SECTION 2

STRUCTURES AND COMPONENTS SUBJECT TO AGING MANAGEMENT REVIEW

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). Furthermore, the IPA must identify those structure and components (SCs) that are subject to an aging management review (AMR) from the system, structure, and components (SSCs) that are within the scope of license renewal in accordance with 10 CFR 54.4(a).

In License Renewal Application (LRA) Section 2.1, "Scoping and Screening Methodology," the applicant described the scoping and screening methodology used to identify SSCs at Brunswick Steam Electric Plant (BSEP) 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 whether it meets the scoping requirements stated in 10 CFR 54.4(a) and the screening requirements stated in 10 CFR 54.21.

In developing the scoping and screening methodology for the BSEP LRA, the applicant considered the requirements of the Rule, the statements of consideration (SOCs) for the Rule, and the guidance presented by NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Revision 3, March 2001. In addition, the applicant also considered the staff's correspondence with other applicants and with NEI in 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 provided the technical information required by 10 CFR 54.21(a). In LRA Section 2.1, "Scoping and Screening Methodology," the applicant described the process used to identify the SSCs that meet the license renewal scoping criteria under 10 CFR 54.4(a), as well as the process used to identify the SCs that are subject to an AMR as required by 10 CFR 54.21(a)(1).

Additionally, LRA Section 2.2, "Plant Level Scoping Results;" Section 2.3, "Scoping and Screening Results - Mechanical Systems;" Section 2.4, "Scoping and Screening Results - Structures;" and Section 2.5, "Scoping and Screening Results - Electrical and Instrumentation and Control (I&C) Systems;" amplify the process that the applicant used to identify the SCs that are subject to an AMR. LRA Section 3, "Aging Management Review Results," contains the following information:

- Section 3.1, "Aging Management of Reactor Vessel, Internals and Coolant Systems"
- Section 3.2, "Aging Management of Engineered Safety Features Systems"
- Section 3.3, "Aging Management of Auxiliary Systems"
- Section 3.4, "Aging Management of Steam and Power Conversion Systems"
- Section 3.5, "Aging Management of Containment, Structures, and Component Supports"
- Section 3.6, "Aging Management of Electrical and Instrumentation and Controls"

LRA Section 4, "Time-Limited Aging Analyses," contains the applicant's identification and evaluation of TLAAs.

2.1.2.1 Scoping Methodology

2.1.2.1.1 Application of the Scoping Criteria in 10 CFR 54.4(a)

Application of the Scoping Criteria in 10 CFR 54.4(a)(1). In LRA Sections 2.1, "Scoping and Screening Methodology," 2.1.1, "Scoping," and 2.1.1.1, "Safety-related Criteria Pursuant to 10 CFR 54.4(a)(1)," the applicant discussed the scoping methodology as it related to safety-related (SR) criteria in accordance with 10 CFR 54.4(a)(1).

The LRA states that 10 CFR 54.4(a)(1) pertains to SR SSCs and further states that SSCs within the scope of license renewal include SR SSCs that must remain functional during and following design-basis events (DBEs), as defined in 10 CFR 50.49(b)(1), to ensure the following functions:

(1) The integrity of the reactor coolant pressure boundary (RCPB)

(2) The capability to shut down the reactor and maintain it in a safe shutdown condition

(3) 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 of this chapter, as applicable

LRA Section 2.1.1.1 states that the PassPort equipment database (EDB) was used to implement the graded quality classification system defined at BSEP. The EDB applied the Quality Class A classification to structures and components necessary, actively or passively, to assure the accomplishment of SR functions. Component quality classifications documented in the EDB are derived according to plant administrative controls using functions defined in CLB documents, including the UFSAR.

A comparison of the criteria of 10 CFR 54.4(a)(1) with the definition of the EDB Quality Class A classification indicates that the Quality Class A criteria are consistent with 10 CFR 54.4(a)(1) with the exception of the references to 10 CFR 50.34(a)(1), which is associated with applications for an initial operating license and is not applicable to BSEP; and 10 CFR 50.67(b)(2), which is associated with accident source term limits and is discussed below. The LRA indicates that at BSEP, 10 CFR Part 100 guidelines have been applicable, historically, under the CLB; 10 CFR 100.11 has been used to identify components credited with preventing and mitigating offsite exposures. Concerning 10 CFR 50.67(b)(2), the LRA states

that the staff issued a safety evaluation authorizing the use of alternative source terms (ASTs) under 10 CFR 50.67(b)(2) in support of the ongoing BSEP Extended Power Uprate Project. Consistent with the terms of the AST license amendment, license renewal scoping impacts arising from the use of nonsafety-related (NSR) equipment to support the use of an AST are evaluated in accordance with the criteria of 10 CFR 54.4(a)(2).

The LRA states that EDB Quality Class A classification is consistent with the scoping criteria of 10 CFR 54.4(a)(1), such that this designation is sufficient to facilitate scoping of SSCs in accordance with 10 CFR 54.4(a)(1). For the purposes of license renewal, any system, including support systems, or structure that contains one or more SR component is considered to be an SR system or structure.

Application of the Scoping Criteria in 10 CFR 54.4(a)(2). LRA Section 2.1.1.2 states that since BSEP implemented a graded quality classification system in the mid-1980s, it has made extensive use of augmented quality classifications to identify SSCs that have functional or physical interactions with SR equipment. These augmented quality classifications have been assigned to NSR components and documented in the EDB. The EDB quality classification designations have been reconciled with license renewal scoping criteria to provide a means for scoping of license renewal components and associated systems/structures. The EDB quality classifications were used to identify NSR components that can be a potential source of damage to nearby SR components. In addition to scoping on the basis of augmented quality designations, an extensive review was performed to identify additional candidates for inclusion based on the CLB, a review of site and industry operating experience, and other pertinent sources of information.

The LRA states that the following NSR SSCs were not considered subject to the review: SSC hypothetical failures that are not part of the plant CLB, or that have not been experienced previously; SCs that would have been included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2) that were already included in accordance with 10 CFR 54.4(a)(3); NSR equipment used to establish initial conditions for equipment operation; and NSR equipment that actuates SR equipment that does not result in the loss of an SR function.

BSEP design and licensing basis information was reviewed to identify NSR SSCs that function to directly support or that could interact with an SR system or structure and whose failure or interaction could prevent the performance of a required intended function. Sources of this information include design-basis documents (DBDs), the FSAR, plant drawings, and other CLB documentation, as well as the EDB and the Maintenance Rule database. The specific function/interaction required of an NSR SSC was also identified for each instance in which NSR SSCs were credited in the CLB. SSCs identified in this category were designated as being within the scope of license renewal per the 10 CFR 54.4(a)(2) criteria, and the associated function or interaction was considered a system/structure intended function.

The LRA states that the majority of NSR piping connected to SR piping can be identified by EDB quality class designation. Where necessary, plant design documents were reviewed or conservative assumptions made to identify additional piping/components in this category. Systems having components credited in this regard were included within the scope of license renewal. The CLB position for seismically induced effects between connected NSR and SR piping was provided in response to an NRC comment documented in Amendment 15 of the

BSEP UFSAR, dated March 1973. The position stated that, in cases where SR piping and NSR piping are connected, the analysis of seismically induced effects was continued well into the NSR piping in order to include the effects that NSR piping has on the adjoining SR piping. Generally, this continuation was to a point where the NSR pipe was restrained in three directions. If this was not practical, the NSR pipe was analyzed up to a point in the system where it was supported in three directions by three individual supports.

Interactions between SR SSCs and non-connected NSR SSCs were defined as NSR SSCs having physical interaction with SR SSCs that impairs an SR SSC's function and is associated with NSR SSC piping degradation and loss of pressure boundary. The LRA indicates that the UFSAR Section 3.6.1 states "operating experience has shown that mechanisms do not exist which could cause the instantaneous failure of piping systems without prior detectable leakage." The LRA indicates that the scoping process was based on the concept that the piping in operating systems that has retained its functional integrity will remain supported so long as its supports do not fail and that direct physical interaction with SR SSCs is prevented by the function of piping supports; therefore, the preventive option consists of managing the aging effects of the supports. Aging effect evaluations associated with direct physical interactions between NSR and SR components are limited to piping/component supports. Civil/structural scoping has included the supports for NSR piping/components that have the capability of preventing satisfactory accomplishment of any required SR functions in spaces where SR equipment within the scope of license renewal is present.

The LRA states that indirect physical interactions between spatially related NSR and SR piping/components are not limited to seismic events, but may include other age-related failures of NSR SSCs. The scoping process for these indirect interactions was accomplished on the basis of a systematic review of areas and hazards. Plant drawings and documentation were reviewed to identify areas housing SR SSCs. Pressure-retaining component types were identified, since potential spatial interactions (flooding, spray, wetting) were assumed to be related to liquid-filled piping systems. Pressure-retaining NSR components located in structures housing SR SSCs were identified on the basis of EDB location information, plant drawings, and other pertinent data. This group of components was further refined to exclude specific components evaluated as not presenting a spatial interaction hazard. Systems having NSR components identified as having the potential for adverse spatial interaction with SR SSCs were included within the scope of license renewal.

Additional scoping evaluations were performed to make scoping determinations against 10 CFR 54.4(a)(2) that cannot be made on the basis of EDB classification. Notable scoping additions include selected NSR connected piping, valves, and components (seismic support), NSR piping and supports in the proximity of SR SSCs (seismic interaction), service water discharge piping (flow path), long-term nitrogen supply to main steam safety relief valves (flow path), reactor building air receivers (explosion/missile hazard), and reactor building leak detection equipment and floor drain systems (flood hazard).

BSEP has implemented the use of accident source term (AST) for evaluation of accident consequences in accordance with 10 CFR 50.67. This activity, undertaken in support of the BSEP Extended Power Uprate (EPU) project, makes use of an NRC-approved methodology for evaluation of an NSR alternate leakage treatment path from the main steam line isolation valves (MSIVs) to the main condenser. Since the BSEP license amendment credits the use of

NSR SSCs in AST analyses, these have been included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

Application of the Scoping Criteria in 10 CFR 54.4(a)(3). In LRA Sections 2.1, "Scoping and Screening Methodology;" 2.1.1, "Scoping;" and Section 2.1.1.3, "Other Scoping Pursuant to 10 CFR 54.4(a)(3)," the applicant discussed the scoping methodology as it related to the regulated event criteria in accordance with 10 CFR 54.4(a)(3).

The LRA states that 10 CFR 54.4(a)(3) indicates that SSCs relied upon in safety analyses or plant evaluations to perform a function that demonstrates compliance with NRC's regulations for fire protection (10 CFR 50.48), EQ (10 CFR 50.49), PTS (10 CFR 50.61), ATWS (10 CFR 50.62), and SBO (10 CFR 50.63) are within the scope of license renewal.

With the exception of pressurized thermal shock, which is not applicable to BWRs, current licensing basis evaluations have been performed to identify and document those SSCs credited for compliance of each of these regulations. For these SSCs, the system/structure-level intended function is that function which is relied upon in safety analyses or evaluations to demonstrate compliance with NRC requirements for the regulated event. Systems or structures that have one or more components credited for demonstrating compliance with one of the regulated events are within the scope of license renewal per the 10 CFR 54.4(a)(3) criteria.

2.1.2.1.2 Documentation Sources Used for Scoping and Screening

In LRA Sections 2.1.1.1, and 2.1.1.2, the applicant stated information derived from the CLB information, design and licensing basis information, design basis documents (DBDs), the UFSAR, plant drawings, Maintenance Rule database, and the equipment database (EDB) was reviewed during the license renewal scoping and screening process. The applicant used this information to identify the functions performed by plant systems, structures, and components. These functions were then compared to the scoping criteria in 10 CFR 54.4(a)(1)-(3) to determine if the associated plant system, structure, or component performed a license renewal intended function and to develop the list of SCs subject to an AMR.

2.1.2.2 Screening Methodology

2.1.2.2.1 Mechanical Screening

The LRA states that following scoping for mechanical systems, the applicant performed screening to identify those mechanical components that were subject to an AMR. The applicant stated in LRA Section 2.1.2.1, "Mechanical Components," that the following methodology was used:

- System intended function boundaries were established, and mechanical components subject to screening were identified. Additionally, license renewal boundary drawings were developed for selected BSEP systems within the scope of license renewal. These boundary drawings were used during the screening process for purposes such as identification of untagged commodities within evaluation boundaries.
- Mechanical components were subjected to screening based on active/passive function. THE BSEP EDB equipment codes were used to sort many components in accordance

to engineering discipline, active/passive determination and recommended intended function. Components having equipment types designated as active were not subject to AMR and were categorically screened out on this basis. Components having equipment types that are indeterminate were reviewed individually to ascertain if they are active and thereby excluded from AMR requirements.

- Mechanical components were reviewed to determine if they constituted a complex assembly. Complex assemblies were considered active and could be excluded from the scope of license renewal. However complex assemblies which include piping or components that interface with external equipment, or components that cannot be adequately tested/monitored as part of the complex assembly, were subject to screening.
- Mechanical components were reviewed to determine if they were subject to periodic replacement. Those mechanical component types subject to replacement based on a qualified life or specified time period (i.e., are not long-lived components) were screened as not subject to AMR.
- Consumable items were evaluated. Consumable parts of a component may be passive, long-lived, and necessary to fulfill an intended function. Screening of consumables was either done as part of the component AMR or the item was excluded based on NRC screening guidance.
- Component intended functions were identified. Each component subject to an AMR was evaluated to determine if the component-level mechanical function(s) were performed without moving parts or change in configuration, in fulfilling or supporting system intended functions.

Components determined to be not subject to an AMR were screened out. These include components that are (a) active, (b) short-lived or replaced based on qualified life or specific time period, or (c) not credited with performance of a mechanical intended function.

2.1.2.2.2 Structural Screening

LRA Section 2.1.2.2 states that the screening process was performed on each structure identified to be within the scope of license renewal. This method evaluated the individual SCs included on or within structures, within the scope of license renewal, to identify specific SCs or SC groups that require an AMR. The LRA describes the following sequence of steps performed for each structure which had been determined to be within the scope of license renewal:

(1) Typical components were grouped together and screened as a single commodity. The source of the civil commodities list was a combination of those civil components identified by tag number in the EDB and those un-tagged civil components identified through industry experience and a review of the plant CLB. An active/passive determination was performed based on whether the commodity supports its intended function without moving parts or without a change in configuration or properties. A determination of commodity replacement based on a qualified life or specified time period was performed for each commodity type. Finally, a set of potential intended functions was developed for each commodity group.

(2) Civil screening was performed on a structural system basis and only civil commodities located within the specific structural system being screened were addressed. The identification of civil commodities for a specific structure was performed using EDB location data, design drawings, general arrangement drawings, penetration drawings, plant modifications, the UFSAR, DBDs, system descriptions, and plant walkdowns. EDB equipment types within a specific structure were reviewed and civil commodities were assigned to the structure based on that review.

Evaluation boundaries between mechanical components, electrical components, and structures and structural components were coordinated between the discipline reviewers. This same methodology was used with components identified by means other than EDB, such as an UFSAR discussion of a specific component or design feature, an untagged component identified on a plant drawing, or a component observed during a plant walkdown.

(3) The commodity-specific intended functions were developed based on comparison of the potential intended functions from the generic commodity groups to the specific intended functions of the structure and the EDB component quality classification. The screening process reviewed EDB equipment types, design drawings, general arrangement drawings, plant modifications, the UFSAR, DBDs, system descriptions, and plant walkdown results within each structure and developed a list of commodities within that structure requiring aging management review. Those SCs that have a component or commodity intended function that supports a structure intended function were subject to an AMR.

2.1.2.2.3 Electrical/I&C Screening

LRA Section 2.1.2.3 described the methodology used to identify electrical and instrumentation and control (I&C) components that are subject to an AMR. For electrical and I&C SCs, the applicant used the component commodity group approach consistent with the guidance in NEI 95-10.

The sequence of steps that the applicant used to identify electrical and I&C SCs that require an AMR included:

(1) The EDB was used to identify electrical equipment and components types within systems and structures determined to be within the scope of license renewal.

(2) The UFSAR, plant drawings, and other documents, were used to identify electrical equipment and component types within electrical and I&C systems determined to be within the scope of license renewal in addition to those identified in the EDB.

(3) The component types associated with electrical and I&C components within scope of license renewal were organized into commodity groups such as circuits, breakers, cables and sensors. In general, grouping of component types followed the guidance in NEI 95-10 to group components based on similar functions.

(4) The electrical and I&C component commodity groups that perform an intended function without moving parts or without a change in configuration (passive) were identified.

(5) Passive electrical and I&C commodity groups, component commodity groups that are not subject to replacement based on a qualified life or time period, were identified.

Electrical and I&C components that were screened in accordance with the steps above and meet the requirements of 10 CFR 54.21(a)(1) were determined to be subject to an AMR.

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 the following sections of the application:

- Section 2.1, "Scoping and Screening Methodology," to verify that the applicant described 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).
- Section 2.2, "Plant Level Scoping Results;" Section 2.3, "Scoping and Screening Results - Mechanical Systems;" Section 2.4, "Scoping and Screening Results - Structures;" and Section 2.5, "Screening Results - Electrical and Instrumentation and Controls (I&C) Systems" to verify that the applicant described a process for determining structural, mechanical, and electrical components at BSEP that are subject to an AMR for renewal in accordance with the requirements of 10 CFR 54.21(a)(1) and (2).

In addition, the staff conducted a scoping and screening methodology audit at BSEP March 1 through 4, 2005. 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 application and the requirements of the Rule. The staff reviewed implementation procedures and engineering reports which describe the scoping and screening methodology implemented by the applicant. In addition, it conducted detailed discussions with the cognizant engineers on the implementation and control of the program, and reviewed administrative control documentation and selected design documentation used by the applicant during the scoping and screening process. It further reviewed a sample of system scoping and screening results reports for main feedwater to ensure the methodology outlined in the administrative controls was appropriately implemented, and the results reports were found to be consistent with the CLB as described in the supporting design documentation.

2.1.3.1 Scoping Methodology

The staff reviewed implementation procedures and engineering reports which describe the scoping and screening methodology implemented by the applicant. These procedures included: EGR-NGGC-0501, "Nuclear Plant License Renewal Program;" EGR-NGGC-0502, "System/Structure Scoping for License Renewal;" EGR-NGCC-0503, "Mechanical Component Screening for License Renewal;" EGR-NGCC-0505, "Electrical Component Screening and Aging Management Review for License Renewal;" EGR-NGGC-0506, "Civil/Structural Screening and Aging Management for License Renewal;" 0ENP-33.5, "Quality Classification Analysis of Structures, Systems, and Components;" and BNP-LR-002, "Bulk Screening of EDB Equipment Types for License Renewal." The staff found that the scoping and screening methodology instructions were consistent with LRA Section 2.1 and were of sufficient detail to provide the applicant's staff with concise guidance on the scoping and screening implementation process to be followed during the LRA activities. In addition to the implementing procedures, the staff reviewed supplemental design information including design-basis drawings, system drawings, and selected licensing documentation relied upon by the applicant

during the scoping and screening phases of the review. The staff 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 of the BSEP.

2.1.3.1.1 Application of the Scoping Criteria in 10 CFR 54.4(a)

Application of the Scoping Criteria in 10 CFR 54.4(a)(1)

10 CFR 54.4(a)(1) requires, in part, that the applicant consider all SR SSCs that are relied upon to remain functional during and following DBEs to ensure the following functions: (1) the integrity of the reactor coolant pressure boundary, (2) the ability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11 to be within the scope of the license renewal.

The applicant used the EDB as the primary source of information to determine whether an SC would be considered within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(1). The SCs' quality designations were determined in accordance with BSEP procedure 0ENP-33.5, "Quality Classification Analysis of Structures, Systems, and Components," and documented in the EDB which had been developed and maintained in accordance with quality assurance requirements of 10 CFR Part 50, Appendix B. SR SCs were identified in the EDB as meeting one of approximately seventeen Quality Class A designations. The Quality Class A designation identified the operational attributes and safety functions of the SCs. All SCs designated as Quality Class A were determined to be within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(1).

The staff determined that the applicant had performed component-based scoping and had included SCs within the scope of license renewal based upon the SC's classification within the EDB relative to the criteria of 10 CFR 54.4 (a)(1), (a)(2), or (a)(3). The applicant had then included all systems within the scope of license renewal which contained any SCs which had been determined to be within the scope of license renewal based on the SC's classification within the EDB. The applicant indicated that the system CLB documentation, including the system intended functions, had been reviewed to verify that all SCs within the scope of license renewal had been identified.

In RAI 2.1-1, dated April 8, 2005, the staff stated that it reviewed the information contained in the LRA, discussed the process with the applicant, and reviewed the applicable process implementation guidance. The staff determined that the process by which the CLB information, including system intended functions, had been reviewed and considered during the scoping process was not clearly documented in the LRA. Therefore, the staff requested that the applicant document how the CLB information, including system intended functions, was considered during the scoping process.

In its response, by letter dated May 4, 2005, the applicant stated that the EDB had been developed from the Q-List, which is maintained in accordance with requirements of 10 CFR Part 50, Appendix B, to create a more detailed, component-level quality classification system for plant equipment. The procedure for classification of components in EDB utilizes a

process that begins with the established intended functions performed by the parent system or structure.

During the license renewal review, information from the EDB was evaluated to determine its suitability for use in the scoping process and a license renewal calculation was developed to document the evaluation. The review determined that EDB quality classifications could be used to facilitate identification of SSCs within the scope of license renewal and provide an indication of the intended functions that the SSCs perform. The methodology through which SCs are assigned a quality classification within the EDB also involves a procedurally controlled process that considers the intended functions of the parent SSC as documented in CLB documents.

The scoping process checked EDB component results against other sources and the EDB function descriptions were compared with UFSAR and DBD function descriptions. In addition, component-level scoping results were mapped to system drawings. Component mapping on the drawings afforded an effective check to ensure that the functions described in the CLB documents were consistent with EDB information.

In addition to the inclusion of SSCs based on quality classifications of individual SCs in the EDB, the scoping process included a review of plant and CLB documents to the extent required to develop the descriptive material, including system intended functions, for use in the LRA. The documents reviewed included the UFSAR, DBDs, system descriptions, docketed correspondence, the EDB, and the Maintenance Rule database. The review was performed to document the SSC descriptions and functions to be incorporated into the SSC scoping worksheets and ultimately into LRA Sections 2.3 and 2.4, so that the description of each SSC and its functions were available for review.

The staff reviewed the additional information provided by the applicant and determined the component-level classification contained in the EDB was based on the parent system intended functions. In addition, the applicant had also considered the system intended functions during the review of information including the CLB, UFSAR, DBDs system descriptions. Therefore, the staff's concern described in RAI 2.1-1 is resolved.

Conclusion. As part of the review of the applicant's scoping methodology, the staff reviewed a sample of the license renewal database 10 CFR 54.4(a)(1) scoping results, reviewed a sample of the analyses and documentation to support these reviews, and discussed the methodology and results with the applicant's personnel responsible for these evaluations. The staff verified that the applicant had identified and used pertinent engineering and licensing information in order to determine the SSCs required to be within the scope of license renewal in accordance with the 10 CFR 54.4(a)(1) criteria. On the basis of this sample review and discussions with the applicant, the staff determined that the applicant's methodology for identifying systems and structures meeting the scoping criteria of 10 CFR 54.4(a)(1) was adequate.

Application of the Scoping Criteria in 10 CFR 54.4(a)(2). Pursuant to 10 CFR 54.4(a)(2), the applicant must consider all NSR SSCs whose failure could prevent satisfactory accomplishment of any of the functions identified in paragraphs 10 CFR 54.4(a)(1)(I) - (iii), to be within the scope of the license renewal. By letters dated December 3, 2001, and March 15, 2002, the staff issued its position to NEI, providing staff expectations for determining which SSCs meet the 10 CFR 54.4(a)(2) criterion.

The December 3, 2003, letter (ADAMS accession ML033370195) provided specific examples of operating experience which identified pipe failure events (summarized in NRC Information Notice (IN) 2001-09, "Main Feedwater System Degradation in Safety-Related ASME Code Class 2 Piping Inside the Containment of a Pressurized Water Reactor") and the approaches the NRC considers acceptable to determine which piping systems should be included within the scope of license renewal based on the 10 CFR 54.4(a)(2) criterion. The March 15, 2002, letter (ADAMS accession ML020770026) further described the staff's expectations for the evaluation of non-piping SSCs to determine which additional NSR SSCs are within the scope of license renewal. 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 paper further describes operating experience as all documented plant-specific and industry-wide experience which can be used to determine the plausibility of a failure. Documentation would include NRC generic communications and event reports, plant-specific condition reports, industry reports, and engineering evaluations.

