignment

A significant aspect of the licensee's scoping and screening methodology involved the use of system boundary realignment. Interfaces between systems were examined and realigned, as necessary, to ensure that interfacing components were associated with the appropriate system for license renewal. For example, a valve in an out-of-scope system that provides an isolation boundary interface with an in-scope system would be considered in the scope of license renewal. The valve is "realigned" to the in-scope system and the remainder of the out-of-scope system remains out-of-scope. Similar realignments are used to address out-of-scope systems that interface with the primary containment boundary. Electrical distribution systems interface with many systems, including many mechanical systems, and the interface point is often an electrical isolation device such as a fuse or circuit breaker. These electrical isolation devices are typically considered part of the mechanical system because their function is to provide electrical isolation of these systems. The applicant examined these interfaces to confirm interfacing components had been identified in the correct system for license renewal. For example, a fuse in an out-of-scope mechanical system that has an isolation boundary interface with an in-scope electrical system was considered in the scope of license renewal. The fuse was realigned to the in-scope electrical system, and the out-of-scope mechanical system remained out-of-scope.

In some cases, components were realigned to support specific intended functions. For example, at PBAPS the main steam isolation valves (MSIVs) are air-operated and require compressed gas to perform their intended function. These valves do not rely on the instrument air distribution system but instead utilize a dedicated instrument air accumulator. Accordingly, the MSIVs instrument air accumulators are required to support the intended function of the MSIVs. For purposes of system scoping, these instrument air accumulators were realigned from the instrument air system to the main steam system. System boundary realignment is described on page 2-5 of the LRA.

2.1.2.2 Screening Methodology

Following the determination of SSCs within the scope of license renewal, the applicant implemented a process for determining which SCs from among the SSCs within the scope of renewal would be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1). In Section 2.1.3, "Screening Methodology," of the LRA, the applicant discussed these screening activities for the various engineering disciplines as they related to the SSCs that are within the scope of license renewal.

2.1.2.2.1 Screening Methodology for Mechanical Components

The license renewal screening methodology identifies the passive, long-lived components subject to an AMR. Active-versus-passive determinations were made in accordance with 10 CFR 54.21(a)(1)(i) and the guidance of NEI 95-10. Long-lived components were identified in accordance with 10 CFR 54.21(a)(1)(ii) and the guidance of NEI 95-10. An AMR is required if the component performs an intended function without moving parts or without a change in configuration or properties (i.e., is passive) and if it is not subject to replacement on the basis of a qualified life or specified time period (i.e., is long-lived). Component-level intended functions were identified for the components requiring an AMR. The intended function of a component depends on the type of component and how it is relied on to support the intended function of the associated system or structure.

As part of the scoping review, component listings were downloaded from the CRL. For in-scope systems, the component listings were added to the license renewal database and used to assist in the development of boundary drawings. License renewal boundary drawings were prepared to identify the boundaries of systems in the scope of license renewal. Although not a requirement of the rule, the development of boundary drawings provided additional confirmation of correct system scoping. For mechanical systems, P&IDs were used to establish evaluation boundaries of systems and components in-scope. The downloaded component listings were added to the license renewal database that was used to assist in component screening. Certain types of components and commodity items such as piping, flex hoses, ventilation ductwork, and electrical cables and connectors, are not identified in the CRL. PBAPS procedure LR-C-14 includes a list of components not typically identified in the CRL. Such components and commodity items were identified by review of design drawings and plant walkdowns and added to the license renewal database.

As described above, CRL component listings were used to prepare boundary drawings and were also included in the license renewal database. For systems in the scope of license renewal, each system component was identified as in-scope, unless during the screening review and the development of boundary drawings it was determined that the component was not required to support the system intended functions. Components that do not support the system intended functions are not in the scope of license renewal and are identified as such in the license renewal database. Components that are not in the scope of license renewal are not shown within the license renewal scope boundary on the system boundary drawing. For example, the feedwater system is included in the scope of license renewal but the reactor feedwater pumps are not required to support any of the identified intended functions of the feedwater system and are not in the scope of license renewal. The reactor feedwater pumps are shown as not in the scope of license renewal in the license renewal database or on boundary drawings.

PBAPS screening form LR-C-14-6 is prepared for each system in the scope of license renewal. The form includes the component identification number and description, active/passive and long-lived determinations, component intended functions, and a reference to the applicable AMR. The screening results are entered in the license renewal database and are reviewed and approved by the license renewal team and the appropriate PBAPS system managers. The screening form also identifies any components that were realigned into the system. The form is generated as a report from the license renewal database into which the screening data is entered during the review process. For mechanical components, boundary drawings in the form of marked-up P&IDs were prepared, reviewed, and approved for the in-scope systems. The applicant's screening results are presented in Section 2.3 of the LRA.

2.1.2.2.2 Screening Methodology for Structural Components

The license renewal screening methodology identifies the passive, long-lived components subject to AMR. Active-versus-passive determinations were made in accordance with 10 CFR 54.21(a)(1)(i) and the guidance of NEI 95-10. Long-lived components were identified in accordance with 10 CFR 54.21(a)(1)(ii) and the guidance of NEI 95-10. Component-level intended functions were identified for the components requiring an AMR. The intended function of a component is based on the type of component and how it is relied on to support the intended function of the associated system or structure. Structures and components are screened to identify those that require an AMR in accordance with the requirements of 10 CFR 54.21 and component-level intended functions are identified.

PBAPS screening form LR-C-14-6 is prepared for each structure in the scope of license renewal. The form includes the component identification number and description, active/passive and long-lived determinations, component intended functions, and a reference to the applicable AMR. The screening results are entered in the license renewal database and are reviewed and approved by the license renewal team and the appropriate PBAPS system managers. The screening form also identifies any components that were realigned into the system. The form is generated as a report from the license renewal database into which the screening data is entered during the review process. A structural boundary drawing, in the form of a marked-up site plan, was prepared, reviewed, and approved to identify the plant structures in the scope of license renewal. The applicant's screening results are presented in Section 2.4 of the LRA.

2.1.2.2.3 Screening Methodology for Electrical Components

Systems for screening evaluations for license renewal were identified by using the CRL, which contains a comprehensive list of electrical systems. The CRL lists the component for each listed system and identifies the quality classification of each component. In addition, components and commodity items not identified in the CRL, such as electrical cables, were identified by review of design drawings and plant walkdowns and included in the license renewal database. For systems that had been determined to be within the scope of license renewal, the system components were identified as in-scope unless it was determined during the screening process that a component was not required to support the system intended function. Active/passive determinations were made in accordance with 10 CFR 54.21(a)(1)(i) and the guidance of NEI 95-10. Long-lived components were identified in accordance with 10 CFR 54.21(a)(1)(ii) and the guidance of NEI 95-10. For components determined to require an aging management review, the component-level intended functions were identified.

PBAPS screening form LR-C-14-6 is prepared for each electrical system in the scope of license renewal. The form includes the component identification number and description, active/passive and long-lived determinations, component intended functions, and a reference to the applicable AMR. The screening results are entered in the license renewal database and are reviewed and approved by the license renewal team and the appropriate PBAPS system managers. The screening form also identifies any components that were realigned into the system. The form is generated as a report from the license renewal database into which the screening data is entered during the review process. An electrical boundary drawing, in the form of a marked-up single line drawing was prepared, reviewed, and approved to identify the major electrical distribution systems within the scope of license renewal. The applicant's screening results are presented in Section 2.5 of the LRA.

2.1.3 Staff Evaluation

As part of the review of the applicant's LRA, the staff evaluated the scoping and screening activities described in Section 2.1, "Scoping and Screening Methodology"; Section 2.2, "Plant Level Scoping Results"; Section 2.3, "Scoping and Screening Results: Mechanical"; Section 2.4, "Scoping and Screening Results: Structures and Component Supports"; and Section 2.5, "Scoping and Screening Results: Electrical and Instrumentation and Controls" to ensure that the applicant describes a process for identifying SSCs that are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(1), (a)(2), and (a)(3). In addition, the staff conducted a scoping and screening methodology audit at the Exelon corporate office December 4-7, 2001. The audit team reviewed implementation procedures and related documentation which describe the scoping and screening methodology implemented by the applicant. The focus of the audit was to ensure that the applicant had developed and implemented adequate guidance to conduct the scoping and screening of SSCs in accordance with the methodologies described in the LRA and the requirements of the rule.

2.1.3.1 Evaluation of the Methodology for Identifying Systems, Structures and Components Within the Scope of License Renewal

The audit team reviewed selected implementation procedures, position papers, and reports which describe the scoping and screening methodology implemented by the applicant. The documents reviewed are listed in Appendix B of this SER. The team found that the scoping and screening methodology reports and procedures were consistent with Section 2.1 of the LRA and were adequate to provide the applicant's staff with guidance on the scoping and screening implementation process to be followed during the LRA activities. In addition to the implementing procedures, the audit team reviewed supplemental design information, including the CRL (Q-list), DBDs, MR bases documentation, and license renewal position papers which were relied on by the applicant during the scoping and screening phases of the review. The team found these design documentation sources to be useful for ensuring that the initial scope of SSCs identified by the applicant was consistent with the CLB.

During the audit, the applicant further described the process used to incorporate plant design information into the LRA development process. The applicant referenced PBAPS procedures LR-C-14, "License Renewal Process," Revision 3; LR-C-14-3, "License Renewal System and Structure Screening Scoping Form"; Revision 3, and LR-C-14-6, "License Renewal Component Screening Form," Revision 4, to describe the process for developing the LRA application and incorporating the DBDs, MR bases information, CRL, and various license renewal position

papers into the process. The procedures outline how these documents and other sources of information are used in the scoping methodology and give formal guidance on their use during the implementation phase. The applicant's engineering staff were cognizant of the requirements and use of these information sources during the scoping development phase of the LRA project.

The applicant provided the audit team with a description of the DBDs and how they were incorporated into the scoping and screening process. The audit team reviewed a sample of the DBDs for both safety-related and non-safety-related systems to better understand the approach implemented by the applicant to determine which SSCs would be initially placed in-scope for license renewal. The team found the DBD documents to provide a concise, well-documented discussion of both safety-related and non-safety-related systems and functions which had been assigned as a result of commitments to the NRC, including those for the Commission regulations identified under 10 CFR 54.4 (a)(3). Each DBD includes a detailed list of the sources of the information in system DBD content, including UFSAR and plant technical specification references, design inputs and system design baseline and evolution information, and non-plant-specific sources such as industry codes and standards, NUREGs, and NRC regulatory guides and information notices. The DBD documentation is controlled and maintained in accordance with the applicant's quality assurance program. The audit team determined that the DBDs were a reliable documentation source for determining system and structure functions during the scoping and screening process.

The applicant's program for the control and data input of the CRL is described in Exelon Nuclear Procedure NE-C-211, "CRL Control," Revision 9. The procedure describes the electronic component database which identifies each individual mark-numbered component and provides information on the component's safety classification and functions. During the review of the CRL information, the audit team reviewed a sample of the database screening results tables developed by the applicant to support the LRA program. The applicant designed a series of filters which enabled the LRA review engineers to sort through the equipment data system records and produce concise tables of component records based on either safety classification or specific functions of interest, such as environmental qualification and fire protection. The audit team determined that the CRL provided a useful tool for the applicant in developing the initial scope of SSCs for the program. During the staff's audit of the applicant's scoping and screening methodology, the staff requested that the applicant provide a detailed discussion of the basis of Figure 2.1-1, "Scoping and Screening Process Overview," of the LRA. In Request for Additional Information (RAI) 2.1.2-1, dated February 6, 2002, the staff asked Exelon to further describe the scoping and screening process for mechanical, structural, and electrical SSCs. On May 21, 2002, Exelon responded to the RAI. The RAI response provided a detailed description of each discipline and included a discussion of the applicant's methodology supporting the identification of systems, system scoping and boundary interfaces, component downloads from the CRL, system intended functions, and component screening.

With respect to the Seismic II/I issue, the scoping process involved a systematic review of the potential for non-safety-related SCs to interact with safety-related SC's. The UFSARs, licensing correspondence, and design basis documents were relied on in addressing these interactions. PBAPS Units 2 and 3 were not originally licensed for Seismic II/I; however, Seismic II/I concerns were addressed in response to Unresolved Safety Issue (USI) A-46, "Seismic Qualification of Equipment in Operating Plants," and considered for license renewal scoping. PBAPS position paper LR-P-005, "Identification of Non-Safety-Related SSCs Whose Failure

Prevents Safety-Related SSCs From Fulfilling Their Safety-Related Function (Seismic II/I)," Revision 0, dated February 23, 2001, documents the results of the PBAPS CLB review performed to identify SSCs required to be included in the scope of license renewal pursuant to 10 CFR 54.4(a)(2). For Seismic II/I, PBAPS has chosen an area-based approach to scoping. Seismic Class II structural components, mechanical and electrical system supports, the foundation, and the anchorage of structures containing safety-related systems and components, including the items in the Safe Shutdown Equipment List credited for USI A-46 resolution, are included in the scope of license renewal.

By letters dated December 3, 2001, and March 15, 2002, the NRC sent a staff position to NEI which described areas to be considered and options the staff expects licensees to use to determine what SSCs meet the 10 CFR 54.4(a)(2) criterion. The letters provided specific examples of operating experience which identified pipe failure events, provided approaches the NRC considers acceptable to determine which piping systems should be included in-scope based on the 54.4(a)(2) criterion, and defines the staff's expectations for the evaluation of nonpiping SSCs to determine which additional non-safety-related SSCs are within-scope. The position states that applicants should not consider hypothetical failures but rather should base their evaluation on the plant's CLB, engineering judgement and analyses, and relevant operating experience. The staff position defines operating experience as all documented plant-specific and industry-wide experience which can be used to determine the plausibility of a failure. Documented operating experience includes NRC generic communications and event reports, plant-specific condition reports, industry reports, and engineering evaluations.

In RAIs 2.1.2-3 and 2.1.2-4, dated February 6, 2002 (which was consistent with the staff position described in the aforementioned letters), the staff asked Exelon to identify which option was used for non-safety-related piping systems which are not connected to safety-related piping but have a spatial relationship such that their failure could adversely impact on the performance of an intended safety function. The staff also asked Exelon to provide a discussion of the basis for the conclusion that the mitigative features are adequate to protect safety-related SSCs. On May 21, 2002, Exelon responded to the RAIs and stated that a review was performed to identify non-safety-related piping systems which are not connected to safety-related piping but have a spatial relationship such that their failure could adversely impact on the performance of an intended safety function. The applicant used its scoping methodology to identify those piping systems which were not in the scope of license renewal and which contained a fluid that could potentially adversely impact a safety-related system if the pressure boundary function degraded. These systems were designated as hazard systems. Then the spatial relationships were established to identify where these hazard systems could impact the safety-related SSCs. The spatial relationships were established based on plant drawings, the CRL, and plant walkdowns. The interactions were evaluated for credibility based on the spatial proximity of the hazard systems and safety-related SSCs. When the interaction was determined to be credible, the system was added to the scope of license renewal because it then satisfied the scoping criterion in 10 CFR 54.4(a)(2). Exelon also stated that an operating experience review of non-fluid-containing systems performed for the systems included in the scope of license renewal has shown no failures have occurred due to aging for the materials and environments. Examples of operating experience data included NRC Information Notices, Bulletins and Generic Letters, and relevant corrective action reports and work orders. Additionally, non-fluid-containing components cannot affect safety-related SSCs by leakage or spray.

The applicant stated in its May 21, 2002, response to the RAIs that the boundaries for six systems already in the scope of license renewal were expanded to include portions of the system that were non-safety-related. Also, 11 new systems were added to the scope of license renewal due to increased scope of criterion 10 CFR 54.4(a)(2). The non-safety-related components of these systems were found to be in spatial proximity to safety-related components such that an age- related failure of a non-safety-related component could impact the performance of an intended safety function. The response also stated that the component supports were already included in the scope of license renewal and that the applicant utilized the preventive option for this evaluation. This issue was also identified during the NRC Region I inspection of the PBAPS LRA, performed April 15-23, 2002, at the corporate office in Kennett Square, PA, and is further discussed in Open Item 2.3.3.19.2.-1 of this SER.

During the NRC audit, the applicant provided the team with a detailed discussion on the development and implementation of the system boundary realignment process which is described in Section 2.1.2.1 of the PBAPS LRA and Project Level Instruction (PLI) PLI-001, "Peach Bottom License Renewal Project, Project Level Instruction," Revision 0, dated April 18, 2001, "System Scoping and Realignment of CRL Components," and LR-C-14, "License Renewal Process," Revision 3. In RAI 2.1.2-2, dated January 23, 2002, the staff asked the applicant to further describe the realignment process. In the applicant's response to the RAI dated February 28, 2002, the applicant provided a discussion of five general cases of interfacing system component realignment, developed by the applicant's engineering staff, that provided guidance to the reviewer for identifying and documenting the realigned components to ensure that all SSCs in the CLB that meet the requirements of 10 CFR 54.4(a)(2) and 10 CFR 54.4(a)(3) have been identified and considered for inclusion in the scope of the LRA. Component realignments are performed in accordance with PLI-001 and the results are documented in the license renewal database and on the scoping and screening forms described in LR-C-14. The five cases of component realignment are as follows: Case 1- Components Associated with Containment Penetration; Case 2 - Interfaces Between In-scope and Out-of-scope Mechanical Systems; Case 3 - Interfaces Between In-scope Electrical and Out-of-scope Mechanical Systems; Case 4 - Components Shared Between In-scope and Out-of-scope Systems, and Case 5 - Components Required to Support Specific Intended Functions.

The rationale for the system boundary realignment was to associate system interfacing components with the appropriate license renewal system-level intended functions that they are required to support. This approach allows the appropriate systems and components to be included in the scope of license renewal based on the intended functions of the system, which is also consistent with MR system scoping approach. System safety classifications are documented in the MR scoping evaluations which were used for license renewal scoping. Boundary realignments and any resulting impacts on system level scoping or component screening were reviewed and discussed during the weekly license renewal team meeting. This review assured that the reviewers assigned to the interfacing systems were aware of and concurred with the final boundary alignments. The system boundary realignment process can be considered a recategorization of existing components for license renewal purposes without changes to the CLB or physical changes to the plant. From a system perspective, the out-of-scope systems are not safety-related in the PBAPS CLB. System boundary interfaces were examined to ensure that interfacing components required to support an in-scope system intended function were associated with the appropriate system for license renewal. The CRL component assignments within systems are often established based on the operational system functions and not necessarily based on the functions performed during design basis events. As

a result, some non-safety-related systems at PBAPS include safety-related components associated with the system's interface to a safety-related system. Non-safety-related systems that do not meet any of the license renewal scoping criteria from 10 CFR 54.4(a)(1), (2), or (3) are not included in the scope of license renewal. Component listings for these systems were reviewed to check for any safety-related components. This review assured that components that interfaced with safety-related systems are included in the scope of license renewal regardless of which system they were assigned to in the CRL. Any safety-related components found in non-safety-related systems were included in the license renewal database. The specific functions of such components were reviewed against the plant CLB on a case-by-case basis to determine the system and system intended functions they are required to support. These component reviews are documented in the individual system scoping evaluation forms and in the license renewal component database.

The scoping criterion of 10 CFR 54.4(a)(3) requires an evaluation to identify SSCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with specific Commission's regulations. The scoping review form includes several questions to address the criterion of 10 CFR 54.4(a)(3). Systems that are in-scope are identified by review of appropriate plant documentation. For 10 CFR 50.48 (fire protection) and 10 CFR 50.63 (station blackout), the staff reviewed license renewal position papers LR-P-002, Revision 1, dated September 6, 2001, and LR-P-003, Revision 0, dated October 6, 2000, respectively. The purpose of the position papers is to identify the systems and structures required to demonstrate compliance with the Commission's regulations.

As a result of the staff's issuance of the latest interim staff guidance (ISG) on Station Blackout, dated April 1, 2002, the applicant revised the scope of SSCs necessary to conform with the ISG position. Discussions on the expanded scoping and AMR results for the Station Blackout for electrical equipment are provided in Section 2.5 and 3.6 of this SER while structural components are provided in Sections 2.4.6 and 3.5.3 of this SER. The staff also reviewed scoping and screening forms for standby liquid control, instrument air, fuel pool cooling and cleanup, and feedwater controls and piping. The reviewer used the position papers and the CRL to answer the questions related to 10 CFR 54.4(a)(3). For 10 CFR 50.62 (ATWS), the required components are identified in the controlled CRL database. Equipment within the scope of 10 CFR 50.49 (environmental qualification) is identified by a controlled data field in the CRL and is addressed in LRA Section 4.4 under the TLAA evaluations. Components included in the PBAPS environmental qualification program are in-scope for license renewal. The results of system scoping are documented, reviewed, and approved on license renewal scoping form LR-C-14-3, which is prepared for each system. The form includes references to the applicable UFSAR sections, design drawings and DBDs. The form also includes answers to the scoping questions, system intended functions, applicable supporting systems, and whether any components were realigned into or out of the system. The scoping form is generated as a report from the license renewal database into which the scoping data is entered during the review process.

The staff concluded that the applicant's scoping methodology for identifying the SSCs within the scope of license renewal was consistent with the requirements of 10 CFR 54.4.

2.1.3.2 Evaluation of the Methodology for Identifying Structures and Components Subject to an Aging Management Review

The staff reviewed the methodology used by the applicant to identify mechanical, structural, and electrical components within the scope of license renewal that were subject to further aging management evaluation. The applicant provided the staff with a detailed discussion of the processes used by each engineering discipline, including the screening methodology, and a sample of the screening results reports for a selected group of safety-related and non safety-related systems. Following the determination of SSCs within the scope of license renewal, the applicant implemented a process for determining which SCs from among the SSCs within the scope of license renewal were subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1). In developing the screening methodology, the applicant considered the rule and the guidance provided in NEI 95-10. In the development of this methodology, the applicant also considered NRC staff correspondence with other applicants and with NEI. The applicant discusses these screening activities in the various engineering disciplines as they relate to the SSCs that are within the scope of license renewal in LRA Section 2.1.3, "Screening Methodology."

The staff reviewed the methodology used by the applicant to identify and list the mechanical components subject to an AMR as well as the applicant's technical justification for this methodology. The staff also examined the applicant's results from the implementation of this methodology by reviewing an overview of the mechanical systems identified as being within the scope, a sample of evaluation boundaries drawn within those systems, the resulting components determined to be within the scope of the rule, the corresponding component-level intended functions, and the resulting list of mechanical components subject to an AMR. The methodology for identifying mechanical components within the scope of the rule included both mark-numbered components (i.e., components identified in the applicant's electronic component database) and non-mark-numbered components. For the mark-numbered components, the individual components were identified and reviewed. For the non-mark numbered components, the components were categorized by component groups such as tubing and hoses. These component groups were then evaluated as part of the system screening table development. Based on the process review and sampling of the process implementation, the audit team concluded that the screening methodology would adequately support screening of mechanical components and documentation of the process.

For structural components, the applicant performed a review to determine which in-scope components would be subject to an AMR. During the audit of the applicant's renewal scoping and screening process, the staff also examined the applicant's results from the implementation of this methodology by reviewing the structural components identified as being within the scope, the corresponding intended functions, and the resulting list of structural components subject to an AMR. The staff performed a detailed review of the scoping and screening methodology process for System 70, "Structures, Structural Commodities, and Seals," dated July 26, 2001." During discussions with the applicant, it was determined that a plant walkdown as well as a review of the UFSARs was conducted to initially identify Seismic Class I and II structures. The process included initiating the appropriate scoping and screening forms for System 70 structures. The team reviewed the scoping forms for the reactor building, turbine building, and control room complex. The forms included pertinent supporting technical information such as DBD number, UFSAR section, drawing numbers, intended system functions, supporting systems, applicable boundary realignment, and system boundary drawing numbers. The staff

reviewed the documents to obtain reasonable assurance that the scoping and screening process, as implemented and documented, was consistent with the appropriate supporting technical information for the systems reviewed. The staff also reviewed a sample of the P&IDs and performed an overview of portions highlighted as in-scope and verified that the applicable portions were included. This drawing review also included a sample of system drawings for mechanical and electrical systems where components had been realigned into System 70. The team also reviewed the screening form for System 70 which identified those components within the scope of license renewal. This list also identified whether the component is included in the CRL for license renewal. The applicant's review identified 12 structures within the scope of license renewal (Table 2.2-2 of the LRA). The tables in Section 3.5, "Aging Management of Structures and Component Groups," of the LRA, provide the results of aging management reviews for structural component groups in each of the 12 structures within the scope of license renewal and the five structure commodity groups. Based on the process review and sampling of the process implementation, the audit team concluded that the screening methodology would adequately support screening of structural components and documentation of the process.

The staff also evaluated the implementation of this methodology by reviewing the list of electrical components subject to an AMR. Systems for screening evaluations for license renewal were identified by using the CRL, which contains a comprehensive list of electrical systems and contains a component list for each listed system and identifies the quality classification of each component contained in the listed system. In addition, components and commodity items not identified in the CRL, such as electrical cables, were identified by review of design drawings and plant walkdowns and included in the license renewal database. For systems that had been determined to be within the scope of license renewal, the system components were identified as in-scope unless it was determined during the screening process that the component was not required to support the system intended function. Active/passive determinations were made in accordance with 10 CFR 54.21(a)(1)(i) and the guidance of NEI 95-10. Long-lived components were identified in accordance with 10 CFR 54.21(a)(1) and the guidance of NEI 95-10. For components determined to require AMR, the component-level intended functions were identified.

The results of the screening process were documented on screening forms for the appropriate system. The audit team reviewed the screening forms for the control rod drive (CRD) system. The forms indicated that certain components had been realigned to the 4kV system. The screening form for the 4kV system indicated receipt of the components from the CRD system and, in addition, listed the component numbers, component description, whether the component was passive, whether the component was long-lived, and the component intended function. Based on the process review and sampling of the process implementation, the audit team concluded that the screening methodology would adequately support screening of electrical components and documentation of the process.

2.1.4 Conclusions

The staff reviewed of the information presented in Section 2.1 of the LRA, the supporting information in the PBAPS UFSAR, the information presented during the scoping and screening audit and inspection, and the applicant's responses to the staff's RAIs, as discussed above. The staff concluded that the applicant's scoping and screening methodology, including its supplemental 10 CFR 54.4(a)(2) review which brought additional non safety-related piping segments and associated components into the scope of license renewal was consistent with

the requirements of the rule and the staff's position on the treatment of non safety-related SSCs. On the basis of its review, the staff concludes there is reasonable assurance that the applicant described an adequate scoping and screening methodology to identify SSCs within the scope of the license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.2 Plant-Level Scoping Results

2.2.1 Introduction

This section describes the staff's evaluation of LRA Section 2.2, "Plant Level Scoping Results." The license renewal rule, 10 CFR Part 54, requires the applicant to provide the results of an integrated plant assessment (IPA) of the SSCs for which an AMR is required. The statements of consideration (60 FR 22478) for the rule indicate that an applicant has the flexibility to determine this set of SSCs, provided the set of SSCs encompasses those for which the Commission has determined an AMR is required. Accordingly, the staff focused its review on verifying that the implementation of the applicant's methodology, as discussed in Section 2.1 of this SER, did not result in the omission of SCs subject to an AMR in accordance with 10 CFR 54.21 (a)(1). Therefore, the staff performed the following two-step evaluation:

- The staff determined whether the applicant properly identified the SSCs within the scope of license renewal in accordance with 10 CFR 54.4. As described in more detail below, the staff reviewed selected SSCs the applicant did not identify as falling within the scope of license renewal to verify whether they have any intended functions that fall within the scope of license renewal.

- The staff then determined, in accordance with 10 CFR 54.21 (a)(1), whether the applicant properly identified the SCs that are subject to an AMR from among the SSCs that were previously identified as being within the scope of license renewal in accordance with 10 CFR 54.4. More specifically, and as described in more detail below, the staff reviewed selected SCs that the applicant identified as being within the scope of license renewal to verify whether the applicant properly identified the SCs that are subject to an AMR, including whether they perform their intended functions, as described in 10 CFR 54.4, without moving parts or without a change in configuration or properties and are not subject to replacement based on a qualified life or specified time period. To determine whether the applicant identified all of the SCs that are subject to an AMR, the staff reviewed SSCs that the applicant had not identified as subject to an AMR.

The staff reviewed the results of the scoping and screening effort to determine if there is reasonable assurance that the applicant identified and listed all plant level systems and structures within the scope of license renewal in accordance 10 CFR 54.4 and subject to an AMR in accordance with 10 CFR 54.21(a)(1).

2.2.2 Summary of Technical Information in the Application

The staff evaluated components and commodities associated with all systems and structures in Sections 2.3 through 2.5 of the Peach Bottom LRA. In LRA Sections 2.3.1, "Reactor Coolant System," 2.3.2, "Engineered Safety Features Systems," 2.3.3, "Auxiliary Systems," and 2.3.4,

"Steam and Power Conversion Systems," the applicant described the mechanical systems and components within the scope of license renewal and subject to an AMR, based on the applicant's license renewal scoping and screening methodology as described in Section 2.1 of this SER.

Structures that support, or provide shelter and protection for, the operation of other systems are presented in Section 2.4 of the LRA. Some structural components were treated as bulk commodity items common to various systems and structures. These commodity items are described in LRA Sections 2.4.13, "Component Supports," 2.4.14, "Hazard Barriers and Elastomers," 2.4.15, "Miscellaneous Steel," 2.4.16, "Electrical and Instrumentation Enclosures and Raceways," and 2.4.17, "Insulation."

Electrical systems and I&C systems that support the operation of both safety- and non-safety-related systems and structures are presented in Section 2.5 of the LRA. Electrical and I&C components are all treated using a bulk commodity approach.

2.2.2.1 Systems, Structures, and Components Within the Scope of License Renewal

In Sections 2.2 through 2.5 of the LRA, the applicant describes the SSCs within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 54.21 (a)(1), respectively. As described in Section 2.1, scoping and screening of mechanical components was performed using a systems approach in conjunction with a controlled database called the component record list (CRL). The CRL uniquely identifies most of the mechanical components at Peach Bottom and provides a link to the associated system. The applicant identified those mechanical components not assigned unique component numbers in the CRL by evaluation of design drawings and documents and by plant walkdowns. These items were treated as commodities for the purposes of license renewal. The CRL database was later updated to include commodity items and to add a field to each component record to identify the components/commodities within the scope of license renewal.

Table 2.2-1 of the LRA presents the results of the applicant's plant-wide scoping of mechanical systems at Peach Bottom. The table indicates whether the intended functions of a given system are needed to satisfactorily accomplish any of the functions in 10 CFR 54.4(a)(1), (2), and (3). Components of non-safety related systems meeting the requirements of 10 CFR 54.4(a)(2) are considered within the scope of license renewal.

Seismic Class I structures and structural components are considered safety-related; therefore, all Seismic Class I structures and structural components requiring an aging management review are within the scope of license renewal. Plant structures and structural components are not uniquely identified in the Peach Bottom CRL. As a result, the UFSAR, engineering drawings, and plant walkdowns were used to identify structures and structural components that are within the scope of license renewal.

The turbine building, the SBO structure, and certain yard structures (including the condensate storage tanks and foundations) are Seismic Class II structures that were included in the scope of license renewal. For example, the main control room complex is a Seismic Class I structure located in the central portion of the Seismic Class II turbine building. These structures support and protect safety-related equipment and equipment required for compliance with 10 CFR 54.4(a)(3) for regulated events.

Some common structural features and components (such as component supports, insulation, hazard barriers, and elastomers and miscellaneous steel) were considered generically and assigned to a commodity group for scoping purposes. Table 2.2-2 of the LRA lists the scoping results for structures. In addition, electrical and I&C system components at Peach Bottom were considered generically and treated as commodity groups. Scoping results for the electrical and I&C systems are listed in Table 2.2-3.

As discussed in LRA Section 2.1.2, the applicant chose to scope and screen components that interface with or support in-scope mechanical and electrical systems with the system considered most appropriate for license renewal. In the Peach Bottom LRA, the applicant refers to this process as "system boundary realignment." These component realignments modified the traditional nomenclature and system boundaries defined by the Peach Bottom UFSAR, CRL, and piping and instrumentation drawings (P&IDs), but did not change the actual location of any components or physical configuration of any systems. The comment column of LRA Table 2.2-1 identifies the most significant system boundary realignments performed by the applicant during the Peach Bottom scoping and screening process.

For example, if a valve in an out-of-scope system provided an isolation boundary interface with an in-scope system, that valve was realigned, i.e., recategorized as part of the in-scope system for the purpose of license renewal. Similar component realignments were used for out-of-scope systems that support specific intended functions. For example, at Peach Bottom, the main steam isolation valves are air-operated valves that require compressed gas to perform their intended function. These valves do not rely on the instrument air distribution system, but instead utilize a dedicated instrument air accumulator. Accordingly, the main steam isolation valve (MSIV) instrument air accumulators are required to support the intended function of the MSIVs. For purposes of system scoping, these instrument air accumulators were realigned from the instrument air system to the main steam system. The applicant stated that the realignment of components was performed to simplify the mechanics of the Peach Bottom scoping and screening process, as this procedure minimized the number of systems and components that had to be manipulated and tracked in the applicant's license renewal computer database.

As an attachment to a letter dated July 2, 2001, The applicant supplied license renewal drawings to the staff. These drawings help identify the components and boundaries of systems within the scope of license renewal but are not considered a part of the LRA. In addition, as these drawings are basically marked-up P&IDs, they do not identify many small mechanical and electrical components. However, the applicant has stated that SSCs within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.21(a)(1) will be identified in the Peach Bottom license renewal database in an auditable and retrievable manner in accordance with the requirements of 10 CFR 54.37.

2.2.2.2 Systems and Structures Not Within the Scope of License Renewal

As stated above, LRA Section 2.2 presents the scoping results for the various Peach Bottom systems and structures. LRA Tables 2.2-1, 2.2-2, and 2.2-3 list the systems and structures, and identify whether the systems and structures are considered within the scope of license renewal. The applicant originally listed 70 mechanical systems in LRA Table 2.2-1, 37 of which were not considered within the scope of license renewal. In response to staff RAIs (discussed

in Section 2.1.3), and Open Item 2.3.3.19.2-1(discussed in Section 2.3.3.19.2-1), the following additional 11 systems were later brought within the scope:

- service water system
- reactor building closed cooling water system
- reactor water cleanup system
- chilled water system
- water treatment system
- plant equipment and floor drain system
- process sampling system
- auxiliary steam system
- condensate transfer
- refueling water storage and transfer
- torus water cleanup system

In response to open item 2.3.3.19.2-1, by letter dated November 26, 2002, an additional system, the post accident sampling system was brought within the scope of license renewal. The next section documents the staff evaluation of whether the applicant IPA omitted Peach Bottom systems and structures that meet the criteria of 10 CFR 54.4 and therefore should have been included within the scope of license renewal.

2.2.3 Staff Evaluation

In LRA Section 2.1, the applicant describes its IPA methodology for identifying the SCs that are within the scope of license renewal and subject to an AMR. An IPA methodology typically consists of a review of all plant SSCs to determine those that are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4. From those plant SSCs that are within the scope of license renewal, the applicant will identify and list those SCs that perform their intended function without moving parts, or without a change in configuration or properties and that are not replaced based on a qualified life or specified time period. The staff reviewed the applicant's scoping and screening methodology, and provided its evaluation in Section 2.1 of this SER. The applicant documented the implementation of that methodology in Sections 2.2 through 2.5 of the LRA.

To ensure that the scoping and screening methodology described in Section 2.1 of the LRA was implemented properly and identified the SCs that are subject to an AMR, the staff performed the following additional review. The staff sampled the contents of the UFSAR based on the listing of systems and structures in Tables 2.2-1 and 2.2-2 of the LRA to identify systems or structures that may have intended functions that meet the scoping requirements of 10 CFR 54.4 but that the applicant does not include within the scope of license renewal. The staff selected several systems and structures to determine how the scoping and screening process was performed to ensure that structures and components (SCs) and their intended functions that need to be in the scope of license renewal are captured in a consistent manner. In a letter to the applicant dated October 30, 2001, the staff requested additional information about how SCs of the (1) battery and emergency switchgear ventilation system, (2) reactor building structure, (3) residual heat removal system, and (4) fuel handling system the SCs' intended functions are captured in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

In a letter dated November 16, 2001, the applicant's response to the staff's RAI included an explanation of the following activities which ensure SCs and their intended functions are captured in a consistent manner:

- identification of plant systems and structures
- identification of system and structure scoping
- identification of system boundary interfaces
- identification of system intended functions
- identification of structure and component screening
- LRA documentation

The applicant stated that the battery and emergency switchgear ventilation system included components which were realigned from the non-safety-related instrument air system that support the battery and emergency switchgear ventilation system. These instrument air components are included in the license renewal database and were organized into component groups and evaluated in the AMR for the gas environment. However, Table 2.3.3-9 did not include the component groups in the gas environment. The applicant's response to the staff RAI revised Table 2.3.3-9 by including the component groups and gas environment required to complete an adequate AMR of the components in Table 2.3.3-9. The staff's review of the battery and emergency switchgear ventilation system is in Section 2.3.3.9 of this document.

The staff questioned the applicant's apparent omission of the spray function, spray nozzle component group (spray nozzles), and environment in Table 2.3.2-5 for the residual heat removal (RHR) system. The applicant, in its response to the staff's question dated November 16, 2001, stated that the containment spray mode of RHR utilizes headers located in the drywell and suppression chamber. The RHR system P&ID shows the ring headers, but does not specifically identify the spray nozzles. Further, the spray nozzles are not uniquely identified in the CRL database. Because the spray nozzles are not uniquely identified in the CRL, the applicant considered the spray nozzles as part of the containment spray ring header piping. The applicant's response to the staff RAI revised LRA Table 2.3.2-5 by including the spray nozzles in the component group and wetted gas environment required to complete an AMR of the components in Table 2.3.2-5. The staff's review of the RHR system is in Section 2.3.2.5.

System Boundary Realignment

As noted in Section 2.2.2.1, the applicant used a process it referred to as "system boundary realignment" to recategorize mechanical components for the purposes of license renewal. This process presented the staff reviewers with the need to correlate the UFSAR descriptions of systems and intended functions with the systems as described in the LRA. Consequently, the staff expended additional resources to overcome the confusing differences between the system and component nomenclature in the LRA, the UFSAR, and other CLB documents. Another side effect of the realignment process was the elimination from the LRA of the discussion of the support functions provided by non-safety-related systems to safety-related systems within the scope of license renewal. This necessitated additional staff evaluations of the impact of component realignments to the boundary of safety-related systems within the scope from non-safety-related systems determined to be out of scope. However, specific components of the non-safety systems supporting safety-related systems are relied on to remain functional during

or after a design basis event meeting the scope of the rule in §54.4(a)(2). Non-safety-related systems having components supporting safety-related systems are listed below:

Non-Safety-related Systems	**Safety-Related Systems With Components Realigned to Non-Safety- Related System**
Drywell Ventilation System	Primary Containment Isolation System
Primary Containment Leak Test System	Primary Containment Isolation System
Reactor Building Ventilation System	RHR System Core Spray System HPCI System RCIC System
Reactor Building Closed Cooling Water System	Primary Containment Isolation System
Reactor Water Cleanup System	Reactor Recirculation System Primary Containment Isolation System
Chilled Water System	Primary Containment Isolation System
Instrument Nitrogen System	Primary Containment Isolation System Main Steam System
Instrument Air System	Main Steam Safety-Grade Instrument Gas System Battery and Emergency Switchgear Ventilation System
Service Air System	Primary Containment Isolation System
Plant Equipment and Floor Drain System	Primary Containment Isolation System
Process Sampling System	Primary Containment Isolation System
Torus Water Cleanup System	Primary Containment Isolation System
Post-accident Sampling System	Primary Containment Isolation System
Traversing In Core Probe System	Primary Containment Isolation System

As a result of the applicant's system boundary realignment, the staff was unable to adequately review the implementation of the boundary realignment using the information presented in the Peach Bottom LRA. Therefore, the staff issued RAIs to the applicant on January 23 and March 12, 2002. The staff's RAI of January 23, 2002, asked the applicant to describe the realignment process and the rationale for its use. The staff's RAI of March 12, 2002, requested the applicant to provide (1) a brief description of each of these out-of-scope systems whose components were realigned to be in-scope, (2) a textual description of the types of components realigned, and (3) details regarding the intended function for each realigned component in the context of license renewal and how the realigned components met the criteria of 10 CFR 54.4(a)(1), (2), or (3). In addition, the RAI requested the applicant to provide a means to identify, in an unambiguous and traceable manner, the components realigned to systems within the scope of license renewal back to the out-of-scope systems. The applicant responded to

this RAI by letter on May 22, 2002. The staff's RAI of January 23, 2002, questioned how the realignment was done and the March 12, 2002, RAI questioned the results of the realignment process as presented in the LRA in Sections 2.3 through 2.5. The applicant's response to the staff's RAI, dated February 28, 2002, described the following five cases for system boundary realignment:

- Case 1: Components Associated with Containment Penetration - This case involves the realignment of components from non-safety-related systems that penetrate primary or secondary containment. The containment isolation valves and the interconnecting piping in non-safety-related systems are addressed in Section 2.3.2.3, Primary Containment Isolation System," of the LRA.

- Case 2: Interfaces Between in-scope and out-of-scope Mechanical Systems - This case involves the examination of interfaces between safety-related and non-safety-related components to ensure that components from the non-safety systems needed to support safety systems were included within the scope of license renewal. The interfacing components are valves or dampers, and may also include attached segments of piping or ductwork.

- Case 3: Interfaces Between in-scope Electrical and out-of-scope Mechanical Systems - This case involves the evaluation of out-of-scope mechanical systems that interface with in-scope electrical distribution systems where isolation devices interface with the mechanical system. The electrical isolation devices protect the power source at the interface, and the interfaces were evaluated to ensure that components relied on to protect the electrical distribution system were included within the scope of license renewal. The isolation devices where realigned to the in-scope electrical system.

- Case 4: Components shared between in-scope and out-of-scope systems - This case only applies to the instrument air and instrument nitrogen systems where an interface exists between mechanical systems within the scope and out of the scope of license renewal. Boundary realignment of the mechanical system within the scope was completed because the CRL database identified the components as being shared with the non-safety-related system which is not in the scope.

- Case 5: Components required to support specific intended functions - This case involves interfaces between non-safety-related and safety-related systems within the scope of license renewal. Some non-safety-related systems have functional interface connections with safety-related systems that include components relied on to support a function of the safety-related system.

The staff had concerns with Cases 1, 4, and 5 with respect to the implementation of the applicant's system boundary realignment. Case 1 involves the realignment of piping and components from the 12 non-safety-related systems identified in the above table to the primary containment isolation system. The applicant's February 28, 2002, response to the staff's RAI referenced the Generic Aging Lessons Learned (GALL) Report, Section V.C, "Containment Isolation Components," which recognizes the potential for realignment of SCs from non-safety systems for the purposes of containment isolation as an acceptable practice meeting the requirements of license renewal. The staff notes that an applicant may also group like components into commodity groups and that the basis for grouping such SCs is determined by

characteristics such as similar function, design, or materials of construction, similar aging management practices, or similar environments. Consequently, if an applicant uses commodity groups, the applicant has to provide the basis for the groups. However, the applicant's discussion in Section 2.3.2.3, "primary containment isolation system," does not mention the inclusion of SCs from the 12 non-safety systems nor does it provide an argument or basis for grouping those SCs as a commodity. The staff's evaluation of the primary containment isolation system is provided in Section 2.3.2.3 of this document.

