

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)

- valves (body and bonnet)
- flow orifice (body)
- pump (casing)
- tank (shell)
- drain system sump pumps

2.3.3.17.2 Staff Evaluation

The staff reviewed LRA 2.3.3.17 and UFSAR Section 9.3.3 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 2.3.3.17, 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 2.3.3.17-1, the staff stated that license renewal boundary drawing D-02543-LR, sheet 1B, location E-8, shows dirty radiological waste (DRW) drain piping which receives fluid from in-scope drains on the 80-foot elevation and connects to the in-scope 6-inch DRW drain to the RHR sump. The DRW drain piping is not identified as being in scope, even though it is connected to in-scope piping. Therefore, the staff requested that the applicant provide additional information to justify its determination to exclude the DRW piping at location E-8 from within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that the subject piping is within the radioactive floor drains system license renewal scoping boundary and subject to an AMR in accordance with 10 CFR 54.4(a)(2).

Based on its review, the staff found the applicant's response acceptable because the subject DRW piping is within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.17-1 is resolved.

In RAI 2.3.3.17-2, the staff stated that on license renewal drawing D 02533 LR, sheet 2, locations B-8 and C-8, for the lines identified below, the transition locations from out-of-scope to in-scope is inconsistent with the continuation drawings indicated. Therefore, the staff requested that the applicant provide additional information to resolve the apparent inconsistency in the license renewal boundary drawings.

- 1-G16-507-4-160 (D25043-1B, C-8)
- 1-G16-510-2-160 (D25046, C-1)
- 1-G16-511-2-160 (D25046, C-8)
- 2-G16-507-4-160 (D2543-1B, C-8)
- 2-G16-511-2-160 (D2546, C-8)

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

Lines 1-G16-503-3-160 and 2-G16-503-4-160, on drawing D-02533-LR, sheet 2, support the function of detecting leakage from the RCPB in accordance with Regulatory Guide (RG) 1.45. (See LRA page 2.3-77.) The connected piping and floor drain collection tank, highlighted on drawing D-02533-LR, sheet 2, at locations B-8 and C-8, were credited in the seismic stress analysis for RG 1.45 compliance. See the response to RAI 2.3.3.17-3 for additional information. Additionally, the portion of 1/2-G16-507 and 511 and 1-G16-510 in the reactor building as well as in the radwaste pipe tunnel in the vicinity of safety related SW valves are non-safety related components, which by virtue of their location, may cause adverse spatial interactions with safety related components and, therefore, are within the scoping boundary.

Based on its review, the staff agrees with the applicant's clarification discussed above and finds the applicant's response acceptable. Therefore, the staff's concern described in RAI 2.3.3.17-2 is resolved.

In RAI 2.3.3.17-3, the staff stated that LRA Table 2.3.3.3-14, "Component/Commodity Groups Requiring Aging Management Review and Their Intended Functions for the Radioactive Floor Drain System," identifies the pump casing and floor drain tank as within the scope of license renewal. On drawing D02533-LR, sheet 2, at location B-5, the line (213-4-161, 240-4-160) from the floor drain collector tank to the suction of the floor drain collector pump is not identified as within the scope of license renewal. Additionally, several other lines (234-6-160 at D-8, V71 to radwaste building wall, 528-3-160 at C-7, 532-3-160 at A-7, and 2-G16-958-3-160 at C-7, 223-6-160, 250-3-160) leading to and from the drain tank are not included within the scope of license renewal. Therefore, the staff requested that the applicant provide information to justify its determination to exclude these lines and the floor drain collector pump casing from within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that the floor drain collection tank, 2-G16-A006, on drawing D-02533-LR, sheet 2, at location B-5, was credited in the seismic stress analysis supporting the function of detecting leakage from the RCPB in accordance with RG 1.45. The tank and subject piping is associated with the liquid waste processing system described in LRA Section 2.3.3.24. As shown on LRA Table 2.3.3-19, tanks in the liquid waste processing system have been assigned the —1 intended function, "Provide pressure-retaining boundary." BSEP methodology typically assigned the —1 component intended function to pressure-retaining mechanical components designated in the EDB as NSR whose failure could impact an SR function. While the —4 function designation may have been more appropriate for the floor drain collection tank, the —1 function designation is conservative; and applicable AMRs are directed towards maintaining pressure boundary integrity. The portions of 2-G16-528/532-3-160 credited in the seismic analysis are within the scope of license renewal and appropriately highlighted on drawing D-02533-LR, sheet 2. The remaining NSR piping and

components noted in RAI 2.3.3.17-3 are not included in the seismic analysis terminating at 2-G16-A006 and, therefore, have no intended function.