In keeping with the NEI draft position on NSR SSCs that could adversely affect SR SSCs, the applicant developed guidance for interpreting and applying the 10 CFR 54.4(a)(2) criteria including NSR components spatially oriented near SR components, seismic II/I components, NSR piping attached to SR piping, flooding, missiles, and high energy line breaks. The applicant used the EDB quality classifications and a review of design and licensing basis information to identify NSR components that could be considered a potential source of damage to nearby SR components.

The applicant's guidance for performing 10 CFR 54.4(a)(2) scoping of NSR SSCs was documented in the following Brunswick Nuclear Plant (BNP) calculations: Nuclear Generation Group calculations BNP -LR-003, "Use of Equipment Database for License Renewal Scoping Calculations;" BNP-LR-007, "License Renewal Scoping Calculation for Criteria 10 CFR 54.4(a)(2);" BNP-LR-009, "Civil Nonsafety-Related (II/I) Determination for License Renewal;" BNP-LR-012, "License Renewal Scoping for Seismic Continuity Piping;" and BNP-LR-013, "License Renewal Scoping Calculation for Nonsafety-Related Spatial Interaction Piping." The applicant reviewed the plant's design and licensing basis information to identify NSR SSC interactions with SR SSCs that could prevent the performance of a required intended function. For each such instance, the specific interaction that may affect the function of SR SSCs was identified. The SSCs meeting these criteria were designated as within the scope of the 10 CFR 54.4(a)(2) criteria.

LRA Section 2.1.1.2, "Non-Safety Related Criteria Pursuant to 10 CFR 54.4(a)(2)," discusses the methodology for including NSR SSCs within the scope of license renewal whose failure could prevent the satisfactory accomplishment of any of the functions identified for SR SSCs interim staff guidance (ISG)-9. Sources of information reviewed by the applicant included DBDs, the FSAR, EDB, Maintenance Rule database, and docketed correspondence. The specific function/interaction required of an NSR SSC was also identified for each instance where NSR SSCs were credited in the CLB. SSCs identified in this category were designated as within the scope of license renewal pursuant to 10 CFR 54.4(a)(2).

The applicant prepared calculations which addressed the issue of including within the scope of license renewal the NSR piping attached to SR piping that is seismically designed and supported up to the "first seismic anchor" past the SR/NSR interface. The LRA states that the analysis of seismically induced effects was continued well into the NSR piping in order to

include the effects on the adjoining SR piping. Generally, this continuation was to a point where the Category II piping was restrained in three directions or if not practical, the Category II piping was analyzed up to a point in the system where it was supported in three directions by three individual supports. The applicant stated this position is consistent with the plant's CLB for seismically induced effects between connected NSR and SR piping, as documented in Comment C.54 of the FSAR, Amendment 15, dated March 1973. The comment responds to an earlier Atomic Energy Commission question requesting that the applicant describe the evaluation performed to determine seismically induced effects of Category II piping systems on Category I piping. BNP was designed prior to issuance of RG 1.29 which required NSR components with the potential to impact safety components to be seismically supported.

During the audit, the team reviewed a study report prepared for CP&L in 1986 by United Engineers and Constructors, the architect-engineer for the plant, entitled "Documentation of Seismic Class I Boundary Conditions." The purpose of the report was to document the seismic Class I boundaries, identify supports utilized to define the seismic stress analysis boundary, and ensure that each boundary had been adequately addressed and evaluated.

In RAI 2.1-2, dated April 8, 2005, the staff stated that based on a review of the LRA, the applicant's scoping and screening implementation procedures, calculations, and discussions with the applicant, the staff determined that additional information was required with respect to certain aspects of the applicant's evaluation pursuant to 10 CFR 54.4(a)(2). Therefore, the staff requested confirmation that use of the term "first seismic anchor" is, in fact, consistent with the CLB position for seismically induced effects between connected NSR and SR piping. The staff also requested that the applicant further describe the methodology of its LRA in relation to the CLB.

In its response, by letter dated May 4, 2005, the applicant stated that during the original final safety analysis report (FSAR) development, the applicant had documented the effects of seismic Category II piping systems on seismic Category I piping systems. In cases where Category I piping and Category II piping are connected, the analysis was continued well into the Category II piping in order to include the effects that Category II piping has on the adjoining Category I piping. Generally, this continuation was to a point where the Category II pipe was restrained in three directions. If this was not practical, the Category II pipe was analyzed up to a point in the system where it was supported in three directions by three individual supports. In addition, the BSEP architect/engineer later provided study reports to document pipe stress analysis methodology. One of these study reports specifically addressed seismic Class I boundary conditions. Corporate procedures for the performance of pipe stress analysis have incorporated the aforementioned study report by reference. This information was incorporated into the design control documents and ensures that the CLB requirements are met.

The applicant further stated that the methodology employed to validate that all seismically connected piping per ISG-09 was properly evaluated for inclusion within the scope of license renewal was multi-faceted. BSEP employed a spaces approach for the review of liquid-filled piping systems. Liquid-filled piping located in buildings housing SR components was brought within the scope of license renewal unless a specific documented evaluation was performed to exclude a particular space. When this evaluation was complete, a separate evaluation was performed to ensure that the seismically connected piping (associated with SR/NSR boundaries), that had not yet been included, was brought within the scope of license renewal

consistent with the CLB. The license renewal boundary drawings were reviewed to ensure that there were no anomalous conditions that required further evaluation.

The staff reviewed the applicant's response and determined that the applicant had previously evaluated the NSR/SR piping interfaces and that the results of the previous evaluations were conservative and consistent with the plant's design basis, the UFSAR, and the CLB. Therefore, the staff's concern described in RAI 2.1-2 is resolved.

Conclusion. Based on the information supplied by the applicant, including determination of credible failures that could impact the ability of SR SSCs to perform their intended functions, evaluation of relevant operating experience, and incorporation of identified NSR SSCs into the applicant's AMPs; and the results of NRC inspection and audit activities, the staff concluded that the applicant has supplied sufficient information to demonstrate that all SSCs that meet the 10 CFR 54.4(a)(2) scoping requirements have been identified as being within the scope of license renewal.

Application of the Scoping Criteria in 10 CFR 54.4(a)(3). 10 CFR 54.4(a)(3) requires, in part, that the applicant consider all SSCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with NRC regulations for fire protection (10 CFR 50.48), EQ (10 CFR 50.49), PTS (10 CFR 50.61), ATWS (10 CFR 50.62), and SBO (10 CFR 50.63) to be within the scope of the license renewal.

In LRA Sections 2.1.1.3, "Other Scoping Pursuant to 10 CFR 54.4(a)(3)," and 2.1.4, "Interim Staff Guidance Issues," the applicant discussed the methodology used to identify SSCs credited for performing a function that demonstrates compliance with regulations for fire protection, EQ, ATWS, and SBO pursuant to the 10 CFR 54.4(a)(3) license renewal scoping criteria. The applicant did not evaluate PTS because it is not applicable to BWRs. The applicant's approaches for scoping systems and structures required mitigating each of these four regulated events, as described in the following sections.

Fire Protection - The applicant described the scoping of SSCs required to demonstrate compliance with the fire protection requirements of 10 CFR 50.48 in LRA Section 2.1.1.3.1, "Fire Protection." The applicant stated that a detailed review of the CLB, which included the EDB, the Safe Shutdown Analysis Report, the fire protection safe shutdown and SBO screening procedure, and the Fire Protection Program Manual, for fire protection was performed and SSCs that support either fire protection design features or safe shutdown following a postulated fire are within the scope of license renewal, and the associated intended functions relied were identified.

Environmental Qualification - The applicant described the scoping of SSCs required to demonstrate compliance with EQ requirements of 10 CFR 50.49 in LRA Section 2.1.1.3.2, "Environmental Qualification." Electric equipment important to safety that is required to be environmentally qualified to mitigate certain accidents that would result in harsh environmental conditions in the plant is defined in 10 CFR 50.49. The applicant stated that an EQ Master List (EQML) was developed in accordance with the requirements of 10 CFR 50.49(b) based on 1) a review of the BSEP design-basis accidents, 2) the resulting environmental service conditions, 3) the functional requirements of the systems, 4) the functional requirements of individual components required to isolate the break or mitigate or monitor the effects of the accident, and 5) the

physical location of the components. THE EQML is maintained in the EDB, which was used as the principal input document for scoping of SSCs. Any system that contained one or more components designated as EQ-related in the EDB was considered within the scope of license renewal per 10 CFR 54.4(a)(3).

Anticipated Transients without Scram (ATWS) - The applicant described the scoping of SSCs required to demonstrate compliance with the ATWS requirements of 10 CFR 50.62 in LRA Section 2.1.1.3.3, "Anticipated Transients without Scram." The applicant stated that the BSEP design features related to ATWS are within the scope of license renewal because they are relied on to meet the requirements of 10 CFR 50.62. The applicant stated that ATWS mitigation is accomplished by the use of three systems at BSEP: 1) the alternate rod injection system, 2) the standby liquid control (SLC) system, and 3) the ATWS-recirculation pump trip system. Based on a review of the CLB, the intended functions supporting the 10 CFR 50.62 requirements were determined.

Station Blackout - In an April 1, 2002 letter from D. Matthews to A. Nelson and D. Lochbaum, the staff provided guidance on the scoping of equipment relied on to meet the requirements of 10 CFR 50.63. In this letter, the staff noted that, consistent with the requirements specified in 10 CFR 54.4(a)(3) and 10 CFR 50.63(a)(1), the plant system portion of the offsite power system used to connect the plant to the offsite power source should be included within the scope of the rule. The applicant described the scoping of SSCs required to demonstrate compliance with the SBO requirements of 10 CFR 50.63 in LRA Section 2.1.1.3.4, "Station Blackout." The applicant noted that the EDB quality classifications that have been assigned to components credited with compliance with SBO requirements were used to identify the applicable equipment. In addition, the applicant augmented the EDB by identifying components with additional reviews of the Station Blackout Coping Analysis Report and other plant documents and procedures. The applicant stated that, based on the review of the CLB for SBO, the equipment performing intended functions required for compliance with 10 CFR 50.63 was determined and was included within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(3). The staff determined that the applicant's approach to scoping SSCs relied on to demonstrate compliance with 10 CFR 50.63 was consistent with the staff's April 1, 2002, interim guidance (ISG-2).

Conclusion. As part of the review of the applicant's scoping methodology, the staff reviewed a sample of the license renewal database 10 CFR 54.4(a)(3) scoping results, reviewed a sample of the analyses and documentation to support these reviews, and discussed the methodology and results with the applicant's personnel responsible for these evaluations. The staff verified that the applicant had identified and used pertinent engineering and licensing information in order to determine the SSCs required to be within the scope of license renewal in accordance with the 10 CFR 54.4(a)(3) criteria. Based on this sampling review and discussions with the applicant, the staff determined that the applicant's methodology for identifying systems and structures meeting the scoping criteria of 10 CFR 54.4(a)(3) was adequate.

2.1.3.1.2 Mechanical Component Scoping

The applicant described the methodology used for mechanical scoping in LRA Section 2.1.1 "Scoping;" EGR-NGGC-0502, "System/Structure Scoping for License Renewal;" and

BNP-License Renewal (LR)-010, "Bulk Screening of EDB Equipment Types for License Renewal." The applicant developed a list of SSCs using the information contained in the EDB. The EDB and the CLB were reviewed to identify SSCs credited with compliance with 10 CFR 54.4(a)(1), (a)(2), and (a)(3). The primary source of this information was the component-level classification provided in the EDB. The system and component intended functions had been used in determining the quality classification of SCs within the EDB. Systems which contained components determined to meet the requirements of 10 CFR 54.4(a)(1), (a)(2), and (a)(3) were considered within the scope of license renewal.

The applicant noted that while the quality classification used in the EDB would accurately identify the SCs that would meet the requirements of 10 CFR 54.4(a)(1) and a portion of those SCs that would meet the requirements of 10 CFR 54.4(a)(2), there may be NSR SCs which would have potential physical interactions with SR SSCs that might not be identified in the EDB. In this case, the applicant performed additional CLB reviews and did on-site walkdowns to identify NSR SSCs that could potentially interact with SR SSCs and included the identified NSR SSCs within the scope of license renewal. In addition, the applicant indicated that additional reviews of the CLB were performed to identify all SCs required to meet those system functions credited with compliance with regulated events (10 CFR 54.4(a)(3)) and to include the identified SCs within the scope of license renewal.

For each mechanical system the applicant developed a scoping worksheet in accordance with calculation BNP-LR-010, "License Renewal Project Scoping Calculation." These worksheets provided a general description of the mechanical system, identified whether the system was in or out of the scope of license renewal, identified a list of applicable CLB documents, and identified each of the system functions required to support the component functions meeting license renewal scoping criteria.

The staff reviewed the scoping process for a selected mechanical system, the main steam system. The staff verified that the EDB had been appropriately used to identify SSCs within the scope of license renewal and that the applicant had identified and highlighted system piping and instrumentation diagrams to develop the system boundaries in accordance with the procedural guidance. The applicant was knowledgeable of the process and conventions for establishing boundaries as defined in the license renewal implementation procedures. Additionally, the staff verified that the applicant had performed independent verification of the results in accordance with its governing procedures. Specifically, the marked-up drawings were reviewed by other personnel knowledgeable with the system, and cross-discipline verification and independent reviews of the resultant highlighted drawings were also performed.

Insulation. During the audit, the applicant described the evaluation performed to determine if any insulation installed in the plant was required to support any system intended functions identified during the scoping process. As a result, the staff requested that the applicant describe any intended functions performed by insulation or the basis for determining that insulation (e.g. piping insulation) did not meet the scoping criteria described in 10 CFR 54.4(a)(1), (a)(2), or (a)(3). The applicant stated that the intended function of thermal insulation is to provide thermal resistance, which has been identified as an intended function.

Section 3.5.1.4, "Thermal Insulation," of BNP-LR-007, "License Renewal Scoping Calculation for Criteria 10 CFR 54.4(a)(2)," states that insulating materials can be credited with reducing piping/equipment heat loads in support of SR room/area cooling systems, with limiting heat

transfer into or out of system working fluids, or with limiting temperatures in support of equipment environmental qualification. The applicant stated that thermal insulation within the scope of license renewal under 10 CFR 54.4(a)(2) is identified as a system commodity in Attachment 2 of the calculation. Plant areas and systems where temperature control may be of concern include the drywell, emergency core cooling system (ECCS) pump rooms, cryogenic systems, and heat-traced outdoor piping and components needed for freeze protection. A review of the mechanical component screening result calculations identified four engineered safety feature (ESF) systems (residual heat removal (RHR), high pressure coolant injection (HPCI), reactor core isolation cooling (RCIC) and the heating, ventilation, and air conditioning (HVAC) control building) as the primary systems that credit thermal insulation. To the extent that insulation is relied upon to mitigate the effects or propagation of fire, calculation BNP LR-004 addresses these fire barriers against the 10 CFR 54.4(a)(3) fire protection criteria.

Consumables. During the audit, the applicant described the screening review for certain types of consumable commodities in LRA Section 2.1.2.1, "Mechanical Components." Section 2.1.2.1(6) states that consumable items were evaluated in accordance with the staff screening guidance of SRP-LR Table 2.1-3, "Specific Staff Guidance on Screening." The table provides guidance for determining if consumable items should be subject to an AMR. For consumables that are periodically replaced, SRP-LR Table 2.1-3 states that the applicant should identify the standards that are relied on for replacement as part of the methodology description.

For consumables such as packing, gaskets, component seals, and O-rings, the table states that these components may be excluded from an AMR using a clear basis. The table also divides consumables into the following four basic categories: (1) packing, gaskets, component seals, and O-rings; (2) structural sealants; (3) oil, grease, and component filters; and (4) system filters, fire extinguishers, fire hoses, and air packs. The LRA states that screening of consumables was either performed as part of the component AMR or the item was excluded based on the staff's screening guidance. The applicant's guidance for performing screening reviews for commodity groups is documented in calculation BNP-LR-002, Revision 0, "Bulk Screening of EDB Equipment Types for License Renewal," which provides the description and the justification for the methodology used for the bulk screening of tagged components in the EDB. Bulk screening is the ability to render an active/passive determination based on EDB equipment type and provide proposed component intended functions for those equipment types that are passive and long-lived.

The staff selected various applicant's AMRs and verified that each contained a discussion on the treatment of consumables. The following applicant's AMRs were reviewed during the staff's scoping and screening audit and were verified to contain components subject to short-lived/replaceable determinations: BNP-LR-306, 337, 338, 341, 345, 348, 359, 364, 365, and 372. The staff concluded that for the remaining AMRs, no short-lived equipment had been identified.

Conclusion. The staff reviewed the LRA, samples of applicable calculations, procedures, drawings, EDB information, and scoping worksheets. The staff determined that the applicant's proceduralized methodology was consistent with the description provided in LRA Section 2.1.1 and the guidance contained in SRP-LR Section 2.1. Based on review of information contained in the LRA, the applicant's detailed scoping implementation procedures, and a sampling review of mechanical scoping results; the staff concluded that the applicant's methodology for

identifying mechanical SSCs within the scope of license renewal meets the requirements of 10 CFR 54.4(a).

2.1.3.1.3 Structural Component Scoping

The applicant described the methodology used for structural scoping in LRA Section 2.1.1 "Scoping;" EGR-NGGC-0502, "System/Structure Scoping for License Renewal;" and BNP-LR-002, "Bulk Screening of EDB Equipment Types for License Renewal." The applicant developed a list of SSCs using the information contained in the EDB. The EDB and the CLB were reviewed to identify structures credited with compliance with 10 CFR 54.4(a)(1), (a)(2), and (a)(3). The primary source of this information was the component-level classification provided in the EDB. The structure and component intended functions had been used in determination of the quality classification of SCs within the EDB. Systems which contained components determined to meet the requirements of 10 CFR 54.4(a)(1), (a)(2), and (a)(3) were considered within the scope of license renewal.

The EDB contained all SR class components and structures and the majority of other plant components and structures. The EDB also included civil commodities such as doors, supports, and penetrations, and the component location. The applicant included all structures within the scope of license renewal which contained components required to be within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(1), (a)(2), and (a)(3).

The applicant conducted a series of additional reviews for 10 CFR 54.4(a)(2) and (a)(3) criteria, documented in a series of calculations, to determine if additional components, civil commodities, or structures were included within the scope of license renewal. All civil components and any component civil functions were assigned to civil commodity groups. The applicant reconciled the commodity types with those in NEI-95-10, the GALL Report, and other facility applications, and added appropriate commodity types. In addition, the applicant reviewed other CLB information such as the UFSAR, the structures' DBD and plant drawings; and walked down all structures utilizing a detailed checklist to determine if additional structures housed any components required for license renewal. The walkdowns also served to identify or confirm the commodity types and materials in each structure. If portions of NSR systems were required for 10 CFR 54.4(a)(2) criteria, the entire system's civil components were placed within the scope of license renewal.

For each structure, the applicant developed a structure scoping worksheet in accordance with calculation BNP-LR-010, "License Renewal Project Scoping Calculation." These worksheets provided a general description of the structure, identified whether the structure was in or out of the scope of license renewal, identified a list of applicable CLB documents, and identified each of the civil intended functions required to support the component functions meeting license renewal scoping criteria.

Conclusion. The staff reviewed the LRA, samples of applicable calculations, procedures, drawings, EDB information, and scoping worksheets. The staff determined that the applicant's proceduralized methodology was consistent with the description provided in LRA Section 2.1.1 and the guidance contained in SRP-LR, Section 2.1. Based on review of information contained in the LRA, the applicant's detailed scoping implementation procedures, and a sampling review of structural scoping results, the staff concluded that the applicant's methodology for

identification of structural SSCs within the scope of license renewal met the requirements of 10 CFR 54.4(a).

2.1.3.1.4 Electrical and I&C Component Scoping

Electrical and I&C component scoping was performed using the commodity method and is discussed, along with electrical and I&C component screening, in SER Section 2.1.3.2.3.

2.1.3.2 Screening Methodology

2.1.3.2.1 Mechanical Component Screening

The staff reviewed the screening implementation procedures and a selected sample of the system screening reports to ensure consistent application of the applicant's screening methodology. The applicant developed standard procedure EGR-NGGC-0503, "Mechanical Component Screening for License Renewal," to define the process for performing screening of mechanical components.

The applicant determined the components within the scope of license renewal to be those that performed an intended function without moving parts or without a change in configuration or properties. Active/passive screening determinations were based on the guidance in NEI 95-10, Appendix B. The passive components within the scope of license renewal that were not subject to replacement based on a qualified life or specified time period were identified as requiring an AMR. The determination of whether a passive component within the scope of license renewal has a qualified life or specified replacement time period was based on a review of plant-specific information including the EDB, maintenance programs, and procedures. The applicant identified the component intended functions based on the guidance of NEI 95-10.

The results of the mechanical component screening process were documented in system screening calculations which contained the system intended function boundaries, identified the components subject to screening, and documented the screening results for each system component. The component documentation included the component identification, commodity type, screening results (active or passive), a description, and the intended function. The staff reviewed a sample of the mechanical screening packages assembled by the applicant.

The staff also examined the applicant's implementation of this methodology by reviewing a sample mechanical system, the main steam system, identified as being within the scope of license renewal. The review included the evaluation boundaries and resultant components determined to be within the scope of license renewal, the corresponding component-level intended functions, and the resulting list of mechanical components and commodity groups subject to an AMR.

Conclusion. The staff reviewed the LRA, samples of applicable calculations, procedures, drawings, EDB information, and screening results. The staff determined that the applicant's proceduralized methodology was consistent with the description provided in LRA Section 2.1.2 and the guidance contained in SRP-LR Section 2.1. Based on review of information contained in the LRA, the applicant's detailed screening implementation procedures, and a sampling review of mechanical screening results, the staff concluded that the applicant's methodology for

identification of mechanical SCs subject to an aging management review meet the requirements of 10 CFR 54.21(a)(1).

2.1.3.2.2 Structural Component Screening

The applicant initially performed a bulk screening process in accordance with guidance of procedure ENG-NGGC-0506, "Civil/Structural Screening and Aging Management Review for LR" and calculations BNP-LR-002 and BNP-LR-008, "Civil Commodity Types and Bulk Screening of EDB Equipment Types" utilizing component information from the EDB. Calculation BNP-LR-008 also provided a list of the 13 civil intended functions, defined civil equipment types, and provided guidance for active/passive/long-lived determinations. This screening process resulted in typical commodity types pertinent to each structure. In addition, reviews of CLB information and facility walkdowns were conducted. Commodity types were reconciled with NEI 95-10, the GALL Report, and other facility license renewal applications.

Portions of the structures such as walls, beams, and foundations do not have unique identifiers, so the applicant identified structural members which support the intended function(s) that the structure performs via review of structural drawings and walkdowns. These items were assigned to a commodity group.

The applicant developed calculations BNP-LR-0110, "License Renewal Civil Screening for Outside Areas," and BNP-LR-0111, "License Renewal Civil Screening for Primary Containment System," to document the results of the screening effort for each structure. The calculations provided a list of structures and structural components subject to aging management review and described the methodology used to develop that list. The calculations provided a description of each structure, identified the structure and commodity civil intended functions, identified the evaluation boundary, and described all components which were transferred into the system from other disciplines (mechanical, electrical) and other structural systems.

Conclusion. The staff reviewed the LRA, samples of applicable calculations, procedures, drawings, EDB information, and screening results. The staff determined that the applicant's proceduralized methodology was consistent with the description provided in LRA Section 2.1.2 and the guidance contained in SRP-LR Section 2.1. Based on review of information contained in the LRA, the applicant's detailed screening implementation procedures, and a sampling review of structural screening results; the staff concluded that the applicant's methodology for identification of structural SCs subject to an AMR meets the requirements of 10 CFR 54.21(a)(1).

2.1.3.2.3 Electrical and I&C Component Scoping and Screening

The applicant described the methodology used for electrical and I&C scoping in LRA Section 2.1.1, "Scoping;" EGR-NGGC-0505, "Electrical Component Screening and Aging Management Review for License Renewal;" and BNP-LR-002, "Bulk Screening of EDB Equipment Types for License Renewal." The applicant developed a list of SSCs using the information contained within the EDB. The EDB and the CLB were reviewed to identify SSCs credited with compliance with 10 CFR 54.4(a)(1), (a)(2), and (a)(3). The primary source of this information was the component-level classification provided in the EDB. The system and component intended functions had been used in determination of the quality classification of SCs within the EDB. Systems which contained components determined to meet the

requirements of 10 CFR 54.4(a)(1), (a)(2), and (a)(3) were considered within the scope of license renewal.