Case 4 involves the realignment of shared components of the instrument air and instrument nitrogen systems, which are non-safety-related, to (1) the safety grade instrument gas, (2) the backup instrument nitrogen to ADS, and (3) the battery and emergency switchgear ventilation system (BESVS). In the February 28, 2002, RAI response, the applicant stated that the plant design includes a safety grade backup source of compressed gas for the safety-related systems which share components with the above-mentioned non-safety-related systems. As previously stated, the staff's evaluation of the BESVS is in Section 2.3.3.9 of this document. Also, the staff's evaluations of other realignments involving the instrument air and nitrogen systems are in Section 2.3.3.12 (safety grade instrument gas), and 2.3.3.13 (backup instrument nitrogen to ADS), of this document.

Case 5 involves the realignment of piping and components of the reactor building ventilation system to the boundary of the RHR, core spray, high-pressure coolant injection, and RCIC systems. In the May 22, 2002, response to the staff's RAI 2.2-1.2, the applicant stated that the cooling intended function for all components cooled by the emergency service water (ESW) system is included under the ESW system intended function of component cooling. Further, the HPCI, RCIC, RHR, and core spray system room coolers are cooled by the ESW system. The applicant also stated that the ESW system performs the room cooling function by providing cooling water to the room coolers and therefore the function of room cooling is not included as an intended function of the HPCI, RCIC, RHR, and core spray systems.

Because the components responsible for cooling were realigned to the HPCI, RCIC, RHR, and core spray systems, the system intended function of room cooling is removed from the scope of license renewal. The system intended function of room cooling meets the scope of the Rule in §54.4(a)(2). However, realignment of SCs to extend the boundary of HPCI, RCIC, RHR, and core spray obscures the room cooling function since the supported systems rely on the room coolers to remain functional before and after a design basis event but do not include room cooling as a system level intended function. The staff's evaluations of the system boundary realignment of SCs are in Sections 2.3.2.5 (RHR), 2.3.2.1 (HPCI), 2.3.2.2 (core spray), and 2.3.2.4 (RCIC) of this document.

Non-Safety-related Systems Affecting Safety-Related Systems

The staff evaluated the applicant's methodology for scoping SSCs meeting the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(2). The implementation of the methodology for the potential spatial interaction between non-safety and safety-related systems resulted in the expansion of systems boundaries for the following systems:

- reactor pressure vessel instrumentation system
- core spray system
- residual heat removal system

- fuel pool cooling and cleanup system
- control rod drive system
- radiation monitoring system

These systems were already within the scope of license renewal but the evaluation of non-safety-related portions of these systems boundaries determined that an age-related failure of the non-safety-related components could impact the performance of a safety-related SC resulting in a loss of a safety-related intended function. In addition, Section 2.2.2.2 of this document identifies non-safety-related systems that were brought within the scope of license renewal due to potential interactions with safety-related SCs. The staff's review of the systems brought into scope because of these potential interactions is in Section 2.3.3.19 of this document.

The applicant's response to the staff's RAIs provided in letters dated November 16, 2001, February 28, May 21, and May 22, 2002 provided the staff reviewers with adequate information to identify and cross-reference realigned components and intended functions from out-of-scope systems in the various LRA tables and descriptions for the Peach Bottom systems within the scope of license renewal.

2.2.4 Conclusions

On the basis of the staff's review of the information presented in Section 2.2 of the LRA, the supporting information in the Peach Bottom UFSAR, and the applicant's responses to the staff RAIs provided in letters dated November 16, 2001, and February 28, May 21, and May 22, 2002, the staff has reasonable assurance that the applicant has adequately identified the SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21 (a)(1), respectively. The NRC staff's detailed review of the SCs that are subject to an AMR is provided in Sections 2.3 through 2.5 of this SER.

2.3 System Scoping and Screening Results Mechanical

2.3.1 Reactor Coolant System

In Section 2.3.1, "Reactor Coolant System (RCS)," of the Peach Bottom Atomic Power Station, Unit 2 and 3, License Renewal Application (the LRA), Exelon (the applicant) described the systems, structures and components (SSCs) of the RCS that are subject to aging management review (AMR) for license renewal.

2.3.1.1 Reactor Pressure Vessel and Internals

2.3.1.1.1 Summary of Technical Information in the Application

As described in the LRA, the reactor pressure vessel is a vertical, cylindrical pressure vessel with hemispherical heads and is of welded construction. The cylindrical shell and bottom hemispherical head of the reactor vessel are fabricated of low alloy steel plate. The shell is clad on the interior with a stainless steel overlay, and the bottom head with an Inconel overlay. The major safety consideration for the reactor vessel is the ability of the vessel to function as a radioactive material barrier. The vessel also provides a floodable core volume, contains the moderator, and provides support for the reactor vessel internals.

The reactor vessel internals are installed to properly distribute the flow of coolant delivered to the vessel, to locate and support the fuel assemblies, and to provide an inner volume containing the core that can be flooded following a break in the nuclear system process barrier external to the reactor vessel.

The following intended functions of the reactor vessel are within the scope of license renewal:

Containment - The reactor vessel and internals provide a fission product and pressure barrier.

Physical support - The reactor vessel and internals provide vertical and horizontal support for the core and other reactor pressure vessel internal components.

Core cooling - The reactor vessel and internals provide a means to distribute coolant to the fuel assemblies located in the central region and in the periphery of the core.

Floodable volume - The reactor vessel and internals provide a means to flood the core to at least two-thirds core height following design basis accidents.

Table 2.3.1-1 of the LRA identified the component groups requiring aging management review. The following component groups were identified for the reactor pressure vessel and internals: top and bottom head, shell courses, flanges, closure studs and nuts, stabilizer bracket, support skirt, feedwater nozzle and other nozzles, nozzle safe ends (including core delta-P/SLC nozzle safe end), core spray attachments, jet pump riser brace attachments, shroud support attachment, other attachments, CRD stub tube penetrations, ICM housing and instrument penetrations, shroud, shroud support, access hole cover, core support plate, top guide, core delta-P/SLC line, core spray lines and core spray spargers, jet pump assemblies, orificed fuel support, CRD guide tube base, CRD housing stub tubes, CRD housing guide tubes, in-core housing guide tubes, and LPRM and WRNM dry tubes.

2.3.1.1.2 Staff Evaluation

The staff reviewed Section 2.3.1.1 of the LRA and relevant sections of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the reactor pressure vessel and internals system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below. After completing the initial review, the staff requested by letter dated March 1, 2002, that the applicant to provide additional information on the reactor pressure vessel and internals. By the letter dated May 6, 2002, the applicant responded to staff's request for additional information (RAI) as discussed below.

In Table 3.1-1 of the LRA, spraying of the fuel assemblies following a LOCA was not identified as an intended function for the core spray spargers. The table also identified cracking as the

only aging effect for the subject components. In RAI 2.3.1-1, the staff requested the applicant to address the following staff concerns:

a) The staff believes that adequate long-term core cooling following a LOCA can only be assured by retaining the original spray distribution over the core which was assumed for the CLB. In the safety evaluation report (SER) for the BWRVIP-18 report, the staff had concluded that when performing inspection of core spray spargers, all BWR plants need to be treated as "geometry-critical" plants. In addition, it is staff's understanding that the previous BWRVIP designations of "geometry-tolerant" plants have been rescinded and all plants are now considered to be "geometry-critical." Consequently, in order to assure adequate cooling of the uncovered upper third of the core, the core spray system must provide adequate spray distribution to all bundles in the core. It is also staff's understanding that leakage through sparger and piping cracks and repairs and potential blockage of spray nozzles must be considered in assessing the core spray distribution. As a result, the staff believes that it is essential that spraying water on the fuel assemblies in a pattern that was originally designed for the core be acknowledged as one of the license renewal intended functions for the spargers, and that the applicant's aging management activities be designed to provide a reasonable assurance that the original spray distribution will be preserved during the period of extended operation. The staff, therefore, requests the applicant to identify the spray distribution function as an intended function of the spargers within the scope of license renewal so that this function will be maintained during the license renewal period, and the applicant affirm that when performing inspection of core spray spargers, the Peach Bottom plants are inspected in accordance to the requirements for the "geometry-critical" plants, as required by the staff SER for the BWRVIP-18 report.

b) The staff believes that cracking of the core spray spargers is not the only aging mechanism which can degrade the spray distribution over the core following a LOCA, as Table 3.1-1 has suggested. Partial or full blockage of the spray holes due to repairs to reactor internals, by foreign objects (loose parts), and/or due to corrosion can also influence the core spray pattern. The staff understands that the applicant's ISI program (B.2.7) for the vessel internals is geared towards detecting cracking of the internals. The staff, therefore, requests the applicant to explain how it plans to detect other means of degradation of the spray pattern, as discussed above, when the B.2.7 program is used for managing the aging effects due only to cracking and loss of material, as stated in page B-64 of the LRA.

The applicant provided the following response:

a) The core spray sparger is identified in BWRVIP-06, "Safety Assessment of BWR Reactor Internals," as a safety-related component. BWRVIP-06 Section 2.5.2 on safety assessment of core spray sparger states: "The loss of the ability to distribute coolant to individual fuel bundles only has safety significance when the core cannot be fully flooded, as in the case of a recirculation line break...However, this loss of localized cooling would affect a limited number of bundles. The resultant consequences for BWR/3-6 plants would be bounded by plant safety analyses...In BWR/3 and BWR/4 plants (PBAPS is a BWR/4 plant), analysis has shown that steaming of water in the lower bundle provides adequate localized cooling...Therefore, in these plants, the loss of spray distribution has no safety significance". However, based on the latest position of GE on the core spray issue, as discussed in GE Position Summary DRF-E22-00135-01, Rev. 0, "Long-Term Post-LOCA Adequate Core Cooling Requirements," the applicant has acknowledged that spray is an intended function of the core spray spargers.

The applicant further stated that PBAPS Units 2 and 3 are following the latest BWRVIP Guidelines (ref. BWRVIP response to NRC safety evaluation of BWRVIP-18, dated January 11, 1999). This latest guidance concedes that all plants are considered "geometry critical" with respect to core spray sparger examination. The Reactor Pressure Vessel and Internals ISI program, LRA Appendix B.2.7, directs reexamination of the sparger welds in accordance with the latest BWRVIP-18 guidelines.

b) The applicant asserts that because core spray piping is made of stainless steel material, corrosion is not a credible aging mechanism to cause flow blockage. Also, BWRVIP-18, "Core Spray Internals Inspection and Flaw Evaluation Guidelines," provides a means to inspect the core spray piping. The applicant stated that when performing the inspection of the welds and brackets for the aging effect of cracking, the nozzle openings are also visually inspected for flow blockage.

The applicant's examination of core spray spargers will detect missing or degraded spray nozzles, and it will take corrective actions if necessary, so that the original core spray distribution will be preserved during the extended period of operation. The staff finds the applicant's response acceptable because the intended function of the spargers is within the scope of license renewal, the spargers themselves are subject to aging management, and the applicant is following the latest BWRVIP guidelines for the inspection and re-inspection of the core spray piping and spargers. The BWRVIP AMP (aging management program) is evaluated in SER Section 3.0.3.9 "Reactor Pressure Vessel and Internals Inservice Inspection (ISI) program."

In RAI 2.3.1-2, the staff requested the applicant to verify whether the plant is equipped with a thermal shield, whose intended function is to provide shielding for the safety-related SSCs, such as the reactor vessel and the internals, from gammas and neutrons, and whether the shield may be relied on to minimize irradiation-induced embrittlement of the vessel and/or the internals. If the component exists at Peach Bottom, the staff requested the applicant to justify its exclusion from aging management; otherwise, submit an AMR for the subject component. The applicant's response stated that the BWR internals do not provide gamma or neutron shielding. This function is accomplished by the water. Further, the BWR design does not employ a thermal shield. Therefore, there is no need to identify such a component in the LRA. The staff finds the applicant's response assessment acceptable because the applicant stated that a thermal shield is not part of the Peach Bottom design.

The staff SER for BWRVIP-41 listed the jet pump sub-components that should be subject to an AMR. The following sub-components of the jet pump were listed in the BWRVIP-41 SER, and were also described in the Peach Bottom UFSAR section, "Jet Pump Assemblies"; but were not identified in the LRA: nozzle thermal sleeve, riser pipe, and diffuser. In RAI 2.3.1-4, the staff requested the applicant to explain why they were not within the scope of Part 54. In response, the applicant stated that the sub-components of the jet pump assembly were not separately identified in the LRA. The applicant further asserted that 10 CFR Part 54 only requires that the application include a list of components, and that the sub-components are not required to be listed. However, the applicant confirmed that the following sub-components are part of jet pump assembly, and that these sub-components will be subjected to aging management: riser pipe, riser elbows, thermal sleeve, diffusers, hold-down beams, riser braces, inlet-mixer nozzles, elbows and adapters, restrainer brackets and restrainer bracket wedges and adjusting screws. The staff finds the applicant's response acceptable.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.1.1.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the reactor pressure vessel and internals SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.1.2 Fuel Assemblies

2.3.1.2.1 Summary of Technical Information in the Application

The fuel assemblies are high-integrity assemblies of fissionable material that can be arranged in a critical array. Each assembly must be capable of transferring the generated fission heat to the circulating coolant water while maintaining structural integrity and containing the fission products.

The nuclear fuel is designed to assure that fuel damage limits will not be exceeded during either normal operation or anticipated operational occurrences. The nuclear fuel is utilized as the initial barrier for containment of fission products.

There are 764 fuel assemblies in each reactor, with each assembly consisting of a matrix of Zircaloy fuel rods.

Intended functions within the scope of license renewal:

Containment - The fuel cladding is the primary fission product barrier.

Table 2.3.1-2 of the LRA identified no component groups requiring aging management review, and noted that fuel assemblies do not require aging management review because they are short-lived.

2.3.1.2.2 Staff Evaluation

The staff reviewed Section 2.3.1.2 of the LRA and relevant sections of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the fuel assembly system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.1.2.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the fuel assemblies SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.1.3 Reactor Pressure Vessel Instrumentation System

2.3.1.3.1 Summary of Technical Information in the Application

The reactor pressure vessel instrumentation monitors and transmits information concerning key reactor vessel operating parameters during planned operations to ensure that sufficient control of these parameters is possible in order to avoid (1) release of radioactive material such that the limits of 10 CFR Part 20 are exceeded, (2) nuclear system stress in excess of that allowed by applicable industry codes, and (3) the existence of any operating conditions not considered by plant safety analyses.

The reactor pressure vessel instrumentation system consists of components utilized for flow, water level, pressure, and temperature measurements required for the operation of the reactor under various normal, transient, shutdown, and accident conditions.

Reactor vessel instrumentation is designed to provide the operator with sufficient indication of the following:

- Reactor core flow rate during planned operations to avoid operating conditions not considered by plant safety analyses.

- Reactor vessel water level during planned operations to determine that the core is adequately covered by the coolant inventory inside the reactor vessel to avoid the release of radioactive materials such that the limits of 10 CFR Part 20 are exceeded, and to avoid operating conditions not considered by plant safety analyses.

- Reactor vessel pressure and temperature during planned operations to avoid operating conditions not considered by plant safety analyses.

- Reactor vessel flange leakage during planned operations to avoid nuclear system stress in excess of that allowed by applicable industry codes and the release of radioactive material such that the limits of 10 CFR Part 20 are exceeded.

Intended functions within the scope of license renewal:

Provide signal input - The reactor pressure vessel instrumentation provides trip signals to plant safety systems, signals to plant non-safety systems, and plant process information.

Monitor key parameters - The reactor pressure vessel instrumentation monitors key water level, pressure, and temperature indications.

Table 2.3.1-3 of the LRA identified the component groups requiring aging management review. The component groups which were identified for the reactor pressure vessel instrumentations include: valve bodies, pipes, tubes, condensing chambers, and restricting orifices.

2.3.1.3.2 Staff Evaluation

The staff reviewed Section 2.3.1.3 of the LRA and relevant sections of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the reactor pressure vessel instrumentation system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.1.3.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the reactor pressure vessel instrumentation SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.1.4 Reactor Recirculation System

2.3.1.4.1 Summary of Technical Information in the Application

The reactor recirculation system is a reactivity control system that serves to control reactor power levels by varying the coolant rate through the core over a limited range so that greater versatility is available in making power adjustments without the use of control rods.

The recirculation system consists of two independent loops, external to the reactor pressure vessel, each with a motor-driven centrifugal pump, suction and discharge valves, piping, piping supports, and restraints. The recirculation system is part of the reactor coolant pressure boundary, and functions to maintain the pressure boundary during normal operation, transients, and accident scenarios to prevent the release of radioactive liquid and gas. The system piping and pump design pressures are based on the peak steam pressure in the reactor dome plus the static head above the lowest point in the recirculation loop.

The reactor recirculation system provides flow paths out of the reactor pressure vessel for residual heat removal (RHR) and reactor water cleanup systems and into the reactor vessel for RHR shutdown cooling and low pressure coolant injection.

The coolant flow rate through the reactor core is varied by using variable frequency motor-generator sets and flow control instrumentation to change the speed of the centrifugal pumps to control the recirculation system drive flow rate.

A recirculation pump trip on reactor high-pressure or reactor low water level has been provided to limit the consequences of a failure to scram during a transient.

Intended functions within the scope of license renewal:

Pressure boundary - The reactor recirculation system maintains the integrity of the reactor coolant pressure boundary.

RHR flow path - The reactor recirculation system provides flow paths for RHR shutdown cooling and low pressure coolant injection.

Flow-biased neutron monitoring - The reactor recirculation system supports average power range neutron monitor signal input.

Recirculation pump trip - The reactor recirculation pump motor-generator set supports anticipated transient without scram mitigation by recirculation pump trip.

Table 2.3.1-4 of the LRA identified the component groups requiring aging management review. The component groups which were identified for the reactor recirculation system include: valve bodies, pump casings, pipes, tubing, flow elements, thermowells, and restricting orifices.

2.3.1.4.2 Staff Evaluation

The staff reviewed Section 2.3.1.4 of the LRA and relevant portions of the UFSAR for Peach Bottom to determine whether there is reasonable assurance that the reactor recirculation system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

After completing the initial review, the staff requested the applicant to provide additional information on the reactor recirculation system. The applicant's response to the requests for additional information (RAIs) are discussed below.

In RAI 2.3.1-3, the staff requested the applicant to verify whether the pumps at Peach Bottom, such as the recirculation pumps, are designed with lube motor-oil collection systems, as required under 10 CFR Part 50, Appendix R, III O. If they are, then the components should be in-scope requiring aging management. It appeared that the subject components were not identified in the LRA, and therefore, it was requested that the exclusion be justified.

In response, the applicant stated that 10 CFR Part 50 Appendix R, III O, requires oil collection systems for reactor coolant pumps if the containment is not inerted during normal operation. It was further stated that the PBAPS containments are inerted during normal operation, and therefore, this requirement is not applicable. The staff finds the applicant's assessment acceptable.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.1.4.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the reactor recirculation SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.2 Engineered Safety Features Systems

In Section 2.3.2, "Engineered Safety Features Systems (ESF)," of the Peach Bottom Atomic Power Station, Units 2 & 3, License Renewal Application (the LRA), Exelon (the applicant) described the systems, structures and components (SSCs) of the ESF that are subject to aging management review (AMR) for license renewal.

2.3.2.1 High-pressure Coolant Injection System

2.3.2.1.1 Summary of Technical Information in the Application

As described in the LRA, the high-pressure coolant injection (HPCI) system is provided to assure that the reactor is adequately cooled to limit fuel clad temperature in the event of a small break in the nuclear system and loss of coolant which does not result in rapid depressurization of the reactor vessel. The system is designed to allow the plant to be shut down while maintaining sufficient reactor vessel water inventory until the reactor vessel is depressurized. The HPCI system continues to operate until reactor vessel pressure is below the pressure at which low pressure coolant injection (LPCI) operation or core spray system operation maintains core cooling.

The HPCI system consists of a turbine driven pump, piping, valves, and controls which provide for a complete and independent emergency core cooling system. The primary water source is water from the condensate storage tank, with a backup supply of water available from the suppression pool. Delivery of water to the vessel occurs via the "A" feedwater line. Steam supply to the HPCI turbine is from the reactor via the "B" main steam line. The system is equipped with a test line shared with the reactor core isolation cooling system to permit functional testing and a minimum flow bypass line which directs flow to the suppression pool for pump protection purposes during periods of low system flow. The exhaust steam from the turbine is discharged to the suppression pool.

Intended functions within the scope of license renewal:

Coolant injection - The HPCI system provides sufficient coolant to the reactor vessel to limit fuel clad temperature in the event of a small break in the reactor coolant system and a subsequent loss of coolant which does not result in a rapid depressurization of the reactor vessel.

Table 2.3.2-1 of the LRA identified the component groups requiring aging management review. The component groups which were identified for the HPCI include: valve bodies, pump casings, filter bodies, turbine casings, flexible hoses, gland seal condenser, turbine lube oil cooler, pump room cooling coils, piping, tubing, fittings, thermowell, flow elements, restricting orifice, steam trap, rupture disc, sparger, suction strainers, and lubricating oil tanks.

2.3.2.1.2 Staff Evaluation

The staff reviewed Section 2.3.2.1 of the LRA and relevant sections of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the high-pressure coolant injection system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In response to a staff RAI, the applicant stated in the letter dated May 22, 2002 that as result of the applicants system boundary realignment, the HPCI pump room cooling coils are realigned from the Reactor Building Ventilation System to the HPCI system for license renewal, and are addressed in LRA Table 2.3.2-1. The staff noted that pressure boundary is the only intended function identified in LRA Table 2.3.2-1 for the HPCI pump room cooling coils. In a telephone conference call on August 5, 2002, the applicant further clarified that the instrumentation in the HPCI room which needed to be protected against extreme environmental conditions was relocated outside the room. As a result, the applicant's EQ analysis for the HPCI pump room for the environmental conditions that were postulated to occur during postulated design basis accidents for the plants determined that the HPCI pump room cooling coils are not required to maintain the operability of the HPCI system during these events. Additional discussion on the applicant's boundary realignment is provided in Section 2.2.3 of this SER. The staff found the applicant's response acceptable.

On the basis of the above review, the staff did not find any omissions by the applicant of SCCs within the scope of license renewal.

2.3.2.1.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified HPCI SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR Part 54.4 and 10 CFR Part 54.21(a)(1).

2.3.2.2 Core Spray System

2.3.2.2.1 Summary of Technical Information in the Application

The core spray system (CS) provides a redundant means for removal of decay heat from the core following a postulated LOCA. The system also provides a means for flooding the reactor vessel to remove decay heat from the core to support alternate shutdown cooling.

The system consists of two independent loops per unit, each with two 50% capacity motor driven pumps and associated piping, valves, and instrumentation necessary to perform the system intended functions. The core spray system automatically sprays water onto the top of the fuel assemblies upon receipt of signals indicative of a LOCA. The system delivers cooling water at a sufficient flow rate to cool the core and prevent excessive fuel clad temperature. The low pressure coolant injection system initiates on the same signal as the core spray system and operates independently to fulfill the same objective as the core spray system. The system is maintained in a standby condition, powered by independent safeguard buses in the electrical distribution system.

The core spray system provides protection to the core for large break scenarios with resultant low reactor pressure. In addition, protection can be afforded for small-break scenarios in which the automatic depressurization system has initiated to lower reactor vessel pressure.

Intended functions within the scope of license renewal:

Core cooling - The core spray system provides water to spray onto the top of the fuel assemblies to cool the core and prevent excessive fuel clad temperature following a design basis accident.

Minimum flow bypass - The core spray system has a minimum flow bypass mode which is initiated for pump protection whenever a core spray pump is operating and flow through the pump is low.

Table 2.3.2-2 of the LRA identified the component groups requiring aging management review. The component groups which were identified for the CS include valve bodies, pump casings, pump motor oil cooler, pump room cooling coils, piping, tubing, restricting orifices, flow elements, thermowells, cyclone separators, and suction strainers.

2.3.2.2.2 Staff Evaluation

The staff reviewed Section 2.3.2.2 of the LRA and relevant sections of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the core spray system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by
10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

As discussed in Section 2.3.1.1.2 of this SER, the staff identified that the applicant did not include the spray function of the core spray spargers as a license renewal intended function. However, the applicant subsequently agreed to include the core spray function of the spargers within the scope of license renewal and maintain the core spray distribution as originally designed during the extended period of operation.

Based on the discussion on system boundary realignment in Section 2.2.3 of this document, the core spray pump room cooling function was realigned to the CS system. However, the staff notes that Table 2.3.2-2, as presented in the LRA, identifies heat transfer as an intended function for the core spray pump room cooling coils. Therefore, the boundary realignment did not impact the staff's conclusion in this section.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.2.2.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the core spray SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.2.3 Primary Containment Isolation System

2.3.2.3.1 Summary of Technical Information in the Application

The primary containment isolation system (PCIS) is a plant protection system and includes the steam leak detection system. The system provides timely protection against the onset and consequences of accidents involving the gross release of radioactive materials from the fuel and nuclear system process barrier. The primary containment and reactor vessel isolation control system initiates automatic isolation of appropriate lines that penetrate the primary containment whenever monitored variables exceed preselected operational limits.

The system initiates isolation of the reactor pressure vessel, isolation of piping which penetrates primary containment, and isolation of piping in selected balance of plant systems that provide potential paths for the release of radioactive materials coming from breaks in the reactor coolant pressure boundary.

Intended functions within the scope of license renewal:

Reactor pressure vessel isolation - The primary containment isolation system initiates isolation of the reactor pressure vessel to contain released fission products in the event of gross fuel failure.

Primary containment isolation - The primary containment isolation system initiates automatic closure of isolation valves in piping that penetrates the primary containment whenever monitored parameters indicate a fluid loss from the reactor coolant pressure boundary or high leakage from the piping for selected nuclear steam supply or auxiliary systems.

Leak detection - The steam leak detection system provides piping and equipment area high-temperature signals when steam leaks from high-energy piping cause unacceptably high temperatures.

Table 2.3.2-3 of the LRA identified the component groups requiring aging management review. The component groups which were identified for the PCIS include valve bodies, piping, tubing, restricting orifices, and flow elements.

2.3.2.3.2 Staff Evaluation

The staff reviewed Section 2.3.2.3 of the LRA and relevant sections of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the primary containment isolation system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

After completing the initial review, the staff requested the applicant to provide additional information on the PCIS. By the letter dated May 6, 2002, the applicant responded to the staff's request for additional information (RAI) as discussed below.

One of the intended functions of the main steam line flow restrictors is to limit steam line flow during a steam line rupture outside of primary containment until the MSIVs can close, thereby limiting potential radioactive release. Over the extended life of the plant, it is therefore essential to maintain the flow area of the flow restrictors used in the CLB to calculate the amount of steam released. The staff believes that erosion/corrosion due to high-energy steam flow can eventually increase this flow area beyond the value used in the CLB. It appears from Table 3.4-1 of the LRA that the applicant's aging management program for flow-accelerated corrosion (FAC), which was implemented as required by NRC Generic Letter 89-08, "Erosion/Corrosion-Induced Pipe Wall Thinning", has not been applied to the flow restrictor component groups; however, for some of the flow restrictors, the Inservice inspection (ISI) program is applied in addition to RCS chemistry control. In RAI 2.3.2-1, the staff requested the applicant to provide the following information:

a) Are the main steam line flow restrictors, and their flow restriction function within-scope? If not, why?

b) If in-scope, how will the applicant determine that the flow area does not exceed the value used in the CLB, so that the intended functions will be maintained consistent with the CLB for the period of extended operation?

In response, the applicant clarified that the main steam line flow restrictors are in the scope of license renewal. The main steam line flow restrictors are identified under Piping Specialties in LRA Table 3.4.1. The main steam line flow restrictor is identified in the LRA as a flow element consisting of a body and a throat. The intended function of the flow element throat is identified

as throttle, which addresses the main steam line flow restriction function. The main steam line flow restrictors are designed with a throat constructed of stainless steel. The applicant further stated that in accordance with EPRI NSAC-202L-R2, "Recommendations for an Effective Flow-Accelerated Corrosion Program," stainless steel components are not susceptible to flow-accelerated corrosion. The LRA identifies aging effects of loss of material and cracking for the stainless steel throat. The aging management program identified in the LRA is discussed in Section 3.4.2 on this SER. The staff finds the applicant's assessment acceptable.

As a result of the applicant's system boundary realignment, Table 2.3.2-3 of the LRA includes valve bodies and pipes from 12 non-safety-related systems within-scope, which perform primary containment isolation function. In response to the staff RAI of March 12, 2002, the applicant provided a supplement to Table 2.3.2-3 which added the component groups of valve bodies and pipes from the torus water cleanup system. These components perform the intended function of pressure boundary. The staff finds the addition of the component groups acceptable because they perform the intended function of pressure boundary, and are passive and long-lived. This modification was documented in the applicant's letter dated May 22, 2002. Additional discussions on the applicant's boundary realignment are provided in Section 2.2.3 of this document.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.2.3.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the primary containment isolation SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.2.4 Reactor Core Isolation Cooling System

2.3.2.4.1 Summary of Technical Information in the Application

The reactor core isolation cooling (RCIC) system is a high-pressure coolant makeup system which supports safe shutdown of the reactor whenever the reactor is isolated from its heat sink at elevated temperatures and pressures. The system functions to prevent a release to the environs because of inadequate core cooling. The RCIC system has sufficient makeup capacity to accommodate decay heat boiloff during a normal shutdown when the reactor is isolated from its normal heat sink at elevated pressure. The system will facilitate depressurization of the reactor vessel until the shutdown cooling mode of the residual heat removal (RHR) system can be placed in operation. The primary water source is demineralized water from the condensate storage tank, with a backup supply of treated water available from the suppression pool.

The RCIC system consists of a turbine driven pump, piping, valves, and controls, which provide for delivery of makeup water to the reactor vessel. The system is equipped with a test line shared with the high-pressure coolant injection system to permit functional testing and a minimum flow bypass line which directs flow to the suppression pool for pump protection

purposes during periods of low system flow. The exhaust steam from the turbine is directed to the suppression pool.

Intended functions within the scope of license renewal:

Coolant injection - The RCIC system provides makeup water to the reactor vessel during shutdown and reactor isolation in order to prevent excessive fuel cladding temperatures.

Reactor vessel level control - The RCIC system provides reactor vessel level control to maintain water level in the reactor vessel above the top of the active fuel should the reactor vessel be isolated from normal feedwater flow.

Reactor vessel pressure control - The RCIC system provides reactor pressure control by drawing off steam for turbine operation and directing the discharge to the suppression pool. The pressure will decay to the level suitable for operation of the shutdown cooling mode of the RHR system.

Table 2.3.2-4 of the LRA identified the component groups requiring aging management review. The component groups which were identified for the RCIC include valve bodies, pump casings, strainer bodies, turbine casings, turbine lube oil cooler, pump room cooling coils, piping, tubing, fittings, flow element, thermowells, Y-strainer bodies, Y-strainer screens, restricting orifices, steam traps, rupture discs, suction strainers, tank.

2.3.2.4.2 Staff Evaluation

The staff reviewed Section 2.3.2.4 of the LRA and relevant sections of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the reactor core isolation cooling system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In response to a staff RAI, the applicant stated in the letter dated May 22, 2002 that as a result of the applicant's system boundary realignment, the RCIC pump room cooling coils are realigned from the Reactor Building Ventilation System to the RCIC system for license renewal, and are addressed in LRA Table 2.3.2-4. The staff noted that pressure boundary is the only intended function identified in LRA Table 2.3.2-4 of the RCIC pump room cooling coils. In a telephone conference call on August 5, 2002, the applicant further clarified that the instrumentation in the RCIC room which needed to be protected against extreme environmental conditions was relocated outside the room. As a result, the applicant's EQ analysis for the RCIC pump room for the environmental conditions that were postulated to occur during postulated design basis accidents for the plants determined that the RCIC pump room cooling coils are not required to maintain the operability of the RCIC system during these events. Additional discussion on the applicant's boundary realignment are provided in Section 2.2.3 of this SER. The staff found the applicant's response acceptable.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.2.4.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the RCIC SSCs that are within the scope of license renewal and are subject to an AMR in accordance with 10 CFR Part 54.4 and 10 CFR Part 54.21(a)(1).

2.3.2.5 Residual Heat Removal System

2.3.2.5.1 Summary of Technical Information in the Application

The residual heat removal (RHR) system is an emergency core cooling system and heat removal system. The RHR system restores and maintains the coolant inventory in the reactor vessel such that the core is adequately cooled after a LOCA. The system also provides containment cooling by condensing steam resulting from the blowdown due to a design basis accident.

The RHR system consists of two independent loops. Each loop consists of two heat exchangers, two parallel RHR pumps, plus the associated piping, valves, and instrumentation. The loops are located in different areas of the reactor building to minimize the possibility of a single physical event causing the loss of the entire system.

The RHR system is designed for three modes of operation: shutdown cooling, containment cooling, and low-pressure injection. Each mode of operation is defined as a subsystem of the RHR system, with each subsystem contributing toward satisfaction of all objectives and design bases of the system.

The shutdown cooling subsystem is placed in operation during a normal shutdown and cooldown. The subsystem uses one or more RHR heat exchangers to remove reactor core decay heat and sensible heat from the reactor core to achieve and maintain the reactor in a cold shutdown condition.

The containment cooling subsystem provides a means for cooling the containment when operating in either the suppression pool cooling or the containment spray modes. The suppression pool cooling mode provides a means to remove the reactor core decay heat and sensible heat discharged to the suppression pool in the event of a design basis accident or event. The containment cooling subsystem also provides the ability to reduce containment pressure by using the spray headers in the drywell and above the suppression pool.

The low pressure coolant injection (LPCI) subsystem operates to restore and, if necessary, maintain the coolant inventory in the reactor vessel after a LOCA so that the core is sufficiently cooled to preclude excessive fuel clad temperature. The LPCI subsystem operates in conjunction with the high-pressure coolant injection system, the automatic depressurization system, and the core spray system to achieve this goal. The LPCI subsystem is designed to reflood the reactor vessel to at least two-thirds core height and maintain this level. After the core has been flooded to this height, the capacity of one RHR pump is more than sufficient to maintain the level.

Intended functions within the scope of license renewal:

Shutdown cooling - the RHR system provides the shutdown cooling function to remove decay heat and sensible heat from the primary system following depressurization of the reactor.

Containment cooling - The RHR system provides a means to cool the containment when operating in the suppression pool cooling or containment spray mode.

Alternate shutdown cooling - The RHR system provides alternate heat removal capability to cool the core in the event that the shutdown cooling mode of the system cannot be established.

Low pressure coolant injection (LPCI) - The LPCI subsystem operates to restore and maintain the coolant inventory in the vessel post-LOCA so that the core is sufficiently cooled to preclude excessive fuel clad temperatures.

Minimum flow bypass - The RHR system has a minimum flow bypass mode which is initiated for pump protection whenever an RHR pump is operating and flow through the pump is low.

Sample isolation - The RHR sample valves isolate on a primary containment isolation system Group I signal.

Table 2.3.2-5 of the LRA identified the component groups requiring aging management review. The component groups which were identified for the RHR include: Valve bodies, pump casings, heat exchangers, pump room cooling coils, piping, tubing, thermowells, flow elements, cyclone separators, restricting orifices, and suction strainers.

2.3.2.5.2 Staff Evaluation

The staff reviewed Section 2.3.2.5 of the LRA and relevant sections of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the residual heat removal system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

After completing the initial review, the staff requested the applicant to provide additional information on the RHR. By the letter dated May 6, 2002, the applicant responded to staff's request for additional information (RAI) as discussed below.

The LPCI coupling was identified in the BWRVIP-06 report as a safety-related component. It appears, however, that the component was not identified in the LRA as requiring an AMR. In RAI 2.3.2-2, the staff requested that if the component exists at Peach Bottom, then the applicant should justify its exclusion from aging management; otherwise, submit an AMR for the subject component. In response dated May 6, 2002, the applicant stated that neither PBAPS

unit has a LPCI coupling, and therefore it was not identified in the LRA. The staff consider the RAI response was acceptable because the LPCI coupling was not part of the plant's design.

The containment spray mode of RHR utilizes ring headers located in the drywell and suppression chamber. The applicant indicated that it considered the spray nozzles as part of the containment spray ring header piping. However, in response to a staff RAI, which is further discussed in Section 2.2.3 of this document, the applicant agreed to identify the spray nozzles as individual components rather than grouped under the category of containment spray ring header piping. The LRA Table 2.3.2-5 was revised accordingly.

Based on the discussion on system boundary realignment in Section 2.2.3 of this document, the RHR pump room cooling function was realigned to the RHR system. The staff notes that Table 2.3.2-5, as presented in the LRA, identifies heat transfer as an intended function for the RHR pump room cooling coils, in addition to the pressure boundary function. This is acceptable to the staff.

On the basis of the above review the staff did not find any omissions by the applicant of SSC's within the scope of license renewal.

2.3.2.5.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the residual heat removal SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.2.6 Containment Atmosphere Control and Dilution System

2.3.2.6.1 Summary of Technical Information in the Application

In Section 2.3.2.6 of the LRA, the applicant identified the components of the containment atmosphere control (CAC) and containment atmospheric dilution (CAD) systems that are subject to an AMR and described their intended functions. Additional information concerning the CAC and CAD systems is provided in Section 5.2 of the UFSAR for both Units 2 and 3. The components of these systems that fall within the scope of license renewal are shown in CAC license renewal drawing LR-M-367, sheets 1-3, all Rev. A, and in CAD license renewal drawing LR-M-372, sheets 1-4, all Rev. A.

The CAC and CAD systems are designed to supply and maintain an inert atmosphere inside primary containment for combustible gas control. The CAC system is designed to purge air from the primary containment atmosphere (drywell and torus) with nitrogen until the containment atmosphere contains less than 4 percent oxygen by volume during startup and provides a supply of makeup nitrogen during normal operation.

The containment atmospheric dilution (CAD) system is a standby system during normal operation of the plant. Following a design basis LOCA, the primary means of hydrogen control at Peach Bottom is maintaining the normally inerted containment atmosphere and controlling the intrusion of oxygen into the containment. No credit is assumed for operation of the CAD system in the UFSAR Chapter 14 accident analysis. However, the CAD system is maintained to meet the requirements of GDCs 41, 42, and 43 of Appendix A to 10 CFR Part 50 and

10 CFR 50.44. Following a beyond design basis LOCA, the CAD system is used instead of the normal nitrogen inerting system to maintain the oxygen concentration within the containment at less than 5 percent by volume.

Included among the major equipment for the CAC system are a liquid nitrogen storage tank, a water-bath vaporizer, ambient vaporizers, an electric heater, valves, piping, controls and instrumentation. Major components of the CAD system are a liquid nitrogen storage tank, electrical vaporizers, valves, piping, controls and instrumentation. The containment atmosphere is monitored by a combined CAD and CAC analyzer system. The CAD and CAC analyzer system consists of two redundant combustible gas (H2 and O2) detection chambers.

The applicant determined that the following intended functions for the CAC and CAD systems fall within the scope of license renewal.

- Containment pressure control - The CAD system provides a means for controlling containment pressure following a design basis event.

- Nitrogen source - The CAD liquid nitrogen storage tank is the source of nitrogen for the safety grade instrument gas system.

- Combustible gas monitoring - The CAD and CAC analyzer system monitors the oxygen and hydrogen concentration in the containment atmosphere.

On the basis of the intended functions of the CAD and CAC systems that are identified above and the methodology described in Section 2.1.2 of the LRA, the applicant compiled a list of component groups within the scope of license renewal and subject to an AMR. The applicant also identified the intended functions and environments for each component group. The applicant supplied this list in Table 2.3.2-6 of the LRA, which identifies four types of component groups with six types of components:

- casting and forgings (valve bodies, pump casings)
- piping (pipe)
- piping specialities (nitrogen electric vaporizer)
- vessels (nitrogen storage tanks, H2 and O2 detection chambers).

In LRA Table 2.3.2-6, the applicant identified pressure boundary as the intended function associated with components of the CAD and CAC systems that are subject to an AMR.

2.3.2.6.2 Staff Evaluation

The staff reviewed Section 2.3.2.6 of the LRA, UFSAR Section 5.2, and related UFSAR sections describing the CAC and CAD systems and systems that support the function of the CAC and CAD systems to determine whether there is reasonable assurance that the containment atmosphere control and dilution system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system

functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff review could not determine whether certain CAC and CAD components that are shown on drawing LR-M-372 as being within the scope of license renewal were included in the list of components subject to an AMR identified in Table 2.3.2-6 of the LRA. Therefore, the staff issued RAI 2.3.2.6-1 to determine whether the applicant considered the following components and housings within the scope of license renewal and subject to an AMR:

- atmospheric vaporizer 60GC-1, sheet 1, location G4
- pressure build coil, sheet 1, location G4
- numerous fittings, increasers, and reducers
- rupture disk, sheet 1, location G4
- numerous flow elements
- numerous temperature elements

By letter dated May 22, 2002, the applicant responded that the atmospheric vaporizer and the pressure build coils are categorized as pipe and are therefore included in the piping component group in LRA Table 2.3.2-6. The applicant stated that the reducers and increasers are fittings which it considered part of the piping system. As described in Section 3.0 of the LRA, the component group of piping includes piping, tubing, and fittings. Thus, increasers and reducers are included in the piping component group in LRA Table 2.3.2-6. The identified rupture disk, flow elements, and thermowells (pressure boundary components associated with temperature elements) also fall within the scope of license renewal and are subject to an AMR. These components were inadvertently omitted from LRA Table 2.3.2-6 and also LRA Table 3.2-6. In response to RAI 2.3.2.6-1, the applicant resubmitted LRA Tables 2.3.2-6 and 3.2-6, after revising them to include the omitted components. The staff considers the applicant's response to RAI 2.3.2.6-1 to be acceptable because it indicates that, in accordance with 10 CFR 54.21(a)(1), the passive, long-lived components in question will be subject to an AMR.

During its review, the staff determined that containment inerting was not identified as a CAC and CAD system intended function in the LRA along with the above-listed functions of controlling primary containment pressure, providing a nitrogen source for safety-grade instrument gas, and monitoring the concentration of combustible gas inside primary containment. The CAD purge mode is required to meet the technical specification requirement that the primary containment be purged of air with nitrogen until the atmosphere contains less than 4 percent oxygen. The UFSAR Section 5.2.3.8 further reads: "Reference 12 [of the UFSAR], states that although the [CAD] system is no longer assumed to be the primary means of combustible gas control, the system will be maintained as originally installed." In light of the UFSAR's statement that the CAD system is to be maintained as installed, the staff was concerned that the LRA did not provide reasonable assurance that it is acceptable to exclude the CAD system's primary containment inerting function from being classified as an intended function. Therefore, on March 12, 2002, the staff issued RAI 2.3.2.6-2 to request that the applicant provide the basis for excluding the primary containment inerting intended function of the CAD purge mode from the scope of license renewal.