Based on its review, the staff found the applicant's response acceptable because the applicant has provided justification as to why the components in question are not included within the seismic analysis and have no intended function and thereby do not need to be included within the scope of license renewal. Therefore, the staff's concern described in RAI 2.3.3.17-3 is resolved.

2.3.3.17.3 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 radioactive floor drains 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 radioactive floor drains system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.18 Radioactive Equipment Drains System

2.3.3.18.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.18, the applicant described the radioactive equipment drains system. The 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 ensure that water does not accumulate on floors and that radiologically contaminated water does not mix with non-contaminated water. The function of the radioactive equipment drains system is to route all equipment drains to the proper disposal facility. Reactor building equipment drains are collected in two separate subsystems. One handles drainage from all equipment drains located in the drywell; the other handles drainage from equipment drains located in the reactor building. Individual drywell equipment drain lines collect in branch lines and discharge to the drywell equipment drain sump; sump pumps transfer the collected fluid to the radwaste system. The system includes automatic containment isolation valves on lines penetrating the primary containment. These valves provide the primary containment isolation function following postulated DBEs.

The radioactive equipment drains system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the radioactive equipment drains system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the radioactive equipment 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 flow restriction (throttle)
- provides structural support/seismic integrity

In LRA Table 2.3.3-15, the applicant identified the following radioactive equipment drains system 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)
- flow orifice (body)
- pump (casing)
- tank (shell)

2.3.3.18.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.18 and UFSAR Section 9.3.3.3 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 2.3.3.18, 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 2.3.3.18-1, the staff stated that LRA Table 2.3.3.3-15, "Component/Commodity Groups Requiring Aging Management Review and Their Intended Functions for the Radioactive Equipment Drains System," identified the equipment drain tank as in scope for license renewal. On drawings D-25043-LR, sheet 1A; and D-02543-LR, sheet 1A, at location A-7, the equipment drain tank shows several lines entering (8" CRW drain, 6" CV-FO11, 2" 1-160) and two exiting (4" CRW vent and 524-3-161 at A-7) that are not within the license renewal boundary. Therefore, the staff requested that the applicant provide additional information to justify its determination to exclude these lines from within the scope of license renewal.

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

The Clean Radwaste (CRW) piping described in the Radioactive Equipment Drains System collects treated water from equipment leak-off for transfer to the Radwaste System. The BSEP 10 CFR 54.4(a)(2) scoping methodology allows for the exclusion from applicability of non-safety piping and components that are not normally liquid or steam-filled during operation (e.g. normally empty pipe) with a low probability of failure during actual use. Based on these considerations and operating experience, normally empty, unpressurized, non-safety CRW piping and components do not present a spatial interaction hazard for safety related components.

The Equipment Drain Tanks and connected piping, shown on drawings D-02543-LR, Sheet 1A, and D-25043-LR, Sheet 1A, illustrate this scoping approach. The Equipment Drain Tanks are normally partially filled with an overflow that vents to the atmospheric pressure Radioactive Floor Drain System through 1/2-G16-524-3-161, which has no intended function. The piping exiting the Equipment Drain Tanks and connecting to the equipment drain pumps, 1/2-G16-C007, is normally liquid-filled and within the License Renewal scoping boundary. The piping down stream of the Equipment Drain Pump is normally liquid filled, can be pressurized and is within the License Renewal scoping boundary. The only lines entering the top of the Equipment Drain Tanks shown as in-scope for License Renewal is the return line from the Equipment Drain Tank cooling heat exchanger, 1/2-G16-B002, which was conservatively assumed to be liquid-filled and pressurized.