The applicant identified electrical components contained in the EDB that were determined to be within the scope of license renewal and developed a list of the EDB electrical component types for the systems within the scope of license renewal. The applicant reviewed the UFSAR, plant design drawings, and other documentation to identify additional electrical and I&C systems within the scope of license renewal and subsequently identified the equipment and components within the electrical and I&C systems. The applicant developed a comprehensive list of electrical component types present in the systems and structures within the scope of license renewal. The component types associated with the electrical and I&C systems within the scope of license renewal were organized into commodity groupings, such as circuit breakers, cables, and sensors in accordance with the guidance in NEI 95-10.

The applicant identified electrical and I&C component commodity groups that perform an intended function without moving parts or without a change in configuration or properties in accordance with the requirements of 10 CFR 54.21(a)(1)(i). The applicant identified the components within the passive electrical and I&C component commodity groups which are not subject to replacement based on a qualified life or specified time period in accordance with 10 CFR 54.21(a)(1)(ii). The electrical and I&C commodities which were determined to be within the scope of license renewal and subject to an AMR are as follows:

- non-EQ insulated cables and connections
- electrical portions of electrical and I&C penetration assemblies
- phase buses
- high voltage insulators
- switchyard bus
- transmission conductors

The staff also reviewed the applicant's approach to scoping and screening of electrical fuse holders in accordance with ISG-05, "Identification and Treatment of Electrical Fuse Holders for License Renewal," dated March 10, 2003. ISG-05 stated that, consistent with the requirements specified in 10 CFR 54.4(a), fuse holders (including fuse clips and fuse blocks) are considered to be passive electrical components. Fuse holders should be scoped, screened, and included in the AMR in the same manner as terminal blocks and other types of electrical connections that are currently being treated in the process. This staff position only applies to fuse holders that are not part of a larger assembly, but support SR and NSR functions in which the failure of a fuse precludes a safety function from being accomplished.

The EDB contained information on all fuses installed at BSEP. The applicant had reviewed each fuse listed in the EDB to determine whether the fuse was part of a larger assembly. The EDB provided sufficient information concerning the application of the fuses to determine that the majority of fuses were part of a larger assembly. However, the applicant identified a subset of the fuses listed in the EDB that were described with limited information and required further evaluation. The applicant reviewed the point-to-point wiring diagrams for the resulting subset of fuses which provided the actual location and equipment in which the fuses were installed. The applicant determined that all fuses contained within the subset were part of a larger assembly; therefore, the fuseholders were not within the scope of license renewal. The applicant did not

identify any fuseholders that were required to be within the scope of license renewal in accordance with ISG-05.

Conclusion. The staff reviewed the LRA, samples of applicable calculations, procedures, drawings, EDB information, and scoping and screening results. The staff determined that the applicant's proceduralized methodology was consistent with the description provided in LRA Sections 2.1.1 and 2.1.2 and the guidance contained in SRP-LR Section 2.1. Based on its review of information contained in the LRA, the applicant's detailed scoping and screening implementation procedures, and a sampling review of electrical and I&C scoping and screening results, the staff concluded that the applicant's methodology for identification of electrical and I&C SSCs within the scope of license renewal and electrical and I&C SCs subject to an AMR meets the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.1.4 Evaluation Findings

The staff's review of the information presented in LRA Section 2.1, the supporting information in the scoping and screening implementation procedures, calculations and reports, and the information presented during the scoping and screening audit formed the basis of the staff's safety determination. The staff verified that the applicant's scoping and screening methodology was consistent with the requirements of the Rule and the staff's position on the treatment of NSR SSCs. On the basis of this review, the staff concluded that there is reasonable assurance that the applicant's methodology for identifying the SSCs within the scope of license renewal and the structures and components requiring an AMR is consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.2 Plant-Level Scoping Results

2.2.1 Introduction

In LRA Section 2.1, the applicant described the methodology for identifying the SSCs within the scope of license renewal. In LRA Section 2.2, the applicant used the scoping methodology to determine which of the SSCs are required to be included within the scope of license renewal. The staff reviewed the plant-level scoping results to determine whether the applicant had properly identified all plant-level systems and structures relied upon to mitigate DBEs, as required by 10 CFR 54.4(a)(1), or whose failure could prevent satisfactory accomplishment of any of the SR functions, as required by 10 CFR 54.4(a)(2), as well as the systems and structures relied on in safety analysis or plant evaluations to perform a function required by one of the regulations referenced in 10 CFR 54.4(a)(3).

2.2.2 Summary of Technical Information in the Application

In LRA Tables 2.2-1, 2.2-2, and 2.2-3, the applicant provided a list of the plant mechanical systems, structures, and electrical/I&C systems, respectively, identifying those mechanical systems, structures, and electrical/I&C systems that are within the scope of license renewal. Based on the DBEs considered in the plant's CLB, other CLB information relating to NSR systems and structures, and certain regulated events, the applicant identified those plant-level systems and structures that are within the scope of license renewal, as defined by 10 CFR 54.4.

2.2.3 Staff Evaluation

In LRA Section 2.1, the applicant described its methodology for identifying the systems and structures that are within the scope of license renewal and subject to an AMR. The staff reviewed the scoping and screening methodology and provided its evaluation in SER Section 2.1. To verify that the applicant properly implemented its methodology, the staff focused its review on the implementation results, as shown in LRA Tables 2.2-1, 2.2-2, and 2.2-3 to confirm that there were no omissions of plant-level systems and structures within the scope of license renewal.

The staff determined whether the applicant properly identified the systems and structures within the scope of license renewal in accordance with 10 CFR 54.4. The staff reviewed selected systems and structures that the applicant did not identify as falling within the scope of license renewal to verify whether the systems and structures have any intended functions that would require their inclusion within the scope of license renewal. The staff's review of the applicant's implementation was conducted in accordance with the guidance described in SRP-LR Section 2.2, "Plant-Level Scoping Results."

The staff sampled the contents of the UFSAR based on the systems and structures listed in LRA Tables 2.2-1, 2.2-2, and 2.2-3 to determine whether there were systems or structures that may have intended functions within the scope of license renewal, as defined by 10 CFR 54.4, that were omitted from the scope of license renewal. The staff did not identify any omissions.

2.2.4 Conclusion

The staff reviewed LRA Section 2.2 and the supporting information in the UFSAR to determine whether any systems and structures within the scope of license renewal had not been identified by the applicant. The staff's review did not identify any omissions. On the basis of this review, the staff concluded that the applicant properly identified the systems and structures that are within the scope of license renewal in accordance with 10 CFR 54.4.

2.3 Scoping and Screening Results – Mechanical Systems

This section documents the staff's review of the applicant's scoping and screening results for mechanical systems. Specifically, this section discusses the following mechanical systems:

- reactor vessel, internals, and reactor coolant system
- engineered safety features
- auxiliary systems
- steam and power conversion systems

In accordance with the requirements set forth in 10 CFR 54.21(a)(1), the applicant must list and describe structures and components that are within the scope of license renewal (i.e., those that meet the scoping criteria of the License Renewal Rule) and are subject to an AMR. To verify that the applicant properly implemented its scoping and screening methodology, the staff focused its review on the implementation results. This enabled the staff to confirm that the applicant did not inadvertently omit any mechanical system structures or components that meet the scoping criteria and are subject to an AMR.

Staff Evaluation Methodology. The staff evaluated the information provided in the LRA using the same approach for all mechanical systems. The objective of the staff's review was to determine whether all components and supporting structures for a given mechanical system that meet the scoping criteria specified in the rule were identified by the applicant as being within the scope of license renewal in accordance with 10 CFR 54.4. Similarly, the staff evaluated the applicant's screening results to verify that all long-lived, passive components were identified by the applicant as being subject to an AMR in accordance with 10 CFR 54.21(a)(1).

Scoping. To perform its scoping evaluation, the staff reviewed the applicable LRA section and associated component drawings (with the exception of some balance-of-plant (BOP) systems discussed below), focusing on components that were not identified as being within the scope of license renewal. The staff reviewed relevant licensing-basis documents, including the plant's UFSAR, for each mechanical system to determine whether the applicant omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff also reviewed the licensing-basis documents to determine whether the LRA omitted any intended function(s) delineated under 10 CFR 54.4(a). If the review revealed an omission, the staff issued an RAI to resolve the discrepancy.

Screening. After completing its scoping evaluation, the staff reviewed the applicant's screening results. For structures and components with intended functions delineated under 10 CFR 54.4(a), the staff sought to determine whether those structures and components perform their function(s) with moving parts or a change in configuration or properties, or if they are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1). For those that did not meet either of these criteria, the staff sought to confirm that the given structures and components were subject to an AMR as required by 10 CFR 54.21(a)(1). If the review revealed any discrepancies, the staff issued an RAI to resolve them.

Two-Tier Scoping Review Process for BOP Systems. There are 62 mechanical systems in the LRA among which 39 are BOP systems, which include most of the auxiliary systems and all the steam and power conversion systems. The staff performed a two-tier scoping review for these BOP systems.

In the two-tier scoping review, the staff reviewed the LRA and UFSAR description focusing on the system intended function to screen all the BOP systems into two groups based on the following screening criteria:

- safety importance/risk significance
- potential for system failure to cause failure of redundant safety system trains
- operating experience indicating likely passive failures
- systems subject to omissions based on previous LRA reviews

Examples of the safety important/risk significant systems are the instrument air (IA) system, the diesel generator (DG) and support systems, and the service water (SW) system based on the results of Individual Plant Examination (IPE) for Brunswick. An example of a system whose failure could result in common cause failure of redundant trains is a drain system providing flood protection. Examples of systems with operating experience indicating likely passive failures include main steam system, feedwater system, and SW system. Examples of systems

with identified omissions in previous LRA reviews include spent fuel cooling system, and makeup water sources to safety systems.

From the 39 BOP systems, the staff selected 24 systems for a detailed (Tier-2) scoping review as described above. For the remaining 15 BOP systems, the staff performed a Tier-1 review of the LRA (that do not require detailed boundary drawings) and UFSAR that would identify apparent missing components for an AMR. However, Tier 2 requires the review of detailed boundary drawings in accordance with SRP-LR NUREG - 1800 Section 2.3. The following is a list of these 15 systems:

- screen wash water system
- turbine building closed cooling water system
- heat tracing system
- service air system
- chlorination system
- potable water system
- area radiation monitoring system
- non-contaminated water drainage system
- extraction steam system
- moisture separator reheater drains system and reheat steam system
- heater drains and miscellaneous vents and drains
- turbine building sampling system
- turbine electro-hydraulic control system
- stator cooling system
- hydrogen seal oil system

The staff verified that there is no risk significant system in the above list by examining the results of the Brunswick IPA. None of the above 15 systems are dominant contributors to core damage frequency (CDF), nor are these systems involved in the dominant initiating events.

Systems Identified for Inspection. By the memorandum dated April 28, 2004, the staff recommended that the inspection be used to verify 10 CFR 54.4(a)(2) scoping results. To implement this recommendation in reviewing the Brunswick LRA, the staff identified several systems for the regional inspection team to include in its scoping and screening inspection. These systems have been included in scope of license renewal by the applicant as a result of the 10 CFR 54.4(a)(2) review. The staff requested that the inspection include a sampling review of the engineering report (if available), plant layout drawings, and other documentation, as well as walk-downs of the plant areas that contain these systems and associated components. The following are the list of systems, which the staff identified for inspection:

- heat tracing system
- moisture separator reheater drains system and reheat steam system
- heater drains and miscellaneous vents and drains

As shown in the inspection report, dated July 12, 2005 (ADAMS accession ML052100315).

> "The inspectors reviewed the applicants screening and scoping analysis for the following non-safety related systems located in proximity to safety related systems to assess the implementation of 10 CFR 54.4(a)(2):

Heat Tracing System
Moisture Separator Reheater Drain System & Reheat Steam System
Heater Drains & Miscellaneous Vents and Drains

The review included the applicant's calculation that assessed the system and component applicability to 10 CFR 54.4(a)(2), applicable plant drawings, and visual examination of the in-plant configuration. The inspectors concluded that the applicant had appropriately implemented the criteria of 10 CFR 54.4(a)(2) in identifying these systems as being in-scope for license renewal due to their proximity to other safety related systems."

2.3.1 Reactor Vessel, Internals, and Reactor Coolant System

In LRA Section 2.3.1, the applicant identified the structures and components of the reactor vessel, internals, and reactor coolant system that are subject to an AMR for license renewal.

The applicant described the supporting structures and components of the reactor vessel, internals, and reactor coolant system in the following sections of the LRA:

- 2.3.1.1 reactor vessel and internals
- 2.3.1.2 neutron monitoring system
- 2.3.1.3 reactor manual control system
- 2.3.1.4 control rod drive hydraulic system
- 2.3.1.5 reactor coolant recirculation system

The corresponding subsections of this SER (2.3.1.1 – 2.3.1.5, respectively) present the staff's review findings with respect to the reactor vessel, internals, and reactor coolant system for Units 1 and 2.

2.3.1.1 Reactor Vessel and Internals

2.3.1.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.1, the applicant described the reactor vessel and internals. The reactor pressure vessel (RPV) is a vertical, cylindrical pressure vessel with hemispherical heads and is of welded construction. 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 and provides support for the reactor vessel internals. The RPV contains the RPV internals, consisting of the following: reactor core shroud and support structure; steam separators and dryers; jet pump assemblies; control rod guide tubes; distribution lines for the feedwater, core spray, and standby liquid control systems; the incore instrumentation; and associated components. The purposes of the RPV internals are to properly distribute the flow of coolant delivered to the RPV, to locate and support the fuel assemblies and other internal components, 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. In addition, the reactor vessel and internals include connected piping that is part of the RCPB.

The reactor vessel and internals contain SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the reactor vessel and internals could potentially prevent the satisfactory accomplishment of an SR function. In addition, the reactor vessel and internals perform functions that support FP, EQ, ATWS, and SBO.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides flow restriction (throttle)
- provides structural support/seismic integrity
- provides post-accident containment, holdup, and plateout of MSIV bypass leakage
- provides adequate flow in a properly-distributed spray pattern

In LRA Table 2.3.1-1, the applicant identified the following reactor vessel and internals component types that are within the scope of license renewal and subject to an AMR:

- top head enclosure (top head)
- top head enclosure [nozzles (vent, top head spray or RCIC, and spare)]
- top head enclosure (head flange)
- top head enclosure (closure studs and nuts)
- vessel shell (vessel flange)
- vessel shell (upper shell)
- vessel shell (intermediate nozzle shell)
- vessel shell (intermediate beltline shell)
- vessel shell (lower shell)
- vessel shell (beltline welds)
- vessel shell (attachment welds)
- nozzles (main steam)
- nozzles (feedwater)
- nozzles (control rod drive (CRD) return line)
- nozzles (recirculation outlet)
- nozzles (recirculation inlet)
- nozzles (low pressure core spray (LPCS) - Unit 1)
- nozzles (LPCS - Unit 2)
- nozzles (shell flange)
- nozzles safe ends (LPCS)
- nozzles safe ends (CRD return line)
- nozzles safe ends (recirculation water inlet and outlet)
- nozzles safe ends (feedwater - Unit 1)
- nozzles safe ends (feedwater - Unit 2)
- nozzles safe ends (standby liquid control)
- nozzles safe ends (instrumentation)
- penetrations (CRD stub tubes)
- penetrations (instrumentation)
- penetrations (jet pump instrument)
- penetrations (standby liquid control)
- penetrations (flux monitor)
- penetrations (drain line)

- reactor vessel (boiling water reactor) (bottom head)
- reactor vessel (boiling water reactor) (support skirt and attachment welds)
- thermal sleeves (feedwater - Unit 1)
- thermal sleeves (feedwater - Unit 2)
- thermal sleeves (LPCS)
- core shroud and core plate [core shroud (upper, central, lower)]
- core shroud and core plate (core plate)
- core shroud and core plate (core plate bolts)
- core shroud and core plate (access hole cover)
- core shroud and core plate (shroud support structure)
- core shroud and core plate (core plate plugs)
- core shroud and core plate (top guide)
- core spray lines and spargers (core spray lines headers)
- core spray lines and spargers (spray rings)
- core spray lines and spargers (spray nozzles)
- core spray lines and spargers (thermal sleeves)
- jet pump assemblies (thermal sleeve)
- jet pump assemblies (inlet header)
- jet pump assemblies (riser brace arm)
- jet pump assemblies (holddown beams)
- jet pump assemblies (inlet elbow)
- jet pump assemblies (mixing assembly)
- jet pump assemblies (diffuser)
- jet pump assemblies (castings)
- jet pump assemblies (jet pump sensing line)
- jet pump assemblies (jet pump holddown beam keeper, lock plate, and bolt)
- fuel supports and CRD assemblies (orificed fuel support)
- fuel supports and CRD assemblies (CRD housing)
- instrumentation (intermediate range monitor dry tubes)
- instrumentation (source range monitor dry tubes)
- reactor vessel internals (boiling water reactor – NSR) (steam dryer)
- reactor vessel internals (boiling water reactor – NSR) (shroud head and separators)
- reactor vessel internals (boiling water reactor – NSR) (feedwater spargers)
- reactor vessel internals (boiling water reactor – NSR) (surveillance capsule holder)
- piping and fittings (main steam)
- piping and fittings (feedwater)
- piping and fittings (small bore piping less than nominal pipe size (NPS) 4)
- piping and fittings (reactor vessel head vent components)
- valves (body)
- non-RCPB (boiling water reactor) (piping and fittings)
- non-RCPB (boiling water reactor) (valves)
- non-RCPB (boiling water reactor) (piping specialties)
- piping (piping and fittings)
- valves (including check valves and containment isolation) (body and bonnet)
- air receiver (shell access cover)

2.3.1.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.1 and UFSAR Sections 3.9.5, 4.5-4.6, and 5.1-5.3 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3, "Scoping and Screening Results - Mechanical Systems."

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.1.1 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAIs as discussed below.

In RAI 2.3.1.1-1, dated April 8, 2005, the staff stated that UFSAR Section 3.9.5.1.1 states that the core shroud is reinforced at the upper shroud/top fuel guide support ring/middle shroud interface with twelve brackets located at 30 degree intervals starting at the 15 degree azimuth. These brackets provide structural integrity across the interface and compensate for cracking in the heat-affected zones of the original fabrication welds. Therefore, the staff requested that the applicant indicate whether the top fuel guide support ring and middle shroud interface brackets have been included in scope of license renewal or justify the exclusion of these components. In its response, by letter dated May 4, 2005, the applicant stated:

> These components are in scope. The 12 brackets are evaluated as "Core Shroud and Core Plate (Core Shroud Repair Hardware)" and the subcomponents of the Core Shroud are evaluated as "Core Shroud and Core Plate (Core Shroud (Upper, Central, Lower))" as shown in Table 2.3.1-1 on page 2.3-6 of the LRA.

Based on the inclusion of the above components, the staff's concern described in RAI 2.3.1.1-1 is resolved.

In RAI 2.3.1.1-2, dated April 8, 2005, the staff stated that UFSAR Section 3.9.5.1.3 states that a thermal sleeve is inserted into the control rod drive housing (CRDH) from below and is rotated to lock the control rod guide tube in place. A key is inserted into a locking slot in the bottom of the CRDH to hold the thermal sleeve in position. Therefore, the staff requested that the applicant indicate whether the CRDH thermal sleeve is included in the scope of license renewal or justify its exclusion. In its response, by letter dated May 4, 2005, the applicant stated:

> This subcomponent is in scope but is below the level of detail presented in the AMR tables. See page 2.3-2 of the LRA - "Control Rod Drive (CRD) equipment." Similar to other subcomponents that comprise the Reactor Vessel Internals, the applicable aging management programs are Water Chemistry and Reactor Vessel and Internals Structural Integrity.

Based on the inclusion of the above component, the staff's concern described in RAI 2.3.1.1-2 is resolved.

In RAI 2.3.1.1-3, dated April 8, 2005, the staff requested that the applicant indicate whether thermal sleeves for recirculation inlet nozzles are considered part of reactor vessel nozzles, nozzle safe ends and/or instrumentation penetrations requiring an AMR. The subject components represent a pressure boundary and direct flow to core spray spargers and jet pumps. In its response, by letter dated May 4, 2005, the applicant stated:

> The thermal sleeve is evaluated as "Jet Pump Assemblies (Thermal Sleeve)" as shown in Table 2.3.1-1 on page 2.3-6 of the LRA. The associated AMR line items are shown on pages 3.1-58 and 3.1-59 of the LRA. Note: Flow from the Reactor Pressure Vessel (RPV) Recirculation Inlet Nozzles, i.e., Nozzles N2A through N2K, directs flow only to the Jet Pumps. Flow to the Core Spray Spargers is through the Core Spray Nozzles, i.e., N5A and N5B.

Based on the inclusion of the above component, the staff's concern described in RAI 2.3.1.1-3 is resolved.

In RAI 2.3.1.1-4, dated April 8, 2005, the staff stated that the differential pressure and liquid control line serves a dual function within the reactor vessel: (1) to inject liquid control solution into the coolant stream, and (2) to sense the differential pressure across the core support assembly. Therefore, the staff requested that the applicant indicate whether the subject component is considered part of reactor vessel nozzles, nozzle safe ends and/or instrumentation penetrations requiring an AMR. In its response, by letter dated May 4, 2005, the applicant stated:

> The core differential pressure and standby liquid control (SLC) lines within the vessel are not within the scope of license renewal. On May 15, 1998, the BWR Vessel and Internals Program (BWRVIP) issued "Appendix B, BWR Standby Liquid Control System Core Plate Delta P Inspection and Flaw Evaluation Guideline, Demonstration of Compliance with the Technical Information Requirements of the License Renewal Rule (10 CFR 54.21)." Refer to letter from V. Wagoner, BWRVIP Integration Committee, to C. Carpenter, (NRC), (Serial: 98-185), "License Renewal Appendix B to BWR Vessel and Internals Project, BWR Standby Liquid Control System Core Plate Delta P Inspection and Flaw Evaluation Guideline (BWRVIP-27), April, 1997," dated May 15, 1998, for further information. Section B.2 discusses the components subject to an AMR. Regarding differential pressure/standby liquid control (ΔP/SLC) lines, it states:
>
> > The only ΔP/SLC components required to accomplish the intended function are the vessel penetration/nozzle and SLC external piping. The ΔP/SLC internals piping is not within the license renewal evaluation boundary because it is not required to accomplish the intended function. Therefore, an aging management review of the internals piping is not needed for license renewal.
>
> In Section 2.1 of the NRC Safety Evaluation (SE) for the License Renewal version of BWRVIP-27, it states:

> In Appendix B, the BWRVIP identified the passive and long-lived components as required by 10 CFR 54.21(a)(1). The BWRVIP noted that the ΔP/SLC vessel penetration/nozzle and safe-end extensions are subject to aging management review.

The NRC SE was provided by letter from C. Grimes, (NRC), to C. Terry, (BWRVIP), "Acceptance for Referencing of Report, 'BWR Vessel and Internals Project, BWR Standby Liquid Control System/Core Plate ΔP Inspection and Flaw Evaluation Guidelines (BWRVIP-27),' for Compliance with the License Renewal Rule (10 CFR Part 54)," dated December 20, 1999.

In Section 3.1 of the SE, it states:

> The staff agrees that the ΔP/SLC vessel penetration/nozzle and safe-end extensions are subject to aging management review because they perform intended functions 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. The staff concludes that BWR applicants for license renewal must identify the appropriate subject RPV internal components as subject to aging management to meet the applicable requirements of 10 CFR 54.21 (a)(1).

The ΔP/SLC vessel penetration/nozzle is evaluated as part of "Penetrations (Standby Liquid Control)" and the safe-end is evaluated as "Nozzle Safe Ends (Standby Liquid Control)." These commodities are shown in Table 2.3.1-1 on page 2.3-5 of the LRA. The associated AMR line items appear in Table 3.1.2-1 on pages 3.1-34, 3.1-40, and 3.1-41 of the LRA.

Based on the explanation provided above, the staff's concern described in RAI 2.3.1.1-5 is resolved.

In RAI 2.3.1.1-5, dated April 8, 2005, the staff stated that the two 100 percent-capacity core spray lines separately enter the reactor vessel through the two core spray nozzles. Each line divides immediately inside the reactor vessel. The two halves are routed to opposite sides of the reactor vessel and are supported by clamps attached to the vessel wall. The header halves are then routed downward into the downcomer annulus and pass through the upper shroud immediately below the flange. The flow divides again as it enters the center of the semi-circular sparger ring which is routed halfway around the inside of the upper shroud. The ends of the two sparger rings for each line are supported by slip-fit brackets designed to accommodate thermal expansion of the rings. The header routing and supports are designed to accommodate differential movement between the shroud and the vessel. Therefore, the staff requested that the applicant indicate whether the core spray clamps which are attached to the vessel wall and the slip-fit brackets which support the ends of the two sparger rings are included in the scope of license renewal requiring an AMR or justify their exclusion. In its response, by letter dated May 4, 2005, the applicant stated:

> The components described are within the scope of License Renewal. The Core Spray Bracket is evaluated as part of "Vessel Shell (Attachment Welds)" as shown in Table 2.3.1-1 on page 2.3-5 of the LRA. The associated AMR line items appear in

Table 3.1.2-1 on pages 3.1-22 and 3.1-23 of the LRA. The slip-fit brackets which support the ends of the two sparger rings are evaluated as part of "Core Shroud and Core Plate (Core Shroud (Upper, Central, Lower))" as shown in Table 2.3.1-1 on page 2.3-6 of the LRA. The associated AMR line items appear in Table 3.1.2-1 on pages 3.1-46 and 3.1-47 of the LRA.