In a letter dated May 22, 2002, the applicant responded that the primary containment inerting function does not meet the 10 CFR 50.49(b)(1) definition of safety-related and therefore is not

considered a safety-related intended function for license renewal. The primary containment atmosphere is maintained at less than 4 volume percent oxygen concentration in accordance with the technical specifications, so that in the event of a LOCA, the postulated resulting hydrogen and oxygen generation will not result in a combustible mixture inside containment. In addition, Peach Bottom UFSAR Section 5.2.3.8, Subsection 5.2.3.8.1, page 5.2-15b, Rev. 17 04/00, states that the purpose of the inerting system is to assure that the initial concentration of O^2 prior to a LOCA is maintained below the flammable limits within primary containment. Following a design basis accident, the UFSAR indicates that the primary method of combustible gas control is through maintaining the primary containment atmosphere in its initially nitrogen-inerted state and ensuring that no external sources of oxygen are introduced into containment. Therefore, the inerting function is used to establish and maintain technical-specification-required containment atmosphere conditions but is not required to mitigate postulated accidents.

The applicant further responded that the operation of the CAD system and its potential contribution to offsite dose is not assumed in the plant accident analysis described in UFSAR Chapter 14. As described in UFSAR Section 5.2.3.9.2, the CAD system is designed to comply with the requirements of 10 CFR 50.44. Although the system is no longer assumed to be the primary means of combustible gas control, the system will be maintained as originally installed. This statement requires that the CAD system be maintained as originally designed, but eliminates the need to reevaluate the system's design for design changes that have no impact on the original CAD system design basis. On the basis of the above CLB description, the applicant stated that the primary containment inerting function is not a safety-related intended function for license renewal.

With respect to the applicant's response to RAI 2.3.2.6-2, the staff concurs that the containment inerting function is not an intended function for license renewal. The plant technical specifications do not permit extended power operation with the containment in a noninerted condition, and the inerting function of the CAC and CAD system is not required to mitigate design basis accidents. Therefore, in accordance with 10 CFR 54.4, the applicant's response is acceptable.

In RAI 2.3.2.6-3, the staff inquired as to whether the applicant identified all of the intended functions of H^2 and O^2 detection chambers. LRA Table 2.3.2-6 listed pressure boundary as the only intended function of these components, though they also appeared to perform an intended function of combustible gas monitoring for the CAC and CAD system. In a letter dated May 22, 2002, the applicant responded that the combustible gas monitoring function identified in LRA Section 2.3.2.6 is a system intended function and not a component intended function, and therefore is not included in Table 2.3.2-6.

The staff considers the applicant's differentiation between system functions and component functions not pertinent to the reason the rule requires intended functions to be specified. Section 54.21(a)(3) of 10 CFR Part 54 states that during the IPA process, applicants must identify and list the intended function of each structure and component meeting the scoping criteria of 10 CFR Part 54.4 to "demonstrate that the effects of aging will be adequately managed so that the intended function will be maintained consistent with the CLB for the period of extended operation." That is, the intended functions guide the selection of an appropriate set of aging management programs for the component in question.

However, based upon the discussion in UFSAR Section 5.2.3.9.4, the staff concludes that the H^2 and O^2 detection chambers are mechanical components which form a pressure boundary to allow the primary containment atmosphere to be monitored through an active, electrochemical process. As the detection chambers merely form the requisite pressure boundary and do not otherwise contribute to the electrochemical process used to detect combustible gases, the staff agrees that the detection chambers do not serve a combustible gas monitoring function. Therefore, the staff has concluded that the applicant has adequately identified the intended functions of the H^2 and O^2 detection chambers in accordance with 10 CFR 54.4.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.2.6.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the containment atmosphere control and dilution SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.2.7 Standby Gas Treatment System

2.3.2.7.1 Summary of Technical Information in the Application

The standby gas treatment system (SGTS) is an engineered safety feature system for limiting the ground-level release from the reactor building that surrounds the primary containment and provides a secondary containment barrier during postulated design basis accidents (DBAs). The SGTS also provides for an elevated release point of primary and secondary containment air via the main exhaust stack. The SGTS system is common to both Peach Bottom Atomic Power Station (PBAPS) Units 2 and 3 and is located in a shielded room in the radwaste building between the reactor buildings.

In Section 2.3.2.7 of the LRA, the applicant identified the components of the SGTS that fall within the scope of license renewal and are subject to an AMR. The SGTS is described in Section 5.3.3 of the UFSAR for PBAPS Units 2 and 3. The system scoping is shown in license renewal boundary drawings LR-M-391, Rev. A, and LR-M-397, Rev. A, for both units.

The SGTS consists of two parallel air filtration trains connected to three full-capacity exhaust fans. Each filter train is sized to treat a rated flow of 10,500 cfm. Each fan is capable of exhausting the rated flow through either filter train. Each train consists of a moisture separator, electric resistance heater, pre-filter, high-efficiency particulate air (HEPA) filter, charcoal filter, and a final HEPA filter. The discharge lines from the trains tie together into an 18-in. diameter header for discharge into the main exhaust stack. Inlet flow to the two SGTS filter trains is from a common plenum connected to two exhaust lines from the reactor building ventilation system. One line is connected to the reactor building refueling floor exhaust duct. The second line is connected to the air spaces below the refueling floor and also to the torus and drywell.

Following the receipt of a reactor building isolation signal, the reactor building ventilation isolation valves rapidly isolate the reactor building atmosphere, preventing the escape of potentially contaminated air. At the same time, the SGTS is automatically started to maintain a

negative pressure in the reactor building. With the reactor building isolated, each of the two exhaust fans has the necessary capacity to maintain the reactor building at a minimum negative pressure of 0.25-in. water gauge.

The initial scoping performed by the applicant determined that the following intended functions for the SGTS fall within the scope of license renewal:

- Filtration - Following a design basis accident, the SGTS filters the exhaust air to remove radioactive gases and particulates that may be present in the secondary containment prior to discharge to the environment.

- Containment - The SGTS maintains a negative pressure in the reactor building under normal atmospheric conditions.

- Elevated release - The SGTS provides for an elevated release of radioactive materials post-LOCA to minimize the release of radioactive materials to the environment during accident conditions.

On the basis of the intended functions identified above, the applicant determined that all SGTS safety-related components (electrical, mechanical, and instrument) fall within the scope of license renewal. The applicant described its process for identifying the mechanical components subject to an AMR in Section 2.1.2 of the LRA. Based on this methodology, the applicant compiled a list of the component groups that are within the scope of license renewal and are subject to an AMR. The applicant listed these component groups in Table 2.3.2-7 of the LRA. The applicant identified the following component groups as falling within the scope of license renewal and subject to an AMR:

- casting and forgings (valve bodies)
- elastomer (fan flex connections, filter plenum access door seals)
- piping (pipe, tubing, fittings)
- piping specialities (flow elements, pressure elements, temperature element couplings)
- sheet metal (ducting, plenums, fan enclosures, damper enclosures, louvers)

In Table 2.3.2-7, of the LRA the applicant further identified that the pressure boundary and throttle intended functions are the only intended functions associated with components of the SGTS that are subject to an AMR.

2.3.2.7.2 Staff Evaluation

The staff reviewed Section 2.3.2.7 of the LRA, Section 5.3.3 of the Peach Bottom UFSAR, and license renewal drawings LR-M-391, sheets 1 and 2, and LR-M-397, sheets 1-3, Rev. A, to determine whether there is reasonable assurance that the SGTS components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components

having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In a letter dated March 12, 2002, after completing the initial review, the staff requested additional information concerning the exclusion of certain SGTS components from the scope of license renewal. The applicant submitted responses to those RAIs, as discussed below.

In RAI 2.3.2.7-1(a), the staff determined that the license renewal drawings for SGTS (LR-M-397, sheet 1) show additional components within the scope of license renewal that were not listed in LRA Table 2.3.2-7:

- demisters OAV347 (Train A) at location F7 and OBV347 (Train B) at location C7
- heating coils OAE065 (Train A) at location F7 and OBE065 (Train B) at location C7
- prefilters OAF034 (Train A) at location F6 and OBF034 (Train B) at location C6
- HEPA filters OAF035 (Train A) at location F6 and OBF035 (Train B) at location C6
- charcoal filters, OAF036 (Train A) at location F6, and OBF036 (Train B) at location C6
- HEPA filters OAF037 (Train A) at location F6 and OBF037 (Train B) at location C6
- fire spray nozzles shown at locations F6 (Train A) and C6 (Train B)

In addition, the RAI stated that if the filter media for the components listed above (prefilters, HEPA filters, charcoal filters) were excluded on the basis that these media components are routinely replaced (consumables), the applicant should describe the plant-specific monitoring program and the specific performance standards and criteria for periodic replacement. The components listed above typically are located in engineered safety-features (ESF) filtration housing.

In a letter dated May 22, 2002, applicant responded that the components identified above are included in the scope of license renewal but are not subject to an AMR as they are short-lived passive components. The filter media for these components (prefilters, HEPA filters, charcoal filters) are condition monitored at a frequency of once every 12 months using station procedures ST-M-09A-600-2 (3) and ST-M-09A-610-2 (3) and are replaced if filter failure is determined. A review of the plant history for these components indicated that some or all of these filters were replaced during the last 20 years and it is expected that they will be replaced again in the future. The ducting and plenum that house the above components are included in the scope of license renewal and are subject to an AMR. These are included in Table 2.3.2-7 and Table 3.2-7 of the LRA.

The staff considers the applicant's response is partially acceptable since prefilters, HEPA filters, and charcoal filters are governed by technical specification (TS) requirements or plant procedures which provide for their replacement in accordance with TS surveillance requirements or plant procedures. The staff does not agree that the demisters, fire spray nozzles, and heating coils should be excluded from AMR because if any one of these components should fail, the intended function of the filtration unit may not be accomplished. This was Open Item 2.3.2.7.2-1.

In a letter dated November 26, 2002, the applicant provided additional clarifying information stating that the demisters have been included in the AMR for the SGTS as part of Tables 2.3.2-7 and 3.2-7 of the LRA and fire spray nozzles are included in the scope of license renewal and subject to an AMR in the LRA Table 2.3.3-7 under fire protection system as piping

specialties-discharge nozzles. The heating coils are electric heating coils were evaluated and determined not to be within the scope of license renewal since they are active components and do not have a pressure boundary housing. They are installed and enclosed within the SGTS filter plenum. The plenum is included in LRA Table 2.3.2-7 and subject to an AMR. These electric heating coils are active components and are, therefore, not subject to an AMR. In addition, the staff confirmed that the Peach Bottom, Units 2 and 3, technical specification, 3.6.4.3, "Ventilation Systems," Surveillance Requirements 3.6.4.3.2 verifies the performance of the electric coils of the filtration system.

On the basis of the additional information provided by the applicant regarding the demisters, fire spray nozzles and electric heating coils, the NRC staff agrees with the applicant's response for the demisters and fire spray nozzles since they are subject to an AMR as identified in Tables 3.2-7 and 3.3-7, respectively. The staff has determined that it is acceptable to exclude the electric heating coils from the scope of license renewal because they do not support any intended functions that satisfy the scoping criteria in 10 CFR 54.4. Therefore Open Item 2.3.2.7.2-1 is closed.

In RAI 2.3.2.7-1(b) the staff asked why LRA Table 2.3.2-7 did not identify the drywell purge supply and exhaust filtration system components and their housings shown on license renewal drawing LR-M-391, sheets 1 and 2, as falling within the scope of license renewal. Specifically, the staff asked applicant to justify the exclusion of the following components and housings:

- piping (or ductwork) and valve (or damper) housings for AO-20452 through AO-20470 at locations F7, E7, D7&D8, F3&F4, E2&E3, D3, C4, and B4
- piping (or ductwork) at locations between B6 through E6
- instrumentation taps at locations F3, F7, E2, E7, D3, D7 (two), and B6
- piping (or ductwork) and valve (or damper) housings for AO-30452 through AO-30470 at locations F7, E7, D7&D8, F3&F4, E2&E3, D3, C4, and B4
- piping (or ductwork) at locations between B6 through E6
- instrumentation taps at locations F3, F7, E2, E7, D3, D7 (two), and B6

The applicant responded that the components identified above are part of the secondary containment as shown by the flag "SC" on drawing LR-M-391, sheets 1 and 2, Rev. A. As such, the valve bodies, ductwork, and tubing are shown in Table 2.3.2-8 in LRA Section 2.3.2.8. The staff considered the applicant's response to the RAI acceptable since the components were subject to an AMR and were identified in Table 2.3.2-8 of the LRA. However, the applicant needs to indicate that valve bodies include damper housings for the SGTS dampers, if any, in LRA Table 2.3.2-7. This was part of Open Item 2.3.2.7.2-2. The additional part of this item is discussed in Section 2.3.2.8.2 of this SER.

In a letter dated November 26, 2002, the applicant provided the following clarification regarding valve bodies including damper housings for the SGTS dampers.

License renewal drawings LR-M-391, Sheets 1 and 2, Rev. A, show a portion of the SGTS and a portion of the secondary containment system that are in the scope of license renewal. System boundary flags delineate these two systems. The secondary containment system includes air-operated butterfly valves and does not include any dampers (P & ID symbols for butterfly valves and dampers are shown on LR-M-300 sheet 2). Therefore, LRA Table 2.3.2-8, Component Group Requiring Aging Management Review - Secondary Containment System,

includes valves bodies but does not include damper enclosures. The SGTS includes both air-operated butterfly valves and dampers. Therefore, LRA Table 2.3.2-7, Component Groups Requiring Aging Management Review - Standby Gas Treatment System, includes both valve bodies and damper enclosures.

The NRC staff reviewed the applicant's response for the SGTS valve bodies and damper housings for the SGTS dampers and determined that LRA Table 2.3.2-7 includes these component group requiring an AMR. Therefore the SGTS part of Open Item 2.3.2.7.2-2 is closed.

In RAI 2.3.2.7-1(c), the staff requested that applicant clarify whether the housings for radiation detectors 430A/B/C/D and 432A/B/C/D at locations E3&E4 and F4&F5 on license renewal drawing LR-M-391, sheets 1 and 2, primary containment isolation and control (PBAPS Units 2 and 3) are within the scope of license renewal and subject to an AMR.

In response, the applicant stated that the subject radiation detectors are within the scope of license renewal. In accordance with NUREG-1800 and NEI 95-10, these radiation detectors are active and not subject to an AMR. These detectors are environmentally qualified instruments and are therefore addressed as a TLAA.

The staff agrees that the subject radiation detectors are active components, and as such are not subject to an AMR. The housings for these radiation detectors have a separate, passive pressure boundary intended function, and as such, could be considered as a separate component subject to an AMR. However, radiation detectors and their housings are typically tested, maintained, and replaced as a single integral unit. The staff therefore concurs with the applicant's conclusion that the housings for radiation detectors are not subject to an AMR.

On the basis of the above review, with the exception of the Open Items 2.3.2.7.2-1 and 2.3.2.7.2-2, the staff did not find any other omissions by the applicant of SSCs within the scope of license renewal.

2.3.2.7.3 Conclusions

On the basis of its review the staff concludes there is reasonable assurance that the applicant has adequately identified the standby gas treatment SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.2.8 Secondary Containment

2.3.2.8.1 Summary of Technical Information in the Application

In Section 2.3.2.8 of the LRA, the applicant identifies the components of the secondary containment system that fall within the scope of license renewal and are subject to an AMR. The details of the secondary containment are described in Sections 5.1 and 5.3 of the UFSAR for Peach Bottom Units 2 and 3. The boundaries of the secondary containment are shown in license renewal drawing LR-M-391, sheets 1 and 2, Rev. A.

The secondary containment system is an engineered safety feature system, consisting of mechanical components credited with maintaining the integrity of the secondary containment

pressure boundary. This system includes components of the reactor building penetrations, components of the reactor building heating and ventilating system, and components of the standby gas treatment system (up to and including the second outboard isolation valve). The reactor building structure (refer to Section 2.4.2) is treated as a separate system from the secondary containment system. The LRA states that the reactor building penetrations are considered part of the reactor building structure; however, as explained below in the staff's evaluation, the applicant included them in Section 2.4.14 of the LRA, "Hazard barriers and Elastomers." The reactor building penetrations for piping, ventilation ducts, electrical cables, and instrument leads are sealed. The ventilation ducts are provided with valves for automatic closure when reactor building isolation is required. As the reactor building completely encloses the primary containment and auxiliary systems of the nuclear steam supply system, the secondary containment serves as the containment during reactor refueling when the primary containment is open and as an additional barrier when the primary containment is functional.

The initial scoping performed by the applicant has determined the following intended function for the secondary containment system to be within the scope of license renewal:

- Containment - The secondary containment system provides a secondary containment system boundary to contain any release of radioactive material outside the primary containment.

On the basis of the intended function identified above, the applicant identified secondary containment system components that are within the scope of license renewal. The applicant described its process for identifying the mechanical components subject to an AMR in Section 2.1.2 of the LRA. Based on this methodology, the applicant compiled a list of the component groups falling within the scope of license renewal and subject to an AMR. The applicant provided this list in Table 2.3.2-8 of the LRA. Table 2.3.2-8 identifies the following component groups and component types as falling within the scope of license renewal and subject to an AMR:

- casting and forgings (valve bodies)
- piping (tubing)
- sheet metal (ducting)

In Table 2.3.2-8, the applicant further states that pressure boundary is the only intended function associated with components of the secondary containment system that are subject to an AMR.

2.3.2.8.2 Staff Evaluation

The staff reviewed Section 2.3.2.8 of the LRA, Sections 5.1 and 5.3 of the Peach Bottom UFSAR, and license renewal drawings LR-M-391, sheets 1 and 2, Rev. A to determine whether there is reasonable assurance that the secondary containment system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components

having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In a letter dated March 12, 2002, the staff requested additional information regarding the exclusion of certain secondary containment system components related to ventilation from the scope of license renewal. The applicant responded to the RAIs as discussed below.

In RAI 2.3.2.8-1, the staff stated that Section 2.3.2.8 of the LRA presents a summary description of the system functions, that evaluation boundary drawings highlight the evaluation boundaries of the secondary containment system, and that Table 2.3.2-8 lists components falling within the scope of license renewal and subject to an AMR. The corresponding drawings for this system in the UFSAR, however, show additional components that were not listed in Table 2.3.2-8 of the LRA. Specifically, the AMR results provided in Table 2.3.2-8 do not list damper housings (numerous locations) and test connections (locations E2, E7, D3 and D8), although these passive, long-lived components are shown on drawing LR-M-391, sheets 1 and 2, as falling within the scope of license renewal.

In a letter dated May 22, 2002, the applicant clarified that the components referred to by the staff as dampers in RAI 2.3.2.8-1 are actually air-operated valves. These valves are secondary containment isolation valves; their associated valve bodies are subject to an AMR and are listed in Table 2.3.2-8. Also, the applicant indicated that the test connections identified by the staff are considered to be in the ducting component group, which the applicant has included in the AMR results provided in LRA Table 2.3.2-8. The staff finds the applicant's RAI response to be acceptable, as it clarifies that the passive, long-lived components in question are subject to an AMR in accordance with 10 CFR 54.21(a)(1). However, the applicant needs to indicate that valve bodies include the damper housings for the secondary containment system dampers, if any (as shown in LRM-391), in LRA Table 2.3.2-8. This was the other part of Open Item 2.3.2.7.2-2.

In a letter dated November 26, 2002, the applicant clarified that License renewal drawings LR-M-391 sheets 1 and 2 show a portion of the SGTS and a portion of the secondary containment system that are in the scope of license renewal. System boundary flags delineate these two systems. The secondary containment system includes air-operated butterfly valves and does not include any dampers. Therefore, LRA Table 2.3.2-8, Component Group Requiring Aging Management Review - Secondary Containment System, includes valves bodies but does not include damper enclosures.

The NRC staff reviewed the applicant's response and agrees with the clarification that the secondary containment system does not have any dampers and, therefore, the damper housing for the dampers need not to be addressed for an AMR. Based upon the above, the other part of secondary containment system Open Item 2.3.2.7.2-2 is closed.

In RAI 2.3.2.8-2, the staff stated that neither Section 2.3.2.8 nor Section 2.4.2 of the LRA listed penetration components described in the UFSAR. LRA Section 2.3.2.8, which describes the secondary containment system, states that secondary containment penetrations are considered part of the reactor building structure. However, LRA Table 2.4-2, which lists components of the reactor building structure that are within the scope of license renewal and subject to an AMR, does not list secondary containment penetrations, nor does the associated discussion in

Section 2.4.2 justify their exclusion. Therefore, the staff issued RAI 2.3.2.8-2 to ascertain whether the applicant properly addressed the secondary containment penetrations in the LRA.

In a response dated May 22, 2002, the applicant verified that all secondary containment penetrations fall within the scope of license renewal and are treated as hazard barrier components. As such, the secondary containment penetrations are included in LRA Table 2.4-14 as hazard barriers and in LRA Table 3.5-14 for aging management. The staff found this response to be acceptable, as it clarifies that all secondary containment penetrations are within the scope of license renewal and subject to an AMR.

On the basis of the above review, with the exception of Open Item 2.3.2.7.2-2, the staff did not find any other omissions by the applicant of SSCs within the scope of license renewal.

2.3.2.8.3 Conclusions

On the basis of its review, with the exception of Open Item 2.3.2.7.2-2, the staff concludes there is reasonable assurance that the applicant has adequately identified the secondary containment SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3 Auxiliary Systems

In Section 2.3.3, "Auxiliary Systems (AUX)," of the Peach Bottom Atomic Power Station, Units 2 & 3, License Renewal Application (the LRA), Exelon (the applicant) described the systems, structures and components (SSCs) of the AUX that are subject to aging management review (AMR) for license renewal.

2.3.3.1 Fuel Handling Systems

2.3.3.1.1 Summary of Technical Information in the Application

In Section 2.3.3.1, "Fuel Handling Systems," of the LRA, the applicant describes the structural components of the fuel handling systems that are within the scope of license renewal and subject to an AMR. Additional information concerning fuel handling systems is given in Sections 10.3 and 10.4 of the Peach Bottom UFSAR.

In Section 2.1 of the LRA, the applicant described its process for identifying the structural/civil components within the scope of license renewal and subject to an AMR. Based on its methodology, the applicant, in Table 2.2-1 identifies the fuel handling system components within the scope of license renewal and describes the results of its scoping methodology in Section 2.3.3.1 of the LRA.

As stated in Section 10.4.2, "Fuel Servicing Equipment," of the Peach Bottom UFSAR, the fuel preparation machines located in each fuel storage pool are used to remove and install channels to support inspection or servicing of fuel assemblies. The fuel preparation machines are also used for the placement of new fuel assemblies into the spent fuel pool. These machines are designed to be removed from the pool for servicing. In addition, Section 10.4.6, "Refueling Equipment," describes the use and purposes of the refueling platform. The refueling platform is used primarily as a means of transporting fuel assemblies back and forth between the reactor

well and the storage pool. The platform travels on rails extending along each side of the reactor well and fuel pool. The platform supports the fuel grapple and the frame-mounted and monorail auxiliary hoists. Platform operations are controlled from either auxiliary hoist control pendants or refuel grapple controller consoles. Other cranes and hoists used during refueling operations, including the fuel channel handling hoists, the control rod drive (CRD) jib crane and the reactor building cask hoist, are discussed in LRA Section 2.3.3.18, "Cranes and Hoists."

The applicant's scoping methodology captures fuel handling systems within the scope of license renewal that meet the intent of 10 CFR 54.4(a) because they perform the following "structure level" intended function:

- Maintain structural integrity - Maintain structural integrity of the refueling platform and the fuel preparation machines.

On the basis of the function identified above, the applicant identified the fuel handling systems components that are within the scope of license renewal. Table 2.3.3-1 lists the following component groups and structural components that are subject to an AMR:

- fuel preparation machines
- refueling platform (assembly)
- refueling platform (rails)
- refueling platform (mast)

SCs of the component groups listed within Table 2.3.3-1 perform a structural support intended function. As a result, SCs of the fuel handling systems within the scope of license renewal perform their intended functions without moving parts or without change in configuration or properties, and are not subject to periodic replacement based on a qualified life or specified time limit.

2.3.3.1.2 Staff Evaluation

The staff reviewed Section 2.3.3.1 of the LRA and Sections 10.3 and 10.4 of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the fuel handling system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the structural component groups in Table 2.3.3-1 (i.e., fuel preparation machines, refueling platform, rails, and mast) to determine whether there were any other components associated with the fuel handling systems that meet the scoping criteria of 10 CFR 54.4(a), but were not included within the scope of license renewal. The staff has reviewed Section 2.3.3.1 of the LRA and the various sections of the UFSAR pertaining to the fuel handling systems. The staff also examined the component groupings listed in Table 2.3.3-

1 in the LRA to determine whether they are the only SCs that are subject to an AMR in accordance with 10 CFR 54.21(a)(1).

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.1.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the fuel handling SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.2 Fuel Pool Cooling and Cleanup System

2.3.3.2.1 Summary of Technical Information in the Application

In Section 2.3.3.2 of the LRA, the applicant describes the components of the fuel pool cooling and cleanup system falling within the scope of license renewal and subject to an AMR. This system is further described in Section 10.5 of the Peach Bottom UFSAR.

The fuel pool cooling and cleanup system provides fuel pool water temperature control and is used to maintain fuel pool water clarity, purity, and level. The fuel pool cooling and cleanup system cools the fuel storage pool by transferring decay heat through the heat exchangers to the service water system. Water purity and clarity in the fuel storage pool, reactor well, and steam dryer-separator storage pit are maintained by filtering and demineralizing the pool water. An interconnection with the RHR system provides backup cooling and makeup water to the fuel storage pool.

The system consists of three fuel pool cooling pumps, three heat exchangers, filter-demineralizers, two skimmer surge tanks, and associated piping, valves, and instrumentation. The three fuel pool cooling pumps are connected in parallel, as are the three heat exchangers. The pumps and heat exchangers are located in the reactor building. The filter-demineralizers are located in the radwaste building.

The pumps circulate fuel pool water in a closed loop, taking suction from the skimmer surge tanks through the heat exchangers, circulating the water through the filter-demineralizers, and directing the processed fuel pool water back into the pool and reactor well.

The applicant described its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.2 of the LRA. The applicant stated that only the safety-related path for providing makeup water for the fuel pool in the event of a loss of fuel pool inventory when normal makeup is not available is within the scope of license renewal.

Using the methodology described in LRA Section 2.1.2, the applicant listed the mechanical component groups subject to an AMR and identified their intended functions in Table 2.3.3-2 of the LRA. Table 2.3.3-2 identifies the following component groups and component types:

- casting and forging (valve bodies)
- piping (pipe)

- piping specialties (vacuum breakers and restricting orifices)

The intended function for the fuel pooling cooling and cleanup system components subject to an AMR is pressure boundary integrity.

2.3.3.2.2 Staff Evaluation

The staff reviewed Section 2.3.3.2 of the LRA and the associated sections of the UFSAR for Peach Bottom to determine whether there is reasonable assurance that the fuel pool cooling and cleanup system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that are required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.3.2 of the LRA and the Peach Bottom UFSAR to determine if the applicant adequately identified the SSCs of the fuel pool cooling and cleanup system that are in the scope of license renewal. The staff verified that those portions of the fuel pool cooling and cleanup system that meet the scoping requirements of 10 CFR 54.4 are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.3.2 of the LRA. The staff then focused its review on those portions of the fuel pool cooling and cleanup system that were not identified as being within the scope of license renewal to verify that they do not meet the scoping requirements of 10 CFR 54.4. The staff also reviewed the UFSAR to determine if there were any additional system functions that were not identified in the LRA, and verified that those additional functions did not meet the scoping requirements of 10 CFR 54.4.

The staff then determined whether the applicant had properly identified the SSCs that are subject to an AMR from among those portions of the fuel pool cooling and cleanup system that are identified as being within-scope of license renewal. The applicant identifies and lists the SSCs subject to AMR for the Fuel Pool Cooling and Cleanup system in Table 2.3.3-2 of the LRA using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff performed its review by sampling the SSCs that the applicant determined to be within the scope of license renewal but not subject to AMR to verify that these SSCs performed their intended functions with moving parts or with a change in configuration or properties and were subject to replacement base on a qualified life or specified time period.

The applicant identified the portions of the fuel pool cooling and cleanup system that are within-scope of license renewal in the drawings referenced in the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that are within the scope of license renewal. The applicant highlighted those components which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and the descriptions in the UFSAR to ensure they were representative of the fuel pool cooling and cleanup system. The staff sampled portions of the flow diagram that were

not highlighted to verify that these components did not meet any of the scoping criteria in 10 CFR 54.4.

By letter dated March 12, 2002, the staff requested the following additional information regarding the fuel pool cooling and cleanup system.

On license renewal boundary drawing LR-M-363, sheets 1 and 2, a spool piece (location E2) and reducers and increasers (location F2) are shown as falling within the scope of license renewal. However, these particular components are not specifically listed in Table 2.3.3-2 of the LRA as being subject to an AMR. In RAI 2.3.3.2-1, the staff asked the applicant to indicate whether these piping components are included in the scope of license renewal and subject to an AMR. In a letter dated May 22, 2002, the applicant stated that components such as reducers and increasers are fittings and are part of the piping component group, and therefore are within the scope of license renewal and subject to an AMR. Based on the above clarification, the staff found the applicant's response to RAI 2.3.3.2-1 to be acceptable.

On drawing LR-M-363, sheets 1 and 2, in the fuel storage pool, there is an unidentified component indicated by a circle at location F4. The staff believes that this component may perform one or more intended functions, such as pressure boundary, which justify its inclusion within the scope of license renewal. However, this component is not identified on the legend (drawing LR-M-300). In RAI 2.3.3.2-2, the staff asked the applicant to identify this component and indicate where in the LRA it is included within the scope of license renewal and subject to an AMR. In a letter dated May 22, 2002, the applicant clarified that the "hole" on the drawing is not a component, but represents two siphon breaker holes to prevent siphoning of water. The staff considers the clarification provided in the applicant's response to RAI 2.3.3.2-2 to be acceptable.

In Table 2.3.3-2 of the LRA, a restricting orifice is listed as a component requiring an AMR. However, pressure boundary is the only intended function listed for this component. In RAI 2.3.3.2-3, the staff questioned whether flow restriction should also be listed as an intended function for this component. In a letter dated May 22, 2002, the applicant stated that the restricting orifice was installed in the RHR to fuel pool discharge line during plant construction to give a pressure drop large enough to prevent the upstream valves from vibrating open. However, the addition of RHR pump discharge control valves, after the original plant construction, provides sufficient flow control that the restricting orifice is no longer needed. Therefore, the restricting orifice is not required to provide the flow restriction (throttle) intended function. The staff found the applicant's exclusion of this component from the scope of license renewal to be acceptable, as the component does not perform an intended function that meets the criteria of 10 CFR 54.21(a)(1).

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.2.3 Conclusions

On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the fuel pool cooling and cleanup system SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.3 Control Rod Drive System

2.3.3.3.1 Summary of Technical Information in the Application

As described in the LRA, the control rod drive (CRD) system is a reactivity control system that utilizes pressurized demineralized water to rapidly insert control rods in the core upon receipt of a scram signal. The system also provides control rod manipulation and positioning for power adjustments, and serves as a source of cooling water for the Graphitar seals of the CRD mechanisms.

The CRD system serves as a source of purge water for the reactor water cleanup pumps and reactor recirculation pump seals. The system also serves as a source of injection water to reactor vessel level instrumentation reference legs to mitigate the accumulation of gases.

The alternate rod insertion (ARI) system is a subsystem of the CRD system and serves as a backup means to provide a reactor scram, independent of the reactor protection system, by venting off the scram air header. The ARI function serves to reduce the probability of an ATWS event and may be initiated automatically or manually.

Intended functions within the scope of license renewal:

CRD scram - The control rod drive system provides rapid control rod insertion in the core upon receipt of an automatic or manual scram signal.

Alternate rod insertion - The alternate rod insertion feature of the CRD system reduces the probability of an ATWS event by providing an alternate means to scram the reactor.

Table 2.3.3-3 of the LRA identified the component groups requiring aging management review. The component groups which were identified for the CRD include: valve bodies, filter bodies, piping, tubing, rupture discs, and accumulators.

2.3.3.3.2 Staff Evaluation

The staff reviewed Section 2.3.3.3 of the LRA and the associated sections of the UFSAR to determine whether there is reasonable assurance that the CRD system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

After completing the initial review, by letter dated March 1, 2002, the staff requested the applicant to provide additional information on the CRD system. By the letter dated May 6, 2002, the applicant responded to staff's request for additional information (RAI) as discussed below.

The staff understands that the control rod drop accident is a design basis event for Peach Bottom, and that in the CLB it is assumed that the control rod drive is fully withdrawn before the stuck rod falls out of the core at a maximum velocity of 5 ft/sec. According to Section 1.6.2.13 of the UFSAR, the control rod velocity limiter, an engineered safeguard, limits the rod drop velocity to less than this value, and the velocity limiters contain no moving parts. Furthermore, the staff understands that the limiter is relied on to keep the resultant doses due to radioactive material release below the guideline values of 10 CFR Part 100. One of the required functions designated in the rule for safety-related SSCs, as delineated in 10 CFR 54.4(a)(1)(iii), is the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR Part 100 guidelines. It appears that the subject components were not identified in the LRA, and therefore in RAI 2.3.3-1, the staff requested the applicant to either include the subject components within the scope of license renewal requiring an AMR or submit a basis for concluding that the components are not in-scope. In response, the applicant stated that the control rod velocity limiter is part of the control rod blade, which is short-lived and therefore is not subject to aging management review requirements. The staff find the applicant's response acceptable because the control rod velocity limiter is periodically replaced and therefore not subject to an AMR.

Section 1.6.2.14 of the UFSAR states that the CRD housing supports (CRDHSs) limit the travel of a control rod in the event that a control rod housing is ruptured. The supports prevent a nuclear excursion as a result of a housing failure, thus protecting the fuel barrier and limiting radioactive releases. In addition, Section 3.4.6.4 of the UFSAR states that following a postulated failure of the drive housing at the attachment weld at the same time the control rod is withdrawn, and if the collet were to stay unlatched, the housing would separate from the vessel, and the drive and housing would be blown downward against the CRDHS. Since credit is taken for the CRDHSs, and the CRDHSs are passive and long-lived, the staff believes that the subject components should be within the scope of license renewal and require aging management. It appears, however, that the subject components and their intended function of limiting travel of the control rod following control rod housing rupture have not been identified in the LRA. Therefore in RAI 2.3.3-2, the staff requested the applicant to provide an explanation. In response, the applicant clarified that the CRD housing supports are included in the scope of license renewal and subject to aging management review. The supports are not listed separately in the LRA, but included in the component support commodity group described in Section 2.4.13 of the LRA. The applicant further stated that this approach is consistent with NUREG-1800, wherein CRD housing supports are not listed separately. The staff finds the applicant's response acceptable because CRDHS are within the scope of license renewal and subject to an AMR.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.3.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the CRD SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.4 Standby Liquid Control System

2.3.3.4.1 Summary of Technical Information in the Application

The purpose of the standby liquid control (SLC) system is to provide a backup method, which is redundant to, and independent of, the control rod drive system to shut down the reactor and maintain it in a cold, subcritical condition. Maintaining subcriticality as the nuclear system cools assures that the fuel barrier is not threatened by overheating in the event that not enough of the control rods can be inserted to counteract the positive reactivity effects of a decrease in the moderator temperature. A neutron absorber consisting of enriched sodium pentaborate in solution is injected into the vessel and distributed throughout the core in sufficient quantity to achieve and maintain shutdown while allowing for margin due to leakage and imperfect mixing.

The system consists of a solution storage tank, a test tank, two 100%-capacity positive displacement pumps with their associated relief valves and accumulators, two explosive valves installed in parallel, and associated controls and instrumentation. The system is manually initiated from the control room via a three-position key-locked selector switch.

Intended functions within the scope of license renewal:

Reactivity control - The standby liquid control system injects sodium pentaborate solution into the reactor vessel in sufficient quantity and concentration to bring the reactor from rated power to a cold shutdown at any time in core life.

Table 2.3.3-4 of the LRA identified the component groups requiring aging management review. The component groups which were identified for the SLC system include: valve bodies, pump casings, piping, tubing, thermowells, accumulators, and solution tank.

2.3.3.4.2 Staff Evaluation

The staff reviewed Section 2.3.3.4 of the LRA and the associated sections of the UFSAR to determine whether there is reasonable assurance that the SLC system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.4.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the SLC SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.5 High-Pressure Service Water System

2.3.3.5.1 Summary of Technical Information in the Application

In Section 2.3.3.5 of the LRA, the applicant describes the components of the high-pressure service water (HPSW) system falling within the scope of license renewal and subject to an AMR. This system is further described in Section 10.7 of the Peach Bottom UFSAR.

The HPSW system provides cooling water for the residual heat removal system (RHR) heat exchangers under normal, hot standby, refueling, and postaccident conditions. The system provides core decay heat removal capability during shutdown periods, and containment cooling during normal operations and during post-accident conditions.

The HPSW system consists of four pumps and the necessary piping, valves and controls. During normal operation, HPSW cooling water suction is from the Conowingo Pond, and the system discharge is to the discharge pond through one pipe for each unit. During emergency situations, the HPSW operates in conjunction with the emergency cooling tower and suction is from the HPSW pump bay, which is fed by the emergency cooling tower basin. The HPSW pumps deliver cooling water at a pressure greater than RHR system pressure. This inhibits radioactive leakage from the RHR system to the environs. Radioactivity in the HPSW system is monitored upstream and downstream of the RHR heat exchangers to detect activity in potential release paths.

The following intended function was identified as falling within the scope of license renewal:

- RHR heat sink - The HPSW system provides cooling water flow to transfer heat from the RHR heat exchangers for the normal operation, post-accident shutdown, hot standby, and refueling modes of operation.

Using the methodology described in LRA Section 2.1.2, as specified in 10 CFR 54.21(a)(1), the applicant compiled a list of the mechanical component groups subject to an AMR and identified their intended functions in Table 2.3.3-5 of the LRA. Table 2.3.3-5 identifies the following component groups and component types as falling within the scope of license renewal and subject to an AMR:

- casting and forging (valve bodies, pump casings, strainer bodies, strainer screens)
- heat exchanger (pump motor oil cooler)
- piping (pipe, tubing)
- piping specialties (restricting orifice, flow elements)

All of the HPSW components identified above (except strainer screens) have a pressure boundary intended function. Strainer screens have a filter intended function. In addition to the pressure boundary intended function, the HPSW pump motor oil cooler has a heat transfer intended function and the restricting orifice has a throttle intended function.

2.3.3.5.2 Staff Evaluation

The staff reviewed Section 2.3.3.5 of the LRA and Section 10.7 of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the HPSW system components and

supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff verified that those portions of the HPSW system that meet the scoping requirements of 10 CFR 54.4 are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.3.5 of the LRA. The staff then focused its review on those portions of the HPSW system that were not identified as being within the scope of license renewal to verify that they do not meet the scoping requirements of 10 CFR 54.4. The staff also reviewed the UFSAR to determine if there were any additional system functions that were not identified in the LRA, and verified that those additional functions did not meet the scoping requirements of 10 CFR 54.4.

The staff then determined whether the applicant had properly identified the SSCs that are subject to an AMR from among those portions of the HPSW system that are identified as being within-scope of license renewal. The applicant identifies and lists the SSCs subject to AMR for the HPSW system in Table 2.3.3-5 of the LRA using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff performed its review by sampling the SSCs that the applicant determined to be within the scope of license renewal but not subject to AMR to verify that these SSCs performed their intended functions with moving parts or with a change in configuration or properties and were subject to replacement base on a qualified life or specified time period.

The applicant identified the portions of the HPSW system that are within-scope of license renewal in the drawings referenced in the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that are within the scope of license renewal. The applicant highlighted those components which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and the descriptions in the UFSAR to ensure they were representative of the HPSW system. The staff sampled portions of the flow diagram that were not highlighted to verify that these components did not meet any the scoping criteria in 10 CFR 54.4.

By letter dated March 12, 2002 the staff requested additional information regarding the HPSW system. In a letter dated May 22, 2002, the applicant responded to the two staff RAIs discussed below.

RAI 2.3.3.5-1 asked the applicant to justify the omission of the HPSW intended function of inhibiting leakage of radioactive material from the RHR system to the environment, as identified in Section 10.7.4 of the UFSAR.

In response to RAI 2.3.3.5-1, the applicant stated that the function of the HPSW system to inhibit leakage of radioactive material from the RHR system to the environment is a power generation design basis function, and not a safety-related intended function of the HPSW

system, as indicated in Section 10.7.4 of the UFSAR. The staff reevaluated Section 10.7.4 of the UFSAR and determined that the function of the HPSW system to inhibit leakage of radioactive material is not relied on to mitigate the consequences of a design basis accident. Therefore, the staff finds the applicant's response to RAI 2.3.3.5-1 to be acceptable, as this function does not meet the criteria of 10 CFR 54.21(a)(1).

In RAI 2.3.3.5-2, the applicant was asked to justify the exclusion of the HPSW radiation monitors and the tubing which delivers fluid to the monitors from within the scope of license renewal and subject to an AMR. The staff referenced Section 10.7.5 of the UFSAR, which states that under abnormal operating conditions, RHR pressure could exceed HPSW system pressure. An RHR heat exchanger leak under these abnormal conditions would result in radioactive RHR water migrating into the HPSW system and into the river. To limit the release of radioactive water to the river from this potential release path, signals from the radiation monitors in the system which sample the HPSW system upstream and downstream of the RHR heat exchangers initiate an alarm in the control room at a predetermined radiation level. Although the HPSW system radiation monitors can be isolated by closing valves (e.g., valve 63H23452A shown on drawing LR-M-315, sheet 1, at location C8), the valves in the tubing to the radiation monitors appear to be normally open, so the tubing and radiation monitors also serve a pressure boundary function.

The applicant responded to RAI 2.3.3.5-2 by stating that the HPSW system radiation monitors are not safety-related and do not have any safety-related intended functions. These radiation monitors are designed to provide operators with an indication of a potential heat exchanger tube leak. The HPSW system radiation monitoring system is a process liquid radiation monitoring system (UFSAR Section 7.12.4) and is provided to indicate when operational limits for the normal release of radioactive material to the environs are being approached, and to indicate process system malfunctions by detecting the presence of radioactive material in a normally uncontaminated system. These radiation monitors provide a clear indication to operations personnel whenever the radioactivity level approaches or exceeds preestablished operational limits for the discharge of radioactive material to the environs. This function is associated with normal plant operation, and is not required to mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR Part 100 guidelines.

The applicant also stated that the HPSW radiation monitoring system 1-inch piping downstream of the boundary isolation valves is not safety-related. Potential flow diversion due to a postulated failure of this small diameter piping would not have a significant impact on the flow through the 18-inch diameter HPSW system piping, and closing the boundary isolation valves can easily isolate the 1-inch piping. The staff found the applicant's response to RAI 2.3.3.5-2 acceptable on the basis that the HPSW radiation monitoring system is not required for monitoring radioactive material releases comparable to 10 CFR Part 100 guidelines. Also, the failure of the HPSW piping leading to the radiation monitoring system will not impact the intended function of the HPSW system. Therefore, HPSW radiation monitors and the associated piping do not have any safety-related intended functions that fall within the scope of license renewal as stated in 10 CFR 54.21(a)(1).

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.5.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the HPSW SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.6 Emergency Service Water System

2.3.3.6.1 Summary of Technical Information in the Application

In Section 2.3.3.6 of the LRA, the applicant describes the components of the emergency service water (ESW) system falling within the scope of license renewal and subject to an AMR . The ESW system is further described in UFSAR Section 10.9.

The ESW system provides a reliable supply of cooling water to diesel generator coolers, emergency core cooling system and reactor core isolation cooling compartment air coolers, core spray pump motor oil coolers, and other selected equipment during a loss of offsite power or during a loss of normal station service water.