In summary, the portion of the Radioactive Equipment Drains System marked, on D-02543-LR, Sheet 1A, and D-25043-LR, Sheet 1A at Location A-7, as being within the License Renewal scoping boundary is for compliance with 10 CFR 54.4(a)(2).

Based on its review, the staff found the applicant's response to RAI 2.3.3.18-1 acceptable, because the subject equipment drain tanks and their associated piping: are non-safety related components; do not perform an intended function which satisfies any one of the 10 CFR 54.4(a) criteria; and do not perform a spatial interaction hazard for safety related components. Therefore, the staff's concern described in RAI 2.3.3.26-1 are resolved

Based on its review, the staff found the applicant's response to RAI 2.3.3.18-1 acceptable because the subject equipment drain tanks and their associated piping are non-safety related components that do not present a spatial interaction hazard for safety related components and, thus, do not perform an intended function pursuant to the 10 CFR 54.4(a) criteria. Therefore, the staff's concern described in RAI 2.3.3.26-1 are resolved.

In RAI 2.3.3.18-2, the staff stated that license renewal drawing D-25043-LR, sheet 1A, location E-5, identifies a portion of drain piping as being within the scope of license renewal. However, the CRW line into which it flows to return to the equipment drain tank is not shown as being within scope. Therefore, the staff requested that the applicant provide additional information to justify its determination to exclude this piping from within the scope of license renewal. Also, the same drain line shown on Unit 2 drawing D-02543-LR, sheet 1A, location E-4, is not within the scope of license renewal. The applicant was also requested to provide a rationale as to why the same drain line on Unit 2 is not within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that the piping connected to hub-drain, C45HD, on drawing D-25043-LR, sheet 1A, at location E-5, was marked in error as

being within the license renewal scoping boundary. This piping is normally empty, unpressurized, NSR CRW piping with no intended function. The corresponding Unit 2 components are correctly represented on D-02543-LR, sheet 1A. Information provided in response to RAI 2.3.3.18-1 provides a more complete discussion of 10 CFR 54.4(a)(2) scoping evaluations for the radioactive equipment drains system.

Based on its review, the staff found the applicant's response acceptable, because the drawings were labeled in error. This response is consistent with RAI 2.3.3.18-1 which was also found to be acceptable. Therefore, the staff's concerns described in RAI 2.3.3.18-2 are resolved.

In RAI 2.3.3.18-3, the staff stated that license renewal drawing D-02531-LR, sheet 1, location C-7, shows the waste collector tank as being within the scope of license renewal because it provides a pressure boundary function. There are several lines that exit the tank that are not included within the scope of license renewal. Therefore, the staff requested that the applicant provide additional information to justify its reason for excluding the piping identified below and associated isolation valves from the scope of license renewal.

- Line 14-4-161 and valve F036
- Line 35-4-161 and valve F033, F143
- Line 677-1/2-161 and its first isolation valve
- Line 2G41-59-8-154
- Instrument level transmitter N026 and valve V338
- Waste collector pump suction line 1-4-152 and valve F034
- Line 9-8-160 and 2-inch CDW/SCRD cap

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

The Waste Collection Tank, 2-G16-A002, on drawing D-02531-LR, Sheet 1, at Location C-7, was credited in the seismic stress analysis as supporting the function of detecting leakage from the RCPB in accordance with RG 1.45. The tank and subject piping is associated with the Liquid Waste Processing System described in LRA Section 2.3.3.24. As shown on LRA Table 2.3.3-19, tanks in the Liquid Waste Processing System have been assigned the —1 intended function, "Provide pressure-retaining boundary." BSEP methodology typically assigned the —1 component intended function to pressure retaining mechanical components designated in the EDB as non-safety whose failure could impact a safety function. While the —4 function designation may have been more appropriate for the Waste Collection Tank, the —1 function designation is conservative and applicable aging management reviews are directed towards maintaining pressure boundary integrity. The Waste Collection Pump suction line, 2-G16-1-4-152, and isolation valve, 2-G16-F034, are within the system scoping boundary and BSEP 05-0050 Enclosure 1 Page 45 of 87 should have been highlighted on drawing D-02531-LR, Sheet 1. The remaining non-safety piping and components noted in RAI 2.3.3.18-3 are not included in the seismic analysis terminating at 2-G16-A002 and, therefore, have no intended function.