Based on the inclusion of the above component, the staff's concern described in RAI 2.3.1.1-5 is resolved.

In RAI 2.3.1.1-6, dated April 8, 2005, the staff stated that its position on reactor vessel flange leak-off lines is that unless a plant-specific justification is provided, the components should be within scope requiring aging management. Therefore, the staff requested that the applicant confirm whether any of the component types listed in LRA Table 2.3.1-1, "Reactor Vessel and Internals," include the subject component. If not, then the subject components should be identified as within scope requiring aging management or provide a plant-specific justification for the exclusion. In its response, by letter dated May 4, 2005, the applicant stated:

> The vessel flange leak detection line is within the scope of License Renewal. The vessel flange leak detection line is evaluated as part of "Non-Reactor Coolant Pressure Boundary (Boiling Water Reactor) (Piping and Fittings)" and "Non-Reactor Coolant Pressure Boundary (Boiling Water Reactor) (Valves)" as shown in Table 2.3.1-1 on page 2.3-7 of the LRA. The associated AMR line items appear in Table 3.1.2-1 on pages 3.1-75, 3.1-76, and 3.1-77 of the LRA. The vessel flange leak detection line is discussed in Section 3.1.2.2.4.2 on page 3.1-8 as follows:
>
> > The reactor vessel flange leak detection line at BSEP is a Class 2 line that is normally dry. The BSEP AMR methodology assumed that this stainless steel line is exposed to treated water and, therefore, is susceptible to cracking due to stress corrosion cracking. This aging effect will be managed with a combination of the Water Chemistry Program and the One-Time Inspection Program.
>
> Further, the vessel flange leak detection line is discussed in the context of responding to Applicant Action Item 4 to BWRVIP-74-A on page B-78 of the LRA as follows:
>
> > The vessel flange leak detection lines are not part of the reactor coolant pressure boundary and as such are not evaluated against Chapter IV of NUREG-1801. These lines (associated with Nozzle N13) are within the scope of License Renewal and are evaluated with all other non-reactor coolant pressure boundary piping and fittings. The AMR for these lines concluded that these lines are susceptible to cracking and loss of material. These lines will be managed by the Water Chemistry and One-Time Inspections Programs.

Based on the inclusion of the above component within the scope of license renewal, the staff's concern described in RAI 2.3.1.1-6 is resolved.

In RAI 2.3.1.1-7, dated April 8, 2005, the staff stated that at BSEP the steam separators are attached to the top of stand pipes which are welded into the shroud head. Therefore, the staff requested that the applicant indicate whether the subject component is included in LRA Table 2.3.1-1 component group "Reactor Vessel Internals (Boiling Water Reactor - Non-safety

Related) (Shroud Head and Separators)." In its response, by letter dated May 4, 2005, the applicant stated: "This subcomponent of the shroud head and separators is within the scope of License Renewal and is evaluated as part of 'Reactor Vessel Internals (Boiling Water Reactor-Non-safety Related) (Shroud Head and Separators).'"

Based on the inclusion of the above component within the scope of license renewal the staff's concern described in RAI 2.3.1.1-7 is resolved.

2.3.1.1.3 Conclusion

The staff reviewed the LRA and RAI responses to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the reactor vessel and internals components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the reactor vessel and internals components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.2 Neutron Monitoring System

2.3.1.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.2, the applicant described the neutron monitoring system (NMS). The NMS is an in-core neutron monitoring system, which detects and monitors neutron flux in the reactor core. The NMS is designed to (1) detect conditions in the core that threaten the overall integrity of the fuel barrier due to excessive power generation and to provide signals to the reactor protection system, so that the release of radioactive materials from the fuel barrier is limited, (2) provide information for the efficient, expedient operation and control of the reactor, and (3) prevent reactor coupled neutronic/thermal-hydraulic instabilities from occurring. The NMS provides the capability to shutdown the reactor via the reactor protection system (RPS) following a DBE and maintains it in a safe shutdown condition. The NMS is composed of the following subsystems: (1) source range monitoring (SRM) subsystem, (2) intermediate range monitoring subsystem, (3) local power range monitoring (LPRM) subsystem, which includes the period-based detection system feature, (4) average power range monitoring subsystem, which includes the oscillation power range monitor subsystem, (5) rod block monitor subsystem, and (6) traversing incore probe (TIP) subsystem.

The NMS contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the NMS could potentially prevent the satisfactory accomplishment of an SR function.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary.

In LRA Table 2.3.1-2, the applicant identified the following NMS component types that are within the scope of license renewal and subject to an AMR:

- instrumentation (incore neutron flux monitor guide tubes)
- non-RCPB (BWR) (piping and fittings)
- non-RCPB (BWR) (valves)
- non-RCPB (BWR) (piping specialties)

2.3.1.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.2 and UFSAR Section 7.6.1.1 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.1.2.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the NMS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the NMS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.3 Reactor Manual Control System

2.3.1.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.3, the applicant described the reactor manual control system (RMCS). The RMCS allows the operator to control core reactivity by inserting and withdrawing control rods. The system consists of the electrical components and logic circuits required to monitor and manipulate the control rods. The RMCS also acts to block rod motion and/or selection in response to protective signals generated by other plant monitoring systems. Supporting the RMCS is the rod position information system (RPIS) which provides the operator with a means for determining the positions of all control rods in the core and for observing the position of a selected rod in relation to specific adjacent rods. The RPIS also provides rod position and identification data to the process computer. The RPIS is considered as a subsystem of RMCS. The function of the rod worth minimizer (RWM) system, another RMCS subsystem, is to implement features that provide (1) protection against the existence of a rod worth which could result in significant fuel damage in the unlikely event of a control rod drop accident, (2)

implementation of the banked position withdrawal sequence as a hard-wired system, and (3) provision of several rod position indication data and control rod testing functions.

The failure of NSR SSCs in the RMCS could potentially prevent the satisfactory accomplishment of an SR function.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary/flow.

In LRA Table 2.3.1-3, the applicant identified the non-RCPB (BWR) (piping and fittings) as the RMCS component type that is within the scope of license renewal and subject to an AMR.

2.3.1.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.3 and UFSAR Section 7.7.1.8 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.1.3.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the RMCS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the RMCS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.4 Control Rod Drive Hydraulic System

2.3.1.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.4, the applicant described the CRD hydraulic system. The CRD hydraulic system supplies the pressure to and controls the flow requirements of the control rod drives. The CRD hydraulic system supplies water at the proper pressures and in sufficient flow to the hydraulic control units (HCU). Each HCU controls the flow to and from a CRD. The water discharged from the drives during a scram flows through the HCU to the scram discharge volume. During a normal control rod positioning operation, the water discharged from a drive

flows through its HCU and exhaust header to the cooling water header. The control rod drive hydraulic supply and discharge subsystems control the pressure and flows required for the operation of the CRD mechanisms and also to supply backfill flow to the cold reference legs for reactor vessel level instrumentation. The CRD hydraulic system is an open loop system consisting of two CRD water pumps, two drive water filters, a flow control station, a drive water pressure control station, hydraulic control units for each of the 137 CRD mechanisms, a scram discharge volume, interconnecting piping, associated valves, controls and instrumentation. Reactor coolant pressure-retaining portions of the CRD units attached to the RPV are considered part of the reactor vessel and internals system. The safety objective of the CRD hydraulic system is to insert control rods to provide a means of rapid reactor shutdown, thus limiting damage to the fuel barrier and primary system pressure.

The CRD hydraulic system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the CRD hydraulic system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the CRD hydraulic system performs functions that support EQ and ATWS

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides filtration
- provides structural support/seismic integrity

In LRA Table 2.3.1-4, the applicant identified the following CRD hydraulic system component types that are within the scope of license renewal and subject to an AMR:

- non-RCPB (BWR) (piping and fittings)
- non-RCPB (BWR) (valves)
- non-RCPB (BWR) (piping specialties)
- hydraulic control units (tanks)
- hydraulic control units (rupture disks)
- hydraulic control units (nitrogen fittings)
- hydraulic control units (filters)
- hydraulic control units (miscellaneous piping)
- CRD pumps (CRD pump casing)
- CRD pumps (CRD pump gearbox coolers)
- CRD pumps (CRD pump skid piping and valves)
- piping (piping and fittings)
- valves (including check valves and containment isolation) (body and bonnet)

2.3.1.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.4 and UFSAR Sections 3.9.4 and 4.6 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions

delineated under 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.1.4.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the CRD hydraulic system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the CRD hydraulic system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.5 Reactor Coolant Recirculation System

2.3.1.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.1.5, the applicant described the reactor coolant recirculation system. The reactor coolant recirculation system regulates coolant flow through the core. Adjustment of the core coolant flow rate changes reactor power output, thus providing a means of following plant load demand without adjusting control rods. The reactor coolant recirculation system consists of two recirculation pump loops external to the reactor vessel that provide the piping path for the driving flow of water to the reactor vessel internal jet pumps. Each external loop contains one high-capacity, motor-driven recirculation pump and three motor-operated gate valves for pump maintenance. Each pump discharge line contains a venturi-type flowmeter nozzle. The recirculation loops are a part of the nuclear system process barrier and are located inside the drywell. The arrangement of the recirculation system is such that a piping failure cannot compromise the integrity of the floodable inner volume of the reactor vessel. To support ECCS following a loss-of-coolant accident (LOCA), the recirculation pump discharge valves close automatically to direct low pressure coolant injection (LPCI) flow upward through the jet pump drive lines and into the core floodable volume.

The reactor coolant recirculation system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the reactor coolant recirculation system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the reactor coolant recirculation system performs functions that support FP, EQ, and ATWS.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides structural support/seismic integrity

In LRA Table 2.3.1-5, the applicant identified the following reactor coolant recirculation system component types that are within the scope of license renewal and subject to an AMR:

- piping and fittings (recirculation)
- piping and fittings (small bore piping less than NPS 4)
- recirculation pump (casing)
- recirculation pump (cover)
- recirculation pump (seal flange)
- recirculation pump (closure bolting)
- valves (body)
- non-RCPB (BWR) (piping and fittings)
- non-RCPB (BWR) (valves)
- non-RCPB (BWR) (piping specialties)
- non-RCPB (BWR) (piping and fittings - closed cooling water)

2.3.1.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.1.4 and UFSAR Section 5.4.1 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.1.5.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the reactor coolant recirculation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the reactor coolant recirculation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2 Engineered Safety Features Systems

In LRA Section 2.3.2, the applicant identified the structures and components of the ESFs systems that are subject to an AMR for license renewal.

The applicant described the supporting structures and components of the ESFs systems in the following sections of the LRA:

- 2.3.2.1 residual heat removal system
- 2.3.2.2 containment isolation system
- 2.3.2.3 containment atmospheric control system
- 2.3.2.4 high pressure coolant injection system
- 2.3.2.5 automatic depressurization system
- 2.3.2.6 core spray system
- 2.3.2.7 standby gas treatment system
- 2.3.2.8 standby liquid control system
- 2.3.2.9 hvac control building system
- 2.3.2.10 reactor protection system

The corresponding subsections of this SER (2.3.2.1 – 2.3.2.10, respectively) present the staff's review findings with respect to the ESFs systems for Units 1 and 2.

2.3.2.1 Residual Heat Removal System

2.3.2.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.1, the applicant described the RHR system. The RHR system operates in several modes to remove heat from plant systems or to provide water to plant systems during normal and post-accident conditions. The functions of LPCI, suppression pool cooling, and drywell spray cooling are SR and, therefore, are RHR system intended functions for license renewal. The RHR system functions of normal shutdown cooling, spent fuel pool cooling, torus spray, hydrogen mixing (via containment sprays), supplying water to systems via the SW system cross-connect, and RHR system leak detection are not SR and, therefore, are not RHR system intended functions. In order to minimize the possibility of a single event causing the loss of the entire RHR system, the system is divided into two loops which are physically separated from each other. One loop, consisting of one heat exchanger, two main system pumps in parallel, and associated piping, is located in one area of the reactor building. The other heat exchanger, pumps, and piping, forming a second loop, are located in another area of the reactor building. Portions of the RHR system maintain the integrity of the RCPB.

The RHR system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RHR system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the RHR system performs functions that support FP, EQ, and SBO.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides flow restriction (throttle)
- provides structural support/seismic integrity
- provides heat transfer
- provides insulation/thermal resistance
- provides adequate flow in a properly-distributed spray pattern

In LRA Table 2.3.2-1, the applicant identified the following RHR system component types that are within the scope of license renewal and subject to an AMR:

- piping and fittings (LPCI system)
- valves (body)
- piping and fittings (LPCI system and RHR)
- piping and fittings (lines to drywell and suppression chamber spray system (DSCSS))
- piping and fittings (piping specialties)
- piping and fittings (misc. auxiliary and drain piping and valves)
- pumps (high pressure core spray (HPCS) or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (bowl/casing)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (suction head)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (discharge head)
- valves (check, control, hand, motor operated, and relief valves) (body and bonnet)
- heat exchangers (RHR and LPCI) (tubes)
- heat exchangers (RHR and LPCI) (tubesheet)
- heat exchangers (RHR and LPCI) (shell)
- DSCSS (piping and fittings)
- DSCSS (spray nozzles)
- ECCS (BWR) (ECCS pump suction strainers)
- piping (piping and fittings)
- valves (body and bonnet)
- heat exchanger (shell)
- heat exchanger (channel head and access cover)
- heat exchanger (tubes)
- pump (casing)

2.3.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.1 and UFSAR Sections 5.4.7 and 6.3 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.2.1 identified an area in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.2.1-1 dated April 8, 2005, the staff stated that the LPCI coupling was identified in the BWRVIP-06 report as an SR component. It appears, however, that the component was not identified in the LRA as requiring an AMR. Therefore, the staff requested that the applicant indicate whether the subject component is within the scope of license renewal requiring an AMR or justify its exclusion from aging management. In its response, by letter dated May 4, 2005, the applicant stated:

> BSEP does not have a LPCI coupling as defined by BWRVIP-06.
>
> As stated on page B-77of the BSEP LRA:
>
> > BWRVIP-42, "LPCI Coupling Inspection and Flaw Evaluation Guidelines," is not applicable to BSEP. BSEP is a BWR-4 whose low pressure coolant injection function of the Residual Heat Removal System injects into the Reactor Coolant Recirculation system discharge lines rather than injecting directly into the reactor vessel.

Based on the explanation above and the non-applicability of the subject component at BSEP, the staff found the applicant's response acceptable. Therefore, the staff's concern described in RAI 2.3.2.1-1 is resolved.

2.3.2.1.3 Conclusion

The staff reviewed the LRA and RAI response to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the RHR system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the RHR system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.2 Containment Isolation System

2.3.2.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.2, the applicant described the containment isolation system. The containment isolation system is an engineered safety feature (ESF) that provides for the closure or integrity of primary and secondary containment penetrations to prevent leakage of uncontrolled or unmonitored radioactive materials to the environment following postulated accidents. The pressure boundary portions of electrical penetrations and miscellaneous/spare mechanical penetrations that are not associated with a process system are included in the civil structural screening described in LRA Section 2.4. The electrical portions of containment electrical penetrations are included in the electrical screening described in LRA Section 2.5. Systems that include primary containment isolation valves are: reactor vessel and internals, NMS, CRD hydraulic system, reactor water cleanup (RWCU) system, reactor coolant recirculation system, core spray system, standby liquid control system, RHR system, containment atmosphere control system, high pressure coolant injection (HPCI) system, RCIC

system, post-accident sampling system, torus drain system, reactor building closed cooling water system, instrument air system, radioactive floor drains system, radioactive equipment drains system, and reactor protection system. The containment isolation valves for these systems are included in the screening results for the above systems described elsewhere in this section. Systems that include secondary containment isolation dampers are: standby gas treatment system and HVAC reactor building system. The containment isolation dampers for these systems were determined to be subject to an AMR and are included in the screening results for the above systems described elsewhere in this section.

Containment isolation system components for the above systems have been screened during the screening of each system that includes containment isolation valves. Therefore, the containment isolation system components that require an AMR are included in the screening results for each system described elsewhere in this SER Section 2.3.

Containment isolation system components for the above systems have been screened during the screening of each system that includes containment isolation valves. Therefore, the containment isolation system components that require aging management review are included in the screening results for each system described elsewhere in this section. No separate listing of containment isolation system components/commodities requiring AMR is provided.

2.3.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.2 and UFSAR Sections 6.2.3 and 6.2.4 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1). The staff did not identify any omissions.

2.3.2.2.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the containment isolation system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the containment isolation system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.3 Containment Atmospheric Control System

2.3.2.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.3, the applicant described the containment atmospheric control (CAC) system. The CAC system consists of three major subsystems: the containment inerting subsystem, the containment atmospheric dilution (CAD) subsystem, and the containment atmospheric makeup subsystem. Of these, only the CAD subsystem is designed to function as an ESF system. Based on NRC guidance to control either hydrogen or oxygen concentration within the flammability limit following a LOCA, the CAD subsystem provides long-term nitrogen makeup to the primary containment to maintain oxygen concentration at or below 5 percent. Since this subsystem is designed to ESF standards, all equipment required for CAD service is designed with suitable redundancy and interconnections such that no single failure of an active component will render the system inoperable. This equipment includes a nitrogen storage vessel, electric liquid nitrogen vaporizers, instrumentation, and appropriate piping, flow control stations, and isolation valves. The CAD subsystem nitrogen supply also provides a backup to the instrument air header in the augmented off-gas (AOG) building upon loss of instrument air for the CAD subsystem. The CAC system supports the capability of purging the primary containment through the standby gas treatment system (SGTS) to reduce pressure resulting from nitrogen addition. In order to limit containment pressure to one half of design pressure, venting through the SGTS can be initiated several days following a LOCA. Purging provides a method for limiting containment pressure and for controlling combustible gas concentrations in the containment.

The CAC system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the CAC system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the CAC system performs functions that support fire protection, EQ, and SBO.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides filtration
- provides flow restriction (throttle)
- provides structural support/seismic integrity

In LRA Table 2.3.2-2, the applicant identified the following CAC system component types that are within the scope of license renewal and subject to an AMR:

- containment atmospheric dilution/control system (valves)
- containment atmospheric dilution/control system (piping and fittings)
- containment atmospheric dilution/control system (piping specialties)
- containment atmospheric dilution/control system (tanks)
- containment atmospheric dilution/control system (pumps)
- containment atmospheric dilution/control system (heat exchangers)

2.3.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.3 and UFSAR Section 6.2.5 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1). The staff did not identify any omissions.

2.3.2.3.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the CAC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the CAC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.4 High Pressure Coolant Injection System

2.3.2.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.4, the applicant described the HPCI system. Each BSEP unit has a dedicated HPCI system. The HPCI system consists of a steam turbine that drives a constant flow pump, and system piping, valves, controls, and instrumentation. The principal HPCI system equipment is installed in the reactor building. Suction piping comes from the condensate storage tank (CST) and the suppression pool. Injection water is piped to the reactor feedwater pipe at a tee connection. Steam supply for the turbine is piped from a main steam header in the primary containment. This piping is provided with an isolation valve on each side of the drywell barrier. Remote controls for valves and turbine operation are provided in the control room. If a LOCA occurs, the HPCI system is actuated automatically. The primary purpose of the HPCI system is to maintain reactor vessel inventory after small breaks which do not depressurize the reactor vessel. The HPCI system permits the nuclear plant to be shut down, maintaining sufficient reactor vessel water inventory until the vessel is depressurized. The HPCI system continues to operate until reactor vessel pressure is below the pressure at which either LPCI or core spray (CS) operation can maintain core cooling. In this manner, the HPCI system provides a means for cooling the core at high pressure for those break sizes which are of such a magnitude that, because of a lack of vessel depressurization, the top of the core would become uncovered before the low pressure standby cooling systems were effective.

The HPCI system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the HPCI system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the HPCI system performs functions that support fire protection, EQ, and SBO.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides filtration
- provides flow restriction (throttle)
- provides structural support/seismic integrity
- provides heat transfer
- provides insulation/thermal resistance

In LRA Table 2.3.2-3, the applicant identified the following HPCI system component types that are within the scope of license renewal and subject to an AMR:

- piping and fittings (HPCI system)
- piping and fittings (steam line to HPCI and RCIC pump turbine)
- piping and fittings (small bore piping less than NPS 4)
- valves (body)
- piping and fittings (HPCI)
- piping and fittings (lines to SC)
- piping and fittings (lines from HPCI and RCIC pump turbines to torus or wetwell)
- piping and fittings (piping specialties)
- piping and fittings (misc. auxiliary and drain piping and valves)
- piping and fittings (restrictive orifices/flow elements)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (bowl/casing)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (suction head)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (discharge head)
- valves (check, control, hand, motor operated, and relief valves) (body and bonnet)
- emergency core cooling system (BWR) (auxiliary pumps)
- emergency core cooling system (BWR) (misc. tanks and vessels)
- emergency core cooling system (BWR) (steam turbines)
- auxiliary heat exchangers (tubing)
- auxiliary heat exchangers (auxiliary heat exchanger shell/housing)

- auxiliary strainers/filters (auxiliary strainer element)
- auxiliary strainers/filters (auxiliary strainer housing)
- emergency core cooling system (BWR) (ECCS pump section strainers)

2.3.2.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.4 and UFSAR 6.3.2 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2.4.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the HPCI system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the HPCI system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.5 Automatic Depressurization System

2.3.2.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.5, the applicant described the automatic depressurization system (ADS). The ADS provides automatic nuclear system depressurization for small and intermediate breaks so that RHR low pressure coolant injection (LPCI) and the CS system can operate when the HPCI system has not been able to accomplish its function. The relief capacity of the ADS is based on the time required after its initiation to depressurize the nuclear system so that the core can be cooled by LPCI and the CS system. The ADS uses seven nuclear system safety relief valves (SRVs) to relieve high pressure steam to the suppression pool. In support of the ADS function, the SRVs open automatically, after a time delay, upon coincident signals of reactor vessel low water level and discharge pressure indication of the availability of any low pressure cooling system (LPSI or CS). In fulfilling its ESF unction, the ADS provides output signals to automatically open designated safety-relief valves. ADS instrumentation and control circuits activate protective actions and support post-accident monitoring of SR systems.

The ADS contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the ADS could potentially prevent the satisfactory accomplishment of an SR function. In addition, the ADS performs functions that support fire protection, EQ, and SBO.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary/flow.

In LRA Table 2.3.2-4, the applicant identified the valves (including check valves and containment isolation) (body and bonnet) as the ADS component type that is within the scope of license renewal and subject to an AMR.

2.3.2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.5 and UFSAR Section 6.3.2 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2.5.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the ADS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the ADS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.6 Core Spray System

2.3.2.6.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.6, the applicant described the CS system. The CS system is provided to protect the core by removing decay heat following the postulated design-basis LOCA. The CS system provides adequate cooling for all intermediate and large line break LOCAs without assistance from any other core standby cooling system. The protection provided by the CS system also extends to a small break in which the CRD water pumps, the RCIC system, and the HPCI system all are unable to maintain the reactor vessel water level; but the ADS has operated

to reduce the reactor vessel pressure such that LPCI and the CS systems can provide core cooling. The CS system consists of two independent loops. Each loop includes one 100 percent capacity centrifugal pump driven by an electric motor, a spray sparger in the reactor vessel above the core, piping and valves that convey water from the suppression pool to the sparger, and associated instrumentation and controls. Actuation of the CS system results from a low water level in the reactor vessel or coincident high pressure in the drywell and low reactor pressure signals. Portions of the CS system support the integrity of the RCPB.