The system consists of two 100%-capacity ESW pumps and the associated discharge and distribution piping, piping components, valves, and instrumentation and controls. The two ESW pumps take suction from individual pump bays within the circulating water pump structure. A return header in each unit returns the water to the discharge pond or the emergency cooling water system. During normal operations, all system loads, with the exception of the emergency diesel generator heat exchangers, are supplied with cooling water from the service water system. The ESW system provides the cooling water whenever the pumps are operating and the ESW system pressure is greater than service water system pressure or the service water system is manually isolated from the ESW system. In the event of extreme high or low Conowingo Pond level, the ESW system can be shifted to closed-cycle operation through the use of the emergency cooling water system.

The following is the intended function of the ESW system identified as falling within the scope of license renewal:

- Component cooling - The ESW system provides cooling water flow to transfer heat from certain safety-related equipment during a loss of offsite power or maximum credible accident via either an open loop or a closed loop configuration.

Using the methodology described in LRA Section 2.1.2, the applicant compiled a list of the mechanical component groups subject to an AMR and identified their intended functions in Table 2.3.3-6 of the LRA. Table 2.3.3-6 identifies the following component groups and component types as falling within the scope of license renewal and subject to an AMR:

- casting and forging (valve bodies, pump casings)
- piping (pipe, tubing)
- piping specialties (thermowells, flow elements, expansion joints)

All of the ESW components identified above have a pressure boundary intended function.

2.3.3.6.2 Staff Evaluation

The staff reviewed Section 2.3.3.6 of the LRA and Section 10.9 of the UFSAR to determine whether there is reasonable assurance that the ESW system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff verified that those portions of the ESW system that meet the scoping requirements of 10 CFR 54.4 are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.3.6 of the LRA. The staff then focused its review on those portions of the ESW system that were not identified as being within the scope of license renewal to verify that they do not meet the scoping requirements of 10 CFR 54.4. The staff also reviewed the UFSAR to determine if there were any additional system functions that were not identified in the LRA, and verified that those additional functions did not meet the scoping requirements of 10 CFR 54.4.

The staff then determined whether the applicant had properly identified the SCs that are subject to an AMR from among those portions of the ESW system that are identified as being within-scope of license renewal. The applicant identifies and lists the SCs subject to AMR for the ESW system in Table 2.3.3-6 of the LRA using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff performed its review by sampling the SCs that the applicant determined to be within the scope of license renewal but not subject to AMR to verify that these SCs performed their intended functions with moving parts or with a change in configuration or properties and were subject to replacement base on a qualified life or specified time period.

The applicant identified the portions of the ESW system that are within the scope of license renewal in the drawings referenced in the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that are within the scope of license renewal. The applicant highlighted those components which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and the descriptions in the UFSAR to ensure they were representative of the ESW system. The staff sampled portions of the flow diagram that were not highlighted to verify that these components did not meet any the scoping criteria in 10 CFR 54.4.

In a letter dated March 12, 2002, the staff requested additional information regarding the ESW system, as discussed below.

In RAI 2.3.3.6-1, the staff asked the applicant to clarify the location of the boundary between the normal service water (NSW) system and the ESW system. According to NUREG/CR-4550, Vol. 4, Rev. 1, Part 3 (page 4.3-5), a LOCA in the NSW system, where the piping interfaces with the ESW system, would cause the ESW to feed the break instead of cooling certain safety

system loads. That is, a rupture of the NSW piping in a post-accident condition could cause the ESW (an in-scope system) to fail to perform its intended safety function. The drawings for the ESW system (LR-M-315) did not indicate the boundary between the ESW and NSW systems, so it cannot be determined whether the section of piping referred to in NUREG/CR-4550 has been recategorized to the ESW system.

In a letter dated May 22, 2002, the applicant stated that the boundary between the Unit 2 non-safety-related service water system and the safety-related emergency service water (ESW) system is shown on drawing LR-M-315, sheet 5, at zone H-2. The interface boundary is at the safety-related ESW system check valve 2-33-514, which is included in the scope of license renewal. This check valve prevents flow from the ESW system to the non-safety-related service water system in the event of a pipe rupture in the non-safety-related service water system. The ESW system side of the check valve is ESW piping, so non-safety-related service water piping is not recategorized to the ESW system.

The applicant further explained that the boundary between the Unit 3 non-safety-related service water system and the safety-related emergency service water (ESW) system is shown on drawing LR-M-315, sheet 4, at zone F-8. The interface boundary is at the safety-related ESW system check valve 3-33-514, which is included in the scope of license renewal. This check valve prevents flow from the ESW system to the non-safety-related service water system in the event of a pipe rupture in the non-safety-related service water system. The ESW system side of the check valve is ESW piping, so non-safety-related service water piping is not re-categorized to the ESW system.

The staff finds the applicant's response to RAI 2.3.3.6-1 to be acceptable because a failure in the non-safety-related service water system will not cause the safety-related ESW system to fail to perform its intended safety-related function. In addition, the drawings cited in the applicant's response to RAI 2.3.3.6-1 adequately identify the boundaries between the safety-related ESW system and the non-safety-related service water system.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.6.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the ESW SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.7 Fire Protection System

2.3.3.7.1 Summary of Technical Information in the Application

In Section 2.3.3.7 of the LRA, the applicant describes the components of the fire protection system (FPS) and fire protection program (FPP) that fall within the scope of license renewal and are subject to an AMR. Section 2.1.2 of the LRA contains the system and structure scoping criteria and identifies the scoping criteria for fire protection SSCs required to demonstrate compliance with 10 CFR 50.48 in accordance with 10 CFR 54.4(a)(3). License renewal boundary drawings referenced for the FPS are LR-M-318 and LR-M-323, both Rev. A.

At Peach Bottom, the term "fire protection system" refers to the integrated complex of components and equipment provided for the detection and suppression of fires. The FPS is described in the Peach Bottom Fire Protection Program (FPP).

The FPP contains information on how regulatory commitments are met through analyses and plant evaluations. The FPP includes the concepts of design and layout implemented to prevent or mitigate fires, administrative controls and procedures, and personnel training. The FPP uses a defense-in-depth approach aimed at preventing fires, minimizing the effect of any fires that occur, providing appropriate fire detection and suppression equipment, and training personnel in fire prevention and fire fighting. The purpose of the FPP at Peach Bottom is to ensure that a fire will not prevent the safe plant shutdown systems from performing their necessary intended functions. The FPP is addressed in Sections 2.3.3.7 and 2.4.14 of the LRA.

The FPS is designed to detect the presence of smoke or excessive heat in designated plant areas, provides local alarms, a control room annunciation horn and printed record, and suppression system activation. The FPS includes various types of water, foam, and carbon dioxide suppression systems.

Heat and smoke detectors are installed in designated plant areas where fire hazards exist and in all areas containing safety-related equipment, except where a specific exemption was granted by the NRC. Detection of fire by any smoke or heat detector will activate an audible control room alarm with visual annunciation and a printed record of the event.

There are two vertical turbine fire pumps, each rated for 2,500 gpm at 125 psig total head. The lead pump is electric-motor-driven, and the 100% capacity backup pump is diesel-engine-driven. The pumps and their controllers are UL-listed. The system is capable of supplying water at the required pressure for the largest sprinkler flow plus 500 gpm. The source of water for the Peach Bottom FPS is Conowingo Pond. This source allows continuous operation of either pump as long as required. The fire pumps take suction from independent, isolatable intake basins. Check valves are installed at the pump discharges to prevent water from one source from being pumped into the other source. The fire pumps also provide water to the foam systems.

Total flooding CO_2 systems are provided for the cable spreading room, computer room, high-pressure coolant injection (HPCI) pump rooms, and high-pressure turbine bearing lube oil pumps. These systems are supplied from two 6-ton storage tanks. The total flooding CO_2 systems for the diesel generator bays are supplied by one 2.75-ton storage tank. The design concentrations for the total flooding CO_2 systems are 34% for the HPCI pump rooms, computer room, and diesel generator bays, and 50 percent for the cable spreading room. These low-pressure CO_2 tanks also supply hose reels on the east side of the turbine enclosure operating deck.

The initial scoping of the fire protection system at Peach Bottom was performed on the basis of the intended functions listed below. A separate fire safe shutdown (FSS) system was designated to capture certain active electrical components, fire barriers, and panels associated with the fire safe shutdown analysis for the purposes of license renewal. These components were realigned to the FSS system from the drywell ventilation system, the substations and transformers system, and the 13 kV system. The components of the FSS system are scoped and screened as commodities in LRA, and identified in Section 2.3.3.7.2 below.

LRA Section 2.3.3.7 lists the following intended functions of the fire protection system within the scope of license renewal:

- Fire protection (detection, suppression, containment, standby) - The fire protection system provides methods to detect, suppress, contain, and monitor fire events.

On the basis of the intended functions identified above, the applicant identified the FPS components that fall within the scope of license renewal. The applicant described its process for identifying the mechanical components subject to an AMR in Section 2.1.2 of the LRA. Based on this methodology, the applicant compiled a list of the components groups within the scope of license renewal and subject to AMR. The applicant provided this list in Table 2.3.3-7 of the LRA. The applicant identified the following five component groups as falling within the scope of license renewal and subject to an AMR in Table 2.3.3-7 of the LRA:

- castings and forgings (valve bodies, sprinkler heads, pump casings, strainer bodies, strainer screens, hydrants)
- elastomer (flexible hoses)
- piping (pipe, tubing, fittings)
- piping specialities (discharge nozzles, strainer bodies, strainer screens, restricting orifice, flow elements, metal flex connection)
- vessel (carbon dioxide tank, fuel tank, muffler)

Table 2.3.3-7 lists pressure boundary as the intended function for most of the fire protection components listed above. Strainer screens have a filter intended function, restricting orifices have a throttle intended function, and sprinkler heads and discharge nozzles also have a spray intended function.

2.3.3.7.2 Staff Evaluation

The staff reviewed Section 2.3.3.7 of the LRA, the associated section of the UFSAR, and the FPP to determine whether there is reasonable assurance that the fire protection system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that are required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff sampled portions of the Peach Bottom FPP which contain the plant commitments and safety evaluations which form the CLB for the FPS. The staff then compared a sample of the FPS and components identified in the FPP to the license renewal drawings to verify that required components were identified as falling within the scope of license renewal. The staff also compared SSCs identified in NRC-approved SERs, which document Peach Bottom's compliance with the provisions of Appendix A to BTP 9.5-1, to the FPS license renewal drawings to verify that no additional required portions of the FPS were outside of the evaluation boundary, as reflected in staff fire protection safety evaluation reports.

Programs to manage the aging of fire hoses, extinguishers, and air packs are described in the Peach Bottom fire protection plan. In accordance with plant technical specifications and Section 3.3.2, item 81, of the FPP, the fire hoses meet the requirements of NFPA 14. They are tested annually and are repaired or replaced as necessary. Portable fire extinguishers are provided as described in FPP Section 2.11 and are installed and maintained in accordance with NFPA 10 and 10A. Breathing apparatuses are provided for fire brigade use as described in Section 3.1, item 43, of the FPP. The staff considers the applicant's treatment of these items acceptable as they are replaced on the basis of condition, consistent with the guidance given to the staff in the March 10, 2000, letter from C. I. Grimes, NRC, to D. J. Waters, NEI, entitled "License Renewal Issue No. 98-12, 'Consumables.'"

The applicant has adequately demonstrated how it was able to include components from the Peach Bottom SER dated September 16, 1993, in the scoping methodology by using the FPP as the primary scoping document for fire protection.

After the staff's initial review of the LRA, the staff identified several concerns with the scoping and screening of FPS components required for compliance with 10 CFR 50.48. The staff noted that several fire protection components listed in the SER, including the fire detection and alarm system, which were excluded from the scope of license renewal are required for compliance with 10 CFR 50.48. These concerns led to the issuance of RAIs, which were sent to the applicant in a letter dated March 12, 2002. The applicant responded to the RAIs in a letter dated May 22, 2002, as discussed below.

RAI 2.2-1.1b requested the applicant to identify components have been realigned from out-of-scope systems to the fire safe shutdown system and other systems listed in the RAI. The applicant responded that the fire safe shutdown system was designated to capture certain components associated with the fire safe shutdown analysis for the purposes of license renewal. Components realigned to the fire safe shutdown system include certain active electrical components, fire barriers, and panels associated with the fire safe shutdown analysis. Cables for temperature monitoring instrumentation used during postulated fire safe shutdown events were realigned from the drywell ventilation system. These cables are addressed in LRA Table 2.5-1. In-scope panels that were realigned from the substations and transformers system are addressed in LRA Table 2.4.16, and in-scope panels realigned from the 13 kV system are addressed in LRA Table 2.4.16. The staff finds the clarification provided to be acceptable.

In RAI 2.3.3.7-1, the staff requested that the applicant verify that the fire protection criteria contained in Branch Technical Position (BTP) Auxiliary and Power Conversion Systems Branch (APCSB) 9.5-1 and related SERs were considered in the scoping and screening process. In a letter dated May 22, 2002, the applicant responded that LRA Section 2.1.2.1, page 2-9, states: "Compliance with 10 CFR 50.48 is documented in the Fire Protection Program (FPP) that is part of the PBAPS UFSAR." The Peach Bottom FPP describes the fire protection features of the plant necessary to comply with BTP APCSB 9.5-1, Appendix A, and makes reference to the SER and its four supplements and also to the SER of September 16, 1993, for the Peach Bottom FPP, through Revision 4. The fire protection features of the plant necessary to comply with BTP APCSB 9.5-1, Appendix A, and the referenced SERs were used to identify those SSCs relied on to demonstrate compliance with 10 CFR 50.48, as stated in Section 2.1.2.1 of the scoping and screening methodology.

The staff reviewed the applicant's response to RAI 2.3.3.7-1. The staff agrees with the applicant's contention that the FPS scoping included all the fire protection SSCs required to meet the commitments outlined in the FPP intended to meet the requirements of 10 CFR 50.48(b)(1)(i). The staff finds the applicant's response acceptable, on the basis that the 10 CFR 50.48 requirements include those commitments made in the response to the BTP and the referenced SERs.

In RAI 2.3.3.7-2, the staff stated that the provision of fire detection and alarm systems and components is required by both BTP APCSB 9.5-1, Appendix A, and by 10 CFR 50 Appendix R. LRA Section 2.3.3.7 identifies heat and smoke detection installed in all areas containing safety-related equipment as being within the scope of license renewal, except as exempted by the NRC, although Table 2.2-3 of the LRA does not specifically list the fire detection and alarm system under Instrumentation and Controls. Based on these criteria, the staff requested that the applicant identify fire detection and alarm system as falling within the scope of license renewal and subject to an AMR or else provide a justification for its exclusion. In a letter dated May 22, 2002, the applicant responded that Table 2.2-1 of the LRA indicated that FPSs are included within the scope of license renewal and are discussed in Section 2.3.3.7. In LRA Section 2.3.3.7, page 2-66, the applicant states: "The term 'fire protection system' refers to the integrated complex of components and equipment provided for detection and suppression of fires." In Section 2.5, page 2-130, the applicant states that, other than station blackout, for all other electrical and I&C components, the passive, long-lived electrical components subject to an AMR were identified as commodities. Specifically, for the fire protection detection and alarm system, this would include insulated cables and connections (connectors, splices, and terminal blocks).

The staff reviewed the applicant's response and agrees that the fire detection and alarm system is included within the scope of license renewal and is included in the LRA as part of the fire protection system, even though those components are not explicitly identified in the electrical and I&C sections of the LRA. The staff further agrees that the passive, long-lived portions of the fire detection and alarm system are subject to an AMR for the electrical commodity groups, as addressed in Section 2.5.

In RAI 2.3.3.7-6, the staff requested that the applicant provide the basis for excluding components of the torus hardened vent from the scope of license renewal even though the containment venting intended function is cited for Appendix R post-fire safe shutdown for Fire Areas 1B (Unit 2), 6S (Unit 2 and Unit 3), 12B (Unit 3), 13S (Unit 3), and 39 (Unit 2 and Unit 3) at Peach Bottom. In a letter dated May 22, 2002, the applicant responded that systems analyzed to achieve compliance with Appendix R (and thereby 10 CFR 50.48) are described in FPP Section 5.2.2, and components are listed in FPP Table A-3. The torus hardened vent does not appear in either of these sections. Therefore, the torus hardened vent is not a system that falls within the scope of systems used to satisfy 10 CFR 50.48.

The staff reviewed the applicant's response to RAI 2.3.3.7-6. The staff agrees that the torus hardened vent is not listed as a safe shutdown component. This component is not part of a fire suppression strategy. Therefore, the staff concurs that the torus hardened vent is not within the scope of the LRA for 10 CFR 50.48 compliance.

In RAI 2.3.3.7-7, the staff requested that the applicant include carbon dioxide discharge nozzles and discharge piping in the scope of the license renewal or provide the technical justification for

their exclusion, since they do not appear in LRA Table 2.3.3-7. In a letter dated May 22, 2002, the applicant responded that license renewal drawing LR-M-318, sheet 4, shows that the discharge piping and discharge nozzles for the carbon dioxide suppression system are within the scope of license renewal and that these components were included in an AMR in Table 2.3.3-7 for their specific environments.

The staff reviewed the applicant's response and agrees that carbon dioxide system discharge piping and nozzles are included within the scope of license renewal. Table 3.3-7 identifies piping, valves, and nozzles with a "dry gas" environment. Only the carbon dioxide tank is specifically mentioned as part of the low pressure CO_2 system. Based on the applicant's response, Table 3.3-7 also applies to the piping, valve, and nozzle components of the CO_2 system. The staff therefore finds the applicant's response to RAI 2.3.3.7-7 to be acceptable.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.7.3 Conclusion

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the fire protection SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.8 Control Room Ventilation System

2.3.3.8.1 Summary of Technical Information in the Application

In Section 2.3.3.8 of the LRA, the applicant identified the boundaries of the control room ventilation system (CRVS) and the components within the scope of license renewal and subject to an AMR. The applicant stated in Section 2.3.3.8 of the LRA that additional information for the CRVS is provided in Section 10.13 of the UFSAR for both Unit 2 and Unit 3. The system scoping for the CRVS is shown in license renewal drawing LR-M-384, sheets 1-3, all Rev. A.

The CRVS is a safety-related system that is common to PBAPS Units 2 and 3. The system consists of several subsystems: control room fresh air supply, control room emergency ventilation filter, control room air conditioning ventilation supply, and the control room return air system. The system ensures the habitability of the control room under the design basis events. The fresh air portion of the system is operable during the loss of offsite power. The fresh air intake is filtered when control room emergency ventilation is initiated to prevent iodine and particulate contamination of the control room environment.

The CRVS consists of normal and emergency ventilation supply fans, air conditioning supply and return fans, filters, heating coils and cooling coils, refrigerant water chillers, chilled water pumps, dampers, ductwork, instrumentation, and controls. The control room fresh air supply system consists of two 100% capacity redundant supply fans, a roll filter, and a preheat coil. The system is supplied with outside air from the outside air intake plenum. The control room emergency ventilation filtration system is a safety-related system which consists of two 100% capacity filter units and redundant supply fans. Each filter unit consists of a charcoal filter and two banks of HEPA filters upstream and downstream of the charcoal filter.

In Section 2.3.3.8 of the LRA, the applicant identified the following intended functions for the CRVS that relate to 10 CFR 54.4(a)(1), 10 CFR 54.4(a)(2), and 10 CFR 54.4(a)(3):

- Control room isolation and filtration - The control room ventilation system provides isolation and filtration for the control room during accident conditions.

- Ventilation - The system provides ventilation for the control room during normal, abnormal, accident, and post-accident conditions.

The applicant described its process for identifying the SCs subject to an AMR in Section 2.1.2 of the LRA. Based on this methodology, the applicant identified the portions of the CRVS that are within the scope of license renewal in control room heating, ventilation, and air-conditioning (HVAC) evaluation boundary drawings LR-M-384, sheets 1, 2, and 3, Rev. A. On the basis of the system intended functions identified above, the applicant determined that the components of the CRVS designated as safety-related are within the scope of license renewal. Using the methodology described in Section 2.1.2 of the LRA, the applicant compiled a list of the SCs and component types within the license renewal boundaries and subject to an AMR and identified their intended functions. The applicant provided this list in Table 2.3.3-8 of the LRA.

The applicant identified the following component groups comprising component types that are within the scope of license renewal and subject to an AMR:

- casting and forging (valve bodies)
- elastomer (filter plenum access door seals, fan flex connections)
- piping (pipe, tubing)
- piping specialties (flow elements)
- sheet metal (ductwork, damper enclosures, plenums, fan enclosures, louvers)

Except for the louvers, which provide a throttle intended function, all of the remaining component types provide a pressure boundary intended function.

2.3.3.8.2 Staff Evaluation

The staff reviewed Section 2.3.3.8 of the LRA and Section 10.13 of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the CRVS components and supporting structures within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the license renewal drawings LR-M-384, sheets 1-3, Rev. A, for the CRVS. The drawings show the evaluation boundaries for the portions of the CRVS within the scope of license renewal. The staff also reviewed LRA Table 2.3.3-8, which lists those SSCs that are subject to an AMR.

The staff also reviewed Section 10.13 of the UFSAR to determine if any portions of the CRVS met the scoping criteria in 10 CFR 54.4(a) were not identified as falling within the scope of license renewal. The staff also reviewed the UFSAR sections to determine if there were any system functions that were not identified as intended functions in the LRA, and to determine if there were SSCs that have intended functions that might have been omitted from the scope of SCs requiring an AMR. The staff also reviewed the above CRVS evaluation boundary drawings to determine if any SCs within the evaluation boundaries were omitted from the scope of SCs requiring an AMR under 10 CFR 54.4(a)(1). The staff compared the intended functions described in the UFSAR with those identified in the LRA. The staff then determined whether the applicant had properly identified the SCs subject to an AMR from among those identified as falling within the scope of license renewal.

The applicant identified and listed the SSCs subject to an AMR for the CRVS in Table 2.3.3-8 of the LRA, using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff sampled SCs from Table 2.3.3-8 to verify that the applicant adequately identified the SCs subject to an AMR. The staff also sampled the SCs within the scope of license renewal but not subject to an AMR to verify that these SCs performed their intended functions with moving parts or with a change in configuration or properties, and were subject to replacement based on a qualified life or specified time period.

By letter dated March 12, 2002, the staff requested additional information regarding those portions of the CRVS identified as not within the scope of license renewal to help ensure that they do not perform any intended functions that are within scope. The applicant submitted responses to those RAIs, as discussed below.

RAI 2.3.3.8-1 requested specific information concerning the areas that constitute the main control room envelope (MCRE) and perform intended functions such as cooling and filtration (in order to maintain control room habitability (CRH) and meet Appendix A to 10 CFR Part 50, General Design Criterion (GDC) 19).

In addition, the staff did not believe that the boundary for the MCRE had been adequately delineated and asked the applicant to verify that all CRVS components inside the MCRE (including housings of air handling units and fan coil units and their associated ductwork, housings of fire damper and control valves, the air intake, and housings of exhaust fans with purge ductwork), which are relied on to perform the safety-related cooling/ventilation intended functions are identified as falling within the scope of license renewal and subject to an AMR on license renewal drawing LR-M-384, Rev. A, and in Table 2.3.3.8 of the LRA.

In a letter dated May 22, 2002, the applicant responded that, as indicated in LRA Section 2.3.3.8, the intended functions of the CRVS are control room isolation, filtration, and ventilation. The components that are required to perform these intended functions are in-scope and identified on license renewal drawings LR-M-384 sheets 1, 2, and 3, Rev. A. All other SSCs and housings, except heating coils enclosures, that are subject to an AMR are identified in LRA. Heating coil enclosures were inadvertently omitted from the LRA table, which will be revised to include these coil enclosures. The staff also reviewed USFAR Section 10.13 “Main Control Room Air Condition, “ and verified the CRVS serves the main control room adjacent offices (control room enclosure); therefore, the staff finds the applicants response acceptable. The

staff found the addition of the heating coil enclosures acceptable because they perform an intended pressure boundary function meeting the requirements of 10 CFR 54.21(a)(1).

In RAI 2.3.3.8-2, the staff stated that LRA Table 2.3.3-8 did not identify the components and their housings listed below, although these components, including their housings, support the intended function of the CRVS to comply with the requirements of the Appendix A to 10 CFR Part 50, GDC 19. These components are shown on license renewal drawing LR-M-384, sheet 1, as falling within the scope of license renewal but are not listed in Table 2.3.3-8 of the LRA. The staff requested that the applicant provide a justification for the exclusion of these components and their housings from an AMR.

Housings and components excluded are:

- reheat coil 00E072, drawing LR-M-384, sheet 3, location H2
- thermowell for temperature transmitter TT00174, drawing LR-M-384, sheet 3, location H2
- louver, drawing LR-M-384, sheet 1, location D8
- preheat coil 00E068, sheet 1, at location D7
- HEPA filters OAF041, drawing LR-M-384, sheet 1, location G6, and OBF041at location F6
- HEPA filters OAF050, drawing LR-M-384, sheet 1, location G5 and OBF050 at location F5

The staff indicated that if the filter media for the components identified above were excluded on the basis that these media components are routinely replaced (consumables), the applicant should describe the plant-specific monitoring program and the specific performance standards and criteria for periodic replacement.

In a response to RAI 2.3.3.8-2, the applicant stated that heating coil enclosures (reheat and preheat coils) were inadvertently omitted from the LRA tables. These components should be included in LRA Table 2.3.3-8 as having a pressure boundary function in a sheltered, ventilation atmosphere environment. The applicant further indicated that there is no thermowell for temperature transmitter TT00174. The temperature element is a capillary type and penetrates the ventilation duct through a bulkhead type fitting. The bulkhead fitting is considered as part of the ventilation ductwork hardware for license renewal. The louver shown on license renewal drawing LR-M-384, sheet 1, at location D8, is mounted in a wall opening at the ventilation intake and does not include any pressure boundary housing or enclosure. The applicant confirmed that heating coil enclosures are subject to an AMR and should be included in LRA Table 2.3.3-8. As stated above, the staff found the inclusion of the heating coil enclosures in Table 2.3.3-8 acceptable because they meet the requirements of 10 CFR 54.21(a)(1).

The filter media for the components identified above are short-lived and passive and are not subject to an AMR. Periodic testing and inspection programs include filter performance such that system intended functions are maintained. The filters are monitored during the annual filter train surveillance tests, including verification of acceptable maximum differential pressure. System filters are replaced as conditions warrant; therefore an AMR is not required. The staff considers the applicant's response to RAI 2.3.3.8-2 partially acceptable. However, the filter housings of the HEPA filters were excluded from the LRA Table 2.3.2-8 and the applicant failed to provide justification for this exclusion in its response. The applicant needs to include these

housings in LRA Table 2.3.2-8 to indicate that they are subject to an AMR or justify their exclusion from an AMR. This was Open Item 2.3.3.8.2-1.

In a letter dated November 26, 2002, the applicant provided clarifying information concerning the filter housings of the HEPA filters. In response to the Open Item, the applicant stated that the HEPA filters shown on drawing LR-M-384 sheet 1 are installed and fully enclosed inside filter plenum (filter housing). The filter plenum is included in the scope of license renewal and subject to an AMR, and is identified in the LRA Table 2.3.3-8 as a sheet metal plenum, and the NRC staff agrees with the applicant's clarification for the filter housings of the HEPA filters. Therefore, Open Item 2.3.3.8.2-1, is closed.

In RAI 2.3.3.8-3. the staff indicated that LRA Table 2.3.3-8 did not identify test connections shown on license renewal drawing LR-M-384, sheet 1, Rev. A, at locations D1 (three locations), F1(three locations), F5 (three locations), F6 (two locations), G2 (one location), G4 (two locations), D2 (one location), D3 (one location), D5 (three locations), and D6 (three locations). The staff requested that the applicant provide justification for the exclusion of these test connections from Table 2.3.3-8 of the LRA as not subject to an AMR.

In response to RAI 2.3.3.8-3, the applicant stated that the test connections are included in the scope of license renewal and are subject to an AMR. The test connections are considered as part of the ventilation ductwork hardware for license renewal. The staff considers the applicant's response to RAI 2.3.3.8-3 to be acceptable.

In RAI 2.3.3.8-4, the staff requested that the applicant clarify whether sealant materials at PBAPS Units 2 and 3, used to maintain the MCRE at positive pressure with respect to the adjacent areas in order to prevent the unfiltered in-leakages inside MCRE, are included in the scope of license renewal and subject to an AMR, and if so, provide the relevant information to complete Table 2.3.3.8 of the LRA. If the sealants are not considered subject to an AMR, the applicant was asked to provide justification for their exclusion. The applicant responded that sealant materials are included as a commodity item in LRA Section 2.4.14, in Table 2.4-14. The staff considers the applicant's response to be acceptable.

In RAI 2.3.3.8-5, the staff identified that GDC 19 of Appendix A to 10 CFR Part 50 requires cooling and protection against radiation and toxic gas release in order to achieve and maintain MCRE habitability during and after an accident. The staff requested the applicant to clarify whether the following main control room (MCR) cooling system components and their associated housings fall within the scope of license renewal and are subject to an AMR because they provide a safety-related cooling function:

Drawing LR-M-384, sheet 2:

- supply fans, OAV028 at location F6 and OABV028 at location C5
- cooling coils, OAE069 at location F5 and OBEV069 at location C5
- supply roll filter, OOF038 at location E3
- bag filter, OOF057 at location E4
- prefilter coil, OOE110 at location F2
- louver at location F1
- ductwork, dampers, and instrumentation tubing and valves

Drawing LR-M-384, sheet 3

- return air fans, OAV027 at location C7 and OBV029 at location A7
- closed cooling control room ventilation, fan, OOV326 at location C4
- filter, OOF327 at location C3
- control room ventilation reheat coil, OOE072 at location H2
- balance dampers at locations F7 and G7
- control room toilet exhaust fan, OOV033 at location G8
- ductwork, dampers, and instrumentation tubing and valves

If the components and the associated housings identified above were excluded from the scope of license renewal and not subject to an AMR, the applicant was asked to provide justification for their exclusion.

The applicant responded that, as indicated on license renewal drawing legend LR-M-300, license renewal drawing note 1, with the exception of the reheat coil 00E072, none of the above-identified components are highlighted on the license renewal drawing and none fall within the scope of license renewal. The components identified in this RAI are not required to support the system intended functions of control room isolation, filtration, and ventilation and are therefore not within the scope of license renewal. The reheat coil 00E072 is addressed in the response to RAI 2.3.3.8-2, above.

The staff considers the applicant's response to RAI 2.3.3.8-5 incomplete because the system's safety-related radiation, cooling, and toxic protection functions are required to meet Appendix A to 10 CFR Part 50, GDC 19. LRA Section 2.3.3.8 refers to UFSAR Section 10.13, which states that the control room ventilation subsystem (of CRVS) provides ventilation for the control room under normal and accident conditions. Also, the UFSAR subsection 10.13.4 states that the emergency cooling and ventilation system for the control room and other safety-related equipment rooms are installed in seismic Class I structure and are provided with 100% redundancy. Therefore, the staff finds that the control room air conditioning ventilation subsystem provides a safety-related cooling function to meet the requirements of GDC 19. Therefore, the applicant needs to include the CRVS subsystem components (that support the accident function to maintain control room habitability) listed below within the scope of license renewal and subject to an AMR (in LRA Tables 2.3.3-8 and 3.3-8) in accordance with 10 CFR 54.4 and 10 CFR 54.21 (a)(1) or justify their exclusion:

<u>LRA Drawing LR-M-384, Sheet 2</u>

- Housings for supply fans (OAV028/OBVO28),
- Cooling coils (OAE069/OBE069)
- Ductwork and damper housings

<u>LRA Drawing LR-M-384, Sheet 3</u>

- Housings for two balance dampers at F7 and G7
- Housings for return air fans (OAV029/OBV020)
- Ductwork and damper housings

Additionally, if the filter media and filter housings for the supply roll filter and bag filter (OOF038/OOF057, as shown in LRA Drawing LR-M-384, Sheet 2) were excluded on the basis

that these media components are routinely replaced (i.e., they are consumables) the applicant should describe the plant specific monitoring program and the specific performance standards and criteria for periodic replacement. This was Open Item 2.3.3.8.2-2.

In a letter dated November 26, 2002, the applicant stated in response to Open Item 2.3.3.8.2-2 that the CRVS consists of (1) the safety-related control room fresh air supply subsystem, and (2) the control room emergency ventilation filter subsystem. The CRVS also consists of (1) the non-safety-related control room air conditioning ventilation supply subsystem, (2) the control room return air subsystem, and (3) the control room toilet exhaust subsystem. The safety-related control room fresh air supply subsystem and the control room emergency ventilation filter subsystems are the only CRVS subsystems relied upon to assure control room habitability, and therefore, are within the scope of the license renewal and subject to an AMR.

The non-safety-related subsystems including the control room air conditioning ventilation supply subsystem of the CRVS are not required for control room habitability and do not have any safety-related intended functions. Therefore, these associated components are not within the scope of license renewal and are not subject to an AMR and the plant specific monitoring program including periodic replacement criteria for the media components (roll filter and bag filter (OOF038/OOF057)) are not warranted.

The NRC staff agrees with the applicant's above clarification as to why certain non-safety-related subsystems which are not relied upon to assure control room habitability are not within the scope of license renewal. Because the applicant has included the safety-related portions of the CRVS that are relied on to support accident conditions (i.e., control room habitability) within the scope of license renewal and subject to an aging management review, Open Item 2.3.3.8.2-2 is closed.

2.3.3.8.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the control room ventilation SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.9 Battery and Emergency Switchgear Ventilation System

2.3.3.9.1 Summary of Technical Information in the Application

In Section 2.3.3.9 of the LRA, the applicant identified portions of the battery and emergency switchgear ventilation system (BESVS) and the components that fall within the scope of license renewal and are subject to an AMR. The applicant stated in Section 2.3.3.9 of the LRA that additional information for the BESVS is provided in Section 10.14 of the UFSAR for both Units 2 and 3. The system scoping for the BESVS is shown in license renewal drawings LR-M-389, sheet 1, Rev. A, and LR-M-399, sheets 1 and 4, both Rev. A.

The BESVS consists of a common air supply system and separate exhaust systems. Outdoor air is filtered and conditioned by heating coils when required, and discharged by one of the two supply fans to the emergency switchgear and battery rooms of Units 2 and 3. One of the two emergency switchgear room return air fans exhausts air to atmosphere at the radwaste building

roof or back to the suction of the supply fan as controlled by an air-operated damper. One of the two battery room exhaust fans discharges exhausts air from the battery rooms to atmosphere at the radwaste building roof exhaust stack. Loss of duct pressure automatically starts standby fans and sounds an alarm in the MCR.

The ventilation system is normally in operation and continues to operate during accident conditions, including the loss of offsite power. All system controls are from a local panel. Redundant fans are provided for reliable system operation. The BESVS is described in additional detail in UFSAR Section 10.14. License renewal drawings referenced for the BESVS are LR-M-389 and LR-M-399, both Rev. A.

Intended Functions within the Scope of License Renewal:

In Section 2.3.3.9 of the LRA, the applicant identified the following intended functions for the BESVS that relate to 10 CFR 54.4(a)(1), 10 CFR 54.4(a)(2), and 10 CFR 54.4(a)(3):

- Ventilation - The system provides ventilation to the emergency switchgear and battery rooms during normal and abnormal accident conditions

- Heating - The system provides room heating during all normal plant operating conditions and following a design basis event or accident conditions. Heating is the recirculation of heated air with reduced air exchange with the outdoor environment

On the basis of the functions identified above, the applicant determined that all BESVS safety-related components (electrical, mechanical, and instrument) are within the scope of license renewal. The applicant described its process for identifying the SCs subject to an AMR in Section 2.1.2 of the LRA. Based on this methodology, the applicant identified the portions of the BESVS that fall within the scope of license renewal in BESVS evaluation boundary drawings LR-M-389, sheet 1 for Common Only, and LR-M-399, sheet 1 for Common Only, and sheet 4, for Unit 2, 3, and Common, all Rev. A. Using the methodology described in Section 2.1.2 of the LRA, the applicant compiled a list of the SCs and component types within the license renewal system boundaries and subject to an AMR and identified their intended functions. The applicant provided this list in Table 2.3.3-9 of the LRA.

The applicant identified the following device types that are identified as within the scope of license renewal and subject to an AMR:

- casting and forging (valve bodies)
- elastomer (fan flex connections)
- piping (tubing)
- sheet metal (ductwork, plenums, damper enclosures, fan enclosures, louvers exhaust hoods, bird screens)

Except for the bird screens, which have a filter intended function, and the louvers, which have a throttle intended function, all of the remaining device types provide a pressure boundary intended function.

2.3.3.9.2 Staff Evaluation

The staff reviewed Section 2.3.3.9 of the LRA and UFSAR Section 10.14 to determine whether there is reasonable assurance that the battery and emergency switchgear ventilation system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the BESVS evaluation boundary drawings LR-M-389, sheet 1, Rev. A, and LR-M-399, sheets 1 and 4, both Rev. A, of the LRA. The drawings show the evaluation boundaries for the portions of the BESVS within the scope of license renewal. The staff also reviewed LRA Table 2.3.3-9, which lists those SSCs subject to an AMR.

The staff also reviewed the above BESVS evaluation boundary drawings to determine if any SSCs within the evaluation boundaries were omitted from the scope of SSCs requiring an AMR under 10 CFR 54.4(a)(1). The staff compared the functions described in the UFSAR with those identified in the LRA. The staff then determined whether the applicant had adequately identified the SSCs subject to an AMR from among those identified as falling within the scope of license renewal.

The applicant identified and listed the SSCs subject to an AMR for the BESVS in Table 2.3.3-9 of the LRA, using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff sampled SCs from LRA Table 2.3.3-9 to verify that the applicant did identify the SSCs subject to an AMR. The staff also sampled the SSCs within the scope of license renewal but not subject to an AMR to verify that these SSCs performed their intended functions with moving parts or with a change in configuration or properties, and were subject to replacement based on a qualified life or specified time period.

After completing the initial review, by letter dated March 12, 2002, the staff requested specific information concerning the exclusion of certain SSCs from the scope of license renewal and/or an AMR, and the applicant submitted responses to those RAIs, as discussed below.

In RAI 2.3.3.9-1, the staff noted that LRA Table 2.3.3-9 does not list the heating coils and their housings 0AE073 and 0BE073 as being subject to an AMR, although these components are shown at locations F5 and C5 on license renewal drawing LR-M-399, sheet 1, as being within the scope of license renewal. The staff believes that these components provide a passive boundary function for the BESVS. Accordingly, the staff requested the applicant to provide its justification for the exclusion of the above components from Table 2.3.3-9 of the LRA. In a letter dated May 22, 2002, the applicant responded that the subject heating coils are steam heating coils that are installed inside the fan unit (0AV034, 0BV034) enclosure housing, and do not provide a passive boundary function for the BESVS. However, the fan enclosures (housings) are included in LRA Table 2.3.3-9.

The staff considers failure of a steam heating coil pressure boundary to cause steam leakage into the BESVS ventilation duct, thereby degrading HVAC unit performance. The staff believes that these heating coils do fall within the scope of license renewal and are subject to an AMR. This was Open Item 2.3.3.9.2-1.

In a letter dated November 26, 2002, the applicant provided additional clarifying information stating that the steam heating coils (0AE073, 0BE073) have been included in the scope of license renewal and are subject to an AMR. They are listed in the Auxiliary Steam System as a heat exchanger (ventilation heaters) component, which has been added to the scope of license renewal as indicated in response to RAIs 2.1.2-3, 2.1.2-4, and 3.3-1 which were transmitted by letter dated May 21, 2002 (see page 25 of 28); therefore, Open Item 2.3.3.9.2-1, is closed.

In RAI 2.3.3.9-2, the staff identified that the system description for the BESVS in LRA Section 2.3.3.9 stated that one of the two battery room exhaust fans discharges air from the battery rooms at the radwaste building roof exhaust stack. However, license renewal drawing LR-M-399, sheet 4, Rev. A, at location G4, shows that the exhaust from the battery room fans is discharged from the MCR roof. If the exhaust air from the battery room exits from the radwaste building roof as stated, then the radwaste exhaust vent must be identified on license renewal drawing LR-M-399, sheet 4, Rev. A, at location B3, as falling within the scope of license renewal and subject to an AMR. The staff requested the applicant to clarify the above discrepancy.

In a letter dated May 22, 2002, the applicant responded that the radwaste exhaust vent and the ductwork leading to it are within the scope of license renewal and are subject to an AMR. These components (ductwork and exhaust hoods) are included in LRA Table 2.3.3-9. License renewal drawing LR-M-399, sheet 4, Rev. A, is in error, and will be revised to identify the exhaust vent and associated ductwork as in-scope. The staff considers the applicant's response to be acceptable.

As stated in applicant's response to RAI 2.2-1.1(b) (refer to SER Section 2.2.3), the instrument air system piping, tubing, and valve bodies that are required to support the safety-related pneumatic system pressure boundary were realigned from the instrument air system to the BESVS for license renewal. The normal source for compressed gas to the pneumatic controls is from the non-safety-related instrument air system. However, portions of the pneumatic controls in the BESVS are safety-related, as are the nitrogen bottles, which are the safety-related source for compressed gas to the pneumatic controls. The subject piping and tubing with associated valves is shown as cross-hatched (pneumatic piping and tubing symbol) and is highlighted as falling within the scope of license renewal on boundary drawings LR-M-399 sheets 1 and 4, Rev. A.

As discussed above, portions of the instrument air system were realigned to the BESVS. In a letter dated October 30, 2001, the staff identified certain components that were omitted from Tables 2.3.3-9 and the corresponding table in Section 3.3. In a November 16, 2001, response, applicant stated that when LRA Table 2.3.3-9 was prepared, the BESVS component groups in the gas environment AMR were inadvertently omitted. Additionally, the applicant stated that LRA Table 2.3.3-9 requires the addition of "dry gas" in the "Environment" column for both the "valve bodies" and "pipe" entries. The applicant further explained that the valve bodies are brass material, and the pipe is copper material. In its May 22, 2002, response to the staff's March 12, 2002, RAIs 2.2-1.1(a) and (b), the applicant clarified which systems or portions

thereof were realigned, and revised LRA Table 3.3-9. The revision adds pipe to the component group of piping which performs the intended function of pressure boundary. The staff finds the addition of the components in the dry gas environment to be acceptable because they perform an intended function, as described in 10 CFR 54.21(a)(1), without moving parts or without a change in configuration or properties.

On the basis of the above review, with the exception of Open Item 2.3.3.9.2-1, the staff did not find any other omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.9.3 Conclusions

On the basis of its review, with the exception of Open Item 2.3.3.9.2-1, the staff concludes there is reasonable assurance that the applicant has adequately identified the battery and emergency switchgear ventilation SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.10 Diesel Generator Building Ventilation System

2.3.3.10.1 Summary of Technical Information in the Application

In Section 2.3.3.10 of the LRA, the applicant identified the boundaries of the diesel generator building ventilation system (DGBVS) and the DGBVS components within the scope of license renewal and subject to an AMR. Section 2.3.3.10 of the LRA stated that additional information for the DGBVS is provided in Section 10.14 of the UFSAR for PBAPS Units 2 and 3. The components of the DGBVS in the scope of license renewal are shown in license renewal drawing LR-M-392, sheet 1, Rev. A.