Based on its review, the staff found the applicant's response acceptable because the applicant has corrected errors with the waste collection pump suction line, 2-G16-1-4-152, and isolation valve, 2-G16-F034. The remaining components are consistent with the response for those

similar items in RAI 2.3.3.18-1 and 2 and are also acceptable. Therefore, the staff's concerns described in RAI 2.3.3.18-3 are resolved.

2.3.3.18.3 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 radioactive equipment drains 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 radioactive equipment drains system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.19 Makeup Water Treatment System

2.3.3.19.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.19, the applicant described the makeup water treatment system (MWTS). The MWTS supplies all normal requirements for demineralized water throughout the plant. The water supply to the MWTS is the county water system (formerly the supply was from the well water system). Piping in the MWTS is used to supply county water directly to the fire protection water tank for makeup. Demineralized water from the MWTS is supplied to the 200,000-gallon demineralized water storage tank from which redundant pumps distribute it through the plant demineralized water piping. The MWTS is a shared system between units providing a supply of high purity water free of materials that could become radioactive.

The MWTS contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the MWTS could potentially prevent the satisfactory accomplishment of an SR function. In addition, the MWTS 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 MWTS component types that are within the scope of license renewal and subject to an AMR:

- piping (piping and fittings)
- valves (body and bonnet)
- piping (piping and fittings)
- valves (body and bonnet)
- tank (shell)

2.3.3.19.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.19 and UFSAR Section 9.2.3 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 within 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 2.3.3.19, 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 2.3.3.19-1, the staff stated that LRA Table 2.3.3-16 identifies the intended function for demineralized water system tank (shell) components requiring aging management review as —1, "Provide pressure-retaining boundary." License renewal boundary drawings D-02040-LR, sheet 1A (quadrant C-6), and D-02040-LR, sheet 1B (quadrant C-4), show Unit 1 and 2 CST shells as being within the scope of license renewal. However, some of the Unit 1 and 2 CST shell nozzle locations are connected to non-isolable portions that are shown as not being within scope of license renewal and some isolable piping that are shown as not within scope up to and including the first isolation valve. Therefore, the staff requested that the applicant provide additional information justifying the in-scope boundaries selected for the non-isolable piping connected to CST shell nozzles.

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

The CSTs are non-safety related, located in the yard and in the scope of License Renewal under 10 CFR 54.4(a)(3), for compliance with Station Blackout (SBO) requirements. UFSAR Section 9.2.6.2 describes the configuration of the CST, specifically identifying 12 inch and 16 inch piping with connection centerlines to the tank at the 10 foot level that preserve the inventory below that point for use by the High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) systems. The UFSAR notes that the physical arrangement of the tank and associated piping assures a reserve capacity of 74,000 gallons, and that additional reserve capacity is provided by an administrative limit at the 10 foot level to provide a total HPCI/RCIC reserve inventory of 105,700 gallons. The NRC Safety Evaluation Report (SER) for SBO compliance notes that the 10 foot level assures an inventory greater than 103,380 gallons, and is therefore sufficient for the coping duration. A review of the BSEP Extended Power Uprate (EPUR) submittal confirms that these limits were not affected by uprated power conditions. Based on these considerations, BSEP is including piping connected to the Unit 1 and 2 CSTs at or below the 10 foot level in the scope of License Renewal. In addition to piping connected to nozzles —1 and —12, which are already in scope, this includes the following connected piping up to their first isolation valves:

- Condensate transfer pump suction line connected to nozzle —2,
- CRD pump condensate return line connected to —3,
- Condensate supply line connected to nozzle —9,

- Unit 1 and 2 CST cross-connect lines connected to nozzles –8 and –13,
- HPCI/RCIC test return line connected to nozzle –14, and
- Drain line connected to nozzle –5.