The CS system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the CS system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the CS system performs functions that support fire protection, EQ, and SBO.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides filtration
- provides flow restriction (throttle)
- provides structural support/seismic integrity

In LRA Table 2.3.2-5, the applicant identified the following CS system component types that are within the scope of license renewal and subject to an AMR:

- piping and fittings (LPCS system)
- piping and fittings (small bore piping less than NPS 4)
- valves (body)
- piping and fittings (LPCS)
- piping and fittings (lines to SC)
- piping and fittings (piping specialties)
- piping and fittings (misc. auxiliary and drain piping and valves)
- piping and fittings (restrictive orifices/flow elements)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (bowl/casing)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (suction head)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (discharge head)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (body and bonnet)
- emergency core cooling system (BWR) (ECCS pump suction strainers)

2.3.2.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.6 and UFSAR Section 6.3.2 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2.6.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the CS system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the CS system components that are subject to an AMR, as required by 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

In LRA Section 2.3.2.7, the applicant described the standby gas treatment system (SGTS). The SGTS provides a means for minimizing the release of radioactive material to the environs by filtering and exhausting the atmosphere from the primary or secondary containment during containment isolation conditions. The suction of the system normally is aligned to draw from the reactor building at elevation 50 feet into which all areas of the reactor building communicate. Elevated release is assured by exhausting to the plant stack. Normally closed suction valves are provided in the flow paths from the drywell and the suppression pool to the SGTS. These valves can be opened only upon operator action. The principal functions of the system are (1) to maintain secondary containment below atmospheric pressure when it is contaminated, for example, following a fuel handling accident, (2) to clean up a contaminated drywell or suppression chamber atmosphere when they are being vented to the atmosphere, (3) to provide a filtered pathway when venting the drywell during nitrogen inerting following a LOCA, and (4) to assist in controlling hydrogen stratification in the reactor building following a LOCA. The SGTS, as a part of the secondary containment isolation system, limits the release of radioactivity to the environs after an accident. The system provides a back-up means of controlling post-LOCA hydrogen inside primary containment by venting of the primary containment through the SGTS. SGTS instrumentation and control circuits actuate ESF functions and support post-accident monitoring of SR systems.

The SGTS contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the SGTS could potentially prevent the satisfactory accomplishment of an SR function. In addition, the SGTS performs functions that support fire protection and EQ.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides structural support/seismic integrity

In LRA Table 2.3.2-6, the applicant identified the following SGTS component types that are within the scope of license renewal and subject to an AMR:

- ductwork (equipment frames and housing)
- filters (housing and supports)
- filters (elastomer seals)
- standby gas treatment system (BWR) (piping)
- standby gas treatment system (BWR) (valves)
- standby gas treatment system (BWR) (piping specialties)
- standby gas treatment system (BWR) (instrument tubing)

2.3.2.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.7 and UFSAR Section 6.5.1 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.2.7 identified an area in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.2.7-1, dated May 18, 2005, the staff requested that the applicant clarify whether all the system components such as, but not limited to, exhaust fan (blower) housings, piping, valve bodies, and damper housings, screens for air intake or exhaust structures, etc., are within the scope of license renewal in accordance with 10 CFR 54.4(a), and subject to an AMR in accordance with 10 CFR 54.21(a)(1).

In its response, by letter dated June 14, 2005, the applicant stated:

> The SGTS is safety related, and components required to supports its safety related function are in the scope of license renewal in accordance with 10 CFR 54.4(a). This

includes fans and filters, valves, screens at the system intake, as well as ductwork / dampers. Passive, long-lived components are subject to AMR under 10 CFR 54.21(a)(1), and include the filter housings, fan housings, screens, and valve bodies.

The SGTS boundaries at BSEP are fairly limited, generally encompassing the SGTS exhaust fans, filters, and piping and valves. Line items for each of these components are represented in the LRA Table 3.2.2-6. Specifically, fan housings are included under "Ductwork (equipment frames and housings)," and valve bodies are addressed under "Standby Gas Treatment (Boiling Water Reactor) (Valves)." The SGTS system interfaces with the reactor building ventilation system and the containment atmospheric control (CAC) system to accomplish its intended functions. The debris screens on the lines from the drywell and suppression chamber are part of the CAC System, and are addressed in LRA Table 3.2.2-2 under "Piping Specialties," with the —2 intended function. Reactor building dampers required to isolate in support of SGTS are part of the reactor building ventilation system and are addressed in LRA Table 3.3.2-22.

Based on its review, the staff found the applicant's response acceptable because the applicant clarified that all applicable system components consisting of exhaust fan (blower) housings, piping, valve bodies, and damper housings, screens for air intake or exhaust structures are within the scope of license renewal in accordance with 10 CFR 54.4(a), and are subject to an AMR in accordance with 10 CFR 54.21(a)(1). Therefore, the staff's concern described in RAI 2.3.2.7-1 is resolved.

2.3.2.7.3 Conclusion

The staff reviewed the LRA and RAI response to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the SGTS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the SGTS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.8 Standby Liquid Control System

2.3.2.8.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.8, the applicant described the SLC system. The SLC system provides a backup method, independent of the control rods, to establish and maintain the reactor subcritical as the nuclear system cools. Maintaining the nuclear system in a subcritical condition as it cools assures that the fuel barrier will not be threatened by overheating in the unlikely event that too few control rods can be inserted to counteract the positive reactivity effects of a colder moderator. Insertion of control rods is always expected to assure prompt shutdown of the reactor should it be required. However, the SLC system can be manually initiated from the control room to pump a neutron absorber solution of sodium pentaborate into the reactor if the operator believes the reactor cannot be shut down or kept shut down with the control rods. The boron in the solution absorbs thermal neutrons and thereby terminates the nuclear fission chain reaction.

The boron solution is piped into the reactor vessel and discharged near the bottom of the core shroud so it mixes with the cooling water rising through the core. The SLC system is credited in AST evaluations with post-LOCA pH control in the suppression pool in order to maintain iodine in solution. Portions of the SLC system support the integrity of the RCPB.

The SLC system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the SLC system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the SLC system performs functions that support ATWS.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides structural support/seismic integrity

In LRA Table 2.3.2-7, the applicant identified the following SLC system component types that are within the scope of license renewal and subject to an AMR:

- piping and fittings (lines to RWC and SLC systems)
- piping and fittings (small bore piping less than NPS 4)
- valves (body)
- piping (piping and fittings)
- solution storage (tank)
- valves (pump suction, relief, injection, containment isolation, and explosive actuated discharge) (body and bonnet)
- injection pumps (casing)
- standby liquid control system (boiling water reactor) (hydraulic accumulator tank)

2.3.2.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.8 and UFSAR Section 9.3.4 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2.8.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the SLC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the SLC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.9 HVAC Control Building System

2.3.2.9.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.9, the applicant described the HVAC control building system. The HVAC control building system is designed to permit continuous occupancy of the control room area, computer rooms and the electronic workrooms (this multi-room area is also called the control room envelope or emergency zone) under normal operating and postulated design basis accident conditions throughout the life of the plant. The system is designed to ensure that optimum habitability and temperature conditions exist within the various control building areas for the safety of plant personnel and equipment. The HVAC control building system permits continuous occupancy of the control room emergency zone under normal and postulated design-basis accident conditions, including a postulated LOCA, main steam line break (MSLB) accident, or release of chlorine gas or smoke. The system permits access and occupancy of the control room under accident conditions without personnel receiving excessive radiation exposure.

The HVAC control building system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the HVAC control building system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the HVAC control building system performs functions that support fire protection, and SBO.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides flow restriction (throttle)
- provides structural support/seismic integrity
- provides heat transfer

In LRA Table 2.3.2-8, the applicant identified the following HVAC control building system component types that are within the scope of license renewal and subject to an AMR:

- piping (piping and fittings)
- valves (including check valves and containment isolation) (body and bonnet)
- air receiver (shell and access cover)
- filter (shell and access cover)
- dryer (shell and access cover)

- duct (duct fittings, access doors, damper housings and closure bolts)
- duct (equipment frames and housings, including fan housings)
- duct (flexible collars between ducts and fans)
- duct (seals in dampers and doors)
- air handler heating/cooling (heating/cooling coils)
- piping (piping and fittings)
- filters (housing and supports)
- filters (elastomer seals)

2.3.2.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.9 and UFSAR Sections 6.4 and 9.4.1 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1) . The staff did not identify any omissions.

2.3.2.9.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the HVAC control building system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the HVAC control building system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.10 Reactor Protection System

2.3.2.10.1 Summary of Technical Information in the Application

In LRA Section 2.3.2.10, the applicant described the reactor protection system (RPS). The RPS provides timely protection against the onset and consequences of conditions that are threats to the integrity of the fuel barriers (uranium dioxide sealed in cladding) and of the nuclear system process barrier. Excessive temperature tends to degrade the cladding and/or melt the uranium dioxide. Excessive pressure tends to rupture the nuclear system process barrier. The RPS limits the uncontrolled release of radioactive material from the fuel and nuclear system process barrier by initiating an automatic scram to terminate excessive temperature and pressure increases resulting from high reactor power.

The RPS contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RPS could potentially prevent the satisfactory accomplishment of an SR function. In addition, the RPS performs functions that support fire protection, EQ, and SBO.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary/flow.

In LRA Table 2.3.2-9, the applicant identified the ESFs (misc. non-GALL components (inside)) as the RPS component type that is within the scope of license renewal and subject to an AMR.

2.3.2.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.10 and UFSAR Section 7.2 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2.10.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the RPS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the RPS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3 Auxiliary Systems

In LRA Section 2.3.3, the applicant identified the structures and components of the auxiliary systems that are subject to an AMR for license renewal.

The applicant described the supporting structures and components of the auxiliary systems in the following sections of the LRA:

- 2.3.3.1 reactor water cleanup system
- 2.3.3.2 reactor core isolation cooling system
- 2.3.3.3 reactor building sampling system
- 2.3.3.4 post accident sampling system

- 2.3.3.5 circulating water system
- 2.3.3.6 screen wash water system
- 2.3.3.7 service water system
- 2.3.3.8 reactor building closed cooling water (RBCCW) system
- 2.3.3.9 turbine building closed cooling water (TBCCW) system
- 2.3.3.10 diesel generator system
- 2.3.3.11 heat tracing system
- 2.3.3.12 instrument air system
- 2.3.3.13 service air system
- 2.3.3.14 pneumatic nitrogen system
- 2.3.3.15 fire protection system
- 2.3.3.16 fuel oil system
- 2.3.3.17 radioactive floor drains system
- 2.3.3.18 radioactive equipment drains system
- 2.3.3.19 makeup water treatment system
- 2.3.3.20 chlorination system
- 2.3.3.21 potable water system
- 2.3.3.22 process radiation monitoring system
- 2.3.3.23 area radiation monitoring system
- 2.3.3.24 liquid waste processing system
- 2.3.3.25 spent fuel system
- 2.3.3.26 fuel pool cooling and cleanup system
- 2.3.3.27 HVAC diesel generator building
- 2.3.3.28 HVAC reactor building
- 2.3.3.29 HVAC service water intake structure
- 2.3.3.30 HVAC turbine building
- 2.3.3.31 HVAC radwaste building
- 2.3.3.32 torus drain system
- 2.3.3.33 civil structure auxiliary systems
- 2.3.3.34 non-contaminated water drainage system

The corresponding subsections of this SER (2.3.3.1 – 2.3.3.34, respectively) present the staff's review findings with respect to the auxiliary systems for Units 1 and 2.

2.3.3.1 Reactor Water Cleanup System

2.3.3.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.1, the applicant described the reactor water cleanup system (RWCU) system. The RWCU system provides continuous purification of a portion of the reactor recirculation flow. The system can be operated at any time. The major equipment of this system, which is located in the reactor building, consists of pumps, heat exchangers (both regenerative and non-regenerative), two filter-demineralizers, and the associated valves, piping, and instrumentation. Reactor coolant is removed from the reactor coolant recirculation system and is cooled in the regenerative and nonregenerative heat exchangers. After cooling, the circulated water is filtered and demineralized to reduce the amount of activated corrosion products in the water. It is then returned to the feedwater system through the shell side of the regenerative heat exchanger. RWCU is isolated automatically upon initiation of the standby liquid control system

and upon detection of conditions that may indicate a pipe break in the RWCU system. These conditions are low reactor vessel water level, high differential flow in RWCU piping, and high room temperature. Portions of the RWCU system support the integrity of the RCPB.

The RWCU system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RWCU system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the RWCU system performs functions that support EQ, ATWS, and SBO.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides flow restriction (throttle)
- provides structural support/seismic integrity

In LRA Table 2.3.3-1, the applicant identified the following RWCU system component types that are within the scope of license renewal and subject to an AMR:

- piping and fittings (lines to RWC and SLC systems)
- piping and fittings (small bore piping less than NPS 4)
- valves (body)
- piping (piping and fittings - beyond second isolation valves)
- regenerative heat exchanger (shell and access cover)
- reactor water cleanup system (BWR) (valves - beyond second isolation valves)
- RWCU system (BWR) (tanks, pumps, and piping specialties - beyond second isolation valves)

2.3.3.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.1 and UFSAR Section 5.4.8 using the Tier-2 evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.1 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. Therefore, by letter dated April 8, 2005, the staff issued RAIs concerning the specific issues to determine whether the applicant had properly applied the scoping criteria of 10 CFR 54.4(a) and the

screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAIs and the applicant's related responses.

In RAI 2.3.3.1-1, the staff stated that LRA Table 2.3.3 1 identifies the license renewal intended function for the regenerative heat exchanger (RHX) shell(s) and access cover(s) as structural support and does not identify it as pressure boundary. This is in contrast to all other RWCU components listed in LRA Table 2.3.3 1. Therefore, the staff requested that the applicant provide additional information describing the basis for the RHX shell and access cover intended function in Table 2.3.3 1.

In its response, dated May 4, 2005, the applicant stated that the RWCU heat exchanger forms the termination point for the seismic evaluation of the SR/NSR interface at the valve F042 and that this boundary appears on drawing D-25027-LR, sheet 1B (quadrant E6) for Unit 1 and D-02527-LR, sheet 1A (quadrant E6) for Unit 2.

LRA Section 2.1.1.2 discusses the criteria used for the scope assessments of NSR SSCs pursuant to 10 CFR 54.4(a)(2). The LRA states that for NSR piping connected to SR piping, the NSR piping is included within the scope of license renewal up to either the first seismic anchor past the safety/non-safety interface, or a point where the NSR pipe is restrained in three directions (either by a single support or by individual supports). Since the RWCU RHX 1C shell and access cover are restrained in three directions, the staff concluded that terminating the seismic evaluation of the SR/NSR piping interface at the valve F042 is consistent with SRP-LR, Revision 1, Section 2.1.3.1.2; therefore license renewal function —4 "Provide structural support/seismic integrity" is appropriate for this component.

In its response to RAI 2.3.3.1-1, dated May 4, 2005, the applicant also stated that the RWCU heat exchangers are in a walled area in the reactor building that houses no SR components and is sufficiently isolated/protected from other parts of the reactor building to preclude adverse spatial interactions (i.e., flooding, wetting, and spraying) with SR components elsewhere in the building. The line 1/2-G31-50-4-907 connected to the heat exchanger is partially located outside this discrete area and therefore the —1 "Provide pressure retaining boundary" function was assigned to this line because of spatial interaction considerations.

Based on its review, the staff found the applicant's response acceptable. The applicant provided clear criteria and bases for limiting the license renewal function of the RWCU RHX shells and connecting piping to M 4 "Provide structural support/seismic integrity" and for excluding M 1 "Provide pressure retaining boundary." Therefore, the staff's concern described in RAI 2.3.3.1-1 is resolved.

In RAI 2.3.3.1-2, the staff stated that license renewal boundary drawing D-25027-LR, sheet 1A (quadrant E-4), and drawing D-25027-LR, sheet 1B (quadrant D-3), show Unit 1 RHX shell "1C" and Unit 2 RHX shell "2C" as within the scope of license renewal. However, the remaining Units 1 and 2 RHX shells "1A," "1B," "2A," and "2B" and their associated piping are shown as not within the scope of license renewal. In addition, several piping sections between the RHX shells and a normally closed isolation valve are also shown as not within the scope of license renewal. Therefore, the staff requested that the applicant provide additional information to support its determination that these components and associated piping are not within the scope of license renewal despite the components intended function defined in LRA Section 2.3.3.1.

In its response, by letter dated May 4, 2005, the applicant stated that the NSR RWCU heat exchangers (i.e., "1C" and "2C") form the termination point for the seismic evaluation of the SR/NSR interface at the F042 valve. The RWCU heat exchangers "1A," "1B," "2A," and "2B" are not credited with seismic support. The applicant also confirmed that all the RWCU regenerative heat exchangers are enclosed within a walled area in the reactor building that houses no SR components and is sufficiently isolated/protected from other parts of the reactor building to preclude adverse spatial interactions (i.e., flooding, wetting, and spraying) with SR components elsewhere in the building. Therefore, the "1C" and "2C" NSR RWCU RHX are brought within the scope of license renewal per 10 CFR 54.4(a)(2) but not the other NSR SSCs in the exclusion area.

Based on its review, the staff found the applicant's response acceptable because the license renewal function of the RWCU regenerative heat exchangers 1C and 2C is to provide structural support/seismic integrity, and the applicant has provided clear criteria and bases for concluding that the failure of any RWCU regenerative heat exchanger shells and connecting piping will not result in spatial interactions with SR equipment per 10 CFR 54.4(a)2. Therefore, the staff's concern described in RAI 2.3.3.1-2 is resolved.

In RAI 2.3.3.1-3, the staff stated that on sheet 1A of license renewal boundary drawings D-25027-LR and D-02527-LR, it was not clear why the portions of lines 36-3-153 and 51-3-153 from inside the reactor building to valves F035, F034, and F036 are shown as not within the scope of license renewal. Therefore, the staff requested that the applicant provide additional information justifying why these are not within scope and why the scope does not include the remaining non-isolable piping between the inside wall of the secondary containment and the piping adjacent to valves F034, F035, and F036.

In its response, by letter dated May 4, 2005, the applicant stated:

> The portions of the RWCU System within the scope of License Renewal shown on License Renewal Boundary Drawing D-25027-LR, Sheet 1A, Locations B-8 and C- 8, for Unit No. 1 and on License Renewal Boundary Drawing D-02527-LR, Sheet 1A, Locations B-8 and C-8, for Unit No. 2 are related to spatial interaction considerations. The License Renewal boundary flags indicate the transition to the walled area containing the RWCU heat exchangers in the Reactor Building that houses no safety related components and is sufficiently isolated/protected from other parts of the Reactor Building to preclude adverse spatial interactions (i.e., flooding, wetting, and spraying) with safety related components elsewhere in the building.

Based on its review, the staff found the applicant's response acceptable because the applicant provided clear criteria and bases for concluding that failure of the portions of RWCU components identified in this RAI will not result in spatial interactions with SR equipment per 10 CFR 54.4(a)2. Therefore, the staff's concern described in RAI 2.3.3.1-3 is resolved.

In RAI 2.3.3.1-4, the staff stated that sheet 1B (quadrant D-6) of license renewal boundary drawings D-25027-LR and D-02527-LR terminate the in-scope portion of line 49-6-907 in the middle of line 65-6-907. Since the portion of 49-6-907 within the scope of license renewal also includes two 3/4-inch capped vent connections, it was not clear why the non-isolable portions of connecting piping would not also be within the scope of license renewal. Therefore, the staff

requested that the applicant clarify the reason for terminating the scope at line 65-6-907 and not including the non-isolable portions of connecting piping.

In its response, by letter dated May 4, 2005, the applicant stated that line 1/2-G31-49-6-907 is an NSR line that was brought within the scope of license renewal because it is required to protect the SR/NSR boundary at valve 1/2-G31-F004. The highlighted portions of the license renewal drawings indicate the extent of the piping included in the seismic evaluation. The license renewal flag on line 1/2-G31 49-6-907 indicates the terminus of the seismic evaluation. Based on its review, the staff found the applicant's response acceptable, because the applicant clarified the extent of the piping that is included within the scope of license renewal to protect the SR portions of the system, and it is based on a seismic evaluation. Therefore, the staff's concern described in RAI 2.3.3.1-4 is resolved.

2.3.3.1.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the RWCU system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the RWCU system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.2 Reactor Core Isolation Cooling System

2.3.3.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.2, the applicant described the RCIC system. The RCIC system consists of a steam-driven turbine pump unit and associated valves and piping capable of delivering makeup water to the reactor vessel. The steam supply to the turbine comes from the main steam line upstream of the isolation valves and exhausts to the suppression pool. The pump can take suction from the CST or from the suppression pool. The makeup water is delivered into the reactor vessel through a connection to the feedwater line and is distributed within the reactor vessel through the feedwater sparger. Cooling water for the RCIC system turbine lube oil cooler and gland seal condenser is supplied from the discharge of the pump. The RCIC system operates automatically to maintain sufficient coolant in the reactor vessel to prevent overheating of the reactor fuel in the event of reactor isolation accompanied by loss of feedwater flow. The system functions in a timely manner so that integrity of the radioactive material barrier is not compromised.

The RCIC system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RCIC system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the RCIC system performs functions that support fire protection, EQ, and SBO.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides filtration
- provides flow restriction (throttle)
- provides structural support/seismic integrity
- provides heat transfer
- provides insulation/thermal resistance

In LRA Table 2.3.3-2, the applicant identified the following RCIC system component types that are within the scope of license renewal and subject to an AMR:

- piping and fittings (RCIC system)
- piping and fittings (steam line to HPCI and RCIC pump turbine)
- piping and fittings (small bore piping less than NPS 4)
- valves (body)
- piping and fittings (RCIC)
- piping and fittings (lines to SC)
- piping and fittings (lines to HPCI and RCIC pump turbine)
- piping and fittings (lines from HPCI and RCIC pump turbines to torus or wetwell)
- piping and fittings (piping specialties)
- piping and fittings (misc. auxiliary and drain piping and valves)
- piping and fittings (restrictive orifices/flow elements)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (bowl/casing)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (suction head)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (discharge head)
- pumps (HPCS or HPCI main and booster, LPCS, LPCI or RHR, and RCIC) (body and bonnet)
- emergency core cooling system (BWR) (auxiliary pumps)
- emergency core cooling system (BWR) (misc. tanks and vessels)
- emergency core cooling system (BWR) (steam turbines)
- auxiliary heat exchangers (auxiliary heat exchanger tubing)
- auxiliary heat exchangers (auxiliary heat exchanger shell/housing)
- auxiliary strainers/filters (auxiliary strainer housing)
- emergency core cooling system (BWR) (ECCS pump suction strainers)
- pressure regulators (body and bonnet)

2.3.3.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.2 and UFSAR Sections 5.4.6 and 6.3.2.8 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.2.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the RCIC system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the RCIC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.3 Reactor Building Sampling System

2.3.3.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.3, the applicant described the reactor building sampling (RXS) system. The RXS system monitors plant and equipment performance to determine routine chemical properties and radiation levels necessary to provide information for equipment operation, corrosion control, and radiation activity. The system also provides information for making operational decisions with regard to effectiveness, safety, and proper performance. Samples can be taken continuously or obtained as grab samples. There is one central sampling station that is essentially a package of sample conditioning and analyzing sections and a sample hood. Consideration of accessibility, safe withdrawal, and efficient handling of samples were factored into the design of the centralized sampling station. Portions of this system comprise part of the RCPB. Also, portions of this system are used for primary containment isolation.

The RXS system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RXS system could potentially prevent the satisfactory accomplishment of an SR function.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary/flow.

In LRA Table 2.3.3-3, the applicant identified the following RXS system component types that are within the scope of license renewal and subject to an AMR:

- piping and fittings (sample lines)
- piping (piping and fittings)
- valves (body and bonnet)
- heat exchanger (shell and access cover)
- flow orifice (body)
- pump (casing)
- filters (shell and access cover)
- immersion element (pressure-retaining housing)
- tank (shell)

2.3.3.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.3 and UFSAR Section 9.3.2.1 using the Tier-2 evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.3 identified an area in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.3.3-1, dated April 8, 2005, the staff stated that LRA Section 2.3.3.3 states that the RXS system monitors the plant and equipment performance to determine routine chemical properties and radiation levels necessary to provide information for equipment operation, corrosion control, and radiation activity. The following inconsistencies were identified in the LRA for the RXS system.

- The pressure relief valves PRV-207, PRV-208, PRV-209, and PRV-210 and their associated piping on Unit 1 drawing D-70070-LR, sheet 1, at locations D-7, D-5, D-2, and D-1, are not shown as being included within the scope of license renewal. However, the same pressure relief valves and associated piping shown on the Unit 2 drawing D-07070-LR at the same relative locations are shown as being included within the scope of license renewal.
- The piping and isolation valves V132, V133, V134, V135, V136, and V137 on Unit 1 drawing D-70070-LR, sheet 1, at locations D-4 through D-6, are not shown as being included within the scope of license renewal. However, the same piping and isolation valves on the Unit 2 drawing D-07070-LR, sheet 1, at the same relative locations are shown as being included within the scope for license renewal. The piping for pressure

indicators PI-5220 (for both Units 1 and 2), PI-5221, PI-5222, and PI-R007A shown on Unit 1 drawing D-70070-LR, sheet 1, at locations D-5 through D-7 are not shown as being included in scope for license renewal. However, the same piping for similar pressure indicators on the Unit 2 drawing D-07070-LR, sheet 1, at the same relative locations are shown as being included in scope for license renewal.