The DGBVS provides heating, cooling, and ventilation for personnel comfort, for the diesel generators and associated equipment, and for the emergency service water (ESW) booster pumps. The system provides ventilation and cooling to the emergency diesel generator (EDG) rooms during normal plant operation and following design basis events. It supplies heating as required during normal operating conditions. The system also provides ventilation, cooling, and heating as required to the Cardox and ESW booster pump room during normal plant operating conditions.

Each EDG room is provided with ventilation air supply fans and an exhaust relief damper. Combustion air for the diesel engine is taken from the room. The ventilation systems are supplied with power from the diesels during the loss of offsite power.

In Section 2.3.3.10 of the LRA, the applicant identified the following intended functions for the DGBVS that relate to 10 CFR 54.4(a):

- Ventilation - The system provides ventilation to maintain an acceptable environment to support proper diesel generator operation during normal plant operating conditions and following design basis events.

- Cooling - The system provides cooling to maintain an acceptable environment to support proper operation of the diesel generators and their associated equipment during normal plant operating conditions and following design basis events.

On the basis of the functions identified above, the applicant determined that all DGBVS safety-related components fall within the scope of license renewal. The applicant described its process for identifying the SCs subject to an AMR in Section 2.1.2 of the LRA. Based on this methodology, the applicant identified the portions of the DGBVS that fall within the scope of license renewal in DGBVS evaluation boundary drawings LR-M-392, sheet 1, Rev. A. Using the methodology described in Section 2.1.2 of the LRA, the applicant compiled a list of the SCs and component types within the license renewal system boundaries and subject to an AMR and identified their intended functions. The applicant provided this list in Table 2.3.3-10 of the LRA.

The applicant identified the following device types that are identified as falling within the scope of license renewal and subject to an AMR:

- elastomer (fan flex connections)
- sheet metal (ductwork, damper enclosures, fan enclosures, louvers)

Except for the louvers, which have a throttle intended function, the remaining components have a pressure boundary intended function.

2.3.3.10.2 Staff Evaluation

The staff reviewed Section 2.3.3.10 of the LRA and Section 10.14 of the UFSAR to determine whether there is reasonable assurance that the diesel generator building ventilation system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff also reviewed the above DGBVS evaluation boundary drawings to determine if any SSCs within the evaluation boundaries were omitted from the scope of SCs requiring an AMR under 10 CFR 54.4(a)(1). The staff compared the functions described in the UFSAR with those identified in the LRA. The staff then determined whether the applicant had properly identified the SSCs subject to an AMR from among those identified as falling within the scope of license renewal.

The applicant identified and listed the SSCs subject to an AMR for the DGBVS in Table 2.3.3-10 of the LRA, using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff sampled SSCs from Table 2.3.3-10 to verify that the applicant did identify the SSCs subject to an AMR. The staff also sampled SSCs within the scope of license renewal but not subject to an AMR to verify that these SSCs performed their intended functions with moving parts or with a change in configuration or properties, and were subject to replacement based on a qualified life or specified time period.

By letter dated March 12, 2002, after completing the initial review, the staff requested additional information regarding the DGBVS and the applicant submitted responses to those RAIs, as discussed below.

In RAI 2.3.3.10-1, the staff identified that LRA Table 2.3.3-10 did not list the housings of the unit heaters identified in drawings OAE097 at location F5, OBE097 at location F4, OCE097 at location E5, ODE097 at location E4, OEE097 at location E5, OFE097 at location E4, OGE097 at location D5, OHE097 at location D4, OAE140 at location G5, and OBE140 at location F5.

If the components and their associated housings identified above were excluded from the scope of license renewal and not subject to an AMR, the staff asked the applicant to provide justification for their exclusion.

In a letter dated May 22, 2002, the applicant responded that the identified unit heaters are not in the scope of license renewal. These components are not identified as in-scope on license renewal drawing LR-M-392. As indicated in LRA Section 2.3.3.10, the system intended functions are ventilation and cooling. Heating is not an intended function of the DGBVS. These unit heaters are not safety-related and do not have any intended functions for license renewal. The staff considers the applicant's response to be acceptable, as the plant's current licensing basis (CLB) requires DGBVS heating to be available during normal operation only.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.10.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the diesel generator building ventilation SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.11 Pump Structure Ventilation System

2.3.3.11.1 Summary of Technical Information in the Application

In Section 2.3.3.11 of the LRA, the applicant identified the portions of the pump structure ventilation system (PSVS) and the components falling within the scope of license renewal and subject to an AMR. Section 2.3.3.10 of the LRA stated that additional information for the PSVS is provided in Section 10.14 of the PBAPS UFSAR for Units 2 and 3. The components that are within the scope of license renewal for the PSVS are shown in license renewal drawing LR-M-392, sheet 1, Rev. A.

The ESW and high-pressure service water (HPSW) compartment houses the ESW pumps, HPSW pumps, fire pumps, and service water screen wash pumps. The ventilation is provided with a supply and exhaust system in each of the two seismic Class I compartments. The PSVS is supplied with standby power during the loss of offsite power. Redundant ventilation equipment is furnished in each compartment for uninterrupted service. Each pump room contains two safety-related 100% capacity supply fans, two safety-related 100% capacity exhaust fans, and one non-safety-related steam unit heater.

Each pump room has a missile-protected concrete air mixing box which contains an outdoor air damper and a return air damper. Air is exhausted to a missile-protected concrete exhaust air plenum.

In Section 2.3.3.11 of the LRA, the applicant identified the following intended functions for the PSVS that relate to 10 CFR 54.4(a):

- Ventilation - The system provides ventilation to maintain an acceptable environment to support proper ESW and HPSW pump operation during normal plant operating conditions and following design basis events.

- Cooling - The system provides cooling to maintain an acceptable environment to support proper operation of the ESW and HPSW pumps and their associated equipment during normal plant operating conditions and following design basis events.

On the basis of the functions identified above, the applicant determined that all PSVS safety-related components (electrical, mechanical, and instrument) fall within the scope of license renewal. The applicant described its process for identifying the SSCs subject to an AMR in Section 2.1.2 of the LRA. Based on this methodology, the applicant identified the portions of the PSVS that fall within the scope of license renewal in PSVS evaluation boundary drawings LR-M-392, sheet 1, Rev. A. Using the methodology described in Section 2.1.2 of the LRA, the applicant compiled a list of the SSCs and component types within the scope of license renewal and subject to an AMR and identified their intended functions. The applicant provided this list in Table 2.3.3-11 of the LRA.

The applicant identified the following component groups comprising component types that are identified as falling within the scope of license renewal and subject to an AMR:

- casting and forging (valve bodies)
- elastomer (flex hose connections)
- piping (tubing)
- sheet metal (ductwork, damper enclosures, fan enclosures, louvers, bird screens)

Except for the louvers, which have a throttle intended function, and the bird screens, which have a filter intended function, the remaining component types have a pressure boundary intended function.

2.3.3.11.2 Staff Evaluation

The staff reviewed Section 2.3.3.11 of the LRA and Section 10.14 of the PBAPS Units 2 and 3 UFSAR to determine whether there is reasonable assurance that the pump structure ventilation system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the PSVS license renewal drawings identified above. These drawings show the evaluation boundaries for the portions of the PSVS falling within the scope of license renewal. The staff compared the highlighted portions of these drawings which indicate the components identified as within the scope of license renewal to the components listed in LRA Table 2.3.3-11, which lists those components that are both within the scope of license renewal and subject to an AMR.

The staff also reviewed the above PSVS evaluation boundary drawings to determine if any SSCs within the evaluation boundaries were omitted from the scope of SSCs requiring an AMR under 10 CFR 54.4(a)(1). The staff compared the functions described in the UFSAR with those identified in the LRA. The staff then determined whether the applicant had properly identified the SSCs subject to an AMR from among those identified as falling within the scope of license renewal.

The applicant identified and listed the SSCs subject to an AMR for the PSVS in Table 2.3.3-11 of the LRA, using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff sampled SSCs from Table 2.3.3-11 to verify that the applicant did identify all SSCs subject to an AMR. The staff also sampled SSCs within the scope of license renewal but not subject to an AMR to verify that these SSCs performed their intended functions with moving parts or with a change in configuration or properties, or were subject to replacement based on a qualified life or specified time period.

By letter dated March 12, 2002, the staff requested specific information concerning the exclusion of the certain components from the scope of license renewal and/or an AMR and the applicant responded to the RAIs as discussed below.

In RAI 2.3.3.11-1, the staff stated that LRA Section 2.3.3.11, page 2-76, identified both ESW pumps and HPSW pumps as being ventilated and cooled by the PSVS. Similarly, UFSAR Section 10.14.3.3, page 10.14-2, Rev. 17, 04/2000, describes the ESW/HPSW compartment as housing the HPSW pumps, ESW pumps, fire pumps, and service water screen wash pumps.

The staff further identified that license renewal drawing LR-M-392, sheet 1, Rev. A, at locations C4 and C5, shows four pump structure compartments identified as falling within the scope of license renewal. Two of these compartments are labeled “Emergency, Water Pumps” for Units 2 and 3. Each compartment is shown as containing two intake and two exhaust fans, plus a unit heater. The staff asked the applicant to clarify whether these are the compartments described in the LRA and the UFSAR as housing the HPSW pumps, ESW pumps, fire pumps, and service water screen wash pumps. The other two compartments are identified as “Circulating Water Pumps.” The staff also requested that the applicant identify all of the components contained in these four compartments that fall within the scope of license renewal and confirm whether they are cooled by PSVS.

In a letter dated May 22, 2002, the applicant replied that license renewal drawing LR-M-392, sheet 1, Rev. A, provides a schematic representation of the pump structure for the purposes of identifying the ventilation system flow paths. The compartment identified as “Emergency. Water Pump” on license renewal drawing LR-M-392, sheet 1, is the same compartment as described in UFSAR Section 10.14.3.3. As stated in the LRA and the UFSAR, the PSVS cools this compartment containing all of the subject pumps. As described in LRA Section 2.3.3.11,

each compartment includes two supply fans, two exhaust fans, and one unit heater. The two compartments identified as “Circ. Water Pumps” are within the scope of license renewal for structural considerations, but do not contain any components within the scope of license renewal that require ventilation or cooling. The staff considers the applicant's response to be acceptable.

In RAI 2.3.3.11-2, the staff identified that LRA Table 2.3.3-11 did not list the housings of the unit heaters shown on the license renewal drawing LR-M-392, sheet 1, Rev. A , one at location C3, two at location C4, two at location C5, and one at location C6. Also LRA Table 2.3.3-11 did not list housings of roof exhausters shown on license renewal drawing LR-M-392, sheet 1, Rev. A, 0AV062 at location D6, 0BV062 at location D5, 0CV062 at location D5, 0DV062 at location D3, 0EV062 at location D3, and 0FV062 at location D4. The staff requested justification for their exclusion.

The applicant responded in a letter dated May 22, 2002, that, as indicated on the license renewal drawing LR-M-300, sheet 1, Rev. A, the unit heaters are not identified as falling within the scope of license renewal on license renewal drawing LR-M-392, sheet 1. The intended functions of the PSVS are ventilation and cooling. The system does not have an intended function for room heating, so the unit heaters are not required to support the system intended function. The unit heaters are not in the scope of license renewal and not subject to an AMR.

The roof exhausters are not identified as falling within the scope of license renewal on license renewal drawing LR-M-392, sheet 1, Rev. A. The roof exhausters are associated with the circulating water pump rooms. The circulating water pump rooms do not contain any safety-related pumps. Cooling or ventilation of the circulating water pump rooms is not an intended function of the PSVS. The circulating water pump room roof exhausters are not safety-related and are not required to support any intended functions. The roof exhausters do not fall within the scope of license renewal and are not subject to an AMR. In view of the fact that the subject components do not have a safety-related intended function in the plant’s CLB, the staff considers the applicant's response to be acceptable.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.11.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the pump structure ventilation SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.12 Safety-Grade Instrument Gas System

2.3.3.12.1 Summary of Technical Information in the Application

In Section 2.3.3.12 of the LRA, the applicant described the components of the safety-grade instrument gas (SGIG) system that fall within the scope of license renewal and are subject to an AMR. The Peach Bottom UFSAR Table of Contents does not list the SGIG system, but it is described in the sections discussing the containment atmosphere dilution (CAD) system

(UFSAR Section 5.2.3.9) and the instrument air, service air, and instrument nitrogen systems (UFSAR Section 10.17).

The primary purpose of the SGIG system is to provide a safety-grade, pneumatic (nitrogen) supply to support short-term and long-term operation of safety equipment. The SGIG system supplies pressurized nitrogen gas from the containment atmospheric dilution tank as a backup to normal instrument air. The safety-grade pneumatic supply is isolated from the non-safety-grade portion of the air supply by spring-loaded, soft-seat, check valves designed for zero leakage. Following a LOCA coincident with a loss of instrument air, the SGIG system supplies pressurized nitrogen gas as a backup pneumatic source to the containment atmospheric control system purge and vent isolation valves, the torus-to-secondary-containment vacuum breakers, and the containment atmospheric dilution vent control valves.

Description of Realigned Components:

Piping and valves associated with the instrument nitrogen system supply to main steam relief valves RV-71E, H and J, shown on drawing LR-M-333, sheets 1 and 3, have been realigned into the SGIG system for the purpose of license renewal. These main steam relief valves are credited during certain Appendix R fire scenarios and are within the scope of license renewal. The instrument nitrogen system piping and valves connected to these main steam relief valves were realigned to the SGIG system because they form part of the pressure boundary necessary to support the SGIG system's intended function of providing a safety-related backup nitrogen supply.

Piping and valves associated with the instrument air system supply to air-operated valves in the containment atmospheric control and dilution system have been realigned into the SGIG for the purpose of license renewal. The instrument air system piping and valves described above are shown on drawings LR-M-367 and LR-M-372 and were realigned to the SGIG system because they form part of the pressure boundary necessary to support the SGIG system's intended function of providing a safety-related back-up nitrogen supply.

Intended Functions within the Scope of License Renewal:

In Section 2.3.3.12 of the LRA, the applicant identified the following intended function for the SGIG system, as defined in 10 CFR 54.4:

- Backup nitrogen supply - The safety-grade instrument gas system provides a backup nitrogen supply to safety-related pneumatically operated components.

Using the methodology described in LRA Section 2.1.2, as specified in 10 CFR 54.21(a)(1), the applicant listed the mechanical component groups subject to an AMR and identified their intended functions in Table 2.3.3-12 of the LRA. The applicant identified the following component groups:

- casting and forging (valve bodies)
- piping (pipe)
- piping specialties (flexible hoses)

The intended function for the SGIG system components subject to an AMR is pressure boundary integrity.

2.3.3.12.2 Staff Evaluation

The staff reviewed Section 2.3.3.12 of the LRA and UFSAR Sections 5.2.3.9 and 10.17 to determine whether there is reasonable assurance that the safety-grade instrument gas system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In the Section 2.3.3.12 of the LRA, the applicant listed two license renewal boundary diagrams, LR-M-367 and LR-M-372, for the SGIG system. The boundary diagrams were highlighted to identify those portions of the system that were within the scope of license renewal in accordance with 10 CFR 54.4. The staff compared the boundary diagrams to the system description in the UFSAR to ensure that they were representative of the SGIG system. The staff also sampled portions of the license renewal boundary diagrams that were not highlighted to ensure these components did not perform any of the functions as defined in 10 CFR 54.4.

The applicant identified the components subject to an AMR for the SGIG system and their intended functions in Table 2.3.3-12 of the LRA using the screening methodology described in Section 2.1.3 of the LRA. The staff evaluated the applicant's scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff subsequently performed a review of the implementation of the methodology for the SGIG system by sampling the components identified as falling within the scope of license renewal but not subject to an AMR to verify that these components performed the intended functions with moving parts or with a change in configuration or properties, or are subject to replacement base on a qualified life or specified time period.

After completing its initial review, by letters dated January 23, 2002, and March 12, 2002, the staff requested additional information regarding the SGIG system, and the applicant submitted responses to those RAIs on February 28, 2002, and May 22, 2002, as discussed below.

The staff issued RAI 2.1.2-2 to document discussions with the applicant concerning the realignment of interfacing system components which took place during an audit of the applicant's scoping and screening methodology. The portion of the applicant's response to RAI 2.1.2-2 which concerns the SGIG system is the fourth case of interfacing system component realignment considered, which covers components that are shared between systems that are within the scope of license renewal and systems that are not within scope. In its response, the applicant explains that though it normally considers interfacing components as belonging to the out-of-scope, non-safety-related system, for the purpose of identifying intended functions for license renewal, it is necessary to realign these interfacing components to in-scope systems for which they perform a pressure boundary function.

Based upon the applicant's response to RAI 2.1.2-2, the staff issued RAI 2.2-1.1(b) to request that the applicant identify, in an unambiguous and traceable manner, the interfacing components belonging to non-safety-related, out-of-scope systems which it had realigned into the SGIG system. The applicant responded to RAI 2.2-1.1(b) by stating that the non-safety-related instrument nitrogen and instrument air systems interface with the SGIG system at components where the normal pneumatic supply is from the instrument nitrogen or instrument air system and the safety-related backup pneumatic supply is from the SGIG system. These interfacing components belonging to the instrument air and nitrogen systems are required to support the SGIG system pressure boundary intended function, and the applicant realigned them to the SGIG system for the purpose of license renewal. The applicant's response to RAI 2.2-1.1(b) then identified the specific components that were realigned (which the staff has previously discussed in Section 2.3.3.12.1 of this SER), and indicated that these components had been included in LRA Table 2.3.3-12. The staff's review of Table 2.3.3-12 confirmed that the components realigned to the SGIG system from the out-of-scope instrument air and nitrogen systems were included in the list of SGIG system components subject to an AMR. Based upon its review of the applicant's responses to RAI 2.1.2-2 and RAI 2.2-1.1(b), the staff concludes that the applicant has adequately identified the components belonging to out-of-scope systems which it has realigned into the SGIG system.

Peach Bottom UFSAR Section 10.17.5 (page 10.17-5) states: "The containment atmosphere dilution system purge and vent valves are supplied with separate safety-grade pneumatic supplies to the inflatable seals to maintain their leak-tight condition." Additionally, the Peach Bottom UFSAR states that one of the suppression chamber-to-secondary containment vacuum breaker air-operated valves (one on each unit) is supplied with an inflatable valve seal. However, on drawing LR-M-367 (locations A-7 and E-2), the inflatable valve seals are not shown to be within the scope of license renewal. In RAI 2.3.3.12-1, the staff asked the applicant to clarify whether the valve seals are within the scope of license renewal. In a letter dated May 22, 2002, the applicant stated that the inflatable valve seals are part of the valve internals whose function is to prevent flow through the valve. The applicant further stated that, as such, the inflatable seals do not perform a pressure boundary function for license renewal that is subject to an AMR, in accordance with NUREG-1800, Table 2.1.5, Item 111. Consistent with NUREG-1800, the NRC staff finds the applicant's response to be acceptable because the inflatable seals change configuration and properties to perform their intended function. Therefore, in accordance with 10 CFR 54.21(a)(1)(i), the staff concludes that the inflatable seals are not considered passive components, and are not subject to an AMR.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.12.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the safety-grade instrument gas SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.13 Backup Instrument Nitrogen to ADS

2.3.3.13.1 Summary of Technical Information in the Application

In Section 2.3.3.13 of the LRA, the applicant described the components of the backup instrument nitrogen to the automatic depressurization system (ADS) within the scope of license renewal and subject to an AMR. License renewal drawings, LR-M-333 and LR-M-351, both Rev. A, were also provided for the backup instrument nitrogen to ADS. This system is further described in Sections 4.4 and 10.17 of the Peach Bottom UFSAR.

The backup instrument nitrogen to ADS consists of a split ring header with a seismic Category I bottle rack, three nitrogen bottles located in the reactor building, seismic Category I piping and valves, and an external nitrogen connection located outside the reactor building at ground-level. The split ring header supplies five ADS valves, three from one section of the header, and two from the other section.

The backup instrument nitrogen to ADS provides a safety-related pneumatic supply of nitrogen to the ADS valves in the event that the instrument nitrogen system is unavailable or inoperable. Short-term ADS operation is provided by locally mounted accumulators on each ADS valve which supply sufficient pneumatic pressure for two valve actuations at 70% of drywell design pressure. The backup instrument nitrogen to ADS also supports the ADS in its emergency core cooling and residual heat removal capacity by providing a safety-related pneumatic supply capable of sustaining ADS operation for 100 days post-LOCA.

A long-term, backup, safety-grade pneumatic nitrogen supply has been provided to selected safety relief valves. This pneumatic supply is provided to enable remote operation of the above valves for a period of 72 hours following a design basis fire in fire areas that have been postulated to render the ADS valves available only for short-term operation. The source of the pneumatic nitrogen supply is the safety-grade instrument gas that is tied into the liquid nitrogen tank that supplies the containment atmospheric dilution system.

Description of Realigned Components:

The instrument nitrogen system accumulators associated with the main steam ADS relief valves were realigned from the instrument nitrogen system to the backup instrument nitrogen to ADS. The instrument nitrogen system piping, valves, and flexible hoses that are part of the ADS valve nitrogen accumulator safety-related pressure boundary were realigned from the instrument nitrogen system to the backup instrument nitrogen to ADS. Flow elements of the instrument nitrogen system that are part of the backup instrument nitrogen supply to ADS pressure boundary were realigned from the instrument nitrogen system to the backup instrument nitrogen to ADS.

Intended Functions Within the Scope of License Renewal:

The applicant described its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.2 of the LRA. The applicant stated that since the backup instrument nitrogen to ADS supplies a long-term, backup, safety-grade supply of nitrogen to the five ADS valves during all normal plant operating and accident conditions, it falls

within the scope of license renewal. The intended function for the backup instrument nitrogen to ADS components subject to an AMR is pressure boundary integrity.

Using the methodology described in LRA Section 2.1.2, as specified in 10 CFR 54.21(a)(1), the applicant listed the mechanical component groups subject to an AMR and identified their intended functions in Table 2.3.3-13 of the LRA. The applicant identified the following component groups:

- casting and forging (valve bodies)
- piping (pipe)
- piping specialties (flexible hoses and flow elements)
- vessel (accumulators)

2.3.3.13.2 Staff Evaluation

The staff reviewed Section 2.3.3.13 of the LRA and UFSAR Sections 4.4 and 10.17 to determine whether there is reasonable assurance that the backup instrument nitrogen to ADS components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The applicant highlighted portions of the license renewal drawings, LR-M-333 and LR-M-351, to identify those components that it considered to be within the scope of license renewal. The staff compared the boundary diagrams to the system description in the UFSAR to ensure that they were representative of the backup instrument nitrogen to ADS. The staff also sampled portions of the boundary diagrams that were not highlighted to ensure these components did not perform any of the functions defined in 10 CFR 54.4.

The applicant identified the components subject to an AMR and their intended functions for the backup instrument nitrogen to ADS in Table 2.3.3-13 of the LRA using the screening methodology described in Section 2.1.3 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff subsequently performed a review of the implementation of the methodology for the backup instrument nitrogen to ADS by sampling the components identified as falling within the scope of license renewal but not subject to an AMR to verify that these components performed the intended functions with moving parts or with a change in configuration or properties, or are subject to replacement base on a qualified life or specified time period.

After completing its initial review, by letters dated January 23, 2002, and March 12, 2002, the staff requested additional information regarding the backup instrument nitrogen to ADS, and the applicant submitted responses to those RAIs on February 28, 2002, and May 22, 2002, as discussed below.

The staff issued RAI 2.1.2-2 to document discussions with the applicant concerning the realignment of interfacing system components which took place during an audit of the applicant's scoping and screening methodology. The portion of the applicant's response to RAI 2.1.2-2 which concerns the backup instrument nitrogen to ADS is the fourth case of interfacing system component realignment considered, which covers components that are shared between systems that are within the scope of license renewal and systems that are not within scope. The applicant's response explains that, though it normally considers interfacing components as belonging to the out-of-scope non-safety-related system, for the purpose of identifying intended functions for license renewal, it is necessary to realign these interfacing components to in-scope systems for which they perform a pressure boundary function.

Based upon the applicant's response to RAI 2.1.2-2, the staff issued RAI 2.2-1.1(a) to request that the applicant provide a traceable method for identifying the interfacing components belonging to non-safety-related out-of-scope systems which the applicant had realigned into systems considered within the scope of license renewal. In response to RAI 2.2-1.1(a), the applicant stated that interfacing components belonging to the instrument nitrogen system performed an intended pressure boundary function for the backup instrument nitrogen to ADS. The applicant then identified the specific components that were realigned (which the staff has previously discussed in Section 2.3.3.13.1 of this SER), and indicated that these components had been included in LRA Table 2.3.3-13. The staff's review of Table 2.3.3-13 confirmed that the components realigned to the backup instrument nitrogen to ADS from the out-of-scope instrument nitrogen system were included in the list of backup instrument nitrogen to ADS components subject to an AMR. Based upon its review of the applicant's responses to RAI 2.1.2-2 and RAI 2.2-1.1(a), the staff found that there is reasonable assurance that the applicant has adequately identified the components belonging to out-of-scope systems which it has realigned to the boundary of the backup instrument nitrogen to ADS.

On license renewal boundary drawing LR-M-333, sheets 1 and 2, piping components such as weld caps (location A3), reducers, and increasers (various locations) were shown to be within the scope of license renewal. However, these piping components were not specifically listed in Table 2.3.3-13 as requiring an AMR. In RAI 2.3.3.13-1, the staff asked the applicant to clarify whether these components are included within the "pipe" component group. In a letter dated May 22, 2002, the applicant confirmed that these components are pipe fittings and are included in the "pipe" component group listed in LRA Table 2.3.3-13. The staff finds the applicant's response to be acceptable because it indicates that these piping components will be subject to an AMR in accordance with 10 CFR 54.21(a)(1).

Section 2.3.3.13 of the LRA states that the backup nitrogen supply to ADS consists of a split ring header with a seismic Category 1 bottle rack. The bottle rack is not mentioned in Sections 4.4 and 10.17 of the Peach Bottom UFSAR, nor is it shown on drawings LR-M-333 and LR-M-351. Additionally, the bottle rack is not listed in Table 2.3.3-13 as requiring an AMR. In RAI 2.3.3.13-2, the staff questioned whether the bottle rack is subject to an AMR. In a letter dated May 22, 2002, the applicant stated the subject bottle racks are included in the component support group as discussed in Section 2.4.13 of the LRA. The staff reviewed Section 2.4.13 of the LRA, confirming that bottle racks are included in the support member component group, and that this component group is included in Table 2.4-13 as being subject to an AMR. Therefore, in accordance with 10 CFR 54.21(a)(1), the staff finds the applicant's response to be acceptable.

Section 4.4 of the Peach Bottom UFSAR states: "Containment isolation is provided for safety-grade pneumatic supply lines into containment by use of check valves and other automatic valves outside containment." However, in Table 2.3.3-13 of the LRA, containment isolation is not listed as an intended component function. In RAI 2.3.3.13-3, the staff asked the applicant to clarify whether this function should be included in the table. In a letter dated May 22, 2002, the applicant clarified that, as described in Table 2.1-1, the intended pressure boundary function for mechanical components includes providing containment isolation for fission product retention. The staff agrees that the component-level pressure boundary function provides for and includes containment isolation and fission product retention. Therefore, the staff concludes that there is reasonable assurance that the applicant has adequately identified the intended functions of the components in Table 2.3.3-13, and finds the applicant's response to be acceptable.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.13.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the backup instrument nitrogen to ADS SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.14 Emergency Cooling Water System

2.3.3.14.1 Summary of Technical Information in the Application

In Section 2.3.3.14 of the LRA, the applicant identifies the emergency cooling water (ECW) system component groups falling within the scope of license renewal and subject to an AMR. This system is further described in Section 10.24 of the Peach Bottom UFSAR.

The ECW system (in conjunction with the ESW and HPSW systems) is designed to remove the sensible and decay heat from the reactor primary and auxiliary systems so that the reactor can be shut down in the event of the unavailability of the normal heat sink, Conowingo Pond. The ECW system consists of one ECW pump, two ESW booster pumps, three emergency cooling tower fans in an induced-draft three-cell cooling tower with an integral storage reservoir, and associated discharge and distribution piping. When the normal heat sink is lost, or when flooding occurs, sluice gates in the circulating water pump structure are closed. Water is provided through two gravity-fed lines from the emergency cooling tower basin into the circulating water pump structure. The ECW pump, in conjunction with the ESW booster pump and HPSW pumps, supplies cooling water to heat exchangers required to bring Units 2 and 3 to safe shutdown. Return water from the ESW system flows through one of the two ESW booster pumps and is pumped into the emergency cooling tower.

Section 2.3.3.14 of the LRA identifies the following intended functions for the ECW system that relate to 10 CFR 54.4(a):

- Component cooling - The ECW system (including the emergency cooling tower) provides cooling water flow to transfer heat from the ESW and HPSW systems during the mitigation of a flood or loss of the normal heat sink, Conowingo Pond.

- Back-up cooling - The ECW system is available to provide a reliable back-up source of cooling water to the ESW system during normal plant operation in the unlikely event of failure of the ESW pumps.

Using the methodology described in LRA Section 2.1.2, the applicant compiled a list of the mechanical component groups subject to an AMR and identified their intended functions in Table 2.3.3-14 of the LRA. Table 2.3.3-14 identifies the following component groups and component types as falling within the scope of license renewal and subject to an AMR:

- casting and forging (valve bodies, pump casings)
- piping (pipe, tubing)
- piping specialties (flow elements)

All ECW components identified above have a pressure boundary intended function.

2.3.3.14.2 Staff Evaluation

The staff reviewed Section 2.3.3.14 of the LRA and UFSAR Section 10.24 to determine whether there is reasonable assurance that the emergency cooling water system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed those portions of the ECW system that were not identified as being within the scope of license renewal to verify that they do not meet the scoping requirements of 10 CFR 54.4. The staff also reviewed the UFSAR to determine if there were any additional system functions that were not identified in the LRA, and verified that those additional functions did not meet the scoping requirements of 10 CFR 54.4.

The staff then determined whether the applicant had properly identified the SSCs that are subject to an AMR from among those portions of the ECW system that are identified as being within scope of license renewal. The applicant identifies and lists the SSCs subject to AMR for the ECW system in Table 2.3.3-14 of the LRA using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff performed its review by sampling the SSCs that the applicant determined to be within the scope of license renewal but not subject to AMR to verify that these SSCs performed its intended function with moving parts or with a change in configuration or properties or were subject to replacement base on a qualified life or specified time period.

The applicant identified the portions of the ECW system that are within-scope of license renewal in the drawings referenced in the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that are within the scope of license renewal. The applicant highlighted those components which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and the descriptions in the UFSAR to ensure they were representative of the ECW system. The staff sampled portions of the flow diagram that were not highlighted to verify that these components did not meet any the scoping criteria in 10 CFR 54.4.

By letter dated March 12, 2002, the staff requested the below additional information regarding the ECW system. The applicant responded in a letter dated May 22, 2002, as described below.

In RAI 2.3.3.14-1, the staff asked about the fittings, strainers, flanges, increasers, and reducers that were shown as falling within the scope of license renewal on drawing LR-M-330, sheet 1, but were not listed in Table 2.3.3-14 of the LRA. The applicant responded that the reducers, increasers, fittings, and flanges are part of the piping component group, which includes piping, tubing, and fittings included in LRA Table 2.3.3-14. The applicant also stated that the strainer was a temporary startup strainer that is no longer installed. Based on the above, the staff found the applicant's response to RAI 2.3.3.14-1 acceptable.

In RAI 2.3.3.14-2, the staff requested that the applicant clarify the status of the discharge pond, which is shown as falling within the scope of license renewal on drawing LR-M-330, sheet 1, at location A7-A8. However, the discharge pond is not shown as falling within the scope of license renewal on site plan LR-S-001 or in LRA Table 2.2-2. The applicant responded that the discharge pond does not perform any license renewal intended functions. The boundary drawing will be revised to remove the highlighting from drawing LR-M-330, sheet 1. The structural site plan is the correct drawing to use for the discharge pond and it indicates that the discharge pond is not within the scope of license renewal. The staff agrees with the applicant that the ECW system provides a safety-related ultimate heat sink intended function that does not require operability of the discharge pond. Therefore the staff finds the applicant's response concerning the status of the discharge pond to be acceptable.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.14.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the emergency cooling water SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.15 Condensate Storage System

2.3.3.15.1 Summary of Technical Information in the Application

In Section 2.3.3.15 of the LRA, the applicant identifies the condensate storage system component groups falling within the scope of license renewal and subject to an AMR. This system is further described in Sections 4.7 and 6.4 of the Peach Bottom UFSAR.

The applicant classified the condensate storage system as non-safety-related. It is included within the scope of license renewal for its 10 CFR 54.4(a)(2) support role as the water supply for the HPCI and RCIC systems during fire safe shutdown and station blackout scenarios. During normal operation, the condensate storage system provides plant system makeup needs, receives reject flow, and provides condensate for any continuous service needs. It is also the preferred water supply for the HPCI system and the RCIC system; however, in the event that the condensate storage tank is unavailable, these systems automatically switch to the torus, which is the safety-grade water source for these systems. The condensate storage system consists of two 200,000-gallon-capacity carbon steel condensate storage tanks, (one for each unit) two condensate transfer pumps, a condensate transfer system keep-full pump, and associated piping and valves necessary to complete required system functions. The condensate storage system is common to Peach Bottom Units 2 and 3.

In Section 2.3.3.15 of the LRA, the applicant identifies the following intended function for the condensate storage system that relates to 10 CFR 54.4(a):

- Water storage and supply - The condensate storage system supports HPCI and RCIC systems during fire safe shutdown and station blackout events by providing a water supply and a means for its storage.

Using the methodology described in LRA Section 2.1.2, the applicant compiled a list of the mechanical component groups subject to an AMR and identified their intended functions in Table 2.3.3-15 of the LRA. Table 2.3.3-15 identifies the following component groups and component types as falling within the scope of license renewal and subject to an AMR:

- casting and forging (valve bodies)
- piping (pipe, tubing)
- vessels (condensate storage tanks, tank nozzles)

All of the condensate storage system components identified above have a pressure boundary intended function.

2.3.3.15.2 Staff Evaluation

The staff reviewed Section 2.3.3.15 of the LRA and UFSAR Sections 4.7 and 6.4 to determine whether there is reasonable assurance that the condensate storage system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.3.15 of the LRA and the Peach Bottom UFSAR to determine if the applicant adequately identified the SSCs of the condensate storage system that are in the scope of license renewal. The staff verified that those portions of the condensate storage system that meet the scoping requirements of 10

CFR 54.4 are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.3.15 of the LRA. The staff then focused its review on those portions of the condensate storage system that were not identified as being within the scope of license renewal to verify that they do not meet the scoping requirements of 10 CFR 54.4. The staff also reviewed the UFSAR to determine if there were any additional system functions that were not identified in the LRA, and verified that those additional functions did not meet the scoping requirements of 10 CFR 54.4.

The staff then determined whether the applicant had properly identified the SSCs that are subject to an AMR from among those portions of the condensate storage system that are identified as being within-scope of license renewal. The applicant identifies and lists the SSCs subject to AMR for the condensate storage system in Table 2.3.3-15 of the LRA using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff performed its review by sampling the SSCs that the applicant determined to be within the scope of license renewal but not subject to AMR to verify that these SSCs performed its intended function with moving parts or with a change in configuration or properties or were subject to replacement base on a qualified life or specified time period.

The applicant identified the portions of the condensate storage system that are within-scope of license renewal in the drawings referenced in the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that are within the scope of license renewal. The applicant highlighted those components which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and the descriptions in the UFSAR to ensure they were representative of the condensate storage system. The staff sampled portions of the flow diagram that were not highlighted to verify that these components did not meet any of the scoping criteria in 10 CFR 54.4.

By letter dated March 12, 2002, the staff requested additional information regarding the condensate storage system. The applicant responded to the RAIs in a letter dated May 22, 2002, as discussed below.

RAI 2.3.3.15-1 concerned the safety-related function of the condensate storage system to provide a backup source of water to the control rod drive system. As stated in UFSAR Section 3.4.5, “In the event that the flow from the condensate system is interrupted at any time, the condensate storage tank provides a backup source to ensure CRDS operability without operator action being required.” The applicant was asked to provide the basis for the exclusion of this intended function from Section 2.3.3.15 of the LRA.

In RAI 2.3.3.15-2, the staff requested that the applicant provide the basis for considering the pipes that connect to the condensate storage tank at a low elevation on P&ID drawing LR-M-309 and the freeze protection piping (from the auxiliary heating/steam supply system) as not falling with the scope of license renewal. This RAI was a follow-up to RAI 2.3.3.15-1 contending that the condensate storage system performs a safety-related function.

In response to both RAIs, the applicant stated that the function of the condensate storage tank to provide a backup source to the control rod drive system is a function that supports normal control rod drive system operation and is not a safety-related function. Only the control rod

scram function and the alternate rod insertion functions are safety-related intended functions of the control rod drive system in the Peach Bottom CLB. Neither of these intended functions requires operability of the control rod drive system water pumps, and therefore neither requires a suction source for the pumps. The scram accumulator stores sufficient energy to fully insert a control rod independent of any other source of energy. The accumulator consists of a water volume pressurized by nitrogen. The accumulator has a piston separating the water on top from the nitrogen below. A check valve in the charging line to each accumulator prevents the loss of water in the event supply pressure is lost. The scram accumulator provides the required energy to rapidly insert the control rod for both the control rod scram intended function and the alternate rod insertion intended function. The control rod drive system water pumps are not required to perform these safety-related intended functions. Therefore, the condensate storage system does not have a safety-related CLB intended function.

The staff reviewed the applicant's response concerning the intended function of the condensate storage tank. The staff agrees with the applicant that its function as a backup water source to the control rod drive system is not relied on to shut down the reactor and maintain it in a safe shutdown condition. As a result, this function does not meet the requirements of 10 CFR 54.21(a)(1). Therefore, the staff finds the applicant's responses to RAIs 2.3.3.15-1 and 2.3.3.15-2 to be acceptable.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.15.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the condensate storage SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.16 Emergency Diesel Generator (EDG)

2.3.3.16.1 Summary of Technical Information in the Application

In the LRA, the applicant describes the components of the emergency diesel generators (EDGs) for the Peach Bottom Atomic Power Station, Units 2 and 3, that are within the scope of license renewal and subject to an aging management review (AMR). The EDGs are further described in Section 8.5 of the Peach Bottom UFSAR. The staff reviewed the EDGs to determine whether there is reasonable assurance that the applicant has identified and listed the mechanical components within the scope of license renewal and subject to an AMR in accordance with the requirements stated in 10 CFR 54.21(a)(1).

The applicant described its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.2 of the LRA. The applicant lists, in Table 2.2-1, the mechanical systems within the scope of license renewal that satisfy the criteria in 10 CFR Part 54.4. The EDGs, as a system, were included within the scope of license renewal since the following intended functions meet the criteria in 10 CFR Part 54.4:

- Provide emergency AC power - The EDG sets provide Class 1E electrical power to the emergency buses in a loss of offsite power (LOOP) or a LOCA coincident with a LOOP.

- Support offsite power transfer - The EDG sets are used to support the transfer of power from one offsite safeguard source to another by providing a parallel source of AC power to the emergency buses during the transfer operation.

The applicant also lists mechanical systems not within the scope of license renewal in Table 2.2-1. Based on the scoping methodology, the applicant, in Section 2.3.3.16 and Table 2.3.3-16 of the LRA, describes the EDGs and EDG components that are within the scope of license renewal and subject to an AMR.

Four EDGs supply independent standby AC power to Peach Bottom Units 2 and 3. Each EDG set consists of a diesel engine, a generator, and auxiliary systems (starting air, fuel oil, jacket cooling, air coolant, and lubricating oil). Each EDG is connected to one 4kV Class 1E emergency bus per unit. The EDGs are connected to the 4kV emergency buses upon a loss of offsite power after generator voltage and frequency are established. The 4kV emergency switchgear bus distributes AC power to engineered safeguard and selected nonsafeguard systems. Power provided to engineered safeguard loads is divided into four safeguard channels, “A” through “D,” for each unit so that the failure of one diesel generator or one 4kV emergency bus will not prevent a safe shutdown of either unit.

The applicant identified EDG mechanical components that require an AMR in Table 2.3.3-16 in the LRA. This table lists the types of component groups, including their component types, with their passive function and environment identified. The applicant identified the following 6 component groups and 23 component types as subject to an AMR:

- casting and forging (valve bodies, pump casings, strainer bodies, strainer screens)
- elastomer (flexible hoses)
- heat exchanger (jacket coolant coolers, air coolant coolers, lube oil coolers),
- piping (pipe, tubing, fittings)
- piping specialties (thermowells, thermowell caps, thermocouple caps, expansion joints, restricting orifices, drain taps)
- vessel (fuel oil storage tank, fuel oil day tanks, expansion tanks, lube oil tanks, air receivers, silencers)

All of the EDG components identified above, except for the strainer screens, have a pressure boundary intended function. Strainer screens have a filter intended function. The jacket coolant coolers, air coolant coolers, and lube oil coolers also have a heat transfer intended function.

2.3.3.16.2 Staff Evaluation

The staff reviewed Section 2.3.3.16 of the LRA and Section 8.5 of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the emergency diesel generator system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the mechanical components in Table 2.3.3-16 for PBAPS Units 2 and 3 to determine whether any other components associated with the EDG meet the scoping criteria of 10 CFR 54.4(a), but were not included within the scope of license renewal. The staff then reviewed portions of the UFSAR descriptions to ensure that all mechanical components of the EDG had been adequately identified and that they were passive, long-lived and performed their intended functions without moving parts or with a change in configuration or change in properties and were not subject to replacement based on a qualified life or specified time period. In Section 2.3.3.16 of the LRA, the applicant listed one license renewal drawing, LR-M-377, Rev. A, for the EDG, which the staff reviewed. The license renewal drawing was highlighted to identify those portions of the system included within the scope of license renewal. The applicant highlighted those components that perform an intended function meeting the requirements 10 CFR 54.21(a)(1). The staff then compared the boundary diagram to the system description in the UFSAR to ensure that the diagram was representative of the EDG. The staff also sampled portions of the license renewal drawings that were not highlighted to ensure these components did not perform any intended functions that meet the criteria of 10 CFR 54.4(a).

The staff identified several EDG components on license renewal boundary drawing LR-M-377 that were within the scope of license renewal but not subject to an AMR. The staff believes that components such as the EDG lube oil standby heater casing and spare weld caps perform an intended function, as described in §54.4, without moving parts or without a change in configuration or properties, and should be subject to an AMR.

In a letter to the applicant dated March 12, 2002, the staff requested additional information relating to the EDG components shown on engineering drawing LR-M-377 as being within the scope of license renewal but not subject to an AMR. The applicant responded to the staff's question in a letter to the NRC dated May 22, 2002. As a result, the applicant provided its supplement to Table 2.3.3-16, adding the casings of the lube oil standby heater and jacket coolant standby water heater as being subject to an AMR. The casings that are being added under the EDGs in Table 2.3.3-16 perform an intended function of pressure boundary. The staff found the addition of the casings to be acceptable because they perform their intended functions without moving parts or without a change in configuration or change in properties, meeting the requirements in 10 CFR 54.21(a)(1). The applicant also clarified that the spare weld caps in question are considered pipe fittings and, as such, are included in the piping component group in Table 2.3.3-16.