The tank volume above the 10 foot level is not needed for compliance with SBO, and piping connected above this point does not satisfy any license renewal scoping criteria.

The piping and equipment included in license renewal scope, as identified above, will be managed internally with the Water Chemistry and the One-Time Inspection Programs, and externally with the Systems Monitoring and Buried Piping and Tanks Inspection Programs.

Based on its review, the staff found the applicant's response acceptable because the applicant confirmed that the tank volume below the CST 10-foot elevation required for compliance with SBO, and piping up to their first isolation valves piping connected to the Units 1 and 2 CSTs at or below the CST 10-foot elevation will be included in the scope of license renewal. Therefore, because the remaining CST nozzles and attached piping will not result in a loss of the tank shell pressure-retaining function to deliver sufficient water to the HPCI System during an SBO, the staff's concerns described in RAI 2.3.3.19-1 are resolved.

In RAI 2.3.3.19-2, the staff stated that LRA Table 2.3.3 16 identifies the intended function for MWTS piping components requiring aging management review as —1 "Provide pressure-retaining boundary." License renewal boundary drawing D-25043-LR, sheet 1A (quadrants F-4 and F-5), identifies a common drain header and selected connecting RWCU drain piping as within the scope of license renewal. For two RWCU drain lines, the in-scope boundary extends to piping shown on drawing D-25028-2B (quadrants B-2 and B-6). This is inconsistent with sheet 1A of license renewal boundary drawing D-02543-LR (quadrants F-4 and F-5) which shows this piping as not within the scope of license renewal. Drawing D-25028-2B is not identified in LRA Section 2.3.3.19 as an MWST boundary drawing for license renewal and was not made available for staff review. Therefore, the staff requested that the applicant provide additional information to explain these inconsistencies and the basis for the boundary determinations.

In its response, by letter dated May 4, 2005, the applicant stated that the common drain header to C45HD and connecting RWCU drain piping to D-25028-2B shown on D-25043-LR, sheet 1A, at coordinates F-4 and F-5, is not within the scope of license renewal and were inadvertently highlighted. The staff found the applicant's response acceptable and, therefore, the staff's concern described in RAI 2.3.3.19-2 resolved.

2.3.3.19.3 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 MWTS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the MWTS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.20 Chlorination System

2.3.3.20.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.20, the applicant described the chlorination (CL) system. The CL system provides a means of treating the SW and CW systems against biological growth. For control room habitability considerations, chlorine detectors are mounted at the control room air intakes, and attached to the wall of the SW intake structure immediately adjacent to the rail siding where the chlorine tank car is located. In the event high chlorine is detected, local and control room alarms are activated, and the control room isolation dampers automatically close. The CL system has a total of six components that place portions of this system within the scope of license renewal. Two of the six are electrical components that actuate isolation valves required to maintain the function of an SR system (the SW system). Scoping and screening of electrical/I&C components/commodities are addressed in LRA Section 2.5. The remaining components are panels designated quality class due to seismic considerations only. The panels are classified as seismically analyzed to avoid adverse interactions with SR SSCs during an earthquake. Panels are addressed as civil commodities in LRA Section 2.4.

The CL system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the CL system could potentially prevent the satisfactory accomplishment of an SR function. The CL system components that are within the scope of license renewal are electrical and I&C components/commodities or civil commodities, which are discussed in LRA Sections 2.5 and 2.4, respectively.

2.3.3.20.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.20 and UFSAR Section 10.4.5.2 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).

2.3.3.20.3 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 CL 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 CL system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.21 Potable Water System

2.3.3.21.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.21, the applicant described the potable water system (PWS). The PWS supplies the necessary water for onsite drinking and sanitary services and makeup to various components in miscellaneous plant systems. This system is supplied by the county water supply. The PWS is not essential for safe shutdown of the plant and does not satisfy any SR quality criteria. Based on the license renewal review, this system has components that are within the scope of license renewal because of potential spatial interactions with SR components. A potable water line traverses the control building battery rooms to supply water in the radwaste building. 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 PWS 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 2.3.3-17, the applicant identified the following PWS component types that are within the scope of license renewal and subject to an AMR:

- piping (piping and fittings)
- valves (body and bonnet)
- tank (shell)

2.3.3.21.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.20 and USFAR Section 9.4.2 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).