Therefore, the staff requested that the applicant provide additional clarification and justification as to whether the above listed valves and associated piping should be or should not be included in scope for license renewal.

In its response, by letter dated May 4, 2005 the applicant stated that the subject components are within the RXS system license renewal scoping boundary and are subject to an AMR. The staff found the applicant's response acceptable and, therefore, the staff's concern described in RAI 2.3.3.3-1 is resolved.

2.3.3.3.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI response to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the RXS system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the RXS system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.4 Post Accident Sampling System

2.3.3.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.4, the applicant described the post-accident sampling system (PASS). The PASS function is to obtain representative liquid samples from the primary coolant system and gas samples from primary and secondary containment for radiological analysis following an accident, including a LOCA. The basic system consists of a liquid and gas sample station located outside the reactor building in the turbine building breezeway. Each unit has its own sampling system. Each sampling and control station is located near each unit's reactor building personnel access doors. To meet the requirements of NUREG-0578, the design is intended to minimize radiation exposure during sampling by minimizing the required sample sizes, to optimize the weight of shielded sample containers in order to facilitate movement through potentially high-level radiation areas, and to provide adequate shielding at the sample station and in the laboratory. The system is also designed to provide useful samples under all conditions ranging from normal shutdown and power operation. A local area radiation monitor is provided to inform the operator of the ambient radiation level.

The PASS contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the PASS could potentially prevent the satisfactory accomplishment of an SR function. In addition, the PASS performs functions that support EQ.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides structural support/seismic integrity

In LRA Table 2.3.3-4, the applicant identified the following PASS component types that are within the scope of license renewal and subject to an AMR:

- piping (piping and fittings)
- valves (body and bonnet)
- heat exchanger (shell and access cover)

2.3.3.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.4 and UFSAR Section 9.3.2.2 using the Tier-2 evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.4 identified an area in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.3.4-1, dated April 8, 2005, the staff stated that the in-scope license renewal boundaries identified at quadrant E-5 and E-6 on sheet 1 license renewal boundary drawings D-73027-LR and D-07327-LR terminate in the middle of a pipe run. Therefore, the staff requested that the applicant discuss the basis for terminating the in-scope portion of this piping downstream of solenoid valves SV 4180, SV 4181, SV 4184, and SV 4185 in the middle of the piping runs.

In its response, by letter dated May 4, 2005, the applicant stated that lines 1/2-RXS-2 and 1/2-RXS-20 are NSR lines that were brought within the scope of license renewal because they are required to protect the SR/NSR boundary at valves 1/2-RXS-SV-4180/4181 and 1/2-RXS-SV-4184/4185 respectively. The applicant explained that the license renewal boundaries identified at quadrant E-5 and E-6 on sheet 1 license renewal boundary drawings D-73027-LR and D-07327-LR are associated with stress analyses and represent supports or anchor points that define the extent of in-scope piping credited with providing a structural support/seismic integrity license renewal intended function. Based on its review, the staff found the applicant's response acceptable; therefore, the concern described in RAI 2.3.3.4-1 is resolved.

2.3.3.4.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI response to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the PASS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the PASS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.5 Circulating Water System

2.3.3.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.5, the applicant described the circulating water (CW) system. The CW system provides the heat sink necessary to remove the latent heat of condensation from the exhaust steam of the low pressure turbines and to cool the condensate sufficiently to prevent cavitation in the condensate system, thus maintaining the vacuum required for operation. The system also provides the dilution flow necessary for acceptable radioactive liquid effluent release concentrations. The CW system is designed to supply a continuous flow of cooling water to the main condensing system to remove heat rejected from the steam power cycle. The CW system takes suction from the Cape Fear River estuary, provides cooling water through the main condensers, then discharges to the ocean. The CW system also dilutes the liquid waste flow prior to its release to the environment. The CW system is not required to function in order to shutdown the reactor or maintain it in a safe shutdown condition. Some electrical components in the system are classified as seismically analyzed to avoid adverse interactions with SR SSCs during an earthquake.

The failure of NSR SSCs in the CW system could potentially prevent the satisfactory accomplishment of an SR function.

The CW system component types that are within the scope of license renewal and subject to an AMR are addressed as civil commodities in LRA Section 2.4.

2.3.3.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.5 and UFSAR Section 10.4.5 using the Tier-2 evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed those components that the applicant had identified as being within the scope of license

renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.5.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the CW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the CW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.6 Screen Wash Water System

2.3.3.6.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.6, the applicant described the screen wash water (SCW) system. The SCW system consists of twelve traveling screens, four screen wash pumps, and four self-cleaning strainers. This system provides filtering capabilities for the circulating water and SW systems of both units. Intake canal water enters the SW intake structure through trash racks mounted across the inlet bays. Large debris is stopped by the trash racks and accumulates on the upstream face. The traveling screens at the individual pump bays remove the smaller debris and refuse that enters the intake structure. The SCW system is not required for safe shutdown of the unit and does not provide any essential auxiliary service.

The failure of NSR SSCs in the SCW system could potentially prevent the satisfactory accomplishment of an SR function.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary/flow.

In LRA Table 2.3.3-5, the applicant identified the following SCW system component types that are within the scope of license renewal and subject to an AMR:

- piping (piping and fittings)
- valves (body and bonnet)
- pump (casing)
- strainer (body)

2.3.3.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.6 and UFSAR Section 9.2.1.2 using the evaluation methodology described in SER Section 2.3 as related to the "Two-Tier Scoping Review Process for BOP Systems."

In conducting its Tier-1 review of the two-tier review process, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant identified as being within the scope of license renewal to verify that the applicant did not omit any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.6 identified an area in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.3.6-1, dated April 8, 2005, the staff noted that LRA Section 2.3.3.6 states that the SCW system consists of 12 traveling screens. The four traveling screens associated with the SW system were determined to be within the scope of license renewal, but the screens are active components, not subject to an AMR. The application had not addressed the other eight traveling screens. Therefore, the staff requested that the applicant address the following:

(a) The systems/components having intended functions as identified in 10 CFR 54.4(a) are within the scope of license renewal. Clarify whether the other eight traveling screens are within the scope of license renewal. If not, identify where these eight traveling screens are located and explain the intended functions of the system.

(b) Based on the NRC review guidance in SRP-LR Table 2.1-5 and industry guidance, Appendix B to NEI 95-10, Revision 3, for passive/active determination, the screen is not generally included as an active component. The applicant is requested to justify the screen being an active component for Brunswick, or add screens to LRA Table 2.3.3-5 as component requiring an AMR.

(c) Identify all the systems that have screens and were excluded from an AMR based on screens being active.

In its response, by letter dated May 4, 2005, the applicant discussed the bases for its scoping and screening determination for the traveling screens. The applicant stated that traveling screens in the SCW system are provided for trash, fish, and larvae removal to minimize the fouling and clogging of water box tube sheets and piping and to protect fish and larvae. The traveling screens consist of a series of screen panels connected in a continuous loop across rotating drive sprockets. As water flows through the screen panels, debris is collected and held against the screens by the force of flowing water. As debris collects, the pressure differential between the inlet and outlet sides of the screens increases. During normal operations, when the pressure differential reaches the predetermined setpoint, the SW screen rotates and the screen wash pumps wash the debris free.

The eight traveling screens that are not within the scope of license renewal act as filters in the CW system. The CW system provides a condenser cooling function that is not one of the license renewal intended functions specified in 10 CFR 54.4(a). Therefore, the staff agreed with the applicant that these eight traveling screens are not within the scope of license renewal. The four traveling screens act as filters for the SW system, which performs SR functions, and are within the scope of license renewal. These traveling screens are subcomponents of active assemblies, subject to periodic maintenance and replacement, and continuously monitored through control

room annunciation. The traveling screens can move at between 2.5 and 20 feet per minute. The staff agreed with the applicant on its determination that these four traveling screens are active, and can be screened out from an AMR in the license renewal screening process. All the twelve traveling screens in BSEP are not subject to an AMR with acceptable justifications. No other type of screen was excluded from the requirement of an AMR on the basis of being classified as "active." Based on its review, the staff found the applicant's response acceptable. Therefore, the staff's concerns described in RAI 2.3.3.6-1 are resolved.

2.3.3.6.3 Conclusion

The staff reviewed the LRA and RAI response to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the SCW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the SCW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.7 Service Water System

2.3.3.7.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.7, the applicant described the SW system. The SW system provides water from the Cape Fear River for lubrication and cooling of equipment in the reactor building, turbine building, diesel generator building, and the circulating water system, and for dilution flow in the chlorination system. SW can also be cross-connected to the RHR system in an emergency to provide reactor core flooding capability. The SW system is required to operate following a DBE in order to provide cooling water to the diesel generators and to the RHR system for LPCI cooling and to limit the suppression pool temperature during operation of HPCI and RCIC systems. The system also provides cooling water to the CS pump room and RHR pump room coolers. The SW system is subdivided into two major portions, one basically for nuclear and vital loads and the other normally for conventional loads in the turbine building. The two portions of the system are normally operated independently, each consisting of a group of SW pumps, parallel loads, and interconnecting headers. Suitable cross-connecting valves and piping are provided to permit use of the conventional system as a backup supply for reactor building cooling loads. Backup for diesel generator cooling is provided by the nuclear headers of each unit or by cross-connecting conventional header pumps to the nuclear header.

The SW system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the SW system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the SW system performs functions that support fire protection and EQ.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides filtration

- provides flow restriction (throttle)
- provides structural support/seismic integrity
- provides heat transfer

In LRA Table 2.3.3.7, the applicant identified the following SW system component types that are within the scope of license renewal and subject to an AMR:

- piping (piping and fittings)
- piping (underground piping and fittings)
- piping (piping specialties)
- valves (body and bonnet)
- heat exchanger (SW pump motor cooler coils)
- flow orifice (body)
- pump (casing)
- basket strainer (body)
- CW strainer (body only)

2.3.3.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.7 and UFSAR Section 10.4.7 using the Tier-2 evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.7 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results Therefore, by letter to the applicant dated April 8, 2005, the staff issued RAIs concerning the specific issues to determine whether the applicant had properly applied the scoping criteria of 10 CFR 54.4 (a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAIs and the applicant's related responses.

In RAI 2.3.3.7-1, the staff stated that License renewal drawing D-02041-LR, sheet 1, location F-2, has strainer 2-SW-ST-3 within the scope of license renewal; however, strainer 2-SW-ST-2 is not within the scope of license renewal. Therefore, the staff requested that the applicant explain why strainer 2-SW-ST-2 is not within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that 2-SW-ST-2 was inadvertently omitted from highlighting. This component is in the scope of license renewal, and was subject to an AMR.

Based on its review, the staff found the applicant's response acceptable because the applicant had concluded that 2-SW-ST-2 is within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.7-1 is resolved.

In RAI 2.3.3.7-2a and 2b, the staff stated that license renewal drawings D-02041-LR, sheet 1, location F-1, has an LRA flag in the middle of a section of pipe which is continued on D-2041-3. Similarly, license renewal drawing D-20041-LR, sheet 1, location F-8, has an LRA flag in the middle of a section of pipe which is continued on D-20041, sheet 3. Therefore, the staff requested that the applicant explain why the LR scope boundary occurs in the middle of these sections of pipe.

In its response, by letter dated May 4, 2005, the applicant stated that the subject lines supply cooling water to the circulating water pumps. They are NSR, but the portion of the lines inside the SW building are within the scope of license renewal for potential spatial interaction. The boundary flag represents the location where the line exits the SW intake structure.

Based on its review, the staff found the applicant's response acceptable, because the NSR lines within the SW intake structure are included within scope for potential spatial interaction. The LRA boundary flag is placed where the lines exit the SW intake structure where spatial interaction is not a concern. Therefore, the staff's concerns described in RAI 2.3.3.7-2a and 2b are resolved.

In RAI 2.3.3.7-3a and 3b, the staff stated that license renewal drawing D-02041-LR, sheet 1, locations A-8, A-6, and A-3, depict three lines each from the conventional header SW pumps with continuations on drawing F-4024. Drawing F-4024 was not provided with the LRA. Similarly, license renewal drawing D-20041-LR, sheet 1, locations B-1, B-6, and B-3, depict three lines each from the conventional header SW pumps with continuations on drawing F-04024. Drawing F-04024 was not provided with the LRA. Therefore, the staff requested that the applicant provide additional information on where the LRA boundary was located for these sections of pipe.

In its response, by letter dated May 4, 2005, the applicant stated that the subject lines are the seal leak off and lube oil cooler discharge lines on the conventional SW pumps. They are within scope to provide a discharge flow path in support of the operation of the pumps. All six lines discharge into an open hub drain, which drains directly down into the pump intake bay. Failure of the hub drain itself and the short run of pipe back to the pump bay could not obstruct the flow path of these lines, nor otherwise present a liability to the pump or nearby SR equipment. As such, the hub drains and piping depicted on F-4024 do not perform an intended function that satisfies any one of the 10 CFR 54.4 criteria and, therefore, are not within the scope of license renewal.

Based on its review, the staff found the applicant's response acceptable because all six lines discharge into an open hub drain, which drains directly down into the pump intake bay. Failure of the hub drain itself and the short run of pipe back to the pump bay could not obstruct the flow path of these lines, nor otherwise present a liability to the pump or nearby SR equipment. Therefore, the staff's concerns described in RAI 2.3.3.7-3a and 3b are resolved.

In RAI 2.3.3.7-4a and 4b, the staff stated that license renewal drawing D-02034-LR, sheet 1, locations F-2, and E-2, depict five drains, which include valves 2-SW-V444, V95, 2-SW-663, 2-SW-669, and 2-SW-664 that are not within the scope of license renewal. Similarly, license

renewal drawing D-20034-LR, sheet 2, locations F-7, and D-8, depicts five drains which include valves 1-SW-V444, V95, 2-SW-663, 2-SW-669, and 2-SW-664 that are not within the scope of license renewal. Therefore, the staff requested that the applicant explain why these sections of pipe and valves are not within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that the subject piping/components are attached to the 36-inch SW discharge line. The NSR SW discharge line is within the scope of license renewal for providing a discharge flow path from SR components in the reactor building to the CW system discharge tunnel/canal. The area it travels through under the turbine building houses no SR components, so a pressure boundary of the piping does not represent a spatial interaction concern. As such, only the SW discharge flow itself is within the scope of license renewal. Peripheral piping and components such as those identified serve no intended function and are not within the scope of license renewal

Based on its review, the staff found the applicant's response acceptable, because the NSR lines under the turbine building do not represent a spatial interaction concern. Therefore, the staff's concerns described in RAI 2.3.3.7-4a and 4b are resolved.

In RAIs 2.3.3.7-5a and 5b, the staff stated that license renewal drawing D-02034-LR, sheet 1, locations E-2, and E-1, depict two manholes that are not within the scope of license renewal. License renewal drawing D-20034-LR, sheet 2, locations D-8, and E-7, depict two manholes that appear to be within the scope of license renewal. Therefore, the staff requested that the applicant clarify if these manholes are within the scope of license renewal and if not, explain why these manholes are not within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that the subject piping/components are attached to the 36-inch SW discharge line. The NSR SW discharge line was within the scope of license renewal for providing a discharge flow path from SR components in the reactor building to the CW system discharge tunnel/canal. The area it travels through under the turbine building houses no SR components, so a pressure boundary of the piping does not represent a spatial interaction concern. As such, only the SW discharge flow itself is within the scope of license renewal. Peripheral piping and components such as those identified serve no intended function and are not within the scope of license renewal.

Based on its review, the staff found the applicant's response acceptable because the NSR lines under the turbine building do not represent a spatial interaction concern. Therefore, the staff's concerns described in RAIs 2.3.3.7-5a and 5b are resolved.

In RAIs 2.3.3.7-6a and 6b, the staff stated that license renewal drawing D-02034-LR, sheet 1, location E-2, depict three sections of pipe which include valves 2-SW-V443 (2-SW-296-30-R-1) and 2-SW-299 (2-SW-266-1-R-2) and pipe line number (2-SW-22-30-R-1) that are not within the scope of license renewal. Similarly, license renewal drawing D-20034-LR, sheet 2, location E-7, depict three sections of pipe which include valves 2-SW-V443 (1-SW-296-30-R-1) and 1-SW-299 (1-SW-228-1-R-2) and pipe line number (1-SW-22-30-R-1) that are not within the scope of license renewal. Therefore, the staff requested that the applicant explain why these sections of pipe and valves are not within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that the subject piping/components are attached to the 36-inch SW discharge line. The NSR SW discharge line

is within the scope of license renewal for providing a discharge flow path from SR components in the reactor building to the CW system discharge tunnel/canal. The area it travels through under the turbine building houses no SR components, so a pressure boundary of the piping does not represent a spatial interaction concern. As such, only the SW discharge flow itself is within scope. Peripheral piping and components such as those identified above serve no intended function and are not within the scope of license renewal.

Based on its review, the staff found the applicant's response acceptable because the NSR lines under the turbine building do not represent a spatial interaction concern. Therefore, the staff's concerns described in RAIs 2.3.3.7-6a and 6b are resolved.

In RAIs 2.3.3.7-7a and 7b, the staff stated that license renewal drawing D-02041-LR, sheet 2, locations B-3 and B-6, depict three lines each from the nuclear header SW pumps. Similarly license renewal drawing D-20041-LR, sheet 2, locations B-3 and B-6, depict three lines each from the nuclear header SW pumps with continuations on drawing F-40024. Drawing F-40024 was not provided with the LRA. Therefore, the staff requested that the applicant provide additional information as to where the LRA boundary is located for these sections of pipe.

In its response, by letter dated May 4, 2005, the applicant stated that the subject lines are the seal leakoff and lube oil cooler discharge lines on the nuclear SW pumps. They are in scope to provide a discharge flow path in support of the operation of the pumps. All three lines discharge into an open hub drain, which drains directly down into the pump intake bay. Failure of the hub drain itself and the short run of pipe back to the pump bay could not obstruct the flow path of these lines, nor otherwise present a liability to the pump or nearby SR equipment. As such, the hub drain and piping depicted on F-4024 perform no intended function and are not within the scope of license renewal.

Based on its review, the staff found the applicant's response acceptable because all six lines discharge into an open hub drain, which drains directly down into the pump intake bay. Failure of the hub drain itself and the short run of pipe back to the pump bay could not obstruct the flow path of these lines, nor otherwise present a liability to the pump or nearby SR equipment. Therefore, the staff's concerns described in RAIs 2.3.3.7-7a and 7b are resolved.

In RAI 2.3.3.7-8a and 8b, license renewal drawing D-02041-LR, sheet 2, location F-7, has an LRA flag in the middle of a section of pipe which is continued on D-2041-3 and D-2034. Similarly, license renewal drawing D-20041-LR, sheet 2, location F-2, has an LRA flag in the middle of a section of pipe which is continued on D-20034 and D-20041-3. Therefore, the staff requested that the applicant explain why the LRA boundary occurs in the middle of these sections of pipe.

In its response, by letter dated May 4, 2005, the applicant stated that the subject lines are the SW supply to NSR cooling loads in the turbine building, as well as a fill line to the CW system. The SR portion of the line ends at the 2-SW-V3 and 1-SW-V3 valves. The highlighted portions of the license renewal drawings indicate the extent of the piping included in the seismic evaluation. The license renewal flag on line 2-SW-100-30-R-1 indicates the terminus of the seismic evaluation.

Based on its review, the staff found the applicant's response acceptable because the SR portion of the line ends at the 2-SW-V3 and 1-SW-V3 valves, and a segment of piping past these points

has been included for seismic support. The boundary flag represents the terminus of the seismic evaluation. Therefore, the staff's concerns described in RAIs 2.3.3.7-8a and 8b are resolved.

In RAIs 2.3.3.7-9a and 9b, the staff stated that license renewal drawing D-02537-LR, sheet 2, location B-2, has an LRA flag in the middle of a section of pipe which is continued on D-2544. Similarly, license renewal drawing D-25037-LR, sheet 2, location B-2, has an LRA flag in the middle of a section of pipe which is continued on D-25043, sheet 1B. Therefore, the staff requested that the applicant explain why the LRA boundary occurs in the middle of these sections of pipe.

In its response, by letter dated May 4, 2005, the applicant stated that line 2-G16-1178-1-160 and line 1-G16-1177-1-160 are NSR lines that were brought within the scope of license renewal because they are required to protect the SR/NSR boundary at valve 2-E11-F073 and 1-E11-F073. The highlighted portions of the license renewal drawings indicate the extent of the piping included in the seismic evaluation. The license renewal flag on lines 2-G16-1178-1-160 and 1-G16-1178-1-160 indicates the terminus of the seismic evaluation.

Based on its review, the staff found the applicant's response acceptable because the subject lines are within the scope of license renewal and are required to protect the SR/NSR boundary at valve 2-E11-F073 and 1-E11-F073. The highlighted portions of the license renewal drawings indicate the extent of the piping included in the seismic evaluation. Therefore, the staff's concerns described in RAIs 2.3.3.7-9a and 9b are resolved.

2.3.3.7.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the SW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the SW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.8 Reactor Building Closed Cooling Water System

2.3.3.8.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.8, the applicant described the reactor building closed cooling water (RBCCW) system. The RBCCW system removes heat from the reactor auxiliary systems and their related accessories during normal operation. The system also provides an additional barrier between contaminated systems and the SW discharged to the environment. Those portions of the system that are within the scope of license renewal are located in the drywell, reactor building, and control building. The RBCCW system provides cooling for the non-regenerative heat exchangers, reactor coolant recirculation system pump and motor coolers, sump and equipment drain tank coolers, sample coolers, cleanup recirculation pump coolers, cleanup

pre-coat pump coolers, fuel pool heat exchangers, drywell coolers, CRD supply pump coolers, and penetration cooling system. The RBCCW system pumps, heat exchangers, and equipment required for normal system heat removal are designed to Class II requirements. RBCCW system instrumentation and control circuits activate protective actions following postulated accidents and transients, and system indicating circuits support post-accident monitoring functions, such as containment isolation valve position.

The RBCCW system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the RBCCW system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the RBCCW system performs functions that support EQ. The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary/flow.

In LRA Table 2.3.3-7, the applicant identified the following RBCCW system and penetration cooling system component types that are within the scope of license renewal and subject to an AMR:

- piping (pipe, fittings, and flanges)
- piping (piping specialties)
- valves (check, hand, control, relief, solenoid, and containment isolation) (body and bonnet)
- pump (casing)
- tank (shell)
- flow orifice (body)
- closed-cycle cooling water system (strainers)
- closed-cycle cooling water system (heat exchangers)
- closed-cycle cooling water system (piping specialties)
- valves (including check valves and containment isolation) (body and bonnet)
- pressure regulators (body and bonnet)

2.3.3.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.8 and UFSAR Section 9.2.2 using the Tier-2 evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.8 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. The applicant responded to the staff's RAI as discussed below.

In RAI 2.3.3.8-1, dated April 8, 2005, the staff stated that sheet 2 of license renewal boundary drawings D-25038-LR and D-02538-LR (quadrants C4 and D4) show the in-scope boundary terminating in the middle of non-isolable portions of lines 1(2)-RCC-6-6-154 and 1(2)-RCC-54-2-154. Therefore, the staff requested that the applicant discuss the basis for terminating the in-scope portion of this piping at these locations and provide additional information describing the as-built plant locations that these scope boundaries represent.

In its response, by letter dated May 4, 2005, the applicant stated that the piping described in RAI 2.3.3.8-1 (1(2)-RCC-6-6-154 and 1(2)-RCC-54-2-154) performs no SR function and that portions of this piping are within the scope of license renewal for potential spatial interaction. The applicant stated that the scoping boundary described in boundary drawings D-25038-LR and D-02538-LR (quadrants C-4 and D-4) represents the point at which RBCCW enters an area in the reactor building that houses no SR components and is sufficiently isolated/protected from other parts of the reactor building to preclude adverse spatial interactions with SR components elsewhere in the building.

Based on its review, the staff found the applicant's response acceptable because the applicant has sufficiently clarified that the in-scope boundaries for portions of lines 1(2)-RCC-6-6-154 and 1(2)-RCC-54-2-154 described in boundary drawings D-25038-LR and D-02538-LR (quadrants C-4 and D-4) are consistent with plant as-built configurations and that the failure of the out-of-scope piping would not impact the intended functions of SR components. Therefore, the staff's concern described in RAI 2.3.3.3-1 is resolved.