The applicant, in the RAI response, stated that components such as the turbo charger, filter housing, scavenging air blower, and crank case are part of the diesel generator which performs an active function such, they are not subject to an AMR. The staff reevaluated the boundaries for the diesel generator identified on drawing LR-M-377 to ensure the components of concern were in fact part of the diesel. The staff found the applicant's exclusion of these components from an AMR acceptable, as the components in question are included within the boundary of

the complex assembly and complex assemblies are not subject to an AMR in accordance with NUREG-1800.

The NRC staff reviewed the LRA, supporting information in the UFSAR, and the applicant's response to the staff's RAI. In addition, the staff sampled several components from Table 2.3.3-16 and LR-M-377 to determine whether the applicant properly identified the components that are within the scope of license renewal and subject to an AMR. On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.16.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the emergency diesel generators SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.17 Suppression Pool Temperature Monitoring System

2.3.3.17.1 Summary of Technical Information in the Application

In Section 2.3.3.17 of the LRA, the applicant identifies the components of the suppression pool temperature monitoring system (SPOTMOS) falling within the scope of license renewal and subject to an AMR. This system is further described in Section 7.20.4.7 of the Peach Bottom UFSAR.

The SPOTMOS provides indication of the individual and average bulk torus water temperature in the control room, the remote shutdown panel, and the HPCI alternative control station to ensure torus water is maintained within specified temperature limits. The SPOTMOS has two independent divisionalized monitoring systems, consisting of temperature sensors and a processing unit to display temperatures. For each division, only one of the dual elements for each sensor is permanently connected. The remaining elements are provided as installed spares. The SPOTMOS is normally energized and is supplied from independent divisions of Class 1E power sources.

In Section 2.3.3.17 of the LRA, the applicant identifies the following intended function for the SPOTMOS that relates to 10 CFR 54.4(a):

- Torus water temperature monitoring - The suppression pool temperature monitoring system provides indication of the individual and average bulk torus water temperature in the control room to ensure torus water is maintained within specified temperature limits.

Using the methodology described in LRA Section 2.1.2, the applicant compiled a list of the mechanical component groups subject to an AMR and identified their intended functions in Table 2.3.3-17 of the LRA. Table 2.3.3-17 identifies the following component group and component type as falling within the scope of license renewal and subject to an AMR:

- penetration sleeves (thermowells)

The SPOTMOS component identified above has a pressure boundary and fission product barrier intended function.

2.3.3.17.2 Staff Evaluation

The staff reviewed Section 2.3.3.17 of the LRA and UFSAR Section 7.20.4.7 to determine whether there is reasonable assurance that the suppression pool temperature monitoring system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.3.17 of the LRA and the Peach Bottom UFSAR to determine if the applicant adequately identified the SSCs of the SPOTMOS that are in the scope of license renewal. The staff verified that those portions of the SPOTMOS that meet the scoping requirements of 10 CFR 54.4 are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.3.17 of the LRA. The staff then focused its review on those portions of the SPOTMOS that were not identified as being within the scope of license renewal to verify that they do not meet the scoping requirements of 10 CFR 54.4. The staff also reviewed the UFSAR to determine if there were any additional system functions that were not identified in the LRA, and verified that those additional functions did not meet the scoping requirements of 10 CFR 54.4.

The staff then determined whether the applicant had properly identified the SSCs that are subject to an AMR from among those portions of the SPOTMOS that are identified as being within-scope of license renewal. The applicant identifies and lists the SSCs subject to AMR for the SPOTMOS in Table 2.3.3-17 of the LRA using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff performed its review by sampling the SSCs that the applicant determined to be within the scope of license renewal but not subject to AMR to verify that these SSCs performed its intended function with moving parts or with a change in configuration or properties or were subject to replacement based on a qualified life or specified time period.

The applicant identified the portions of the SPOTMOS that are within-scope of license renewal in the drawings referenced in the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that are within the scope of license renewal. The applicant highlighted those components which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and the descriptions in the UFSAR to ensure the diagrams were representative of the SPOTMOS. The staff sampled portions of the flow diagram that were not highlighted to verify that these components did not meet any the scoping criteria in 10 CFR 54.4.

By letter dated March 12, 2002, the staff requested additional information by asking the applicant to provide a correct drawing reference that identifies the components of this system.

In a response dated May 22, 2002, the applicant stated that LR-M-361 was the correct license renewal reference drawing for the SPOTMOS. The majority of the components in this system are active and are not subject to an AMR. As indicated in LRA Table 2.3.3-17, the only components subject to an AMR are the penetration sleeves (or thermowells) in the torus shell. The SPOTMOS thermowells are associated with temperature elements 2-71A1, B1, C1, D1, E1, F1, G1, H1, J1, K1, L1, M1, and N1 and 2-71A2, B2, C2, D2, E2, F2, G2, H2, J2, K2, L2, M2, and N2 are shown on drawings LR-M-361, sheet 1, zone C-3; sheet 2, zone D-7; sheet 3, zone C-3; and sheet 4, zone D-7. However, these temperature elements were inadvertently shown as out-of-scope on the referenced license renewal boundary drawing. The applicant further stated that these temperature elements will be identified as in-scope on the license renewal boundary drawings for identification of the associated thermowells that are subject to an AMR. The suppression pool temperature monitoring system will be added to the list of included license renewal systems in drawing Note 1, with a system flag of ST.

The staff agrees that the applicant's response properly identifies the SPOTMOS components that are passive and long-lived, and that the proposed corrective actions address, in part, the records retention requirements of 10 CFR 54.37. Based on the above, the staff finds the applicant's response to RAI 2.3.3.17 to be acceptable.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.17.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the suppression pool temperature monitoring SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.18 Cranes and Hoists

2.3.3.18.1 Summary of Technical Information in the Application

In Section 2.3.3.18, "Cranes and Hoists," of the LRA, the applicant describes the structural components of the cranes and hoists system that are within the scope of license renewal and subject to an AMR. Cranes and hoists are further described in Section 10.3, 10.4, 12.2, 14.4, and Appendix C, of the Peach Bottom UFSAR. The staff reviewed the cranes and hoists to determine whether there is reasonable assurance that the applicant has identified and listed structures and components subject to AMR in accordance with the requirements stated in 10 CFR 54.21(a)(1).

In Section 2.1 of the LRA, the applicant described its process for identifying the structural/civil components within the scope of license renewal and subject to an AMR. Based on its methodology, the applicant, in Table 2.2-1, identifies the cranes and hoists within the scope of license renewal and describes the results of its scoping methodology in Section 2.3.3.18 in the LRA.

As stated in the Peach Bottom UFSAR Section 10.4.10, “Reactor Building Crane,” the reactor building cranes are designed such that no credible postulated failure of any crane component will result in the dropping of the fuel cask, there by, mitigating the consequences of a cask drop accident. In addition, the applicant describes its heavy load compliance program in UFSAR Section 10.4.11. The applicant’s program incorporates a defense-in-depth philosophy to manage the handling of heavy loads on site such that no credible load drop will endanger the public safety and health. The applicant has excluded cranes and hoists from the scope of license renewal that do not have the potential to impact irradiated fuel, the reactor vessel, or safe shutdown equipment. In addition, Appendix C, “Structural Design Criteria,” identifies seismic Class I structures and equipment as those whose failure could increase the severity of the design basis accident and cause release of radioactivity in excess of 10 CFR Part 100 limits, and those essential for safe shutdown and removal of decay heat following a loss-of-coolant accident (LOCA). The reactor building and circulating water pump structure cranes are identified in Appendix C as seismic Class I equipment. The applicant’s scoping methodology captures cranes and hoists within the scope of license renewal that meet the intent of 10 CFR 54.4(a) because they perform the following system-level intended functions:

- Prevent fuel cask drop accident - The reactor building crane is designed to lift and transport a spent fuel cask so that no credible postulated failure of any crane component will result in the dropping of the cask.

- Heavy loads - The reactor building cranes support single-failure-proof criteria for lifting heavy loads over fuel in the reactor pressure vessel or over the spent fuel pool.

- Structural integrity - Cranes and hoists are required to maintain their structural integrity while they travel above or in proximity of safety-related SSCs.

On the basis of the above-described methodology, the applicant identified both the SSCs and the component groups that are part of the load handling cranes and hoists. Table 2.3.3-18 lists the following component groups and structural components that are subject to an AMR:

- circulating water pump structure crane, 35-ton gantry (structural members, rails, rail clips, and rail bolts)
- reactor building overhead bridge cranes (rails, rail clips, and rail bolts)
- other cranes and hoists (rails, monorail flanges, rail clips, and rail bolts)

SSCs of the component groups listed in Table 2.3.3-18 perform the intended functions of structural support, and structural support to non-safety-related components. As stated by the applicant, cranes and hoists within the proximity of safety-related SSCs are within the scope of license renewal. Load handling cranes and hoists in proximity of SSCs are designed and analyzed to perform tasks so as not to prevent safety-related SSCs from performing their intended functions. As a result, SSCs of cranes and hoists within the scope of license renewal perform their intended functions without moving parts or without change in configuration or properties, and are not subject to periodic replacement based on a qualified life or specified time limit.

2.3.3.18.2 Staff Evaluation

The staff reviewed Section 2.3.3.18 in the LRA and Peach Bottom UFSAR Sections 10.3, 10.4, 12.2, and 14.4, and UFSAR Appendix C to determine whether there is reasonable assurance that the cranes and hoists system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the structural component groups in Table 2.3.3-18 (i.e., structural members, rails, rail clips, monorail flanges, and rail bolts) to determine whether any other crane and hoist components meet the scoping criteria of 10 CFR Part 54.4(a), were not included within the scope of license renewal. The staff also examined the component groupings listed in Table 2.3.3-18 in the LRA to determine whether they are the only groups subject to an AMR in accordance with 10 CFR 54.21(a)(1).

In a letter dated March 12, 2002, the staff requested additional information from the applicant concerning the crane and hoist SSCs were subject to an AMR that are listed on Table 2.3.3-18 of the LRA. In RAI 2.3.3.18-1, the staff stated that the term “other cranes and hoists” was very general and not amenable to a review. Further, asked the applicant to provide a list of all cranes and hoists that are within the scope of license renewal and identify those subject to an AMR.

In a letter dated May 22, 2002, in response to RAI 2.3.3.18-1, the applicant identified the following list of cranes and hoists within the scope of license renewal pursuant to 10 CFR Part 54.4(a), and subject to an AMR:

- reactor building overhead bridge cranes
- turbine hall cranes
- emergency diesel generator bridge cranes
- circulating water pump structure crane, 35-ton gantry
- emergency cooling tower hoist
- service pole caddy platform overhead hoist
- equipment access airlock monorail and hoists
- southwest torus hatch hoist
- leveling tray hoists
- personnel airlock hoists
- precoat material handling hoist (Unit 2)
- fuel channel handling hoists
- CRD cask hoists
- CRD jib cranes
- recirculation pump motor hoists
- recirculation pump motor-generator-set hoists
- main steam line relief valve removal hoists

- turbine building west side vertical restraint rigging hoist
- turbine building east side vertical restraint rigging hoist
- 1-ton crane over storage area

The staff reviewed the list of cranes and hoists provided by the applicant and determined that they are within the scope of license renewal because they are included within the applicant's heavy load program and/or meet the seismic Class I equipment criteria of Appendix C of the UFSAR. As such, SSCs of the listed cranes and hoists perform the intended functions of providing structural support, and structural support to non-safety-related components within the scope of the rule. On the basis of this review, the staff found the applicant's response to the RAI acceptable.

In RAI 2.3.3.18-2, the staff asked the applicant to identify whether the following components are subject to an AMR:

- columns
- baseplates and anchors for attachment to structures
- structural crane components such as bridge girders, columns, trolley rails, baseplates, and anchors for attachment to structures

The staff also asked the applicant to provide the relevant information about the components to complete LRA Table 2.3.3-18. If a component is not subject to an AMR, the applicant was asked to provide a justification for its exclusion.

In response to RAI 2.3.3.18-2, the applicant stated that the components identified by the staff are within the scope of license renewal and subject to an AMR. However, not all of the components are part of the cranes and hoists and thus not all are not listed in Table 2.3.3-18 of the LRA. Structural crane components such as bridge girders, trolley, trolley rails, crane rails, clips, and bolts are included in the component group listed in Table 2.3.3-18. Crane girders, columns, beams, base plates, and anchors are a part of the building structural steel and included in the structural steel component group listed in LRA Table 3.5-1, 3.5-2, 3.5-4, 3.5-5, 3.5-10, or 3.5-11. The applicant identified that the content of Table 2.3.3-18 is consistent with NUREG-1801, Section VII B, and the table on page VII B-3.

The staff reviewed LRA Tables 3.5-1, 3.5-2, 3.5-4, 3.5-5, 3.5-10, and 3.5-11. In addition, the staff reviewed the Generic Aging Lessons Learned (GALL) Report, Section VII, Table VII B-3, to verify if the SSCs listed by the applicant in Table 2.3.3-18 as within scope are consistent with the GALL Report. On the basis of this review, the staff determined that the SSCs and their AMR results were included in the component groups in the tables identified by the applicant. However, the staff could not determine from the applicant's response how the SSCs in RAI 2.3.3.18-2 were captured within the scope of license renewal. 10 CFR 54.21 requires an applicant to identify and list those structures and components subject to an aging management review. The Section 3.0 tables only provide structural steel as a SC requiring an AMR. Therefore, the staff needs to understand how the structural steel component group is linked to Section 2.3.3.18 and how the scoping and screening results of Section 2 supports the applicant's position that components such as crane girders, columns, beams, base plates, and anchors are part of the building structural steel and subject to an AMR. Therefore, this issue was characterized as SER Open Item 2.3.3.18.2-1.

The staff and the applicant held a telephone conference on October 15, 2002, to discuss various SER open items which included the scoping and screening of cranes and hoists. During the conference, the applicant stated that the supporting structures of the cranes and hoist were included within the structural steel component group of Tables 2.4-1, 2.4-2, 2.4-4, 2.4-10, and 2.4-11. A review of the application during the conference provided inadequate justification for considering crane girders, columns, beams, base plates, and anchors as part of the structural steel component groups of the various Section 2.0 tables. To facilitate the staff review and to draw a link between Table 2.3.3-18 and the SCs of concern, the applicant agreed to revise Table 2.3.3-18 to list those components subject to an AMR in accordance with 10 CFR 54.21 and revise the above Section 2.0 tables to have the structural steel component group include the crane supporting SCs subject to an AMR. The applicant provided this response to the staff in a letter dated November 26, 2002. Therefore, SER Open Item 2.3.3.18-1 is closed because the applicant's written response provides the link to Section 2.3.3.18 that shows the SCs of concern captured within the structural steel component group and is subject to an AMR.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.18.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the crane and hoist SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.3.19 Non-Safety-Related Systems Affecting Safety-Related Systems

As described in SER Section 2.1, the applicant's scoping and screening methodology considered seismic Class II structural components, supports, foundations, and anchorages, but did not originally consider potential non-safety-related/safety-related interactions for seismic Class II piping and components. In a letter dated January 23, 2002, the staff requested the applicant to 1) consider non-safety-related piping systems which are not connected to safety-related piping, but have a spatial relationship such that their failure could adversely impact on the performance of an intended safety function. Furthermore, 2) given the methodology used to identify piping systems that meet the 10 CFR Part 54.4(a)(2) scoping criterion, there may be other non-safety-related system, structures, and components (SSCs) which should be included within the scope of license renewal. Therefore the staff asked the applicant to describe how the applicant will prevent an age-related non-safety-related system, structure, and component (SSC) failure from affecting safety-related SSCs where the potential for spatial interaction exists.

2.3.3.19.1 Summary of Technical Information in the Application

In a letter dated May 21, 2002, in a response to RAIs 2.1.2-3, 2.1.2-4, and 3.3-1, the applicant stated that components of selected non-safety-related systems have the potential for a spatial interaction with safety-related SSCs that could adversely impact the performance of an intended safety function. These non-safety-related systems, which were previously excluded from the scope of license renewal were recategorized as falling within the scope of license renewal and subject to an AMR in accordance with the scoping criterion of 10 CFR 54.4(a)(2).

The following is a list of non-safety-related systems identified as having a potential for interacting with safety-related systems:

- service water system
- reactor building closed cooling water system
- reactor water cleanup system
- chilled water system
- water treatment system
- plant equipment and floor drain system
- process sampling system
- auxiliary steam system
- condensate transfer
- refueling water storage and transfer
- torus water cleanup system
- post accident sampling system

In addition, the applicant expanded the boundary of the following in-scope systems because non-safety-related portions of these systems have the potential for interacting with other safety-related systems, structures, and components:

- reactor pressure vessel instrumentation system
- core spray system
- residual heat removal system
- fuel pool cooling and cleanup system
- control rod drive system
- radiation monitoring system
- reactor recirculation system
- emergency service water system

Certain components of the reactor building closed cooling water system, chilled water system, plant equipment and floor drain system, process sampling system, and torus water cleanup system associated with the primary containment boundary support the primary containment isolation system (PCIS) intended function of containment isolation. The LRA included these components within the scope of license renewal by realigning them (as defined in Section 2.2 of this SER) from the non-safety-related system to the PCIS for the purpose of license renewal. The PCIS is described in Section 2.3.2.3 of the LRA and the realigned valves and piping are included in LRA Table 2.3.2-3. The PCIS is evaluated in Section 2.3.2.3 of this document.

In the RAI response the applicant provided tables that listed the “component groups” for the above non-safety-related systems and expanded-boundary systems that require an AMR. These are presented in the supplemental tables to the LRA within the RAI response. These tables list the component groups and the passive and long-lived components of each group with their passive functions identified and the AMR results for each component. The applicant identified the following component groups for the non-safety-related systems that are subject to an AMR:

- castings and forgings (valve bodies, pump casings, steam traps, strainer bodies)
- piping (pipe, tubing)
- piping specialities (thermowells, flow elements, restricting orifice)

- heat exchangers (shell, channel heads, unit heater tubes, unit heater headers and connections, ventilation heater tubes, ventilation heater headers and connections, drywell cooler tubes, drywell cooler headers, drywell cooler connections)
- vessel (head tank, chemical addition tank, tanks)

The applicant identified the following additional components in the systems whose in-scope boundaries were expanded:

- castings and forgings (valve bodies in condensate storage water, pump casings in fuel pool water),
- piping (tubing in condensate storage water)
- piping specialities (filter bodies and rupture disks in condensate storage water)
- heat exchangers (shell in fuel pool water, channel head in raw water)
- vessel (surge tank in fuel pool water)

All of the components added due to potential non-safety-related/safety-related interactions have a pressure boundary intended function.

2.3.3.19.2 Staff Evaluation

The staff reviewed the LRA and UFSAR to determine whether there is reasonable assurance that the non-safety-related systems affecting safety-related system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

Paragraph (2) of 10 CFR 54.4(a)(2) defines the criteria for determining which plant Criterion 2 systems, structures, and components are within the scope of license renewal. Section 54.4(a)(2) states the following:

> All nonsafety-related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in paragraphs (a)(1) (i), (ii), or (iii) of this section.

Paragraphs (a)(1)(i), (ii), and (iii) read as follows:

> (1) Safety-related systems, structures, and components which are those relied on to remain functional during and following design basis events (as defined in 10 CFR 50.49 (b)(1)) to ensure the following functions—
>
> (i) The integrity of the reactor coolant pressure boundary;
>
> (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or

> (iii) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in §50.34(a)(1), §50.67(b)(2), or §100.11 of this chapter, as applicable

The NRC staff position on the 10 CFR Part 54.4(a)(2) scoping criterion states that an applicant should identify and demonstrate that failures of non-safety-related SSCs would not adversely impact on the ability to maintain intended functions of SSCs relied on to meet the requirements of the rule in 10 CFR 54.4(a)(1). Consequently, the staff must have reasonable assurance that the applicant has identified all non-safety-related SSCs that meet the 54.4(a)(2) scoping criterion. When making a determination on the potential for non-safety SSCs adversely impacting safety-related SSCs, an applicant should consider how plant-specific failures of non-safety SSCs and industry failures of such SSCs were considered in its determination. Further, an applicant should consider non-safety SSCs which may not have failed during the current term, but may have a reasonable expectation of failure during the extended term. Therefore, all SSCs that meet with 10 CFR Part 54.4(a)(2), that is all non-safety-related SSCs affecting safety-related intended functions, are in the scope of license renewal.

Additionally, the Statements of Consideration for 54, Section III.b.iii, "Bounding the Scope of Review", state that:

> Pre-application rule implementation has indicated that the description of systems, structures, and components subject to review for license renewal could be broadly interpreted and result in an unnecessary expansion of the review. To limit this possibility for the scoping category relating to nonsafety-related systems, structures, and components, the Commission intends this non-safety-related category (54.4(a)(2)) to apply to systems, structures, and components whose failure would prevent the accomplishment of an intended function of a safety-related system, structure, or component. An applicant for license renewal should rely on the on the plant's [Current Licensing Basis] CLB, actual plant-specific experience, industry-wide operating experience, as appropriate, and existing engineering evaluations to determine those non-safety-related systems, structures, and components that are the initial focus of the license renewal review. Consideration of hypothetical failures that could result from system interdependencies that are not part of the CLB and that have not been previously experienced is not required.

As noted in Section 2.1.3, the staff review of the Peach Bottom scoping and screening methodology determined that the applicant did not include piping of non-safety-related systems not connected to safety-related piping within the scope of license renewal. These piping systems may have a spatial relationship in that their failure could adversely impact the performance of an intended safety function. In letters dated January 23, 2002, and February 6, 2002, the staff issued RAIs 2.1.2-3, 2.1.2-4, and 3.3-1 to address these issues.

In a letter dated May 21, 2002, the applicant responded to the RAIs. The applicant identified components of non-safety-related systems (listed above) which fall within the scope of license renewal and are subject to an AMR. However, the applicant's RAI response did not supply sufficient information to allow the staff to determine, with reasonable assurance, that all of the SSCs with the potential for non-safety to safety-related interactions had been identified and included within the scope of license renewal. The staff asked the applicant to do the following:

- Define the procedure and criteria used to determine the credibility of the spatial interactions of the hazard systems with equipment within the scope of license renewal. Identify the plant area where the potential interactions with safety-related equipment are postulated to occur.

- Explain how non-fluid-containing systems having potential spatial interaction with safety-related systems were evaluated.

- Define the criteria used to designate hazard systems.

- Describe the plant walkdown mentioned in the applicant's May 21, 2002, letter to the NRC and how the results were used to determined which non-safety-related systems, structures, and components were brought within scope.

- Discuss the means by which information that formed the basis for the applicant's conclusions for including the non-safety-related systems within the scope will be documented, auditable, and retrievable, in accordance with 10 CFR 50.37.

This issue was characterized as SER Open Item 2.3.3.19.2-1.

During the staff's July 10, 2002, meeting with the applicant at the Peach Bottom site, and as stated in a letter dated November 26, 2002, the applicant developed Project Level Instruction PLI-008, "Review Process for Non Safety-Related to Safety-Related SC Interactions," to identify non-safety-related systems and components that met the scoping criteria specified in 10 CFR 54.4(a)(2) as a result of potential spatial interactions with safety-related SSCs. The applicant presented the staff with PLI-008 and described how non-safety-related SSCs were included within the scope and subject to AMR.

To address the staff's concerns, the applicant presented its methodology for evaluating non-safety-related systems and the non-safety-related portions of safety-related systems within the scope of license renewal. First, the applicant defined a hazard system (if the system is a hazard it would be included within the scope if it had a potential spatial interaction) as any system that contains a fluid other than air or gas, irrespective of pressure and temperature. Second, once a hazard system was identified the applicant conducted the following evaluation:

- the component record list (CRL) was reviewed for specific location data for individual systems or spaces

- when spaces were evaluated for non-safety-related to safety-related interaction, the results of the evaluations were documented and applied to those systems that occupy those spaces

- plant mechanical piping drawings and equipment location drawings were reviewed in conjunction with the CRL location information to determine where potential spatial interactions could occur.

- walkdowns were performed to verify potential spatial interactions and to identify material information as needed for in-scope non-safety-related components, and the walkdowns were documented in a walkdown file.

For the non-safety-related systems and non-safety-related portions of in-scope systems having potential spatial interaction with safety-related systems, a system-structure matrix was developed. The matrix identifies the evaluation boundaries for the non-safety-related SSCs identified as having spatial interaction with system intended functions meeting the scoping criteria for license renewal. The matrix below identifies the systems that meet the requirements of the 10 CFR 54.4(a)(2) and the evaluation boundaries (i.e., structures) of those systems:

SYSTEM	RB	D/W	D/G	R/W	NSB	CWP	RAB
RPV Instrumentation	X						
Reactor Recirculation	X						
Core Spray	X						
RHR							
Fuel Pool Cooling and Cleanup	X	X					
Control Rod Drive	X						
Radiation Monitoring	X		X				X
Emergency Service Water							X
RWCU	X	X					
Service Water		X					X
Reactor Building closed cooling water	X	X					X
Chilled Water	X	X		X			
Water Treatment	X	X	X				
Plant Equipment and floor drains	X						
Process Sampling	X	X		X			X
Auxiliary Steam	X		X	X	X	X	X
Condensate transfer	X						
Refueling Water Storage and Transfer	X						
Torus Water cleanup	X						
Post Accident Sampling	X						X

Structure legend: RB - Reactor Building; D/W - Drywell (Containment); D/G - Diesel Generator Building; R/W - Radwaste Building; NSB - Nitrogen Storage Building; CWP - Circulating Water Pumphouse; RAB - Reactor Auxiliary Bay

The staff participated in a walkdown of these systems with the applicant during the July 10, 2002, meeting at the Peach Bottom site. The staff verified that non-safety-related systems, listed in the above matrix, could potentially prevent safety-related functions of certain SSCs from being performed if they were to fail. Systems, structures, and components affected by such interactions were the (1) safety-related instrument panel for the emergency core cooling system; (2) high pressure coolant injection alternative control panel; (3) safety-related motor control center; (4) reactor pressure vessel instrumentation panel; and (5) safety-related breakers.

For non-fluid containing SSCs in which a failure could adversely impact the performance of an intended safety function of safety-related SSCs, the applicant completed an operating experience review. The applicant reviewed 24 NRC Information Notices, IE Bulletins and Generic Letters regarding non-fluid environments of ventilation, gas and external environments (air). In addition, the applicant reviewed its plant specific operating experience which included 12 potentially relevant corrective action reports and 57 potentially relevant work orders. The review indicated that no failures due to aging had occurred in the industry for the materials and environments examined. Therefore, the applicant concluded that non-fluid containing components could not affect safety-related SSCs due to leakage or spray.

The applicant, in its response dated November 26, 2002, added additional non-safety-related systems to the scope of license renewal beyond those identified in its May 21, 2002, response to the staff's RAI. The applicant included non-safety-related portions of the reactor recirculation system and the emergency service water system. These systems were already included within the scope of license renewal. However, the evaluation boundary was increased to include non-safety-related portions of each system as a result of potential spatial interaction with other safety-related SSCs. In addition, the applicant included the post accident sampling system to the scope of license renewal as portions of the system posed a potential hazard due to potential spatial interaction in which a failure could adversely impact the performance of an intended function of safety-related SSCs.

To meet the requirements of 10 CFR 54.37, the applicant stated that documents will be created for the above systems within the scope of license renewal because of 10 CFR 54.4(a)(2), similar to those documents created for safety-related systems within the scope of license renewal that meet 10 CFR 54.4(a)(1) or 10 CFR 54.4(a)(3). The documents consist of scoping and screening forms, aging management reviews, boundary drawings, CRL updates, and procedure annotations of commitments. Therefore, Open Item 2.3.3.19.2-1 is closed based upon the applicant's response to the Open Item and the staff's review of the November 26, 2002, response which is consistent with the staff's review and plant walkdown of July 10, 2002, at the Peach Bottom site.

On the basis of the above review the staff did not find any other omissions by the applicant of SSCs within the scope of license renewal.

2.3.3.19.3 Conclusions

On the basis of its review the staff concludes there is reasonable assurance that the applicant has adequately identified the non-safety-related SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.4 Steam and Power Conversion Systems

2.3.4.1 Main Steam System

2.3.4.1.1 Summary of Technical Information in the Application

In Section 2.3.4.1 of the LRA, the applicant describes the components of the main steam system that fall within the scope of license renewal and are subject to an AMR. This system is further described in Sections 4.4, 4.11, 6.4.2, and 14.9 of the Peach Bottom UFSAR.

The main steam system conducts steam from the reactor vessel through the primary containment to the steam turbine over the full range of reactor power operation. Four steam lines are utilized between the reactor and the main turbine. The use of multiple lines permits turbine stop valve and main steam line isolation valve tests during plant operation with a minimum amount of load reduction. Each main steam line up to and including the main steam line isolation valve external to the primary containment is seismic Class I.

The main steam system provides steam on demand to the HPCI and RCIC system turbines via the “B” and “C” main steam lines, respectively.

Overpressure protection of the reactor pressure vessel is provided via the main steam safety relief valves (SRVs) and safety valves (SVs). This function ensures the integrity of the reactor coolant pressure boundary and associated piping. The capability to depressurize the reactor vessel via the ADS designated SRVs during all normal plant operating conditions and following a design basis event allows the operation of the low pressure ECCS systems should they be required.

The five safety relief valves designated to fulfill the ECCS function, in conjunction with the ADS logic, ensure that the low pressure ECCS systems provide adequate core cooling during accident and post-accident conditions in the event that the high-pressure coolant injection systems are unavailable or unable to maintain level in the vessel.

The main steam system operates in conjunction with the primary containment isolation system to mitigate the consequences of accidents which could result in potential offsite exposure due to a breach of the main steam system. The MSIVs will close on signals indicative of a LOCA or leak in the main steam system to containment. The main steam line flow restrictors limit maximum steam flow under assumed accident conditions of a steam line rupture to a value which ensures that the steam dryer in the reactor vessel remains in place. This feature ensures that fragments from the dryer will not be blown into the steam lines preventing tight closure of the MSIVs. This function also serves to limit steam line flow during a steam line rupture outside of primary containment until the MSIVs can close, thereby limiting potential radioactive release.

The main steam system also allows for a path for alternate shutdown cooling in the event that the shutdown cooling mode of the RHR system cannot be established. This is accomplished by closing the main steam isolation valves, raising the reactor vessel level to the main steam lines, and using no more than two ADS SRVs for low pressure liquid discharge to the suppression pool, and one or more RHR loops operating in the suppression pool cooling mode of the system.

Post-accident containment, holdup, and plateout of MSIV bypass leakage are credited in accident analyses when calculating airborne activities. Plateout of elemental and particulate iodine is credited in steam line piping and the main condenser.

The applicant describes its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.2 of the LRA. The applicant states that the following intended functions fall within the scope of license renewal:

- delivery of steam to HPCI and RCIC systems
- overpressure protection of the reactor pressure vessel (RPV)
- RPV depressurization
- containment isolation
- steam line flow restriction
- steam flow measurement
- alternate shutdown cooling
- post-accident containment, holdup and plateout of MSIV bypass leakage

Using the methodology described in LRA Section 2.1.2, as specified in 10 CFR 54.21(a)(1), the applicant listed the mechanical component groups subject to an AMR and identified their intended functions in Table 2.3.4-1 of the LRA. The applicant identifies the following component groups:

- vessel (accumulators)
- casting and forging (valve bodies)
- piping (pipe, tubing, SRV Tailpipe and RPV Head Flange Leakoff)
- piping specialties (restricting orifices, dashpots, flexible hoses, flow elements, strainers, condensing chambers, and spargers)

The intended functions for the main steam system components subject to an AMR are pressure boundary integrity, throttle, and spray.

2.3.4.1.2 Staff Evaluation

The staff reviewed section 2.3.4.1 of the LRA and UFSAR sections 4.4, 4.11, 6.4.2, and 14.9 to determine whether there is reasonable assurance that the main steam system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.4.1 of the LRA and the Peach Bottom UFSAR to determine if the applicant adequately identified the SSCs of the main steam system that are in the scope of license renewal. The staff verified that those portions of the main steam system that meet the scoping requirements of 10 CFR 54.4 are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.4.1 of the LRA. The staff then focused its review on those portions of the main

steam system that were not identified as being within the scope of license renewal to verify that they do not meet the scoping requirements of 10 CFR 54.4. The staff also reviewed the UFSAR to determine if there were any additional system functions that were not identified in the LRA, and verified that those additional functions did not meet the scoping requirements of 10 CFR 54.4.

The staff then determined whether the applicant had properly identified the SSCs that are subject to an AMR from among those portions of the main steam system that are identified as being within the scope of license renewal. The applicant identifies and lists the SSCs subject to AMR for the main steam system in Table 2.3.4-1 of the LRA using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff performed its review by sampling the SSCs that the applicant determined to be within the scope of license renewal but not subject to AMR to verify that these SSCs performed its intended function with moving parts or with a change in configuration or properties or were subject to replacement based on a qualified life or specified time period.

The applicant identified the portions of the main steam system that are within the scope of license renewal in the drawings referenced in the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that are within the scope of license renewal. The applicant highlighted those components which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and the descriptions in the UFSAR to ensure they were representative of the main steam system. The staff sampled portions of the flow diagram that were not highlighted to verify that these components did not meet any the scoping criteria in 10 CFR 54.4.

By letter dated March 12, 2002, the staff requested additional information regarding the main steam system, as discussed below.

In RAI 2.2-1.1(b), the staff requested additional information about realigned components, that is, components recategorized from one system to another for the purposes of license renewal. The applicant's response to RAI 2.2-1.1(b) stated, in part, that the following components were realigned to the main steam system:

- the instrument nitrogen system inboard MSIV nitrogen accumulators and associated piping and valves inside containment
- the instrument nitrogen system solenoid valves associated with the main steam system relief valves
- the instrument air system outboard MSIV air accumulators and associated piping and valves outside containment

The staff reviewed LRA Table 2.3.4-1 to confirm that the piping and components realigned from the non-safety-related instrument nitrogen and air systems were, in fact, included in the list of main steam system components subject to an AMR. The staff concluded that the applicant's realignment process did not omit any SSCs of the instrument nitrogen and air systems associated with the main steam system that require an AMR. Therefore, the staff finds that the applicant's realignment of SSCs requiring an AMR from the Instrument nitrogen and air systems to the main steam system have been captured in Table 2.3.4-1 of the LRA, and that the applicant's response to RAI 2.2-1.1(b) relating to the main steam system is acceptable.

RAI 2.3.4.1-1 asked for a copy of drawing LR-M-304, which is listed in the LRA but had not been provided previously. The applicant responded on May 22, 2002, that drawing LR-M-304 does not exist. The LRA reference for this drawing is in error and will be corrected. Based on the above, the staff found the applicant's response acceptable.

According to Section 2.3.4 of the LRA (page 2-94), and Peach Bottom UFSAR Section 14.9, one of the intended functions of the main steam system is post-accident containment, holdup, and plateout of the MSIV bypass leakage. However, this intended function was not included in Table 2.3.4-1. In RAI 2.3.4-2, the staff asked the applicant to explain why this function was not included in the table. In a letter dated May 22, 2002, the applicant stated that as described in Table 2.1-1, the component intended function of pressure boundary includes fission product barrier and fission product retention. Based on the clarification presented above, the staff found the applicant's response acceptable.

On license renewal boundary drawings LR-M-303 (locations C8, E8, F8) and LR-M-351 sheets 1 and 3 (location G2), thermowells (without temperature elements) are shown to fall within the scope of license renewal but are not specifically listed as being subject to an AMR in Table 2.3.4-1. In RAI 2.3.4-3, the staff questioned why these components were not subject to an AMR. In a letter dated May 22, 2002, the applicant stated that the subject thermowells fall within the scope of license renewal and are subject to an AMR; however, the thermowells were inadvertently omitted from LRA Table 2.3.4-1 and LRA Table 3.4.1. The applicant stated that the thermowells will be included in the two subject tables under piping specialties. The staff found the applicant's response acceptable based on the clarification presented above.

On license renewal boundary drawing LR-M-351 (locations C3 and G4), an expansion joint is shown to fall within the scope of license renewal. A review of Section 2.3.2.3, "Primary Containment Isolation System," of the LRA does not indicate that this component was identified as being subject to an AMR. In RAI 2.3.4-4, the staff asked the applicant to clarify the intended function of this expansion joint, and whether it is subject to an AMR. In a letter dated May 22, 2002, the applicant clarified that these components are included in LRA Table 2.4-1, listed as penetrations under the drywell component group. The staff found the response to RAI 2.3.4-4 acceptable, as the applicant clarified that the expansion joint is subject to an AMR.

In Section 2.3.4.1 of the LRA, containment isolation was listed as an intended function, but this function was not listed in Table 2.3.4-1. The containment isolation function is said to be provided by the primary containment isolation system. In RAI 2.3.4-5, the staff asked the applicant to clarify if the containment isolation function should be included as an intended function for various components listed in Table 2.3.4-1. In a letter dated May 22, 2002, the applicant clarified that the containment isolation function identified in LRA Section 2.3.4.1 is a system intended function and not a component intended function, and therefore should not be included in Table 2.3.4-1. The definition of "pressure boundary" in LRA Table 2.1-1 includes the containment isolation function. Based on the above, the staff found the applicant's response acceptable.

License renewal boundary drawing LR-M-303, sheets 1 and 3, indicate that the turbine stop valves are not within the scope of license renewal for Peach Bottom. On the drawing, the turbine stop valves form the boundary between the piping that is within the scope of license renewal and the piping that is out of scope. If the valve body failed, it appears that the piping within the scope of the rule would be unable to perform its intended function. In RAI 2.3.4.1-6,

the staff asked the applicant to provide the basis for the exclusion of these valves from the scope of license renewal.

In a letter dated May 22, 2002, the applicant stated that the main steam piping downstream of the outboard main steam isolation valves, up to but not including the turbine stop valves, is classified as safety-related because the piping provides structural support for the safety-related outboard main steam isolation valves. The turbine stop valves are not safety-related and do not have a safety-related intended function, and therefore have not been included in the scope of license renewal. The staff found the applicant's response acceptable on the basis that the turbine stop valves do not have a pressure boundary intended function.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.4.1.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the main steam SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.4.2 Main Condenser

2.3.4.2.1 Summary of Technical Information in the Application

In Section 2.3.4.2 of the LRA, the applicant described the components of the main condenser that fall within the scope of license renewal and are subject to an AMR. This system is further described in Sections 11.3 and 14.9 of the Peach Bottom UFSAR.

The main condenser provides a heat sink for the turbine exhaust steam, turbine bypass steam, and other flows. It also deaerates and stores the condensate for reuse after a period of radioactive decay. Additionally, the main condenser provides for post-accident containment, holdup, and plateout of MSIV bypass leakage.

The main condenser is a single-pass, single-pressure, deaerating type with a reheating deaerating hotwell and divided waterboxes. The condenser consists of three sections, each section located below the low-pressure elements of the turbine, with the tubes oriented transverse to the turbine-generator axis. The steam exhausts directly down into the condenser shells through exhaust openings in the bottom of each low-pressure turbine casing. The condensers also receive steam from the reactor feed pump turbines.

The Peach Bottom accident analyses evaluated MSIV bypass leakage as part of primary containment leakage. This is treated as a ground-level release, with credit for holdup and plateout (elemental and particulate iodine only) in steam line piping and the condenser. This leakage is to the condenser, which is assumed to leak at 1 percent of volume per day.

The applicant described its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.2 of the LRA. The applicant stated that the main condenser provides for post-accident containment, holdup, and plateout of MSIV bypass leakage and, therefore, is within the scope of license renewal. The intended function for the

main condenser components subject to an AMR is also post-accident containment, holdup, and plateout.

Using the methodology described in LRA Section 2.1.2, as specified in 10 CFR 54.21(a)(1), the applicant listed the mechanical component groups subject to an AMR and identified their intended functions in Table 2.3.4-2 of the LRA. The applicant identified the main condenser as the component requiring an AMR.

2.3.4.2.2 Staff Evaluation

The staff reviewed Section 2.3.4.2 of the LRA and UFSAR Sections 11.3 and 14.9 to determine whether there is reasonable assurance that the main condenser system components, and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.4.2 of the LRA and the Peach Bottom UFSAR to determine if the applicant adequately identified the SSCs of the main condenser that are in the scope of license renewal. The staff verified that those portions of the main condenser that meet the scoping requirements of 10 CFR 54.4 are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.4.2 of the LRA. The staff then focused its review on those portions of the main condenser that were not identified as being within the scope of license renewal to verify that they do not meet the scoping requirements of 10 CFR 54.4. The staff also reviewed the UFSAR to determine if there were any additional system functions that were not identified in the LRA, and verified that those additional functions did not meet the scoping requirements of 10 CFR 54.4.

The staff then determined whether the applicant had properly identified the SSCs that are subject to an AMR from among those portions of the main condenser that are identified as being within the scope of license renewal. The applicant identifies and lists the SSCs subject to AMR for the main condenser in Table 2.3.4-2 of the LRA using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff performed its review by sampling the SSCs that the applicant determined to be within the scope of license renewal but not subject to AMR to verify that these SSCs performed their intended function with moving parts or with a change in configuration or properties or were subject to replacement based on a qualified life or specified time period.

The applicant identified the portions of the main condenser that are within the scope of license renewal in the drawings referenced in the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that are within the scope of license renewal. The applicant highlighted those components which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system

drawings and the descriptions in the UFSAR to ensure they were representative of the main condenser. The staff sampled portions of the flow diagram that were not highlighted to verify that these components did not meet any the scoping criteria in 10 CFR 54.4.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.4.2.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the main condenser SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.3.4.3 Feedwater System

2.3.4.3.1 Summary of Technical Information in the Application

In Section 2.3.4.3 of the LRA, the applicant described the feedwater system components that fall within the scope of license renewal and are subject to an AMR. This system is further described in Sections 4.11, 7.10, and 11.8 of the Peach Bottom UFSAR. The system boundaries of the feedwater system are shown in license renewal drawings LR-M-308 and LR-M-351, both Rev. A.

The feedwater system is safety-related from the outermost primary containment isolation valve to the RPV. The portion of the feedwater system from the inlet of the drain cooler up to, but not including, the outermost primary containment isolation valve is non-safety-related.

During normal plant operation, the feedwater system receives its supply of water from the outlet of the condensate demineralizers. The system consists of three feedwater heater strings (with cascading drains) connected in parallel, each consisting of five low-pressure feedwater heaters and one drain cooler in series. The feedwater heaters receive steam from the main turbine system and preheat feedwater entering the reactor feed pumps, thus increasing the heat cycle efficiency. The outlets of the three heater strings are cross-connected and provide a common suction header for the three reactor feed pumps. The reactor feed pumps are mounted in parallel with each having an individual suction valve, discharge check valve, and discharge valve. The reactor feed pumps discharge to a common discharge header that connects to two feedwater headers. These two feedwater headers contain inboard and outboard containment isolation valves. Inside containment, these two feedwater headers each split into three piping runs for a total of six, which then go to the RPV. The feedwater system provides the injection path for HPCI and RCIC during transient and accident conditions. HPCI and RCIC join the feedwater system outside the primary containment. Flow is then channeled through the feedwater piping to the RPV.

The applicant described its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.2 of the LRA. The applicant stated that the following functions of the feedwater system fall within the scope of license renewal:

- HPCI and RCIC injection - The feedwater system provides an injection path into the RPV for both HPCI and RCIC during transient or accident conditions.