2.3.3.21.3 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 PWS components that are within the scope of license renewal, as required by

10 CFR 54.4(a), and that the applicant adequately identified the PWS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.22 Process Radiation Monitoring System

2.3.3.22.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.22, the applicant described the process radiation monitoring (PRM) system. The PRM system is designed to continuously monitor radioactivity within the plant. A number of radiation monitors and monitoring systems are provided on process liquid and gas lines that may serve as discharge routes for radioactive materials. These include the following: (1) main steam line radiation monitoring system, (2) condenser off-gas radiation monitoring system, (3) main stack radiation monitoring system, (4) liquid process radiation monitoring system, (5) reactor building ventilation radiation monitoring system, (6) turbine building ventilation radiation monitoring system, and (7) AOG charcoal absorber system gaseous discharge monitoring system. The main steam line monitors annunciate alarms in the control room when the radiation level of the steam surpasses a certain level. The processes are continuously sampled for particulate and iodine, and the samples are routinely analyzed. SR process radiation monitors in the reactor building exhaust can initiate reactor building isolation and startup of the SGTS. Monitors in the SW system are used to assure that effluents will have radiation levels below preestablished limits.

The PRM system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the PRM system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the PRM 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 2.3.3-18, the applicant identified the following PRM system component types that are within the scope of license renewal and subject to an AMR: closed-cycle cooling water system (piping specialties).

2.3.3.22.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.22 and UFSAR Sections 11.5.1 through 11.5.8 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).

2.3.3.22.3 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 PRM 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 PRM system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.23 Area Radiation Monitoring System

2.3.3.23.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.23, the applicant described the area radiation monitoring (ARM) system. The ARM system is designed to detect, indicate, and record (as required) the radiation level of selected points throughout BSEP. Permanently mounted system instrument channels actuate annunciators in the control room when the sensed radiation level exceeds upscale or downscale trip points to warn personnel of increased radiation levels or equipment malfunction. The system consists of the following: (1) ARM system, (2) drywell high range area monitoring system, and (3) airborne radiation monitoring system. The ARM system detectors are located strategically throughout the site. These detectors are located based upon the need to furnish information relative to gamma levels in plant areas. The detectors provide a long-term, post-accident monitoring function. The airborne radiation monitoring system uses fixed instruments to monitor particulates, halogens, and noble gases in the reactor building vents and in the drywell. In addition, continuous air monitors are located in critical areas of the plant and may be moved as conditions require.

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

The ARM system components that are within the scope of license renewal and subject to an AMR are addressed as electrical and I&C component/commodities or civil commodities in LRA Section 2.5 or 2.4, respectively.

2.3.3.23.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.20 and UFSAR Section 112.3.4 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).

2.3.3.23.3 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 ARM 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 ARM system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.24 Liquid Waste Processing System

2.3.3.24.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.24, the applicant described the liquid waste processing system. The liquid waste processing system functions to collect, treat, and process potentially radioactive liquid waste for reuse or controlled discharge in compliance with established regulatory requirements. The system processes radioactive or potentially radioactive liquid wastes of different purities and chemical conditions. Principal sources of liquid wastes are equipment drains (high purity), floor drains (medium to low purity), chemical wastes (very low purity), detergent, and oily liquid drains. Liquid radwaste is classified in two categories; clean radioactive waste (CRW) and dirty radioactive waste (DRW). CRW has the following properties: low or high activities, low conductivity, low solid content and neutral pH. DRW has the following properties: low activity, moderate conductivity, moderate solid content and neutral pH. The properties of each category determine the treatment and processing of the liquid waste collected by this system.