In RAI 2.3.3.8-2, dated April 8, 2005, the staff stated that license renewal boundary drawing D-25038-LR sheet 2 (quadrants E1 and E2) identifies a portion of the RBCCW supply piping (1-RCC-57-1½ -154) to cleanup recirculation pump cooler 1B and adjacent valve V304 as within the scope of license renewal. This is inconsistent with the RBCCW supply piping and valve combinations for the remaining Unit 1 cleanup recirculation pump cooler 1A and the Unit 2 cleanup recirculation pump coolers 1A and 1B (sheet 2 of D-02538-LR), which are shown as out of scope for license renewal. Therefore, the staff requested that the applicant discuss the basis for terminating the in-scope portion of this piping at these locations and provide additional information describing the as-built plant locations that the in-scope boundaries represent.

In its response, by letter dated May 4, 2005, the applicant stated that the portion of the RBCCW supply piping (1-RCC-57-12 -154) to cleanup recirculation pump cooler 1B and adjacent valve V304 shown as in-scope for license renewal on boundary drawing D-25038-LR sheet 2 (quadrants E-1 and E-2) is a drawing error. The applicant stated that this piping does not perform an SR function and is located in an area in the reactor building that houses no SR components and is sufficiently isolated/protected from other parts of the reactor building to preclude adverse spatial interactions with SR components elsewhere in the building. The applicant stated that boundary drawing D-25038-LR, sheet 2 will be revised to show that this piping is not within the scope of license renewal. Based on its review, the staff found the applicant's response acceptable. Therefore, the staff's concern described in RAI 2.3.3.8-2 resolved.

2.3.3.8.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the RBCCW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the RBCCW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.9 Turbine Building Closed Cooling Water System

2.3.3.9.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.9, the applicant described the turbine building closed cooling water (TBCCW) system. The TBCCW system is a closed loop system, which removes heat from the following secondary plant equipment and turbine-generator accessories: (1) turbine-generator lube oil coolers, (2) turbine-generator electro-hydraulic control system coolers, (3) generator stator and rectifier coolers, (4) generator bus duct heat exchangers, (5) Alterex exciter coolers, (6) generator hydrogen coolers, (7) air compressors and air aftercoolers, (8) turbine building sample coolers, (9) condenser mechanical vacuum pump coolers, (10) reactor feed pump turbine oil coolers, (11) recirculation pump motor-generator set oil coolers, (12) heater drain pump jacket and motor thrust bearings, (13) condensate pump motor thrust bearings, (14) condensate booster pump oil coolers. Each unit is provided with a TBCCW system consisting of two pumps, two heat exchangers and integrated piping. The systems utilize a common head tank. In addition, the Unit 2 TBCCW system is equipped with a chemical feed tank and a spare pump and heat exchanger. The spare pump and/or heat exchanger may be lined up to either unit's TBCCW system but not both. The TBCCW pumps that are arranged in parallel take suction from a common header and discharge to the heat exchangers.

The failure of NSR SSCs in the TBCCW system could potentially prevent the satisfactory accomplishment of an SR function.

The TBCCW system components that are subject to an AMR are addressed as civil commodities in LRA Section 2.4.

2.3.3.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.9 and UFSAR Section 9.2.7 using the Tier-1 evaluation methodology described in SER Section 2.3.

In conducting its Tier-1 review of the two-tier review process, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant identified as being within the scope of license renewal to

verify that the applicant did not omit any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.9.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the TBCCW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the TBCCW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.10 Diesel Generator System

2.3.3.10.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.10, the applicant described the DG system. The DG system provides emergency alternating current (AC) power to the onsite electrical distribution system of each unit. The DG system contains four emergency diesel generator sets and is used to ensure that a supply of electrical power is available for the operation of SR equipment in the event of loss of offsite power. Electrical equipment and controls that are required to start and load the diesel, or prevent it from operating are classified SR. Diesel capacity is such that any three of the four diesels provided can supply all required loads for the safe shutdown of one unit and a design-basis accident on the other unit without offsite power. During a SBO event, diesel capacity is such that one operational diesel can supply the required loads for safe shutdown of the non-blacked-out unit and the required SBO coping loads in the blacked-out unit. The DG system provides the AC power required by the Class 1E distribution system to provide power for emergency systems and engineered safety features during and following the shutdown of the reactor when the preferred power supply is not available. The system starts automatically on loss of voltage to its associated buses, an ESF actuation signal on either unit, a loss of offsite power, or a unit trip of either unit.

Support systems necessary to ensure proper operation of the DGs are (1) diesel fuel oil system, (2) diesel lube oil system, (3) diesel jacket water system, (4) DG SW system, (5) DG starting air system, and (6) DG intake/exhaust system. The diesel fuel oil system stores and distributes fuel oil for use by the DGs. The diesel lube oil system is a closed loop system that lubricates various DG components and rejects heat to the lube oil cooling subsystem. The diesel jacket water system is a closed loop system that removes most of the heat generated by the DG during operation by cooling the engine components and DG lubricating oil. The DG SW system contains redundant SW supply lines to remove heat from each DG jacket water cooler; if the normal supply is not available, the alternate supply line valve will open and the normal supply valve will close. The DG starting air system provides compressed air to the diesel engine cylinders for starting the emergency DGs and supplies air to the instrumentation and controls. The DG intake/exhaust system provides combustion air to each DG and removes exhaust gases and potentially explosive fumes from each DG.

The DG system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the DG system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the DG system performs functions that support fire protection and SBO.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides filtration
- provides flow restriction (throttle)
- provides structural support/seismic integrity
- provides heat transfer

In LRA Table 2.3.3-8, the applicant identified the following DG system component types that are within the scope of license renewal and subject to an AMR:

- valves, connected pipe, tubing and fittings
- piping (aboveground pipe and fittings)
- piping (underground pipe and fittings)
- valves (body and bonnet)
- pump (casing)
- tank (internal/external surface)
- immersion element (pressure-retaining housing)
- strainer (body)
- tanks (day and drip)
- filters (shell)
- valves, connected pipe, tubing and fittings
- heaters an thermowells (housing)
- filter (shell)
- pump (casing)
- gauge glass
- heat exchanger (tubes)
- heat exchanger (shell)
- heat exchanger (tube sheet and channel head)
- strainer (casing)
- strainer (screen)
- heat exchanger (shell)
- heat exchanger (channel)
- heat exchanger (channel head and access cover)
- heat exchanger (tubesheet)
- heat exchanger (tubes)
- piping (pipe, fittings, and flanges)
- valves (check, hand, control, relief, solenoid, and containment isolation) (body and bonnet)
- closed-cycle cooling water system (piping specialties)
- diesel engine cooling water subsystem (pipe and fittings)
- diesel engine cooling water subsystem (tanks and vessels)
- diesel engine cooling water subsystem (heat exchangers)
- diesel engine cooling water subsystem (pumps)

- diesel engine cooling water subsystem (piping specialties)
- piping (piping and fittings)
- piping (piping specialties)
- valves (body and bonnet)
- pipe and fittings
- valves (hand and check)
- drain trap
- air accumulator vessel
- filter (shell)
- strainer (shell)
- strainer (basket)
- piping and fittings
- filter
- muffler (intake silencer)
- turbo charger (inlet-housing)
- valve (body), connected piping, tubing and fittings
- turbo charger (inlet-bellows)
- filter (media)
- piping and fittings
- muffler (exhaust)
- fans (housing)
- oil separator (housing)
- valve (body), connected pipe and fittings
- turbo charger (exhaust-housing)
- turbo charger (exhaust-bellows)

2.3.3.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.10 and UFSAR Sections 8.3.1.1.6 through 8.3.1.1.6.2.14 using the Tier-2 evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.10 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. Therefore, by letter to the applicant dated April 8, 2005, the staff issued RAIs concerning the specific issues to determine whether the applicant had properly applied the scoping criteria of 10 CFR 54.4 (a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAIs and the applicant's related responses.

In RAI 2.3.3.10-1, the staff stated that the DG system has several auxiliary support systems, including the diesel fuel oil system, that must function in order to perform its SR functions. There are two sections of piping associated with fuel oil transfer pump 2A shown on drawing D-02268-LR, sheet 1B, at locations B-3 and B-4, that are shown as being out of scope for license renewal. This is not consistent with the fuel transfer pump 1A shown on drawing D-02268-LR, sheet 1A, at locations B-3 and B-4, which shows the same piping sections as being within the scope of license renewal. Therefore, the staff requested that the applicant provide additional clarification or justification to support the determination that it is acceptable to not include these sections of piping as within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that the two sections of piping components associated with fuel oil transfer pump 2A shown on drawing D-02268-LR, sheet 1B, at locations B-3 and B-4, are within the DG system license renewal scoping boundary and subject to an AMR. Therefore, the staff found the applicant's response acceptable and the staff's concern described in RAI 2.3.3.10-1 is resolved.

In RAI 2.3.3.10-2, the staff stated that the DG system has several auxiliary support systems, including the diesel fuel oil system, that must function in order to perform its SR functions. There are several blind flanges and fittings for the DG fuel oil storage tanks listed below that are not consistently treated as being either within the scope or out of the scope of license renewal.

- DG No. 1 fuel oil day tank the 2-inch blind flange on drawing D-02268-LR, sheet 1A, at location F-6, is shown as being out of scope.
- DG No. 1 four day storage tank: the 6-inch blind flange, 24-inch man hole, and 2-inch blind flange on drawing D-02268-LR, sheet 1A, at locations C-4 and B-5, are shown as being in scope.
- DG No. 1 fuel oil transfer pump 1B on drawing D-02268-LR, sheet 1A, at location C-2, has a discharge pressure tap pipe plug down stream of PI-1242-6 that is shown as being out of scope. This is inconsistent with fuel oil transfer pump 1A that has a similar pipe plug downstream of PI-1241-6 that is shown as being in scope.
- DG No. 2 fuel oil day tank: the 2-inch blind flange on drawing D-02268-LR, sheet 1B at location F-6 is shown as being out of scope.
- DG No. 2 four day storage tank: the 6-inch blind flange on drawing D-02268-LR, sheet 1B, at location C-4, is shown as being out of scope.
- DG No. 3 fuel oil day tank: the 2-inch blind flange on drawing D-02269-LR, sheet 2A, at location F-6, is shown as being out of scope.
- DG No. 3 four day storage tank: the 6-inch blind flange, 24-inch man hole, and 2-inch blind flange on drawing D-02269-LR, sheet 2A, at locations C-4 and B-5, are shown as being in scope.
- The diesel seven day storage tank: shown on drawing D-02269-LR, sheet 2A at location B-7 shows a man way, an instrument line flanged access, and a tank fill line that are shown as being out of scope.
- DG No. 4 fuel oil day tank: the 2-inch blind flange, 2-inch blind flange and 6-inch blind flange on drawing D-02269-LR, sheet 2B at locations F-6, B-5, and C-4 are shown as being out of scope.

Therefore, the staff requested that the applicant provide additional clarification or justification to support the determination that it is acceptable to not include the blind flanges and fittings listed above as within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that the blind flanges and fittings identified are either piece-parts or miscellaneous appendages of in-scope components and are, therefore, conservatively assumed to be within the diesel fuel oil system license renewal scoping boundary and subject to an AMR. The staff found the applicant's response acceptable, therefore, the staff's concern described in RAI 2.3.3.10-2 is resolved.

In RAI 2.3.3.10-3, the staff stated that the DG system has several auxiliary support systems, including the diesel lube oil system, that must function in order to perform its SR functions. There are several instrument lines, fittings, and piping segments for the diesel generator lube oil systems listed below that are not consistently treated as being either in scope or out of scope for license renewal.

- DG No. 1 engine control panel pressure gage PI-6520 piping on drawing D-02270-LR, sheet 1A, at location F-7, is shown as being out of scope. This is inconsistent with similar pressure gage piping for DG No. 2 on drawing D-02270-LR, sheet 1B, at the same location that is shown as being in scope.
- DG No. 2 sensing line for TI-6542-2 on drawing D-02270-LR, sheet 1B, at location C-6, is shown as being in scope. This is inconsistent with similar sensing lines for DG No. 1 on drawing D-02270-LR, sheet 1A, at the same location that is shown as out of scope. This same sensing line for DG No. 3, TI-6542-3; and DG No. 4, TI-6542-4, is also shown as being out of scope.
- DG No. 1 level switch LS-6562-1 piping on drawing D-02270-LR, sheet 1A, at location E-6 is shown as being out of scope. This is inconsistent with similar level switch piping for DG No. 2 on drawing D-02270-LR, sheet 1B, at the same location that is shown as being in scope.
- DG No. 2 pipe cap downstream of SS-6577-2-10 on drawing D-02270-LR, sheet 1B, at location E-5, is shown as being out of scope. This is inconsistent with similar pipe caps for DG No. 1 on drawing D-02270-LR, sheet 1A, at the same location that is shown as being in scope. This same pipe cap is also shown as being in scope for DG No. 3 and DG No. 4.
- For DG Nos. 1, 3, and 4, there is a 3-inch diameter piping segment on drawings 0-02270-LR, sheet 1A, at location E-4; D-02271-LR, sheet 2A, at location B-4; and D-02271-LR at location B-4 shown as being out of scope. This is inconsistent with DG No. 2 that shows the same 3-inch diameter piping segment at the same location as being in scope.

Therefore, the staff requested that the applicant provide additional clarification or justification to support the determination that it is acceptable to not include the instrument lines, fittings, and piping segments listed above as within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that the instrument lines, fittings, and piping segments for the DG lube oil systems listed in RAI 2.3.3.10-3 are within the DG system license renewal scoping boundary and are therefore subject to an AMR. The staff found the applicant's response acceptable; therefore, the staff's concerns identified in RAI 2.3.3.10-3 are resolved.

In RAI 2.3.3.10-4, the staff stated that the DG system has several auxiliary support systems, including the diesel SW system, that must function in order to perform its SR functions. The license renewal documentation shows inconsistencies in how the vent piping and pipe caps are shown for this system. For DG No. 1, there is a vent pipe and pipe caps on drawing D-02274-LR, sheet 1, at location E-3, that are shown as out of the scope of license renewal. There is also a pipe cap for DG No. 2 on drawing D-02274-LR, sheet 1, at location E-6, that is shown as out of scope. The same vent piping and pipe caps for DG No. 3 and DG No. 4 on drawing D-02274-LR, sheet 2, at the same locations are shown in scope. Therefore, the staff requested that the applicant provide additional clarification or justification for not including these sections of piping and pipe caps as within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that the vent piping and pipe caps identified in RAI 2.3.3.10-4 are miscellaneous appendages of in-scope components and are, therefore, conservatively assumed to be within diesel SW system license renewal scoping boundary and subject to an AMR. The staff found the applicant's response acceptable; therefore, the staff's concern described in RAI 2.3.3.10-4 is resolved.

In RAI 2.3.3.10-5, the staff stated that the DG system has several auxiliary support systems that must function in order to perform its SR functions including the diesel exhaust and crankcase vacuum blower system. The crankcase vacuum blower discharge lines shown on drawings D-02267-LR, sheets 1 and 2, at locations C-3 and C-6, are not shown as within the scope of license renewal. The crankcase vacuum blower system ensures potentially dangerous crankcase vapors are exhausted to the atmosphere. It is not clear that the crankcase vacuum blower system could perform its intended function if the discharge lines are damaged, pinched off, fail, or are otherwise restricted. Therefore, the staff requested that the applicant provide additional clarification or justification to support the determination that it is acceptable to not include the crankcase vacuum blower discharge lines as within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that the piping down stream of the four diesel crank case vacuum blowers is classified in the plant design records as NSR and is not credited as being required for any of the 10 CFR 54.4 (a)(3) events. The applicant stated that the restriction of crank case ventilation in the vacuum blower discharge lines shown on drawings D-02267-LR, sheets 1 and 2, is a hypothetical event outside of the CLB, therefore, not addressed as a scoping consideration under 10 CFR 54.4. The applicant also stated that potential age-related degradation of the piping could allow the leakage of crank case fumes into the diesel building but would not impact the safety function of the DGs.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.10-5 acceptable, because the crank case vacuum blower is a non-safety related component and age related degradation would not impact the safety function of the DG. Thus, it does not perform an intended function within the meaning of the 10 CFR 54.4(a) criteria. Therefore, the staff's concern described in RAI 2.3.3.10-5 is resolved.

2.3.3.10.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the DG system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the DG system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.11 Heat Tracing System

2.3.3.11.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.11, the applicant described the heat tracing system. The original purpose of the freeze protection and heat tracing system was to provide a source of heat to prevent certain system piping from freezing and/or to maintain proper process system fluid temperatures. The system is no longer used for these purposes and its name has been changed to the heat tracing system. However, a steam line from the system supporting CAC system nitrogen vaporization is located in the vicinity of SR equipment in the AOG building. Therefore, it was concluded that the system contains NSR components (steam piping and valve) that have the potential to cause an adverse physical interaction with SR equipment. These components have been included within the scope of license renewal as a result of the 10 CFR 54.4(a)(2) review.

The failure of NSR SSCs in the heat tracing system could potentially prevent the satisfactory accomplishment of an SR function.

The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary/flow.

In LRA Table 2.3.3-9, the applicant identified the following heat tracing system component types that are within the scope of license renewal and subject to an AMR:

- piping and fittings (steam drains)
- valves (check, control, hand, motor operated, safety valves) (body and bonnet)

2.3.3.11.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.11 and UFSAR Sections 10.4.8 and 3A-22 using the Tier-1 evaluation methodology described in SER Section 2.3.

In conducting its Tier-1 review of the two-tier review process, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed

those components that the applicant identified as being within the scope of license renewal to verify that the applicant did not omit any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.11.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the heat tracing system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the heat tracing system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.12 Instrument Air System

2.3.3.12.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.12, the applicant described the instrument air (IA) system. The IA system provides instrument-quality air to pneumatically operated instruments and controls throughout the plant. Instrument air consists of interruptible instrument air and non-interruptible instrument air. The interruptible instrument air system provides operating air to less vital pneumatic instruments and controls and is not essential to safe plant shutdown. The non-interruptible instrument air system is designed with the capability of supplying instrument air requirements in the reactor building (RB) required for plant safety during normal operation. The nitrogen backup system (also designated reactor non-interruptible air (RNA)) provides an independent, SR pneumatic source to selected SR loads in the event of either a LOCA or the loss of the normal pneumatic supply. The CAD system provides a backup to the instrument air header in the AOG building upon loss of instrument air for the CAD subsystem. Components in the IA system automatically actuate and monitor backup nitrogen supplies when required.

The IA system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the IA system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the IA system performs functions that support fire protection, EQ, and SBO.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides structural support/seismic integrity

In LRA Table 2.3.3.12, the applicant identified the following IA system component types that are within the scope of license renewal and subject to an AMR:

- piping (piping and fittings)
- valves (including check valves and containment isolation) (body and bonnet)
- air receiver (shell and access cover)

- pressure regulators (body and bonnet)
- filter (shell and access cover)

2.3.3.12.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.12 and UFSAR Section 9.3.1 using the Tier-2 evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.12 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. Therefore, by letter to the applicant dated April 8, 2005, the staff issued RAIs concerning the specific issues to determine whether the applicant had properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAIs and the applicant's related responses.

In RAI 2.3.3.12-1, the staff stated that the IA system receivers 1A, 1B, 2A, and 2B are within the scope of license renewal and provide a pressure-retaining boundary function; however, none of the air receiver discharge lines that allow the system to provide IA to components are identified as being within the scope of license renewal on the following drawings:

- D-70029-LR, sheet 2B, at location E-7 (line 221-2-170)
- D-72006-LR, sheet 4, at location B-1 (line 201-2-170, 206-2-170, 215-2-170, 220-2-170)
- D-07029-LR, sheet 2A, at location F-1 (line 201-2-170, 251-2-170, 203-2-170)
- D-07029-LR, sheet 2B, at location E-7 (line 221-2-170)

Therefore, the staff requested that the applicant provide information and justify its determination to exclude the identified lines from the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated:

> The referenced Instrument Air (IA) Receivers 1A, 1B, 2A, 2B are located in the Unit 1 and Unit 2 Reactor Buildings and quality classified as non-safety related. These air receivers are discussed in UFSAR Section 3.5.1.1. The IA System safety evaluation is described in UFSAR Section 9.3.1.2.3. BNP-LR-007, "License Renewal Scoping Calculation For Criteria 10 CFR 54.4(a)(2) Nonsafety Affecting Safety-Related Equipment," Revision 2, page 20 states:
>
> > Missiles may be generated by failure of compressed air tanks located within buildings/structures. The Reactor Building air receivers are located in the vicinity

of safety related equipment, hence these receivers are included in the scope of License Renewal.

Thus, the referenced IA Receivers 1A, 1B, 2A, and 2B are in the scope of License Renewal for a spatial interaction, not a functional relationship. The plant does not rely on the instrument air in these receivers to accomplish the function of a safety related or a regulated event component. Failure of the identified lines would not prevent the IA System from performing its required safety functions.

Based on its review, the staff found the applicant's response acceptable because failure of the air receiver discharge lines will not result in failure of the intended safety functions of the systems. Therefore, the staff's concerns described in RAI 2.3.3.12-1 are resolved.

In RAI 2.3.3.12-2, the staff stated that license renewal boundary drawings D-70077-LR, sheet 3A, and D-07077-LR, sheet 3A, both identify the valve B32-F020, at location B-1, as being within the scope of license renewal; however, the lines connecting valve B32-F020 to the IA header are not shown as being within the scope of license renewal. Therefore, the staff requested that the applicant provide information to justify its determination to exclude the piping that connects the IA header to valve B32-F020.

In its response, by letter dated May 4, 2005, the applicant stated:

Valve B32-F020 is a recirculation sample line isolation valve, which is a safety related valve in System 2020. Per design basis document, DBD-002, "Reactor Coolant Recirculation System," Revision 9, Section 4.4.3, this valve is an air-operated globe valve, which receives automatic closure signals. This valve has alternating current solenoid pilots which de-energize to vent air from the diaphragm to allow valve closure by spring action using de-energize-to-close "fail-safe" logic.

The IA System is not required for valve B32-F020 to perform its safety related function. Failure of the IA piping would not cause loss of function of valve B32-F020. This valve fails to the safe position without IA supply. Non-safety related IA lines connecting valve B32-F020 to the IA header are correctly shown as not being within scope.

Based on its review, the staff found the applicant's response acceptable because valve B32-F020 fails to the safe position without IA supply. Failure of the IA piping would not cause loss of function of valve B32-F020. Therefore, the staff's concern described in RAI 2.3.3.12-2 is resolved.

2.3.3.12.3 Conclusion

The staff reviewed the LRA and RAI responses to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the IA system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the IA system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.13 Service Air System

2.3.3.13.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.13, the applicant described the service air (SA) system. The SA system provides compressed air from the service air header to selected auxiliary equipment and to service outlets throughout the plant. A manual cross-tie isolation valve and necessary piping connect the SA headers between units for improved reliability. The SA system has no SR functions other than containment isolation in any mode of operation as the system does not supply air to any component requiring air to perform an SR function. The containment isolation function is performed by a segment of piping that has been cut and capped inside and outside the containment wall. In addition, those portions of the system in close proximity to, and which may adversely interact with, SR equipment are designed to limited seismic qualification requirements and are within the scope of license renewal. The supports for the piping prevent the occurrence of adverse spatial interactions.

The SA system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the SA system could potentially prevent the satisfactory accomplishment of an SR function. The SA system component types that are within the scope of license renewal and subject to an AMR are addressed as civil commodities in LRA Section 2.4.

2.3.3.13.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.13 and UFSAR Section 9.3.1 using the Tier-1 evaluation methodology described in SER Section 2.3.

In conducting its Tier-1 review of the two-tier review process, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant did not omit from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant identified as being within the scope of license renewal to verify that the applicant did not omit any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.13.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the SA system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the SA system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.14 Pneumatic Nitrogen System

2.3.3.14.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.14, the applicant described the pneumatic nitrogen system (PNS). The PNS provides gaseous nitrogen to pneumatically operated components in the drywell to prevent an increase in drywell atmosphere oxygen concentration due to releases of air from valve operation and leakage. The nitrogen for PNS is provided from two cryogenic tanks, one for each unit, located in the yard area southeast of the Unit 2 reactor building. This system may be used as backup to service and instrument air. The PNS, which is the normal pneumatic supply to the drywell during plant operation, may be isolated at low power levels (including unit shutdown) to allow personnel access to the drywell. The PNS provides gaseous nitrogen needed for operation of the instrumentation and pneumatic controls in the drywell only during normal plant operation; it has no SR function. Those portions of the system in close proximity to, and which may interact with, SR equipment are designed to limited seismic qualification requirements to prevent undesirable interactions with SR equipment.

The failure of NSR SSCs in the PNS could potentially prevent the satisfactory accomplishment of an SR function. The intended function, within the scope of license renewal, is to provide structural support/seismic integrity.