- Primary containment isolation - The feedwater system provides primary containment isolation to prevent primary containment leakage under transient and accident conditions.

Using the methodology described in LRA Section 2.1.2, as specified in 10 CFR 54.21(a)(1), the applicant listed the mechanical component groups subject to an AMR and identified their intended functions in Table 2.3.4-3 of the LRA. The applicant identified the following component groups:

- casting and forging
- piping
- piping specialties

LRA Table 2.3.4-3 lists pressure boundary integrity as the intended function for the feedwater system components subject to an AMR.

2.3.4.3.2 Staff Evaluation

The staff reviewed Section 2.3.4.3 of the LRA, UFSAR Sections 4.11, 7.10, and 11.8, and license renewal boundary drawings to determine whether there is reasonable assurance that the feedwater system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The applicant identified and listed the components subject to an AMR for the feedwater system in Table 2.3.4-3 of the LRA using the screening methodology described in Section 2.1.3 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff subsequently performed a review of the implementation of the methodology for the feedwater system by sampling the components identified as falling within the scope of license renewal but not subject to an AMR to verify that these components perform their intended functions with moving parts or with a change in configuration or properties or are subject to replacement base on a qualified life or specified time period.

In Section 2.3.4.3 of the LRA, the applicant listed two license renewal boundary diagrams, LR-M-308 and LR-M-351, for the feedwater system. The applicant also identified the mechanical components subject to an AMR and their intended functions in Table 2.3.4-3 of the LRA. The boundary diagrams were highlighted to identify those portions of the system that were included within the scope of license renewal. The applicant highlighted those components, which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the boundary diagrams to the system description in the UFSAR to ensure that it was representative of the feedwater system. The staff also sampled portions of the boundary diagrams that were not highlighted to ensure these components did not perform any of the functions as defined in 10 CFR 54.4(b).

After completing the initial review, in a letter dated March 12, 2002, the staff requested additional information regarding the feedwater system, and the applicant submitted responses to the RAIs, as discussed below.

Section 2.3.4.3 of the LRA provided a list of the intended functions within the scope of license renewal. One of the functions listed is containment isolation. However, Table 2.3.4-3 does not list this intended function. In RAI 2.3.4-1, the staff asked the applicant to explain why this function was not included in the table.

In a letter dated May 22, 2002, the applicant clarified that the containment isolation function identified in LRA Section 2.3.4.3 is a system intended function and not a component intended function, and therefore should not be included in Table 2.3.4-3. The applicant further stated that the definition of "pressure boundary" in LRA Table 2.1-1 includes the containment isolation function. The staff found the applicant's clarification in response to RAI 2.3.4-1 to be acceptable.

On boundary drawing LR-M-308, reducers and increasers were shown to fall within the scope of license renewal. However, these piping components were not specifically listed in Table 2.3.4-3 as subject to an AMR. In RAI 2.3.4-2, the staff asked the applicant to justify their exclusion from the table. In a letter dated May 22, 2002, the applicant clarified that the reducers and increasers are fittings and part of the piping system, and therefore are included in Table 2.3.4-3 in the "pipe" component group. The staff found the applicant's clarification in response to RAI 2.3.4-2 to be acceptable.

License renewal boundary drawing LR-M-351, sheets 1 through 4, show the tie into the feedwater system from the high-pressure coolant injection system. For example, location F8 shows an expansion joint which falls within the scope of license renewal. A review of Section 2.3.2.3, "Primary Containment Isolation System," of the LRA does not indicate that this component is subject to an AMR. In RAI 2.3.4-3, the staff asked the applicant to clarify the intended function of this expansion joint, and whether it requires an AMR. In a letter dated May 22, 2002, the applicant clarified that the expansion joint shown on drawing LR-M-351 is the drywell penetration bellows, and that it is in the scope of license renewal and is identified in Table 2.4-1 of Section 2.4.1, "Containment Structure." The staff found the applicant's clarification in response to RAI 2.3.4-3 to be acceptable.

On license renewal boundary drawing LR-M-308 sheets 1 and 3 (locations B7, E7, and G7), a flow element is shown. The only intended function listed in Table 2.3.4-3 is pressure boundary. In RAI 2.3.4-4, the staff asked whether "throttle" should be included as an intended function. In a letter dated May 22, 2002, the applicant clarified that "throttle" is not an intended function for the flow elements in the feedwater system. The feedwater system intended functions are to provide an injection path to the RPV for HPCI and RCIC during accident conditions and to isolate the primary containment. The component intended function of "pressure boundary" supports these system intended functions.

The staff reviewed that applicant's response to RAI 2.3.4-4 and determined that the pressure drop produced by these flow elements is sensed to produce a flow measurement signal for the feedwater control system and does not directly initiate a containment isolation signal or reactor trip. The feedwater control system regulates the flow of feedwater to the reactor vessel; its malfunction is an analyzed event whose effects do not fall within the criteria of

10 CFR 54.4(a)(1). Therefore, the staff finds that flow restriction need not be included as an intended function, and the applicants clarification in response to RAI 2.3.4-4 is acceptable.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.3.4.3.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the feedwater SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4 Scoping and Screening Results: Structures and Component Supports

The applicant described the structures and structural components that are within the scope of license renewal and subject to an AMR in the following sections of the LRA: 2.4.1 "Containment Structure"; 2.4.2 "Reactor Building Structure"; 2.4.3 "Radwaste Building and Reactor Auxiliary Bay"; 2.4.4 "Turbine Building and Main Control Room Complex"; 2.4.5 "Emergency Cooling Tower and Reservoir"; 2.4.6 "Station Blackout Structure and Foundations"; 2.4.7 "Yard Structures"; 2.4.8 "Stack"; 2.4.9 "Nitrogen Storage Building"; 2.4.10 "Diesel Generator Building"; 2.4.11 "Circulating Water Pump Structure"; 2.4.12 "Recombiner Building"; 2.4.13 "Component Supports"; 2.4.14 "Hazard Barriers and Elastomers"; 2.4.15 "Miscellaneous Steel"; 2.4.16 "Electrical and Instrumentation Enclosures and Raceways"; and 2.4.17 "Insulation." The license renewal boundary diagram referenced for structures is LR-S-001. The scoping and screening methodology for identifying SSCs subject to an AMR is addressed in Section 2.1 of this report.

For each of the structures within the scope of license renewal, the applicant provided the following information:

- general description of the structure
- intended functions of the structure within the scope of license renewal
- reference to the applicable UFSAR sections
- reference to the applicable license renewal boundary diagrams
- list of the components or component groups that require an AMR and associated component intended functions and environments (for each structure, the tables were sorted by component group and then by environment)

In addition to the structures within the scope of license renewal presented in this section, the applicant evaluated several structural component groups, such as component supports as commodities. Commodity groups were determined on the basis of similar design or similar materials and similar environments. For each of the structural commodities, the applicant provided the following information:

- general description of the commodity
- list of the components or component groups that require aging management review and the associated component intended functions and environments

The staff reviewed Section 2.4 of the LRA, license renewal site diagram LR-S-001, applicable sections and figures of the Peach Bottom UFSAR, and additional information provided by the applicant in response to staff's RAIs, to determine whether there is reasonable assurance that all SSCs have been identified that are within the scope of license renewal as specified in 10 CFR 54.4(a) and are subject to an AMR in accordance with 10 CFR 54.21(a)(1). The results of this review are discussed in the following sections.

2.4.1 Containment Structure

2.4.1.1 Summary of Technical Information in the Application

In Section 2.4.1 of the LRA, the applicant provided a description of the primary containment and its intended functions that place the containment structure and its structural components within the scope of license renewal and subject to an AMR. In each unit, the containment structure consists of the primary containment and internal structural steel. The primary containment of each unit has a Mark I containment that consists of a drywell, a suppression chamber (in the shape of a torus), and a connecting vent system between the drywell and the suppression chamber.

The containment structure is part of a "multibarrier" system with a primary barrier consisting of the primary containment and its pressure suppression system. The secondary barrier is the reactor building, which has a system to limit the ground-level release of airborne radioactive material from the secondary containment. In the event of a design basis LOCA , the containment structure contains the released steam to limit the release of fission products from the accident to the reactor building.

The primary containment is a seismic Class I structure that encloses the reactor vessel, the reactor coolant recirculating system, and other branch connections of the reactor coolant system. In addition to the drywell and connected pressure suppression chamber, it includes isolation valves, vacuum breakers, containment cooling systems, and other service equipment. The drywell is a steel pressure vessel in the shape of a light bulb. The pressure suppression chamber is a torus-shaped steel pressure vessel below and around the drywell. The drywell is enclosed in reinforced concrete for the purpose of shielding. The stiffened pressure suppression chamber contains approximately 125,000 ft^3 of water and has a gas space volume above the pool. The pressure suppression chamber is supported on braced vertical columns which carry the loading to the reinforced concrete foundation slab of the reactor building.

Internal structural steel is provided at various elevations of the primary containment drywell and the pressure suppression chamber. The internal structural steel provides structural support to the safety-related and non-safety-related systems and equipment inside the primary containment drywell. It also provides personnel access to the equipment for maintenance and testing.

The containment structure is further discussed in Sections 5.2, 14.6, and Appendix M.3 of the UFSAR. The license renewal drawing referenced for the containment structure is LR-S-001.

The applicant determined that the following intended functions for the containment structure fall within the scope of license renewal:

- Primary containment - The primary containment provides an essentially leak-tight fission product barrier.

- Primary containment pressure suppression - The containment structure supports the pressure suppression by providing the following functions:

    - LOCA vent system steam discharge pressure suppression
    - Steam discharge pressure suppression
    - Suppression pool water inventory and supply

- Physical support - The containment structure provides physical support for the safety-related and non-safety-related systems and equipment during normal and abnormal loading conditions.

The applicant described its process for identifying the structural/civil components falling within the scope of license renewal and subject to an AMR in Section 2.1 of the LRA. On the basis of this methodology, the applicant identified the following containment component groups in Table 2.4-1 as the passive and long-lived component groups subject to an AMR:

- reinforced concrete (reactor pedestal, foundation, floor slab)
- unreinforced concrete (sacrificial shield wall)
- drywell (shell, head, CRD removal hatch, equipment hatch, personnel airlock, access manhole and inspection ports, penetrations, penetration bellows, gaskets, o-rings and packing materials)
- pressure suppression chamber (shell, ring girders, column and saddle supports, seismic restraints, lubrite plates, access hatches, penetrations and elastomers [gaskets])
- vent system (vent lines, vent line bellows, header and downcomers, downcomer bracing, vent system supports)
- structural steel (reactor vessel pedestal steel, sacrificial shield wall steel, sacrificial shield wall stabilizer, radial beam seats, lubrite plates, jet impingement shields, pipe whip restraints, missile barriers and radiation shields)

The intended functions of these components include providing (1) structural support, (2) shelter, protection, and/or radiation shielding, (3) pressure boundary, and (4) fission product barrier.

2.4.1.2 Staff Evaluation

The staff reviewed Section 2.4.1 of the LRA, Sections 5.2 and 14.6 and Appendix M.3 of the Peach Bottom UFSAR, relevant staff SERs, the IPE and IPEEE, and additional documents and drawings provided by the applicant in response to staff's RAIs to determine whether there is reasonable assurance that the primary containment system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In a letter dated March 12, 2002, the staff requested additional information on the primary containment intended functions and the components subject to an AMR listed on Table 2.4-1 of the LRA. In RAI 2.4.1-1, the staff acknowledged that the LRA listed the following three intended functions for the primary containment structure:

- provide an essentially leak-tight fission product barrier
- support pressure suppression
- provide physical support for safety-related and non-safety-related systems and equipment during normal and abnormal loading conditions

The staff inquired of the applicant whether additional intended functions should be attributed to primary containment such as protecting safety-related equipment from missiles, high-energy line breaks, fires, and environmental hazards.

In response to RAI 2.4.1-1 (in a letter dated May 22, 2002), the applicant stated that the primary containment intended functions specified in the LRA were consistent with its safety design basis as described in the UFSAR, Section 5.2. The primary containment did not provide protection against missiles, high-energy line breaks, fire, or environmental hazards. This protection was provided by the components of the reactor building structure, which enclosed the primary containment. The applicant referred to Figure M 1.1 of the UFSAR, which outlined the boundary of the primary containment structure, and to Figure 12.1.7 of the UFSAR, which showed reactor building concrete that protected the primary containment structure.

On the basis of this response, the staff found that the applicant has properly identified the primary containment intended functions.

In RAI 2.4.1-2, the staff indicated that Section 2.4.1 of the LRA stated that the drywell was enclosed in reinforced concrete for shielding purposes. Table 2.4-1 of the LRA listed reinforced concrete foundation and floor slabs that function as radiation shielding. However, the reinforced concrete around the drywell was not included. The staff asked the applicant to clarify whether the reinforced concrete around the drywell was part of the containment structure and subject to an AMR.

In response to RAI 2.4.1-2, the applicant stated that the reinforced concrete around the drywell was not part of the primary containment structure but was a part of the reactor building structure. The reinforced concrete around the drywell is subject to AMR as indicated in Table 3.5-2 of the LRA. The staff found this clarification to be acceptable .

Based on the information provided in the LRA and the UFSAR, the staff sampled several components in Table 2.4-1 of the LRA to determine whether the applicant properly identified the passive and long-lived structural components on the list of components as being subject to an AMR. On the basis of the above review, the staff did not find any omissions by the applicant.

2.4.1.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the primary containment structure SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.2 Reactor Building Structure

2.4.2.1 Summary of Technical Information in the Application

For each unit, the reactor building is a seismic Class I structure that completely encloses the primary containment and auxiliary systems of the nuclear steam supply system, and houses the associated spent fuel storage pool, dryer and separator storage pool, and reactor well. The building substructure from the foundation mat to the refueling floor is a reinforced concrete structure. Above this floor, the building superstructure consists of metal siding and roof decking supported on a structural steel framework. The foundation of the building consists of a reinforced concrete mat supported on rock. This foundation mat also supports the primary containment and its internals, including the reactor vessel pedestal. The exterior wall and some of the interior walls of the building above the foundation are constructed with cast-in-place concrete. Other interior walls are normal-weight concrete block walls. The floor slabs of the buildings are of composite construction with cast-in-place concrete over structural steel beams and metal floor deck. The thickness of the walls and slabs was governed by structural design or shielding requirements. The building superstructure is a steel-framed structure that is cross-braced to withstand wind and earthquake forces and support metal siding, metal roof deck, and roofing. The steel frame also supports a runway for the 125-ton traveling reactor building crane.

The reactor building is further discussed in Section 12.2 and Appendix C of the UFSAR. The license renewal drawing referenced for the reactor building is LR-S-001.

The applicant determined that the following intended functions for the reactor building structure fall within the scope of license renewal:

- Physical support - The reactor building provides physical support for safety-related and non-safety-related systems and equipment during normal, severe environmental, extreme environmental, and abnormal loading conditions.

- Protection - The reactor building provides protection for safety-related and non-safety-related systems and equipment from external, internal, and environmental hazards.

- Containment - The reactor building provides a secondary containment boundary to contain any release of radioactive material outside the primary containment.

- Fire protection - The reactor building provides rated fire barriers or retards a fire from spreading to adjacent areas of the plant.

- Storage - The spent fuel pool portion of the reactor building provides storage for spent fuel, new fuel, and spent fuel storage casks.

- Water volume - The spent fuel pool holds the volume of water necessary for shielding, cooling, and reactivity control during normal plant operation.

- Reactivity management - The spent fuel storage racks maintain spent fuel in subcritical configuration having a k(eff) less than or equal to 0.95.

In Section 2.1 of the LRA, the applicant described its process for identifying the structural/civil components within the scope of license renewal and subject to an AMR. On the basis of this methodology, the applicant identified, in Table 2.4-2, the following reactor building structural component groups subject to an AMR:

- reinforced concrete (walls, slabs, columns, beams, foundation, block walls)
- fuel pool liner
- fuel pool gates
- fuel storage racks
- Boraflex absorbers
- component supports
- structural steel (structural steel, reinforced concrete embedment, pipe whip restraints, missile barrier, metal siding, roof deck, blowout panels)

The intended functions of the concrete components include providing (1) structural support, (2) fire barrier, (3) shelter, protection, and/or radiation shielding, (4) flood barrier, (5) fission product barrier, (6) missile barrier, (7) HELB shielding and (8) fluid containment. The fuel pool liner and gates have the intended function of maintaining pressure boundary integrity. The Boraflex absorbers have the intended function of absorbing neutrons. The fuel storage racks, component supports, and structural steel components have the intended function of structural support.

2.4.2.2 Staff Evaluation

The staff reviewed Section 2.4.2 of the LRA, the relevant Peach Bottom UFSAR sections, including Section 12.2 and Appendix C, relevant staff's SERs, the IPE and IPEEE, and additional drawings and documents provided by the applicant in response to the staff's RAIs to determine whether there is reasonable assurance that the reactor building structure system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In a letter dated March 12, 2002, the staff requested additional information on the reactor building components listed on Table 2.4-2 of the LRA. Section 5.2.3.2 of the UFSAR (page 5.2-5) states that "shielding over the top of the drywell is provided at the refueling floor by a removable, segmented, reinforced concrete shield plug." Table 2.4-1 of the LRA lists a steel drywell head subject to an AMR, but the concrete shield plug is not included. Table 2.4-2 of the LRA lists reinforced concrete walls, slabs, columns, beams, and foundation as the components subject to an AMR. However, the drywell shield plug (as addressed in the UFSAR) is not included. In RAI 2.4.2-1, the staff asked the applicant why the drywell shield plug should not be within the scope of license renewal and subject to an AMR.

In response to RAI 2.4.2-1 (in a letter dated May 22, 2002), the applicant stated that the reinforced concrete drywell shield plugs described in Section 5.2.3.2 of the UFSAR were within

the scope of license renewal and subject to an AMR. These plugs are considered to be part of the reactor building refueling floor slab and were included in Table 3.5-2 of the LRA with reinforced concrete slabs. The staff found the applicant's response to the RAI to be acceptable.

Based on the information provided in the LRA and the UFSAR, the staff sampled several components to determine whether the applicant properly identified the passive, long-lived structural components on the list of components subject to an AMR in Table 2.4-2 of the LRA.

On the basis of the above review the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.2.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the reactor building structure SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.3 Radwaste Building and Reactor Auxiliary Bay

2.4.3.1 Summary of Technical Information in the Application

In Section 2.4.3 of the LRA, the applicant provided a description of the radwaste building and reactor auxiliary bay. These structures are connected to the control room and are located between the two reactor buildings. This complex is designed as a seismic Class I structure. Though located between the reactor buildings, the radwaste building is structurally separated from them. The radwaste building houses various components of the radwaste system, the standby gas treatment system, and associated equipment. It also houses the recirculation system motor generator sets for the two units of the power plant, along with the heating and ventilating equipment for the radwaste building and the main control room. The adjoining reactor auxiliary bay houses HPCI and RCIC turbine pumps and RHR equipment.

The building is founded on rock with a reinforced concrete mat. All walls except the west wall are concrete up to the roof. The west wall consists of concrete and metal siding for its full height. The HPCI and RCIC equipment is protected by concrete walls and floor slabs for protection from floods, missiles, and tornados. The heating and ventilating equipment, located at an elevation of 165 ft, is considered essential for a safe shutdown of the plant, and thus is protected from tornado missiles.

Additional information on the radwaste building and reactor auxiliary bay is provided in UFSAR Section 12.2 and Appendix C. The license renewal drawing referenced for the radwaste building and reactor auxiliary bay is LR-S-001.

The applicant determined that the following intended functions for the radwaste building and reactor auxiliary bay fall within the scope of license renewal:

- Physical support - The radwaste building and reactor auxiliary bay provide physical support for safety-related and non-safety-related systems and equipment during normal, severe environmental, extreme environmental, and abnormal loading conditions.

- Protection - The radwaste building and reactor auxiliary bay provide protection for safety-related and non-safety-related systems and equipment from external, internal, and environmental hazards.

- Fire protection - The radwaste building and reactor auxiliary bay provide rated fire barriers or retard a fire from spreading to adjacent areas of the plant.

The applicant described its process for identifying the structural/civil components falling within the scope of license renewal and subject to an AMR in Section 2.1 of the LRA. On the basis of this methodology, the applicant identified, in Table 2.4-3, the following radwaste building and reactor auxiliary bay component groups as the passive and long-lived component groups which are subject to an AMR:

- reinforced concrete (walls, slabs, columns, beams, foundation, block walls)
- structural steel (structural steel, reinforced concrete embedments, jet impingement shields, missile barrier)

The intended functions of the concrete components include providing (1) structural support, (2) fire barrier, (3) shelter, protection, and/or radiation shielding, (4) flood barrier, (5) missile barrier, and 6) HELB shielding. Intended functions of the structural steel components include structural support, HELB shielding, and missile barrier.

2.4.3.2 Staff Evaluation

The staff reviewed Section 2.4.3 of the LRA, Section 12.2 and Appendix C of the Peach Bottom UFSAR, relevant staff SERs, and the IPE and IPEEE to determine whether there is reasonable assurance that the radwaste building and reactor auxiliary bay system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In a letter dated March 12, 2002, the staff requested additional information on radwaste building and reactor auxiliary bay components subject to an AMR listed on Table 2.4-3 of the LRA. In RAI 2.4.3-1, the staff indicated that Section 2.4.3 of the LRA stated that the west wall of the radwaste building and reactor auxiliary bay consisted of concrete and metal siding for its full length. However, metal siding was not explicitly mentioned under structural steel in Table 2.4-3. The staff noted that metal siding was explicitly mentioned in reviews of other structures such as the reactor building and asked the applicant whether the metal siding was within the scope of license renewal.

In a letter dated May 22, 2002, in response to RAI 2.4.3-1, the applicant indicated that scoping and screening of radwaste building components concluded that the metal siding performed no intended functions under 10 CFR 54.4. The design function of the siding was to protect non-

safety-related SSCs housed in the building from the weather. It was not designed to protect safety-related SSCs in the building. The safety-related SSCs were enclosed in reinforced concrete compartments to ensure adequate protection from extreme environmental conditions such as tornadoes and tornado missiles. The siding also was not required for the secondary containment function (fission product barrier), unlike the reactor building siding. The staff found the applicant's response to RAI 2.4.3-1 to be acceptable.

Using the information provided in the LRA and the UFSAR, the staff sampled several components to determine whether the applicant properly identified, in Table 2.4-3 of the LRA, the passive, long-lived structural components that are subject to an AMR. On the basis of this review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.3.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the radwaste building and reactor auxiliary bay SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.4 Turbine Building and Main Control Room Complex

2.4.4.1 Summary of Technical Information in the Application

In Section 2.4.4 of the LRA, the applicant provided a description of the turbine building and main control room complex. The turbine building is nominally 600 ft by 150 ft in plan and houses both turbine-generators, one for each unit, and other auxiliary plant equipment. This building is founded on rock at various elevations below an elevation of 116 ft. The external and some internal walls are concrete up to the operating floor. The structure above this level is metal siding and deck above a 20-ft band of precast concrete wall panels, all supported by structural steel frames. Frames also support two 110-ton overhead bridge cranes in tandem.

Each turbine-generator is mounted on a concrete pedestal nominally 225 ft by 42 ft and 50 ft high. The pedestals are supported on a concrete mat and founded on rock. The turbine building is designed with the seismic design criteria for Zone 1 established by the Uniform Building Code. The turbine building is located east of the two reactor buildings and is separated from them by a gap to accommodate movements of the structures during an earthquake. The main control room, the cable spreading room, computer room, battery rooms, and emergency switchgear rooms are located in the center portion of the turbine building.

The failure of the turbine building will not impair the safety function of any seismic Class I structure or equipment inside it or adjacent to it. The turbine building and main control room complex is discussed in UFSAR Section 12.2 and Appendix C. The license renewal drawing referenced for the turbine building is LR-S-001.

The applicant determined that the following intended functions for the turbine building and main control room complex fall within the scope of license renewal:

- Physical support - The turbine building provides physical support for safety-related and non-safety-related systems and equipment during normal, severe environmental, extreme environmental, and abnormal loading conditions.

- Protection - The turbine building provides protection for safety-related and non-safety-related systems and equipment from external, internal, and environmental hazards.

- Leak-tightness - The control room provides airtight containment for the habitable areas housed within.

- Fire protection - The turbine building provides rated fire barriers and retards a fire from spreading to adjacent areas of the plant.

- Support and protection - The turbine building provides support and protection for the condensers that are credited for the accident analysis in UFSAR Chapter 14.

The applicant described its process for identifying the structural/civil components falling within the scope of license renewal and subject to an AMR in Section 2.1 of the LRA. On the basis of this methodology, the applicant identified, in Table 2.4-4, the following turbine building and main control room complex component groups as the passive and long-lived component groups subject to an AMR:

- reinforced concrete (walls, slabs, columns, beams, foundation, block walls)
- structural steel (structural steel, reinforced concrete embedments, missile barrier)

The intended functions of the concrete components are providing (1) structural support, (2) fire barrier, (3) shelter, protection, and/or radiation shielding, (4) flood barrier, (5) missile barrier, and (6) HELB shielding. The intended functions of the structural steel components are structural support and missile barrier.

2.4.4.2 Staff Evaluation

The staff reviewed Section 2.4.4 of the LRA, Section 12.2 and Appendix C of the Peach Bottom UFSAR, relevant staff SERs, and the IPE and IPEEE to determine whether there is reasonable assurance that the turbine building and main control room complex system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In a letter dated March 12, 2002, the staff requested additional information on the turbine building and main control room complex components subject to an AMR listed on Table 2.4-4 of the LRA. In RAI 2.4.4-1, the staff indicated that Section 2.4.4 of the LRA described the turbine building structure as follows: “The structure above this level is metal siding and deck above a 20-ft band of precast concrete wall panels all supported by structural steel frames.” However,

metal siding was not included in Table 2.4-4. The staff stated that metal siding was identified as a component subject to an AMR for other structures, including the reactor building structure and SBO structure.

In a letter dated May 22, 2002, in response to RAI 2.4.4-1, the applicant indicated that the scoping and screening of turbine building and main control room complex components concluded that the metal siding performed no intended functions under 10 CFR 54.4. The design function of the siding was to protect non-safety-related SSCs housed in the building from the weather. It was not designed to protect safety-related SSCs in the building. The safety-related SSCs were enclosed in reinforced concrete compartments to ensure adequate protection from extreme environmental conditions such as tornadoes and tornado missiles. The siding also was not required for the secondary containment function (fission product barrier), unlike the reactor building siding. The staff found the applicant's response to RAI 2.4.4-1 to be acceptable.

In RAI 2.4.4-2, the staff indicated that Section 2.4.4 of the LRA identified leak-tightness as an intended function for the turbine building and main control room complex: "Leak-tightness - The control room provides airtight containment for the habitability areas housed within." The staff believed that the walls separating the main control room complex from the turbine building should not be completely air-tight, as during loss of offsite power operation, control room ventilation exhaust appeared to be by leakage directly through the walls to the adjoining turbine building (see LR-M-384, sheet 3, locations D4, D5). Controlling the amount of leakage (both infiltration and exfiltration) was not listed as an intended function of the control room complex roof or walls in Table 2.4-4 of the LRA.

In response to RAI 2.4.4-2, the applicant indicated that the control room was not designed to be completely air-tight or leak-proof. Thus, the leak-tightness intended function as defined in the LRA Section 2.4.4, should not be interpreted to imply it was. The structure was designed to be maintained at a slightly positive pressure with respect to the surrounding areas during normal operation and accident conditions. This function supported the control room ventilation system "ventilation" intended function, described in LRA Section 2.3.3.8 and required by the Peach Bottom Units 2 and 3 technical specifications. The applicant also indicated that control room ventilation exhaust during loss of offsite power was exfiltrated through the floor, ceiling, and walls to the adjacent turbine building. However, controlling the amount of exfiltration leakage was not identified as a design basis function for the control room structure or its structural components. The function was provided by normal leakage through sealed penetrations, door jams, and concrete joints while maintaining positive pressure as required by the technical specifications. The applicant concluded that controlling exfiltration was not an intended function of the control room structure.

The staff's concern is that over the years the main control room complex may become too leak-tight (from multiple coats of paint and sealant) to allow adequate air circulation when forced circulation exhaust is unavailable. The applicant's response did not directly address this concern, but the staff considered the response acceptable on the following basis: (1) The building was not designed to be completely air-tight or leak-proof, and therefore it is highly unlikely that exfiltration will be insufficient to support adequate air recirculation, and (2) forced air exhaust will be unavailable only during SBO events, during which the control room complex doors and louvers could be opened if needed.

Using the information provided in the LRA and the Peach Bottom UFSAR, the staff sampled several components to determine whether the applicant properly identified, in Table 2.4-4 of the LRA, the passive, long-lived structural components on the list of components that are subject to an AMR. On the basis of the above review the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.4.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the turbine building and main control room complex SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.5 Emergency Cooling Tower and Reservoir

2.4.5.1 Summary of Technical Information in the Application

In Section 2.4.5 of the LRA, the applicant provided a description of the emergency cooling tower and reservoir. The emergency cooling tower and reservoir and associated mechanical and electrical equipment are classified as seismic Class I. The Class I elements of the emergency cooling tower and reservoir structure are founded on rock. The reservoir of the emergency cooling tower has a 1-week water storage capacity, and is a reinforced concrete tank structure approximately 25 ft deep with a precast, prestressed concrete roof. The tank structure is founded on rock.

The cooling tower is a mechanical induced draft type, consisting of three cells. The reservoir and tower facility is a reinforced concrete structure. The cooling tower fill consists of vitreous clay tiles of the multicell block design. Peach Bottom UFSAR Sections 10.24 and 12.2 describe the emergency cooling tower and reservoir in detail. The license renewal drawing referenced for the emergency cooling tower structure is LR-S-001.

The applicant determined that the following intended functions for the emergency cooling tower and reservoir fall within the scope of license renewal:

- Physical support - The emergency cooling tower and reservoir provide physical support for safety-related and non-safety-related systems and equipment during normal, severe environmental, extreme environmental, and abnormal loading conditions.

- Protection - The emergency cooling tower and reservoir provide protection for safety-related and non-safety-related systems and equipment from external, internal, and environmental hazards.

- Fire protection - The emergency cooling tower and reservoir provide rated fire barriers or retards a fire from spreading to adjacent areas of the plant.

- Emergency heat sink - The emergency cooling tower and reservoir provides sufficient capacity for removing the sensible and decay heat from the reactor’s primary systems so that both reactors can be shut down in the event of unavailability of the normal heat sink.

- Sustained operation - The emergency cooling tower and reservoir provide sufficient storage water capacity to permit emergency cooling tower operation until a makeup water supply can be established.

The applicant described its process for identifying the structural/civil components within the scope of license renewal and subject to an AMR in Section 2.1 of the LRA. On the basis of this methodology, the applicant identified, in Table 2.4-5, the following emergency cooling tower and reservoir component groups as the passive and long-lived component groups subject to an AMR:

- reinforced concrete (walls, slabs, columns, beams, foundation, block walls)
- prestressed concrete (roof slab)
- structural steel (structural steel, reinforced concrete embedments)

The intended functions of the concrete components include providing (1) structural support, (2) fire barrier, (3) shelter, protection, and/or radiation shielding, (4) flood barrier, and (5) missile barrier. The structural steel components have a structural support intended function.

2.4.5.2 Staff Evaluation

The staff reviewed Section 2.4.5 of the LRA, Peach Bottom UFSAR Sections 10.24 and 12.2, relevant staff SERs, and the IPE and IPEEE to determine whether there is reasonable assurance that the emergency cooling tower and reservoir system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule.

Using the information provided in the LRA and the UFSAR, the staff sampled several components to determine whether the applicant properly identified the passive, long-lived structural components on the list of components subject to an AMR in Table 2.4-5 of the LRA. On the basis of the above review the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.5.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the emergency cooling tower and reservoir SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.6 Station Blackout Structure and Foundations

2.4.6.1 Summary of Technical Information in the Application

In Section 2.4.6 of the LRA, the applicant provided a description of the station blackout (SBO) structure. The SBO structure houses the switchgear necessary to connect the alternate AC source to the plant. The structure is a prefabricated steel enclosure with double doors at either end of the structure to facilitate equipment transfer in and out of the structure as required. The structure is designed to protect the equipment from damage due to external weather exposure and is mounted on three reinforced concrete piers. The license renewal drawing referenced for the SBO structure is LR-S-001.

The applicant determined that the following intended functions for the SBO structure and foundations fall within the scope of license renewal:

- Protection - The SBO structure protects equipment required for station blackout.
- Physical support - The SBO structure provides support for equipment required for station blackout.

In Section 2.1 of the LRA, the applicant described its process for identifying the structural/civil components falling within the scope of license renewal and subject to an AMR. On the basis of this methodology, the applicant identified, in Table 2.4-6 of the LRA, the following structural component groups subject to an AMR:

- reinforced concrete (foundation)
- structural steel (structural steel, reinforced concrete embedment, metal siding)

The concrete components have an intended function as structural support. The intended functions of the structural steel components are to provide (1) structural support and (2) shelter, protection, and/or radiation shielding.

2.4.6.2 Staff Evaluation

The staff reviewed Section 2.4.6 of the LRA, associated sections of the Peach Bottom UFSAR, relevant staff SERs, and the IPE and IPEEE to determine whether there is reasonable assurance that the SBO structure and foundation components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. On the basis of this review, the staff has made the findings described below.

In a letter dated March 22, 2002, the staff requested additional information on the SBO structure. Section 2.4.6 of the LRA stated that the SBO structure is a prefabricated steel enclosure with double doors at either end of the structure to facilitate equipment transfer in and out of the structure as required. The structure was designed to protect the equipment from

damage due to external weather exposure. However, the LRA did not describe the structural components that protect the SBO equipment inside the enclosure from high wind, rainfall, and potential flooding. These components could include the materials for roof and wall sealing or moisture barriers, if any. If present, such materials should have been included in the scope of license renewal. In RAI 2.4.6-1, the staff requested that the applicant provide additional information on the components or commodities required for weather protection of the SBO structure.

In response to RAI 2.4.6-1 (in a letter dated May 22, 2002), the applicant stated that the SBO structure consists of an industrial-grade lineup of outdoor 13.8 KV and 34.5 KV metal-clad switchgear enclosures. The enclosure lineup is nominally 26 feet by 19 feet in plan, mounted on a steel skid that is supported on concrete piers. Each enclosure is constructed with 12 gage sheet metal and designed to operate in an outdoor environment. The SBO structure is classified as non-safety-related and was designed to commercial-grade standard. The structure is designed to protect the SBO equipment from rainfall and wind, but not resist high winds or flood.

The applicant stated that the enclosure is of welded steel construction, including the roof. Thus, the components, which provide the required protection, are included in Table 2.4-6 and Table 2.4-14 of the LRA. The joint between the switchgear enclosures forming the lineup is sealed with silicone sealant. The sealant is in the scope of license renewal and subject to an AMR. It is considered as a commodity and is included in the hazard barrier and elastomer commodity group identified in Table 2.4-14 of the LRA. The staff found the applicant's clarification in response to RAI 2.4.6-1 to be acceptable.

In review of the screening results of Section 2.5 of the LRA, the staff found that the applicant did not include any SBO-related structures or components within the scope of license renewal for the offsite power system. The function of the offsite power system under the SBO rule is to provide a means of recovering from the SBO. The system performs a function to demonstrate compliance with the NRC regulations on SBO that meets the criterion of 10 CFR 54.4(a)(3). In RAI 2.5-1, the staff asked the applicant to add the applicable structures and components of the offsite power system to the scope of license renewal.

In its response to RAI 2.5-1, the applicant, by letter dated May 22, 2002, supplemented its LRA to include additional structures and components of the offsite power system that should be included within the scope of license renewal and the AMR process. The offsite power system (substations and 13 Kv) consists of three power sources and their associated structures and components. The substations are designed to the industry standard for power distribution design and consist of switchyard bus, insulators, circuit breakers, ground and disconnect switches, transformers, offsite power line poles, and associated switchgear and control buildings, and foundations and supports. The following structures and components protect and support the offsite power system:

- startup switchgear buildings
- substation control buildings
- switchgear enclosures
- manholes and ductbanks
- offsite power line poles

- raceway and switchgear supports
- supports for in-scope substation components
- cable trays, conduits, and electrical boxes

The structural components of the offsite power system that are subject to an AMR are the foundation, walls, block wall, slabs, ductbank, precast panels, structural steel, support members, offsite power line poles, metal siding, metal decking, anchors, reinforced concrete embedment, and electrical and instrument enclosures and raceways. The intended functions of these structural components are to provide (1) structural support, (2) shelter, and (3) protection and/or radiation shielding to the non-safety-related offsite power system and components.

The staff reviewed the RAI response and found that the applicant has properly identified the structures and components for the offsite power system that are within the scope of license renewal and subject to an AMR. The staff found applicant's response to RAI 2.5-1 to be acceptable because the structures and components that are within the scope of license renewal meet the requirements of 10 CFR 54.4 (a)(3) and the staff's SBO position in a letter dated April 1, 2002.

Based on the information provided in the LRA and additional information submitted by the applicant in response to the staff's RAIs, the staff sampled several components to determine whether the applicant properly identified the passive, long-lived structural components on the list of components subject to an AMR in Table 2.4-6 of the LRA. On the basis of the above review, the staff did not identify any omissions by the applicant.

2.4.6.3 Conclusions

On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the SBO and offsite power system structures and their structural components that are within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1), respectively.

2.4.7 Yard Structures

2.4.7.1 Summary of Technical Information in the Application

In LRA Section 2.4.7, "Yard Structures," the applicant describes the yard structures at the plant site, and identifies the structural components of the yard structures that are within the scope of license renewal and subject to an AMR. The general location of the yard structures is identified in drawing LR-S-001

In Section 2.1 of the LRA, the applicant described its process for identifying the structural/civil components within the scope of license renewal and subject to an AMR. Based on its methodology, the applicant, in Table 2.2-2, identifies the yard structures within the scope of license renewal and describes the results of its scoping methodology in Section 2.4.7 in the LRA.

The yard structures consist of various conduit duct banks, manholes, the high-pressure service water system valve pit, the service water pipe tunnel, and the condensate storage tank foundations. Conduit duct banks are located throughout the plant to provide passageways and

protection for electrical cables and conduits. Manholes provide access to electrical components to meet accessibility requirements. These concrete structures provide a method for routing cables and provide protection from various environmental conditions. Manholes are protected from intrusion of combustible liquid by raised curbing or gaskets.

The high-pressure service water valve pit is a concrete structure located in the yard area south of the discharge outlet structure. Two high-pressure service water valves, as well as one emergency service water valve, are in the valve pit. The Unit 2 condensate storage tank is located south of the Unit 2 reactor building. Its base is supported on a 14-inch thick perimeter ring reinforced concrete wall and subbase consisting of crushed stone and sand. The Unit 3 condensate storage tank is located north of the Unit 3 reactor building. Its base is supported on the crushed stone and sand subbase. The high-pressure service water, service water, and emergency service water pipes run from the circulating water pump structure to the turbine building partially in the service water pipe tunnel.

The yard structures are further described in Section 6.3 of the Peach Bottom fire protection plan. The applicant's scoping methodology captures the yard structures within the scope of license renewal that meet the intent of 10 CFR 54.4(a) because they perform the following intended "structure level" functions:

- Physical support - The yard structures provide physical support for safety-and non-safety-related systems and equipment during normal, severe environmental, extreme environmental, and abnormal loading conditions.

- Protection - The yard structures provide protection for safety-related and non-safety-related systems and equipment from external, internal, and environmental hazards.

- Fire barrier – The yard structures provide rated fire barriers or retard a fire from spreading to adjacent areas of the plant.

On the basis of the above described methodology, the applicant identified the structures and structural components that are part of the yard structures. Table 2.4-7 lists the following structures and structural components that are subject to an AMR:

- reinforced concrete (walls, slabs, foundation)
- condensate storage tank foundations
- structural steel (reinforced concrete embedments for the service water pipe tunnel)

The intended functions of the concrete components include providing (1) structural support, (2) fire barrier, (3) shelter, protection, and/or radiation shielding, and (4) missile barrier. The structural steel components have a structural support intended function, as does the condensate storage tank foundation. As a result, the structures and structural components of the yard structures within the scope of license renewal perform their intended functions without moving parts or without change in configuration or properties, and are not subject to periodic replacement based on a qualified life or specified time period.

2.4.7.2 Staff Evaluation

The staff reviewed Section 2.4.7 in the LRA, the associated sections of the Peach Bottom UFSAR, the fire protection plan (FPP), relevant staff SERs, the IPE and IPEEE to determine whether there is reasonable assurance that the yard structures system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

Using the information provided in the LRA and the Peach Bottom UFSAR and FPP, the staff sampled several components identified in Table 2.4-7 of the LRA to determine whether the applicant properly identified the passive, long-lived structural components that were subject to an AMR. In a letter dated March 12, 2002, the staff requested additional information on the yard structure components subject to an AMR listed in Table 2.4-7 of the LRA. In RAI 2.4.7-1, the staff indicated that UFSAR Section 9.2 (page 9.3-4) stated that the water-tight dikes around the refueling water storage tank, the Unit 2 condensate storage tank, the Unit 3 condensate storage tank, and the torus water storage tank are seismically designed to withstand the effects of maximum ground acceleration due to the design basis earthquake. However, LRA Table 2.2-2 stated that the water-tight dikes did not fall within the scope of license renewal. The staff requested the applicant to provide justification for their exclusion.

In a letter dated May 22, 2002, in response to RAI 2.4.7-1, the applicant stated that the water-tight dikes around the refueling water storage tank, the condensate storage tanks, and the torus water storage tank were provided to contain any spills or overflow to support the liquid radwaste system design basis. The liquid radwaste system is designed such that discharge concentrations are always less than 10 CFR Part 20 limits. Water collected within the dikes is either directed to the radwaste system for processing or released to the plant storm drain system. Prior to any release to the storm drain system, the liquid is analyzed for radioactivity to ensure no significant radioactivity is released to the environment. The dikes are designed to withstand the effects of the maximum ground acceleration due to the design earthquake as indicated in UFSAR Section 9.2, but are not classified seismic Class I structures in the Peach Bottom UFSAR Appendix C.1.2, nor are they credited for a regulated event.

Based on the applicant's response to the RAI, the staff reviewed the technical information in UFSAR Section 9.2. The staff found that the UFSAR Section 9.2.3, "Safety Design Basis," states that the liquid radwaste system prevents the inadvertent release of significant quantities of liquid radioactive material from the site boundary of the plant which could result in radiation exposures to the public in excess of the limits specified in 10 CFR Part 100. UFSAR Section 9.2.9 states that leaks or spills from the liquid radwaste system are retained by secondary enclosures such as water-tight dikes and the water-tight dikes support the liquid radwaste system, by providing a barrier, in meeting its safety design of ensuring that a radioactive release to the public in excess of 10 CFR Part 100 limits is prevented. Therefore, this item was characterized as SER Open Item 2.4.7.2-1.

In a letter dated November 26, 2002, in response to Open Item 2.4.7.2-1, the applicant stated that the staff's review of UFSAR Sections 9.2.3 and 9.2.9 accurately reflect the content of the sections and is consistent with its review of the same UFSAR sections. However, the applicant questioned the accuracy of the UFSAR regarding the water-tight dikes and whether the water-tight dikes safety design basis met the requirements for being included within the scope of license renewal in accordance with 10 CFR 54.4. Consequently, the applicant performed a design basis review of the water-tight dikes to determine if they should be included within the scope of license renewal and subject to an AMR.