The failure of NSR SSCs in the liquid waste processing system could potentially prevent the satisfactory accomplishment of an SR function. The liquid waste processing system also 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 structural support/seismic integrity

In LRA Table 2.3.3-19, the applicant identified the following liquid waste processing system component types that are within the scope of license renewal and subject to an AMR:

- piping (piping and fittings)
- valves (body and bonnet)
- immersion element (pressure retaining housing)
- tank (shell)

2.3.3.24.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.24 and UFSAR Section 11.2 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 2.3.3.24 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 2.3.3.24-1, dated April 8, 2005, the staff stated that LRA Table 2.3.3.3-19, "Component/Commodity Groups Requiring Aging Management Review and Their Intended Functions for the Liquid Waste Processing System," identified several tanks within the scope of license renewal because they provide the pressure boundary function. License renewal drawing D-02534-LR, sheet 1, locations E-3 and E-5, show waste neutralizer tanks A and C, respectively. Drawing D-02534-LR, sheet 2, locations E-4 and E-6, show waste neutralizer tanks B and D, respectively. Drawing D-02492-LR, location B-3, shows the concentrated waste tank. Each drawing shows several lines that enter each tank that are not identified as within scope for license renewal. Therefore, the staff requested that the applicant provide additional information to justify its reason for excluding the lines, identified below, up to the closest isolation valve from within the scope of license renewal.

"A" Waste Neutralizer Tank

- Line 297-6-161 and valves F224A, V1379
- Line 302-3-Z-5 and valves, V14A, F231A, V1086
- Line 338-8-161
- Line 292-4-161, valve F222A
- Line 337-8-161 (cross tie between A and C tanks)

"C" Waste Neutralizer Tank

- Line 291-4-161, valve F222C
- Line 296-6-161, valve F224C
- Line 301-3-Z-5, valves V14C, V13C, F231C
- Line 336-8-161

"B" Waste Neutralizer Tank

- Line 299-6-161, valve F224B
- Line 304-3-Z-5, valves V14B, V13B, V1087, F231B

- Line 338-8-161
- Line 292-4-161, valve F222B
- Line 339-8-161 (cross tie between B and D tanks)

"D" Waste Neutralizer Tank

- Line 293-4-161, valve F222D
- Line 296-6-161, valve F224D
- Line 303-3-Z-5, valves V14D, V13D, F231D
- Line 336-8-161

Concentrated Waste Tank Drawing

- Line 997-2-162
- Line 353-1 ½-162, valve F281
- Line 355-3-160
- Valve V5019

In its response, by letter dated May 4, 2005, the applicant stated that the stainless steel waste neutralizer tanks, 2-G16-A025A/B/C/D, on drawings D-2534-LR, sheets 1 and 2, and concentrated waste tank, 2-G16-A026, on drawing D-02492-LR are NSR components in the liquid waste processing system. BSEP conservatively brought these tanks within the scope of license renewal on the basis of their being seismically analyzed to assure continued function during an earthquake. A review of the licensing basis of these tanks shows (1) the applicant agreed to a seismic design with the Atomic Energy Commission/Division of Reactor Licensing during evaluation of the radwaste system design against 10 CFR Part 20 limits, and (2) that their failure would not result in exceeding 10 CFR Part 100 limits or adversely impacting any SR function. The license renewal boundaries reflected in the license renewal boundary drawings are limited to the tanks and connected piping included in the seismic design, consistent with the design and licensing basis.

Based on its review, the staff found the applicant's response acceptable because NSR piping and components noted in RAI 2.3.3.24-1 are not included in the seismic analysis and do not perform any intended function within the meaning of the 10 CFR 54.4(a) criteria. Therefore, the staff's concern described in RAI 2.3.3.24-1 is resolved.

2.3.3.24.3 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 liquid waste processing 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 liquid waste processing system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.25 Spent Fuel System

2.3.3.25.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.25, the applicant described the spent fuel system. The spent fuel system includes the new fuel racks, spent fuel racks, underwater equipment storage racks; the spent fuel shipping cask; and associated handling equipment. The new and spent fuel storage racks are designed to maintain their structural integrity in the event of an earthquake and to avoid criticality of the fuel. The spent fuel storage racks are classified as SR. In the license renewal review, the spent fuel storage racks and equipment storage racks are evaluated as structures and are addressed in SER Section 2.4. The new fuel storage racks do not perform any intended functions for license renewal.