In LRA Table 2.3.3-11, the applicant identified the following PNS component types that are within the scope of license renewal and subject to an AMR:

- piping (piping and fittings)
- valves (including check valves and containment isolation) (body and bonnet)
- filter (shell and access cover)

2.3.3.14.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.14 and UFSAR Section 9.3.1 using the Tier-2 evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

In reviewing LRA Section 2.3.3.14, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results. Therefore, by letter to the applicant dated April 8, 2005, the staff issued RAIs concerning the specific issues to determine whether the applicant had properly applied the scoping criteria of 10 CFR 54.4 (a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAIs and the applicant's related responses.

In RAI 2.3.3.14-1, the staff stated that license renewal drawing D-02494-LR, sheet 1, location F-2, has a section of piping with a continuation to D-07077-LR sheet 3A, location F-6, that is not within the scope of license renewal. Note that the continuation could not be found on D-07077-LR sheet 3A, location F-6. Therefore, the staff requested that the applicant provide additional justification as to why this section of pipe is not within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated:

> Pneumatic Nitrogen System (PNS) Line 2-PNS-001-3/4-167 is a non-safety related line that was brought within the scope of License Renewal because it is required to protect the safety related/non-safety related boundary at valve 2-RNA-SV-5262.
>
> The License Renewal boundary flag on Drawing D-02494-LR, Sheet 1, should have been placed upstream of the reducer (i.e., upstream of 2-RNA-V255) to match the boundary flag location on Drawing D-07077-LR, Sheet 3A.
>
> Line 2-PNS-3-1/2-154 is an NSR line that is not within the scope of License Renewal because it is upstream of the corrected License Renewal boundary flag and its failure does not affect the seismic qualification of the safety related/non-safety related boundary at valve 2-RNA-SV-5262.

Based on its review, the staff found the applicant's response acceptable. Line 2-PNS-3-1/2-154 is an NSR line that is not within the scope of license renewal because it is upstream of the corrected license renewal boundary flag and its failure does not affect the seismic qualification of the SR/NSR boundary at valve 2-RNA-SV-5262. Therefore, the staff's concern described in RAI 2.3.3.14-1 is resolved.

In RAI 2.3.3.14-2, the staff stated that license renewal drawing D-02494-LR, sheet 1, location F-3, depicts the piping, and isolation and bypass valves to 2-PNS-FLT-100 to be within the scope of license renewal. A similar piping arrangement for 2-PNS-FLT-101 (see drawing D-07077, sheet 3B, location C-3) indicates 2-PNS-FLT-101 is not within the scope of license renewal. Therefore, the staff requested that the applicant provide information as to whether 2-PNS-FLT-101 and associated piping and valves are within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that line 2-PNS-002-3/4-167 is an NSR line that was brought within the scope of license renewal because it is required to protect the SR/NSR boundary at valve 2-RNA-SV-5261. The license renewal boundary flag on drawing D-02494-LR, sheet 1, should have been placed upstream of the reducer (i.e., upstream of 2-RNA-V256) to match the boundary flag location on drawing D-07077-LR, sheet 3B. Filter 2-PNS-FLT-101 and the associated valves 2-PNS-V5006, 2-PNS-V5007, and 2 PNS V5008 are beyond the corrected license renewal boundary flag and are consequently not required to be within the scope of license renewal.

Based on its review, the staff found the applicant's response acceptable because filter 2-PNS-FLT-101 and the associated valves 2-PNS-V5006, 2-PNS-V5007, and 2 PNS V5008 are beyond the corrected license renewal boundary flag and are consequently not required to be within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.14-2 is resolved.

In RAI 2.3.3.14-3, the staff stated that license renewal drawing D-07077-LR, sheet 3A, location C-6, shows a license renewal boundary designator between valves V255 and 2-PNS-V5004. Drawing D-02494-LR, sheet 1, location F-3, indicates the piping between V255 and V5004 as within scope and piping and valves from PSL 5843A2, 2-PNS-V12, and 2-PNS-V8 to V255, including 2-PNS-V5004 are within the scope of license renewal. The piping between 2-PNS-V12, 2-PNS-V8, 2-PNS-V5004 is shown not shaded on D07077 sheet 3A. A similar situation exists with drawing D-02494-LR, sheet 1, and D-07077-LR, sheet 3B, from V256 through 2-PNS-V11 and 2-PNS-V7. Therefore, the staff requested that the applicant explain these apparent license renewal boundary discrepancies between drawing D-02494-LR, sheet 1, and drawing D-07077-LR, sheet 3A and B, and to provide justification for why the piping between 2-PNS-V12, 2-PNS-V8, 2-PNS-V5004 is not shown as in scope on drawing D-07077-LR sheet 3A.

In its response, by letter dated May 4, 2005, the applicant stated that the license renewal boundary flags on drawings D-07077-LR, sheet 3A and sheet 3B, are associated with the piping upstream of the SR/NSR boundaries for valves 2-RNA-SV-5262 and 2-RNA-SV-5261, respectively. As discussed in the responses to RAI 2.3.3.14-1 and RAI 2.3.3.14-2, the license renewal boundary flags shown on drawing D-02494, sheet 1 are incorrect. Placing the license renewal boundary flags in the correct location will remove the discrepancies among the three referenced drawings: D-02494-LR, sheet 1; D-07077-LR, sheet 3A; and D-07077-LR, sheet 3B.

Based on its review, the staff found the applicant's response acceptable because the license renewal boundary flags shown on drawing D-02494, sheet 1 are incorrect. Placing the license renewal boundary flags in the correct location will remove the discrepancies among the three referenced drawings: D-02494-LR, sheet 1; D 07077 LR, sheet 3A; and D-07077-LR, sheet 3B. Therefore, the staff's concerns described in RAI 2.3.3.14-3 are resolved.

2.3.3.14.3 Conclusion

The staff reviewed the LRA, the accompanying scoping boundary drawings, and RAI responses to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the PNS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the PNS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.15 Fire Protection System

2.3.3.15.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.15, the applicant described the fire protection system. The Fire Protection Program consists of design features, equipment, personnel, and procedures that combine to provide multi-tiered safeguards against a fire that could impact the health and safety of the public. Within the Fire Protection Program, the fire protection system uses the philosophy of defense in depth. The objectives of the fire protection system are to (1) rapidly detect, control, and promptly extinguish those fires that do occur; (2) provide protection for SSCs important to

safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant; and (3) deliver extinguishing agents to areas of the plant through manually and automatically actuated devices. Both water-based and gaseous fire suppression systems are used. The gaseous systems are the CO_2 and halon systems. Water suppression from duplicate sources, powered by independent means is available from the water-based system in plain water or with foam both automatically and manually through sprinkler, deluge, and hydrant/hose stations. Portable extinguishers are also available to provide an additional level of protection. The fire protection system includes physical barriers (doors, walls, seals, etc.) to inhibit the spread of fire and detection equipment for automatic suppression in selected areas. Carbon dioxide fire suppression is used where the consequences of water damage are severe and the hazard can be mitigated readily by oxygen exclusion. Halon systems provide fire protection for several areas and buildings. Design concepts used in the Fire Protection Program provide assurance that a fire will not cause the complete loss of function of SR systems, even though limited loss of redundancy within one system may occur.

The fire protection system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the fire protection system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the fire protection system performs functions that support fire protection.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides flow restriction (throttle)
- provides heat transfer
- provides adequate flow in a properly-distributed spray pattern

In LRA Table 2.3.3-12, the applicant identified the following fire protection system component types that are within the scope of license renewal and subject to an AMR:

- piping and fittings (includes carbon steel fire water tank)
- filter, fire hydrants, mulsifier, pump casing, sprinkler, strainer, and valve bodies (including containment isolation valves)
- HTX - heat exchanger shell and access cover
- HTX - heat exchanger tubes
- diesel-drivel fire pump and fuel supply line
- CO_2 fire suppression (HPCI)
- Halon fire suppression installed in the diesel generator building (DGB)

2.3.3.15.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.15 and UFSAR Section 9.5.1 using the evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff also reviewed approved FP safety evaluation report dated November 22, 1977, for BSEP Unit 1 and 2, and supplements dated November 10, 1981, July 27, 1983, December 30, 1986, May 29, 1987, and August 27, 1987. This report is referenced directly in the BSEP Unit 1 and 2 fire protection current licensing basis (CLB) and summarize the FP program and commitments to 10 CFR 50.48 using the guidance of Appendix A to Branch Technical Position (BTP) Chemical and Mechanical Engineering Branch (CMEB) 9.5-1. The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff's review of LRA Section 2.3.3.15 identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. Therefore, by letter to the applicant dated April 8, 2005, the staff issued RAIs concerning the specific issues to determine whether the applicant had properly applied the scoping criteria of 10 CFR 54.4(a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's review of the fire protection sections of the LRA:

In RAI 2.3.3.15-1, the staff stated that UFSAR Section 9.5.1.4.1.4 discusses the water fire protection system, including the fixed manual suppression system hose stations with hose racks and hose reels. LRA Section 2.3.3.15 references drawing F-02315-LR, sheet 1 "Unit 1 & 2, Charcoal Adsorber System, Miscellaneous Services, Piping & Instrumentation Diagram" for license renewal scoping boundaries for the fire protection system. Drawing F-02315-LR, sheet 1 shows hose station/hose racks AOG 59 and AOG-60, and hose station/hose reels AOG-57, AOG-58, and AOG 61 in scope. Hose station/hose reel AOG-62 is shown out of scope. Therefore, the staff requested that the applicant justify hose station/hose reel AOG-62 as being out of scope.

In its response, by letter dated May 4, 2005, the applicant stated:

> AOG-62 was incorrectly classified in the equipment data base (EDB) and, therefore, was not included in scope. However, AOG-62 is in scope and should have been marked on drawing F-02315-LR as within the scoping boundary.

Based on its review, the staff found the applicant's response acceptable because it adequately explains that the components in question are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a), but were inadvertently left unhighlighted on the license renewal drawing in question, F-02315-LR. The staff concluded that the components were correctly included within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.15-1 is resolved.

In RAI 2.3.3.15-2, the staff stated that UFSAR Section 9.5.1.4.1.4 discusses the water fire protection system, including the fixed manual suppression system hose stations with hose racks and hose reels. In UFSAR Section 9.5.1.5, the specific fire hazards analysis for fire area MWT-1 Makeup Water Treatment states: "Manual fire fighting in the area should not be difficult. A hose line and portable fire extinguishers are available in the area to assist in manual fire fighting." LRA

Section 2.3.3.15 references drawing D-02304-LR for license renewal scoping boundaries for the fire protection system. On Drawing D-02304-LR, Hose station/hose reel 2-WT-HR-#1 is shown out of scope. Therefore, the staff requested that the applicant justify this hose station/hose reel as out of scope.

In its response, by letter dated May 4, 2005, the applicant stated:

> The EDB quality classifications for credited fire protection components are B-31, B-32, B-33, B-34, B-35, and B-42. The hose reel, 2-FP-WT-HR-1, is classified as quality class D-99 (i.e., non-seismic/non-safety related). The BSEP fire protection commitment document does not identify a commitment for hose reels within the Water Treatment Building. As such, the subject hose reel does not support a License Renewal fire protection intended function, and is correctly identified as out of scope.

Based on its review, the staff found the applicant's response to RAI 2.3.3.15-2 acceptable because it adequately explains that hose reel 2-FP-WT-HR-1 in the water treatment building is not credited to meet the requirements of 10 CFR 50.48 and is not part of the plant CLB. The staff concluded that the components were correctly excluded from within the scope of license renewal and from being subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.15-2 is resolved.

In RAI 2.3.3.15-3, the staff stated that UFSAR Section 9.5.1.4.1.4 discusses the water fire protection system, including the fixed automatic suppression system. In UFSAR Section 9.5.1.5, the specific fire hazards analysis for fire area Makeup Water Treatment (MWT)-1 states: "Fire protection includes an automatic sprinkler system with heads located at the ceiling level." LRA Section 2.3.3.15 references drawing D-02304-LR for license renewal scoping boundaries for the fire protection system. On Drawing D-02304-LR (B-8), Sprinkler nozzle 764-I-J-2 is shown out of scope. Therefore, the staff requested that the applicant justify this sprinkler nozzle as out of scope.

In its response, by letter dated May 4, 2005, the applicant stated:

> Sprinkler pipe was inadvertently not highlighted on Drawing D-02304. The sprinkler piping is in scope for License Renewal.

Based on its review, the staff found the applicant's response to RAI 2.3.3.15-3 acceptable because it adequately explains that the components in question are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a), but were inadvertently not highlighted on the license renewal drawing in question, D-02304-LR. The staff concluded that the components were correctly included within the scope of license renewal and subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.15-3 is resolved.

In RAI 2.3.3.15-4, the staff stated that UFSAR Section 9.5.1.4.1.4 discusses the water fire protection system, including the fixed manual suppression system foam-water hose stations located in the diesel generator building to provide backup suppression for the four-day tank rooms and the oil bath air filters. In UFSAR Section 9.5.1.5, the specific fire hazards analysis for fire areas DG-19 Fuel Oil Tank Cell 1, DG-20 Fuel Oil Tank Cell 2, DG-21 Fuel Oil Tank Cell 3, and DG-22 Fuel Oil Tank Cell 4 states: "Manual fire fighting could be difficult should a significant

oil fire occur. Because the tanks are located below grade, access for fire fighting could be difficult. A foam standpipe is available from an adjacent area." LRA Section 2.3.3.15 references drawing D-02301-LR for license renewal scoping boundaries for the fire protection system. On Drawing D-02301-LR, the foam hose station/hose reel AFFF-HR1 is shown out of scope. Therefore, the staff requested that the applicant justify this hose station/hose reel as out of scope.

In its response, by letter dated May 4, 2005, the applicant stated:

> The CLB requires an automatic Aqueous Film Forming Foam (AFFF) System meeting the requirements of National Fire Protection Association (NFPA)-11B to protect the fuel tank bunkers. The CLB also requires two AFFF portable concentrate stations, one to be located in the DG Building and the other in the yard area for the purpose of combating fires in the day tanks, auxiliary boiler, etc. Each portable station provides 20 minutes of AFFF. The two portable AFFF concentrate stations satisfy the licensing commitment.
>
> The piping portion of the AFFF System is in scope up to the hose reel isolation valve to maintain system integrity. Fixed foam station AFFF-HR1 is shown correctly as out of scope for License Renewal.

Based on its review, the staff found the applicant's response to RAI 2.3.3.15-4 acceptable because it adequately explains that hose reel 2-FP-AFFF-HR1 in the Diesel Generator Building is not credited to meet the requirements of 10 CFR 50.48 and is not part of the plant CLB. The staff concluded that the components were correctly excluded from the scope of license renewal and from being subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.15-4 is resolved.

In RAI 2.3.3.15-5, the staff stated that UFSAR Section 9.5.1.4.1.4 discusses the water fire protection system, including the fixed manual suppression system foam-water hose stations located in the diesel generator building to provide backup suppression for the four-day tank rooms and the oil bath air filters. In UFSAR Section 9.5.1.5, the specific fire hazards analysis for fire zone DG-16 Fan Room states: "Manual fire fighting should not be difficult. Water standpipes and foam standpipes are provided to assist in manual fire fighting." LRA Section 2.3.3.15 references drawing D-02302-LR "Unit 1 & 2, Diesel Generator Building, Fire Protection Foam (AFFF) System, Piping Diagram" for license renewal scoping boundaries for the Fire Protection system. On Drawing D-02302-LR, Foam hose station/hose reels AFFF-HR2 and AFFF-HR-3 are shown out of scope. Therefore, the staff requested that the applicant justify these hose station/hose reels as out of scope.

In its response, by letter dated May 4, 2005, the applicant stated:

> The CLB requires an automatic AFFF System meeting the requirements of NFPA-11B to protect the fuel tank bunkers. Fire Protection commitment number AF-003 requires an AFFF System and oil retaining system be added to the oil air intake filters. AFFF-HR2 and AFFF-HR3 are BSEP 05-0050 manual systems and therefore not a fire protection commitment. As such, foam hose stations AFFF-HR2 and AFFF-HR3 are correctly shown out of scope.

The piping portion of the AFFF System is in scope up to the hose reel isolation valve to maintain system integrity.

Based on its review, the staff found the applicant's response to RAI 2.3.3.15-5 acceptable because it adequately explains that hose reels 2-FP-AFFF-HR2 and 2-FP-AFFF-HR3 in the Diesel Generator Building are not credited to meet the requirements of 10 CFR 50.48 and are not part of the plant CLB. The staff concluded that the components were correctly excluded from the scope of license renewal and from being subject to an AMR. Therefore, the staff's concern described in RAI 2.3.3.15-5 is resolved.

In RAI 2.3.3.15-6, the staff stated that UFSAR Section 9.5.1.4.1.4 discusses the water fire protection system, including the electric motor driven fire pump (P-2), the diesel engine driven fire pump (P-1) and the two jockey pumps (P-3 and P-4) providing water for fire suppression and fire fighting. UFSAR Section 9.5.1.4.1.5 discusses the instrumentation and control of the water supply, including the jockey pumps and the electric motor driven pump and diesel engine driven pump. LRA Section 2.3.3.15 references drawing D-04106-LR "Unit 1 & 2, Plant Fire Protection System, Piping Diagram" for license renewal scoping boundaries for the Fire Protection system. On Drawing D-04106-LR, it is unclear if the Control Panels for Pumps P-1 (Engine Driven Fire Pump), P-2 (Motor Driven Fire Pump), P-3 (Jockey Pump), and P-4 (Jockey Pump) are in scope. Therefore, the staff requested that the applicant clarify the status of these control panels, and justify exclusion if they are out of scope.

In its response, by letter dated May 4, 2005, the applicant stated that:

Electrical panels for Fire Pumps P-1 (i.e., Engine Driven), P-2 (i.e., Motor Driven) and P-3/P-4 (i.e., jockey) are in scope. The electrical enclosures are shown as managed commodities on Table 3.5.2-14 of the application.

Based on its review, the staff found the applicant's response to RAI 2.3.3.15-6 acceptable because it adequately clarifies that the components in question are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a). Therefore, the staff's concern described in RAI 2.3.3.15-6 is resolved.

In RAI 2.3.3.15-7, the staff stated that UFSAR Section 9.5.1.4.3.4 discusses propagation/damage control features that are used to prevent the unhindered spread of fire and also to protect equipment from fire exposures. License renewal section 2.3.3.15 states that physical barriers are addressed in the License Renewal review as structural commodities in Section 2.4. Therefore, the staff requested that the applicant clarify that the following have been included within the scope of license renewal, or justify the exclusion from the scope of license renewal:

(1) Impingement shields installed between exposed cables of redundant trains of safe shutdown equipment when the trains are within 5 feet vertically or 3 feet horizontally of each other.

(2) Impingement shields installed between the two fire pumps and between the diesel fire pump fuel tank and the fire pumps. (Discussed in UFSAR Section 9.5.1.5 fire hazard analysis writeup for fire area MWT-1 Makeup Water Treatment)

(3) Flame retardant coatings applied to conduit and cable trays in cable access ways and spreading areas.

(4) Fire stops in Cable Trays.

In its response, by letter dated May 4, 2005, the applicant stated that:

(1) Impingement shields are addressed within the "Fire Barrier Assembly" and "Sprayed on Coatings" commodity groups. See LRA Tables 2.4.2-6, 2.4.2-7, 2.4.2-9, 2.4.2-10, 2.4.2-11, and 2.4.2-13.

(2) Impingement shields installed between the two fire pumps and between the diesel fire pump fuel tank and the fire pumps are addressed within the "Fire Barrier Assembly" commodity group, see LRA Table 3.5.2-13. However, based on a walkdown inspection of the impingement barriers, the "Fire Barrier Assembly"between the diesel fire pump fuel tank and the fire pumps was observed to be masonry block. The LRA Table 3.5.2-14 identifies the material type of the impingement shield as only carbon steel; as such, the Table will be revised to identify the "Fire Barrier Assembly" material type as Carbon Steel and Masonry Block. Both Fire Barrier Assemblies are addressed with the Fire Protection Program and are managed as fire barriers.

(3) Flame retardant coatings applied to conduit and cable trays are addressed within the "Fire Barrier Assembly" and "Sprayed on Coatings" commodity groups. See LRA Tables 2.4.2-6, 2.4.2-7, 2.4.2-9, 2.4.2-10, 2.4.2-11, and 2.4.2-13.

(4) Fire stops in cable trays are addressed within the "Fire Barrier Assembly" and "Sprayed on Coatings" commodity groups. See LRA Tables 2.4.2-6, 2.4.2-7, 2.4.2-9, 2.4.2-10, 2.4.2-11, and 2.4.2-13.

Based on its review, the staff found the applicant's response to RAI 2.3.3.15-7 acceptable because it adequately clarifies that the components in question are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a). Therefore, the staff's concern described in RAI 2.3.3.15-7 is resolved.

2.3.3.15.3 Conclusion

The staff reviewed the LRA and RAI responses to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the fire protection system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the fire protection system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.16 Fuel Oil System

2.3.3.16.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.16, the applicant described the fuel oil (FO) system. The FO system supplies No. 2 fuel oil for use by the auxiliary boiler, diesel fire pump, and emergency diesel engines. The FO system consists of the main diesel fuel oil storage and unloading subsystem, the fire pump diesel engine fuel oil subsystem, and the auxiliary boiler fuel oil subsystem. The main fuel oil storage tank in the main diesel fuel oil storage and unloading subsystem can supply each of the DG 4-day fuel oil storage tanks with fuel to support seven days of diesel operation. The tank is not SR; however, it is within the scope for license renewal because it supports an SR function. As discussed in the UFSAR, to ensure a 7-day supply following postulated damage to the main fuel oil storage tank, fuel oil can be readily obtained by truck or rail directly to the Brunswick plant, or by barge on the Cape Fear River or Intracoastal Waterway to local docks and off-loaded into trucks for delivery to the site.

The failure of NSR SSCs in the FO system could potentially prevent the satisfactory accomplishment of an SR function. The FO system also performs functions that support fire protection. The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary/flow.

In LRA Table 2.3.3.16, the applicant identified the following FO system component types that are within the scope of license renewal and subject to an AMR:

- diesel-driven fire pump and fuel supply line
- valves body and tubing
- diesel fuel tank
- piping (aboveground pipe and fittings)
- valves (body and bonnet)
- tank (internal/external surface)

2.3.3.16.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.16 and UFSAR Section 8.3.1.1.6.2.8 using the Tier-2 evaluation methodology described in SER Section 2.3. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.3.

In conducting its review, the staff evaluated the system functions described in the LRA and UFSAR in accordance with the requirements of 10 CFR 54.4(a) to verify that the applicant had not omitted from the scope of license renewal any components with intended functions delineated under 10 CFR 54.4(a). The staff did not identify any omissions. The staff then reviewed those components that the applicant had identified as being within the scope of license renewal to verify that the applicant had not omitted any passive and long-lived components that should be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

Staff found that both "Table 2.3.3-12 Component/Commodity groups requiring aging management review and their intended functions: fire protection systems" and "Table 2.3.3-12 Component/Commodity groups requiring aging management review and their intended functions: Fuel Oil Systems" list the Diesel-Driven Fire Pump and Fuel Supply Line as a Component/Commodity requiring aging management review, with the intended function of —1 Provide pressure retaining boundary. Staff finds that the components are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a).

On the basis of its review, the staff found that the applicant has identified those portions of the engine driven fire pump fuel oil system that meet the scoping requirements of 10 CFR 54.4(a) and has included them within the scope of license renewal in LRA Section 2.3.3.16. The applicant has also included engine driven fire pump fuel oil system components that are subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) in LRA Table 2.3.3.-12. The staff did not identify any omissions.

2.3.3.16.3 Conclusion

The staff reviewed the LRA to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were identified. In addition, the staff performed a review to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were identified. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the FO system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the FO system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.17 Radioactive Floor Drains System

2.3.3.17.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.17, the applicant described the radioactive floor drains system. Buildings at BSEP are designed and constructed to serve specific purposes and contain equipment necessary for the operation of the plant and to ensure safety to the general public. Each building is fitted with the necessary support equipment to ensure that the function of the building is fulfilled. The layout of drains and routing of drains to sumps ensures that water does not accumulate on floors and that radiologically contaminated water does not mix with non-contaminated water. The function of the radioactive floor drains system is to route all floor drains to the proper disposal facility. The contaminated floor drainage system includes all floor drains from the reactor building, turbine building, AOG building, the radwaste building, and other floor drains having a potential for radioactive spillage. The collected drainage is transferred to the radwaste facility for processing.

The radioactive floor drains system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the radioactive floor drains system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the radioactive floor drains system performs functions that support EQ.

The intended functions within the scope of license renewal include the following:

- provides a pressure-retaining boundary/flow
- provides structural support/seismic integrity

In LRA Table 2.3.3-14, the applicant identified the following radioactive floor drains system component types that are within the scope of license renewal and subject to an AMR:

- piping (piping and fittings)