The PBAPS, Units 2 and 3, design, as stated in Appendix H of the UFSAR, satisfies the requirements of the 27 draft General Design Criteria for Nuclear Power Plants (November 1965) of the Atomic Energy Agency, and was later evaluated against the 70 criteria proposed in July 1967. Furthermore, the NRC staff's evaluation of the design bases for the liquid radwaste system is documented in Section 8.2 of the original facility safety evaluation, dated August 11, 1972. The staff's SER considered effluent activity, hydraulic model studies of the dipersion and dilution characteristics and concluded that liquid effluents are less than 10 CFR Part 20 limits. In addition, the water-tight dikes around the (1) refueling water storage tank and the Unit 2 condensate storage tank and (2) Unit 3 condensate storage tank are only seismically designed for the effects of maximum ground acceleration associated with the design earthquake. This design is consistent with requirements of Regulatory Guide 1.143, "Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water Cooled Nuclear Power Plants."

Based on the above review, the applicant concluded that the "Safety Design Basis" of the liquid radwaste system is to prevent release of radioactive materials to the environment that exceed the limits of 10 CFR 20. The reference to 10 CFR 100 limits is inaccurate, since 10 CFR 20 limits are significantly lower than 10 CFR 100, and it follows that 10 CFR 100 limits will not be exceeded if 10 CFR 20 limits are not surpassed. As a result, the applicant revised UFSAR Section 9.2.3 to indicate that the liquid radwaste system prevents the inadvertent releases of radioactive material in excess of 10 CFR 20 limits, instead of 10 CFR 100 limits. The applicant provided a revised copy of UFSAR Section 9.2.3 as part of its November 26, 2002, response to Open Item 2.4.7.2-1.

Based upon the review of the original SER of 1972, and the applicant's safety evaluation of the water-tight dikes's design basis, the staff agrees with the applicant that the water-tight dikes were designed to meet 10 CFR 20 requirements. As such, the water-tight dikes do not meet the scoping criteria for 10 CFR 54.4 for inclusion within the scope of license renewal. Therefore, SER Open Item 2.4.7.2-1 is closed because the applicant's evaluation supporting the revision of UFSAR Section 9.2.3 demonstrates that the design of the water-tight dikes do not meet the requirements for being included within the scope of license renewal in accordance with 10 CFR 54.4.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.7.3 Conclusions

On the basis of its review the staff concludes there is reasonable assurance that the applicant has adequately identified the yard structures SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.8 Stack

2.4.8.1 Summary of Technical Information in the Application

In Section 2.4.8 of the LRA, the applicant provided a description of the Peach Bottom stack. A single stack is used to discharge gaseous waste from both units. The stack is located approximately 670 feet west of the reactor buildings, where the grade elevation is approximately 265 feet.

The stack is a tapered, reinforced concrete structure 500 feet high. The foundation is an octagonal concrete mat approximately 7 feet thick. The dilution fans and eductor are housed in the lower 30 feet of the structure. The stack is designed to seismic Class I criteria and for normal wind load; it is not designed to withstand tornado wind forces. The stack is located a sufficient distance from the reactor buildings so that they would not incur any damage in the event of a complete stack failure. The stack is discussed further in Section 12.2 and Appendix C of the Peach Bottom UFSAR. The license renewal drawing referenced for the stack is LR-S-001.

The only intended function within the scope of license renewal is elevated release. That is, the stack provides for the discharge of gaseous waste to meet the requirements of 10 CFR Part 100.

The applicant described its process for identifying the structural/civil components falling within the scope of license renewal and subject to an AMR in Section 2.1 of the LRA. On the basis of this methodology, the applicant identified, in Table 2.4-8, the reinforced concrete component group as the passive and long-lived component group subject to an AMR.

2.4.8.2 Staff Evaluation

The staff reviewed Section 2.4.8 of the LRA, Section 12.2 and Appendix C of the Peach Bottom UFSAR, relevant SERs, the IPE and IPEEE to determine whether there is reasonable assurance that the stack system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In a letter dated March 12, 2002, the staff requested additional information on stack structure components subject to an AMR listed in Table 2.4-8 of the LRA. In RAI 2.4.8-1, the staff

indicated that Section 2.4.8 of the LRA stated that the dilution fans and eductor are housed in the lower 30 feet of the stack structure. However, Table 2.4-8 did not contain supports or housings for this equipment. The staff inquired whether these components were within the scope of license renewal.

In a letter dated May 22, 2002, in response to RAI 2.4.8-1, the applicant stated that the dilution fans and eductor are components of the offgas and recombiner system, which is not within the scope of license renewal, as indicated in Table 2.2-1. Also, these components and their supports do not perform any intended function described by 10 CFR 54.4 and, consequently, they are not required to be referenced in the LRA tables. The staff found the applicant's clarification in response to RAI 2.4.8-1 to be acceptable.

Using the information provided in the LRA and the UFSAR, the staff sampled several components to determine whether the applicant properly identified the passive, long-lived structural components on the list of components subject to an AMR in Table 2.4-8 of the LRA. On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.8.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the stack SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.9 Nitrogen Storage Building

2.4.9.1 Summary of Technical Information in the Application

In Section 2.4.9 of the LRA, the applicant provided a description of the nitrogen storage building. The nitrogen storage building is a seismic Class I reinforced concrete structure (nominally 26.6 feet by 43.2 feet) founded on rock and structural lean-concrete backfill supported on rock. The western portion of the building is supported on and connected to the RHR pump room slab. The east wall is butted directly up to the Unit 2 condensate storage water dike wall. The north wall is structurally separated from the reactor building to eliminate interaction between both structures.

The license renewal drawing referenced for the nitrogen storage building is LR-S-001.

The applicant determined that the following intended functions for the nitrogen storage building fall within the scope of license renewal:

- Physical support - The nitrogen storage building provides physical support for safety-related and non-safety-related systems and equipment during normal, severe environmental, extreme environmental, and abnormal loading conditions.

- Protection - The nitrogen storage building provides protection for safety-related and non-safety-related systems and equipment from external, internal, and environmental hazards.

In Section 2.1 of the LRA, the applicant described its process for identifying the structural/civil components falling within the scope of license renewal and subject to an AMR. On the basis of this methodology, the applicant identified, in Table 2.4-9, the following component groups and the passive and long-lived components as subject to an AMR:

- reinforced concrete (walls, slabs, foundation)
- structural steel (reinforced concrete embedment)

The intended functions of the concrete components are to provide (1) structural support, (2) fire barrier, (3) shelter, protection, and/or radiation shielding, and (4) missile barrier. The structural steel components have a intended function of structural support.

2.4.9.2 Staff Evaluation

The staff reviewed Section 2.4.9 of the LRA, the associated sections of the Peach Bottom UFSAR, relevant staff's SERs, and the IPE and IPEEE to determine whether there is reasonable assurance that the nitrogen storage building system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule.

Based on the information provided in the LRA and the UFSAR, the staff sampled several components to determine whether the applicant properly identified the passive, long-lived structural components on the list of components subject to an AMR in Table 2.4-9 of the LRA. On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.9.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the nitrogen storage building SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.10 Diesel Generator Building

2.4.10.1 Summary of Technical Information in the Application

In the LRA, Section 2.4.10, "Diesel Generator Building," the applicant describes the structural components of the diesel generator building that are within the scope of license renewal and subject to an AMR. The general location of the diesel generator building is identified in drawing LR-S-001.

In Section 2.1 of the LRA, the applicant described its process for identifying the structural/civil components within the scope of license renewal and subject to an AMR. Based on its

methodology the applicant, identified the diesel generator building within the scope of license renewal in LRA Table 2.2-2 and describes the results of its scoping methodology in Section 2.4.10.

Appendix C of the UFSAR states that seismic Class I structures are those whose failure could increase the severity of the design basis accident and cause release of radioactivity in excess of 10 CFR Part 100 limits and those essential for safe shutdown and removal of decay heat following a LOCA. Appendix C, Section C.1.2, identifies the diesel generator building as a Class I structure. This building is designed as a seismic Class I structure since it houses the four diesel generators which provide the standby power supply essential for safe shutdown of the plant upon loss of all offsite power. It has a fifth compartment that houses equipment required for operation of the emergency heat sink. The superstructure of the building consists of reinforced concrete walls and roof. Large openings in the diesel generator building are either protected by missile-proof doors or have baffle walls located in front of them. The emergency diesel fuel supply is stored in underground steel tanks east of the building. The applicant's scoping methodology captures the diesel generator building within the scope of license renewal since it meets the intent of 10 CFR 54.4(a), and the building performs the following intended "structure level" functions:

- Physical support - The diesel generator building provides physical support for safety-related and non-safety-related systems and equipment during normal, severe environmental, extreme environmental, and abnormal loading conditions.

- Protection - The diesel generator building provides protection for safety-related and non-safety-related systems and equipment from external, internal, and environmental hazards.

- Fire protection - The diesel generator building provides rated fire barriers or retards a fire from spreading to adjacent areas of the plant.

On the basis of the above described methodology, the applicant identified the structural components that are part of the diesel generator building. Table 2.4-10 lists the following component groups and structural components that are subject to an AMR:

- reinforced concrete (walls, slabs, columns, beams, foundation)
- structural steel (structural steel, reinforced concrete embedments)
- steel foundation piles

The intended functions of the concrete components include providing (1) structural support, (2) fire barrier, (3) shelter, protection, and/or radiation shielding, (4) flood barrier, and (5) missile barrier. The structural steel components and steel foundation piles have a structural support intended function. Therefore, the structural components of the diesel generator building within the scope of license renewal perform their intended functions without moving parts or without change in configuration or properties, and are not subject to periodic replacement based on a qualified life or specified time period.

2.4.10.2 Staff Evaluation

The staff reviewed Section 2.4.10 of the LRA, Section 12.2 and Appendix C of the Peach Bottom UFSAR, relevant staff SERs, the IPE and IPEEE to determine whether there is reasonable assurance that the diesel generator building system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In a letter dated March 12, 2002, the staff requested additional information on diesel generator building structure components subject to an AMR listed in Table 2.4-10 of the LRA. In RAI 2.4.10-1, the staff indicated that Section 12.2.5 of the UFSAR stated that large openings in the diesel generator building are either protected by missile-proof doors, by baffle walls located in front of them, or by blowout panels. However, blowout panels were not mentioned in the LRA text or Table 2.4-10. The staff asked the applicant to indicate whether blowout panels and seals exist and whether they should be included in Table 2.4-10 or provide a justification for their exclusion.

The applicant responded to the staff's question in a letter to the NRC dated May 22, 2002. The applicant stated that blowout panels and blowout panel seals do not exist in the diesel generator building. Large openings in the building are protected either by missile-proof doors or by baffle walls located in front of them, but not blowout panels. This was confirmed by a detailed review of design drawings and a field walkdown of the building. The staff found the applicant's response to be acceptable.

In RAI 2.4.10-2, the staff indicated that Section 12.2.5 of the UFSAR stated that the superstructure of the building consisted of cast-in-place concrete walls and roof. The staff found that walls were included in Table 2.4-10 of the LRA. However, the roof was not explicitly addressed. The staff asked the applicant to clarify this.

The applicant, in its RAI response to the staff dated May 22, 2002, indicated that the roof of the diesel generator building consisted of a cast-in-place reinforced concrete slab. This structural component is included within the component group of reinforced concrete under slabs listed in Table 2.4-10. The staff found the applicant's response to RAI 2.4.10-2 to be acceptable.

The NRC staff reviewed the LRA, supporting information in the UFSAR, and the applicant's response to the staff's RAI. In addition, the staff sampled several components from Table 2.4-10 to determine whether the applicant properly identified the components that are within the scope of license renewal and subject to an AMR. On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.10.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the diesel generator building SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.11 Circulating Water Pump Structure

2.4.11.1 Summary of Technical Information in the Application

In Section 2.4.11 of the LRA, the applicant provided a description of the circulating water pump structure. The circulating water pump structure complex (nominally 280 feet by 80 feet) is a reinforced concrete structure with several sections founded on rock. The central portion is a seismic Class I reinforced concrete tornado-resistant structure. The central portion has three pump bays: one for Unit 2, one for Unit 3, and a third smaller bay which contains two emergency service water pumps in individual cells. These pump bays are interconnected by walls with openings equipped with sluice gates. The superstructure over these pumps has reinforced concrete walls and floor and a reinforced concrete roof supported on structural steel beams. Removable panels in the roof provide access to the pumps. A structural steel and plate wall divides the pump area into two rooms for additional protection. The rooms are flood-protected to an elevation of 135 feet by means of water-tight doors and sealed floor penetrations.

To the east of the superstructure is a similar seismic Class I reinforced concrete tornado-resistant structure which houses the service water traveling screens. Four screens, two per unit, are provided to screen the water before it goes into the pump bays. Each screen has a sluice-gated opening on each side.

The seismic Class I portion of the circulating water pump structure is designed such that no credible event, including internal flooding due to failure of a seismic Class II structure or component, would prevent the equipment housed therein from functioning as necessary to assure safe shutdown of both Units 2 and 3. The circulating water pump structure is further described in Section 12.2 of the UFSAR. The license renewal drawing referenced for the circulating water pump structure is LR-S-001.

The applicant determined that the following intended functions for the circulating water pump structure fall within the scope of license renewal:

- Physical support - The circulating water pump structure provides physical support for the safety-related and non-safety-related systems and equipment during normal, severe environmental, extreme environmental, and abnormal loading conditions.

- Protection - The circulating water pump structure provides protection for the safety-related and non-safety-related systems and equipment from external, internal, and environmental hazards.

- Fire protection - The circulating water pump structure provides rated fire barriers or retards a fire from spreading to the adjacent areas of the plant.

In Section 2.1 of the LRA, the applicant described its process for identifying the structural/civil components falling within the scope of license renewal and subject to an AMR. On the basis of this methodology, the applicant identified, in Table 2.4-11, the following component groups and the passive and long-lived structural components of the circulating water pump structure that are subject to an AMR:

- reinforced concrete (walls, slabs, columns, beams, foundation, block walls)
- structural steel (sluice gates and embedment, structural steel, reinforced concrete embedment)

The intended functions of the concrete components include providing (1) structural support, (2) fire barrier, (3) shelter, protection, and/or radiation shielding, (4) flood barrier, and (5) missile barrier. The structural steel components have the intended functions of structural support and flood barrier. The sluice gates and embedment have the intended function of maintaining pressure boundary.

2.4.11.2 Staff Evaluation

The staff reviewed Section 2.4.11 of the LRA, Section 12.2 of the Peach Bottom UFSAR, relevant staff SERs, and the IPE and IPEEE to determine whether there is reasonable assurance that the circulating water pump structure system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule.

Based on the information provided in the LRA and the UFSAR, the staff sampled several components to determine whether the applicant properly identified the passive, long-lived structural components subject to an AMR in Table 2.4-11 of the LRA. On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.11.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the circulating water pump structure SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.12 Recombiner Building

2.4.12.1 Summary of Technical Information in the Application

In Section 2.4.12 of the LRA, the applicant provided a description of the recombiner building. The recombiner building is a rectangular-shaped (nominally 66.5-feet-by-80.4 feet) reinforced concrete structure founded on rock that consists of several cubicle areas. It is a seismic Class I

structure that houses the hydrogen recombiner system, catalytic recombiner, condensers, preheaters, analyzers, and other system equipment. This structure is located north of the Unit 3 reactor building and west of the Unit 3 turbine building. The structure has two exterior doors on the north wall at an elevation of 135 feet. The recombiner building is shared by Unit 2 and Unit 3 and houses their equipment.

The recombiner building is further described in Section 12.1 and Appendix C of the Peach Bottom UFSAR. The license renewal drawing referenced for the recombiner building is LR-S-001.

The applicant determined that the following intended function for the recombiner building falls within the scope of license renewal:

- Physical support - The recombiner building supports SSCs whose failure could adversely impact safety-related structures.

In Section 2.1 of the LRA, the applicant described its process for identifying the structural/civil components falling within the scope of license renewal and subject to an AMR. On the basis of this methodology, the applicant identified, in Table 2.4-12, the following component groups and the passive and long-lived structural components subject to an AMR:

- reinforced concrete (walls, slabs, columns, beams, foundation)
- structural steel

The reinforced concrete has the intended function of structural support, as does structural steel.

2.4.12.2 Staff Evaluation

The staff reviewed Section 2.4.12 of the LRA, Section 12.1 and Appendix C of the Peach Bottom UFSAR, relevant staff's SERs, and the IPE and IPEEE to determine whether there is reasonable assurance that the recombiner building system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In a letter dated March 12, 2002, the staff requested additional information on the recombiner building components listed in Table 2.4-12 of the LRA. Section 12.1 and Appendix C of the UFSAR described the functions of the recombiner building, but did not describe the building structure. Table 2.4-12 of the LRA listed walls, slabs, columns, beams, and foundation as the components subject to an AMR. However, Table 2.4-12 did not list the building roof, nor did Section 2.4.12 of the LRA provide a justification for its exclusion. In RAI 2.4.12-1, the staff requested that the applicant verify the table to ensure its completeness or justify why the roof should not be within the scope of license renewal.

In response to RAI 2.4.12-1 (in a letter dated May 22, 2002), the applicant stated that the recombiner building is listed in Section 12.1 and Appendix C of the UFSAR as a seismic Class 1 structure, but, as the staff noted, it is not described in detail. The description provided in Section 2.4.12 of the LRA was extracted from the Peach Bottom structural Design Baseline Document. The structure is adjacent and communicates with the Unit 3 reactor building through the safety-related doors at elevation 165 ft. Major components of the building include reinforced concrete, concrete embedment, block walls, structural and miscellaneous steel, siding, and roofing material. The building does not house or support any safety-related systems, or equipment.

The applicant also stated that a detail review of the Peach Bottom CLB concluded that the building and its structural components do not perform an intended function pursuant to 10 CFR 54.4(a)(1) or (a)(3). However, as stated above, it is adjacent to the Unit 3 reactor building and its failure, although unlikely, may impact the safety of the reactor building structure. For this reason, the applicant has conservatively included the components critical to the building structural integrity in the scope of license renewal pursuant to 10 CFR 54.4(a)(2). These components are listed in Table 2.4-12 of the LRA and subject to an AMR as indicated in Table 3.5-12 of the LRA. Structural components, such as roofing, siding, decking, and internal partitions (block walls), do not contribute to the structural integrity of the recombiner building and their failure will not impact the reactor building. Therefore, they are not included in the scope of license renewal. The staff found the applicant's response to RAI 2.4.12-1 to be acceptable.

Based on the information provided in the LRA and the UFSAR, the staff sampled several components to determine whether the applicant properly identified the passive, long-lived structural components subject to an AMR in Table 2.4-12 of the LRA. On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.12.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the recombiner building SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.13 Component Supports

2.4.13.1 Summary of Technical Information in the Application

In Section 2.4.13 of the LRA, the applicant provided a description of the component supports. The component support commodity group includes the following component groups:

- support members
- anchors
- grout

The component group of support members include supports for piping and components, HVAC ducts, conduits, cable trays, instrumentation tubing trays, electrical junction and terminal boxes, electrical and I&C devices, and instrument tubing, and supports for major equipment, such as

pumps, transformers, and HVAC fans and filters. This component group also includes components such as spring hangers, including the springs, rod hangers, braces, guides, clamps, base plates, metal-to-metal sliding joints, lubrite plates, snubber supports, stops, mounting brackets, support bolting, instrument racks, and bottle racks.

The component group, anchors, is the part of the component support assembly used to attach electrical panels, electrical cabinets, racks, switchgears, enclosures for electrical and instrumentation equipment, pipe hangers, pumps, transformers, HVAC fans, and HVAC filters to other components or structures. Welds are used for steel attachments while undercut anchors, expansion anchors, cast-in-place anchors, and grouted-in anchors are used for concrete attachments.

The component group of grout includes grouted support pads and grouted base plates. Grout is used in the construction of equipment pads and for filling, and leveling equipment bases and setting them to their respective foundations.

In Section 2.1 of the LRA, the applicant described its process for identifying the structural/civil components falling within the scope of license renewal and subject to an AMR.

In addition to the structures within the scope of license renewal presented in this section, the applicant also evaluated several structural component groups, such as component supports, as commodities. Commodity groups were determined based upon similar design or similar materials and similar environments. For each of the structural commodities, the applicant provided the following information: a general description of the commodity, a list of the components or component groups that require an AMR, and a list of associated component intended functions and environments.

On the basis of this methodology, the applicant identified, in Table 2.4-13, the following component groups as the passive and long-lived components subject to an AMR:

- support members
- anchors
- grout
- lubrite plates

All components in the component support commodity group have an intended function of structural support .

2.4.13.2 Staff Evaluation

The staff reviewed Section 2.4.13 of the LRA, the associated sections of the Peach Bottom UFSAR, relevant staff's SERs, and the IPE and IPEEE to determine whether there is reasonable assurance that the component supports system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components

having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

Section 2.4.13 of the LRA states that the component support commodity group includes support members, anchors, and grout. The staff found that bolts were used for the support members. However, bolts could also be used to fasten the components and structures that were not used for component support. For example, Section 5.2.3.4.7 of the UFSAR (page 5.2-9) mentioned bolts in relation to the drywell (vessel) head; Section 5.2.3.4.5 of the UFSAR (page 5.2-8) addressed bolted heads of the equipment hatches and bolted manways. In RAI 2.4.13-1 (in a letter dated March 12, 2002), the staff requested that the applicant clarify whether the bolts that are used to fasten structures for reasons other than for support are included in the component support commodity group.

In response to RAI 2.4.13-1 (in a letter dated May 22, 2002), the applicant explained that bolts for structures and structural components within the scope of license renewal are also in the scope of license renewal and subject to an AMR. The bolts are considered subcomponents of the structure or component they fasten and are evaluated as part of that structure or component. This is the case whether the bolts provide a structural support intended function or other functions such as the pressure-retaining function. For example, bolts for the drywell (vessel) head, bolts for equipment hatches, and bolts for manways are included in Table 2.4-1 of the LRA with their respective component group (drywell head, drywell equipment hatch, etc.). Their pressure boundary and structural support intended functions are enveloped by the intended function listed in the table for the drywell head, drywell equipment hatch, and other access hatches. The staff found the applicant's response to RAI 2.4.13-1 to be acceptable.

Based on the information provided in the LRA and the Peach Bottom UFSAR, the staff sampled several component supports to determine whether the applicant properly identified them in Table 2.4-13 of the LRA as being subject to an AMR. On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.13.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the component supports SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.14 Hazard Barriers and Elastomers

2.4.14.1 Summary of Technical Information in the Application

In Section 2.4.14 of the LRA, the applicant describes the hazard barrier and elastomer commodity group, which includes fire and other hazard barrier penetration seals, fire wraps, and fire and other hazard barrier doors.

Elastomer components include expansion joint seals (seismic joint seal material, control joint seal material, and seismic separation joint seal material), moisture barrier inside drywell at the juncture of the drywell shell wall with the concrete floor, reactor building blowout panel seals, and reactor building metal siding gap seals. Hazard barriers and elastomers are treated as a commodity because of similarities in design, material, aging effect, and/or environment. The

steel components are treated as a commodity group because of similarities in design, material, and/or environment.

The applicant describes its process for identifying the structural/civil components falling within the scope of license renewal and subject to an AMR in Section 2.1 of the LRA. In addition to the structures within the scope of license renewal presented in this section, the applicant evaluated several structural component groups, such as hazard barriers and elastomers, as commodities. Commodity groups were determined on the basis of similar design or similar materials and similar environments. For each of the structural commodities, the applicant provides the following information:

- general description of the commodity
- list of the components or component groups that require aging management review and the associated component intended functions and environments

On the basis of this methodology, the applicant identifies the SSCs which form the hazard barrier and elastomer commodity group that are subject to an AMR in LRA Table 2.4-14. Table 2.4-14 lists fire barrier, flood barrier, HELB shielding, fission product barrier, shelter, protection, and/or radiation shielding, missile barrier, and overpressure protection as the intended functions of the hazard barrier and elastomer commodity group.

2.4.14.2 Staff Evaluation

The staff reviewed Section 2.4.14 of the LRA, the associated UFSAR sections, relevant staff SERs, the IPE and IPEEE to determine whether there is reasonable assurance that the hazard barrier and elastomer system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

In a letter dated March 12, 2002, the staff requested additional information regarding hazard barriers, and the applicant responded to that RAI in a letter dated May 22, 2002, as discussed below.

In RAI 2.3.3.7-3, the staff requested that the applicant identify, for each structure in LRA Section 2.4, if fire-resistive coatings have been applied to structural steel members serving as part of fire barriers and if they fall within the scope of license renewal and are subject to an AMR, or if fire-resistive coatings are present but not within the scope and not subject to an AMR, or provide a justification for their exclusion.

In a letter dated May 22, 2002, the applicant responded that fire-resistive coatings have been applied to structural steel beams on a limited basis in the reactor building, turbine building and main control room complex, radwaste building, and auxiliary bay. The resistive coatings are

within the scope of license renewal and subject to an AMR and, therefore, should be included in the scope of fire protection activities as described in LRA Appendix B.2.9.

Using the information provided in the LRA and the UFSAR, the staff sampled several cases of hazard barriers and elastomers to determine whether the applicant properly identified them as being subject to an AMR in Table 2.4-14 of the LRA. On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.14.3 Conclusion

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the hazard barrier and elastomer SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.15 Miscellaneous Steel

2.4.15.1 Summary of Technical Information in the Application

In Section 2.4.15 of the LRA, the applicant described the miscellaneous steel. The commodity group of miscellaneous steel includes platforms, grating, stairs, ladders, steel curbs, handrails, kick plates, instrument tubing trays, and manhole covers. These structural steel components are generally installed throughout Peach Bottom plant structures. Some structural steel components are exposed to the outdoor environment. These steel components are treated as commodities because of similarities in design, material, and/or environment.

In Section 2.1 of the LRA, the applicant described its process for identifying the structural/civil components falling within the scope of license renewal and subject to an AMR. In addition to the structures falling within the scope of license renewal presented in this section, the applicant evaluated several structural component groups such as miscellaneous steel, as commodities. Commodity groups were determined based upon similar design or similar materials and similar environments. For each of the structural commodities, the applicant provided the following information:

- a general description of the commodity
- list of the components or component groups that require an AMR, and the associated component intended functions and environments

On the basis of this methodology, the applicant identified, in Table 2.4-15, the structural components in the miscellaneous steel commodity group subject to an AMR. Table 2.4-15 of the LRA lists structural support, fluid containment, shelter, protection, and/or radiation shielding as the intended functions of the miscellaneous steel commodity group.

2.4.15.2 Staff Evaluation

The staff reviewed Section 2.4.15 of the LRA, the associated sections of the Peach Bottom UFSAR, relevant staff's SERs, and the IPE and IPEEE to determine whether there is reasonable assurance that the miscellaneous steel system components and supporting

structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule.

Based on the information provided in the LRA and the Peach Bottom UFSAR, the staff sampled several kinds of miscellaneous steel components to determine whether the applicant properly identified them as being subject to an AMR in Table 2.4-15 of the LRA. On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.15.3 Conclusions

On the basis of this review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the miscellaneous steel SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.16 Electrical and Instrumentation Enclosures and Raceways

2.4.16.1 Summary of Technical Information in the Application

In Section 2.4.16, "Electrical and Instrumentation Enclosures and Raceways," of the LRA, the applicant describes the structural components of the of the enclosures and raceways that are within the scope of license renewal and subject to an AMR. Additional information concerning SCs of the electrical and instrumentation enclosures and raceways is given in UFSAR Section 8.1, 7.1.6, "Redundant System Wiring Independence, Protection, and Marking", and the Peach Bottom Atomic Power Station Fire Protection Plan (FPP). The staff reviewed the electrical and instrumentation enclosures and raceways to determine whether there is reasonable assurance that the applicant has identified and listed structures and components subject to AMR in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1), respectively.

In Section 2.1 of the LRA, the applicant described its process for identifying the structural/civil components within the scope of license renewal and subject to an AMR. The electrical and instrumentation enclosures and raceways group at PBAPS includes cable trays, cable tray covers, drip shields, rigid and flexible electrical conduits and fittings, wireway gutters, panels, electrical panels, cabinets, and boxes installed in the reactor buildings and other PBAPS buildings. These electrical components are treated as a commodity group because of similarities in design, material, and environment.

The applicant identified component groups for the electrical and instrumentation and raceways that require AMR in Table 2.4-16 of the LRA. This table lists the component groups and component types, along with their passive functions and the component environments. The applicant has identified the following component groups for the electrical and instrumentation enclosures and raceways:

- electrical and instrumentation enclosures and raceways (cable tray and covers, electrical conduits and fittings, wireway gutters, panels, cabinets, and boxes)
- raceways (electrical conduits and fittings and boxes)
- drip shields

In Table 2.4-16 the applicant lists the SCs of the PBAPS electrical and instrumentation enclosures and raceways that are within the scope of license renewal because they fulfill one or more of the following intended functions:

- structural support
- shelter, protection, and/or radiation shielding

As a result, SCs of the electrical and instrumentation enclosures and raceways within the scope of license renewal perform their intended functions without moving parts or without a change in configuration or properties, and are not subject to periodic replacement based on a qualified life or specified time limit.

2.4.16.2 Staff Evaluation

The staff reviewed LRA Section 2.4.16, UFSAR sections 8.1, 7.1.6, and the FPP to determine whether there is reasonable assurance that the electrical and instrumentation enclosures and raceway components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the structural components in Table 2.4-16 to determine whether any other structures associated with the electrical and instrumentation enclosures and raceways meet the scoping criteria of 10 CFR 54.4(a) but were not included within the scope of license renewal. The staff then reviewed portions of the UFSAR descriptions to ensure that all SCs of the enclosures and raceways had been adequately identified and that they were passive and long-lived and performed their intended functions without moving parts or without a change in configuration or properties and were not subject to replacement based on a qualified life or specified time period. The staff found that cable tray and conduit supports, which perform a structural support intended function, were not included within the scope of license renewal in Table 2.4-16. However, cable trays and conduit supports were included within the scope of license renewal and are included in LRA Table 2.4-13, and are evaluated in Section 2.4.13 of this SER.

2.4.16.3 Conclusion

On the basis of its review, the staff concludes that there is reasonable assurance that the applicant has adequately identified the electrical and instrumentation enclosures and raceways SCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.4.17 Insulation

2.4.17.1 Summary of Technical Information in the Application

In Section 2.4.17 of the LRA, the applicant described the insulation commodity group, which includes all insulating materials within the scope of license renewal that are used in plant areas where temperature control is considered critical for system and component operation or where high room temperatures could impact environmental qualification.

The Peach Bottom plant areas that require temperature control include inside the drywell, inside the HPCI and RCIC pump rooms, the outboard MSIV rooms, on heat traced outdoor piping and components for freeze protection.

The jacketing on outdoor insulation applications has the function of maintaining leak-tightness by preventing the insulation material from absorbing moisture. Moisture not only decreases the effectiveness of the insulation, but also creates a corrosive environment in contact with the external piping or component surfaces. Piping and equipment insulation materials used inside the drywell include stainless steel and aluminum mirror insulation and fiberglass blanket insulation with either stainless steel or aluminum jacketing. HPCI and RCIC pump room and the outboard MSIV room piping insulation materials have calcium silicate or fiberglass blankets covered by an aluminum jacket. Equipment insulation consists of either calcium silicate blocks or removable ceramic fiber blankets. The antisweat insulation is fiberglass with an integral vapor barrier.

Outdoor piping insulation materials installed over electric heat tracing have calcium silicate or fiberglass with an integral vapor barrier with either a water-tight aluminum or a reinforced mastic-plastic compound jacketing.

The applicant described its process for identifying the structural/civil components falling within the scope of license renewal and subject to an AMR in Section 2.1 of the LRA. In addition to the structures falling within the scope of license renewal presented in this section, the applicant evaluated several structural component groups, such as insulation, as commodities. Commodity groups were determined on the basis of similar design or similar materials and similar environments. For each of the structural commodities, the applicant provided the following information:

- general description of the commodity
- list of the components or component groups that require an AMR, and the associated component intended functions and environments

On the basis of this methodology, the applicant identified the SSCs in the insulation commodity group that are subject to an AMR and listed them in Table 2.4-17 of the LRA . Table 2.4-17 of the LRA listed insulating characteristics and insulating jacket integrity as the intended functions of insulation commodity group components.

2.4.17.2 Staff Evaluation

The staff reviewed Section 2.4.17 of the LRA, the associated sections of the UFSAR, relevant staff SERs, the IPE and IPEEE documents to determine whether there is reasonable assurance that the insulation system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule.

Using the information provided in the LRA and the UFSAR, the staff sampled the insulation to determine whether the applicant properly identified insulation subject to an AMR in Table 2.4-17 of the LRA.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.4.17.3 Conclusions

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the insulation SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.5 Scoping and Screening Results: Electrical and Instrumentation and Controls

2.5.1 Summary of Technical Information in the Application

In Section 2.5, "Scoping and Screening Results: Electrical and Instrumentation and Controls," of the Peach Bottom Unit 2 and 3 LRA, the applicant describes the electrical components that are within the scope of license renewal and subject to an AMR. The staff reviewed this section of the LRA to determine whether there is a reasonable assurance that all SCCs within the scope of license renewal have been identified, as required by 10 CFR 54.4(a), and that all structures and components subject to an AMR have been identified, as required by 10 CFR 54.21(a)(1).

The applicant performed the screening for electrical/I&C components on a generic component commodity group basis for the in-scope electrical/I&C systems. The applicant used the guidance provided in NEI 95-10, Appendix B, to define electrical commodities subject to AMR. The guidance provided in NEI 95-10, Appendix B, identifies the following passive, long-lived electrical components as potentially subject to an aging management review:

- electrical portions of electrical and I&C penetration assemblies
- high-voltage insulators
- insulated cables and connections (connectors, splices, terminal blocks)
- phase bus (e.g., isolated-phase bus, non-segregated-phase bus, bus duct)
- switchyard bus

- transmission conductors
- uninsulated ground conductors

After applying the scoping and screening criteria as discussed in Sections 2.1.2 and 2.1.3 of the LRA, the applicant determined that the following Peach Bottom electrical commodities require an AMR:

- insulated cables and connections (connectors, splices, terminal blocks)
- electrical portions of electrical and I&C penetration assemblies

The electrical portions of electrical and I&C penetration assemblies are a TLAA and are addressed in Section 4.4 of the LRA.

The applicant also presents the scoping and screening results for station blackout systems. The applicant reviewed the components of the station blackout system and identified the passive, long-lived components subject to an AMR. The applicant defines the station blackout system as the alternate AC (AAC) source required per NUMARC 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors." The station blackout system for PBAPS is in compliance with 10 CFR 50.63, qualifies as an AAC power source per NUMARC 87-00, and consists of the following components:

- Conowingo Hydroelectric Plant (dam)
- Susquehanna substation
- wooden takeoff pole
- manholes at Conowingo and Peach Bottom
- submarine cable (transmission line)
- Station Blackout Substation at PBAPS

2.5.2 Staff Evaluation

The staff reviewed Section 2.5 of the LRA and relevant sections of the Peach Bottom UFSAR to determine whether there is reasonable assurance that the electrical and instrumentation and control system components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The staff also focused on components that were not identified as being within the scope of license renewal to determine if any components were omitted. The staff also sampled selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the rule. This was accomplished as described below.

The staff reviewed the design basis functions of each component type and the applicant's determination of which component types perform their functions without moving parts or a change in configuration or properties (passive and long-lived components) and therefore are subject to an AMR. The staff also reviewed the list of passive, long-lived electrical component types to determine which met the criteria of 10 CFR 54.4(a)(1) through (3). This step defined the set of electrical component types subject to AMR.

The following is a list of in-scope electrical component types subject to an AMR:

- insulated cables and connections (connectors, splices, terminal blocks)
- electrical portions of electrical and I&C penetration assemblies.
- Conowingo Hydroelectric Plant (Dam)
- Susquehanna substation
- wooden takeoff pole
- manholes at Conowingo and Peach Bottom
- submarine cable (transmission line)
- station blackout substation at PBAPS

Finally, the staff reviewed the information submitted by the applicant to verify that the applicant had not omitted or misclassified any electrical components requiring an AMR.

The list of in-scope electrical component types subject to an AMR does not include fuse holders. Fuse holders/blocks are classified as a specialized type of terminal block because of the similarity in design and construction. Terminal blocks are passive components subject to an AMR for license renewal and so are fuse holders. The applicant will include fuse holders in the connection category that requires an AMR. See Confirmatory Item Number 3.6.2.2.2-1 in Section 3.6.2.2.2 of this SER.

The screening results in Section 2.5 do not include any offsite power system structures or components. The license renewal rule, Section 10 CFR 54.4(a)(3), requires that “all systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission regulation for station blackout (10 CFR 50.63)” be included within the scope of license renewal. The station blackout rule, Section 10 CFR 50.63(a)(1), requires that each light-water-cooled power plant licensed to operate be able to withstand and recover from a station blackout of a specified duration (the coping duration) that is based upon factors that include “the expected frequency of loss of offsite power” and “the probable time needed to recover offsite power.” Licensees’ plant evaluations followed the guidance in NRC Regulatory Guide (RG) 1.155 and NUMARC 87-00 to determine their required plant-specific coping duration. The criteria specified in RG 1.155 to calculate a plant-specific coping duration were based upon the expected frequency of loss of offsite power and the probable time needed to restore offsite power, as well as the other two factors (onsite emergency AC power source redundancy and reliability) specified in 10 CFR 50.63(a)(1). In requiring that a plant’s scoping duration be based on the probable time needed to restore offsite power, 10 CFR 50.63(a)(1) is specifying that the offsite power system be an assumed method of recovering from an SBO. Disregarding the offsite power system as a means of recovering from an SBO does not meet the requirements of the rule and results in a longer required coping duration. The function of the offsite power system under the SBO rule is, therefore, to provide a means of recovering from the SBO and the offsite power system thus this meets the criterion of 10 CFR 54.4(a)(3) as a system that performs a function that demonstrates compliance with the Commission’s regulations on SBO. Based on this information, the staff asked the applicant to include applicable offsite power system structures and components within the scope of license renewal and subject to an AMR or provide additional justification for the system’s exclusion.

The applicant responded in a letter dated May 22, 2002, that it will include those applicable offsite power system structures and components required to support the above description of "recovery" within the scope of license renewal and the AMR process, as described in the NRC letter to Alan Nelson and David Lochbaum, "Staff Guidance on Scoping of Equipment Relied on

To Meet the Requirements of the Station Blackout (SBO) rule (10 CFR 50.63) for License Renewal (10 CFR 54.4(a)(3)," dated April 1, 2002.

The offsite power system (substation and 13 kV) provides power to the 4kV safeguard busses via the 13 kV system. It consists of three power sources and their associated structures and components. The substation has the standard industry power distribution design and consists of switchyard bus, insulators, circuit breakers, ground and disconnect switches, transformers, offsite power line poles, and associated switchgear and control buildings, foundations, and supports. The offsite power system is discussed in UFSAR Section 8.1.

The applicant reviewed the electrical components of the offsite power system and identified the following passive, long-lived components as subject to an AMR:

- switchyard bus
- high-voltage insulators
- insulated cables and connections (connectors, splices, terminal blocks)
- phase bus (non-segregated-phase bus)
- transmission conductors

The intended electrical function of the offsite power system within the scope of license renewal is to provide "recovery" power after an SBO event. The aging management review results for the electrical components are shown in Table 1 of the applicant's response dated May 22, 2002, to the staff's RAI. The following structures and components supports, which protect and support the offsite power system, are also included in the scope of license renewal and are subject to an AMR:

- startup switchgear buildings
- substation control buildings
- switchgear enclosures
- manholes and ductbanks
- offsite power line poles
- raceway and switchgear supports
- supports for in-scope substation components
- cable trays, conduits, and electrical boxes

The AMR results for the structural and component supports are shown in Table 2 of the response.

During a telephone conference on June 18, 2002, the staff requested the applicant to provide a detailed description of the PBAPS recovery path for offsite power from the power sources to the 4 kV emergency buses. In response to the staff request, in a letter dated July 30, 2002, applicant stated that the offsite power system consists of three independent power sources and their associated structures and components, which allow for power to be provided to the 4 kV emergency busses via the Substation and 13 kV Systems. The power sources come from the north substation, which is on a hill behind PBAPS. These power paths can be seen on license renewal drawing LR-E-1, with the exception of the #220-34 and the #1 autotransformer sources with their associated in-line load interrupter switch or disconnect switch. Additionally, the #220-08 line disconnect switch is not shown.

One power source is an overhead 230 kV transmission line (Graceton-Nottingham line #220-08) that brings power into the protected area boundary (PAB) via a transmission tower. The power line is then transitioned from the transmission tower to an outdoor substation bus bar structure. The power line continues to an in-line disconnect switch, goes through a 230 kV circuit breaker, and then connects to the 230/13.8 kV #2 startup and emergency auxiliary transformer. The 13.8 side of the transformer is then connected to the #2SU startup transformer switchgear bus via nonsegregated bus duct. The 13 kV system is then connected to the 13.2/4 kV #2 emergency auxiliary transformer via an underground duct bank, routed through manholes where required. The 4 kV side of the transformer is connected to the 4 kV emergency bus and switchgear via an underground duct bank into the plant.

The second source is an overhead/underground 230 kV transmission line (Peach Bottom-Newlinville line #220-34) entering the north substation and transitioning to an outdoor substation bus bar structure. It then goes through a 230 kV load interrupter switch and connects to the 230/13.8 kV #343 startup transformer. From the 13.8 kV side of the transformer, it goes through a 13 kV circuit breaker, and an in-line disconnect switch to another substation bus bar structure, and then transitions into an underground trench to the back of the substation. It then transitions via a substation bus bar structure to an overhead line, which goes down the hill into the PAB of the plant. The overhead line transitions to another substation bus bar structure, and then the line transitions to an underground duct bank, routed through manholes as required, into the #343 startup switchgear building and associated switchgear. The 13 kV line is then transitioned to the 13.2/4 kV #3 emergency auxiliary transformer via an underground duct bank, routed through manholes as required. The 4 kV side of the transformer is connected to the 4 kV emergency bus and switchgear via an underground duct bank into the plant.

The third source is a 13.8 kV source tapped off from the tertiary winding of the #1 auto transformer. From the tertiary winding the feed goes through a substation bus bar structure to an in-line disconnect switch and through a 13.8 kV circuit breaker to the #3 startup and emergency auxiliary regulating transformer. The feed then transitions to another substation bus bar structure, and then goes underground via a buried trench to a manhole at the back of the substation. From the manhole, the feed transitions via an outdoor cable tray to another manhole just outside the PAB. From there it transitions via an underground duct bank to the #3 SU regulating switchgear building and associated switchgear. The 13 kV feed transitions via a duct bank into the plant, where it connects to the 13 kV unit auxiliary buses and switchgear. Additionally, there is a 13 kV aerial tie between the switchgear in the #3 SU regulation switchgear building and the #343 SU transformer switchgear building.

The staff finds the applicant's response acceptable since it describes in detail the recovery power path for offsite power from the power sources to the 4kV emergency busses.

On the basis of the above review, the staff did not find any omissions by the applicant of SSCs within the scope of license renewal.

2.5.3 Conclusion

On the basis of its review, the staff concludes there is reasonable assurance that the applicant has adequately identified the electrical and instrumentation and control SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).