The spent fuel system components that are within the scope of license renewal and subject to an AMR are evaluated as structural components in LRA Section 2.4.

2.3.3.25.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.25 and UFSAR Sections 9.1.2 and 2.4 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).

2.3.3.25.3 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 spent fuel 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 spent fuel system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.26 Fuel Pool Cooling and Cleanup System

2.3.3.26.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.26, the applicant described the fuel pool cooling and cleanup system. The fuel pool cooling and cleanup system cools the spent fuel storage pool by transferring decay heat through heat exchangers to the reactor building closed cooling water system. During

refueling operations, the system is also capable of cooling the reactor cavity and dryer separator storage pit. Water purity and clarity in the storage pool, reactor well, and dryer-separator storage pit are maintained by filters and demineralizers. The system consists of two fuel pool cooling pumps, two heat exchangers, two filter demineralizers, two skimmer surge tanks, and associated piping, valves, and instrumentation. The pumps circulate the pool water in a closed loop, taking suction from the skimmer surge tanks, through the heat exchangers, circulating the water through the filter demineralizer and discharging it through diffusers at the bottom of the fuel pool and reactor well.

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

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

- provides a pressure-retaining boundary/flow
- provides flow restriction (throttle)

In LRA Table 2.3.3-20, the applicant identified the following fuel pool cooling and cleanup system component types that are within the scope of license renewal and subject to an AMR:

- piping (piping, fittings, and flanges)
- valves (check and hand valves) (body and bonnet)
- heat exchanger (shell and access cover)
- heat exchanger (channel head and access cover)
- pump (casing)

2.3.3.26.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.26 and UFSAR Section 9.1.3 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 2.3.3.26 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 2.3.3.26-1, dated April 8, 2005, the staff stated that UFSAR Section 9.1.3.3 states that there are non-seismic drain connections located in the refueling canal between the fuel pool inner gate and the barrier that could drain the fuel pool below the top of the stored fuel if a seismic event occurred when the fuel pool gates are removed for refueling. Plugs are installed in

these drain connections during refueling to prevent loss of water below the elevation of the top of the barrier after a seismic event. However, the drain lines in question, G41-75-1-1/2-161, G41-108-3-161, 111-1 and 1/2-161, 107-1 and 1/2-161, and 82-1-161, shown on drawings D-25049, Sheet 1B, location D-4, and D-02549 sheet 1B, location D-4, respectively, are not identified as being within scope for license renewal. Therefore, the staff requested that the applicant provide additional information to justify its reason for excluding these sections of drain piping from the scope of license renewal.

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

As noted in USFAR Section 9.1.3.3, the design of the fuel pool places the top of the stored fuel at a lower elevation than the top of the barrier located between the reactor well and the fuel storage pool. However, non-seismic drain connections located in the refueling canal between the fuel pool inner gate and the barrier could drain the fuel pool below the top of the stored fuel if a seismic event occurred when the fuel pool gates are removed for refueling.

Because the subject lines are non-safety and not seismically designed, plugs are installed into G41-75-1-1/2-161 and G41-108-3-161 during refueling to prevent the loss of fuel pool water below the elevation of the top of the barrier after a seismic event. G41-111-1-1/2-161, in each unit, is on the vessel side of this barrier and drain well above the required level. There is a baffle on top of the barrier between G41-75-1-1/2-161 and G41-111-1-1/2-161 that ensures the fuel pool water level is adequate without plugging of G41-111-1-1/2-161. G41-82-1-161 is a 1-inch stainless steel leak-off monitoring line entirely imbedded in concrete that drains back into fuel pool leak-off monitoring. Even if these non-safety drain lines were to experience age-related degradation, no loss of intended function would occur.

Based on its review, the staff finds the applicant's response to RAI 2.3.3.26-1 acceptable, because, the subject lines are non-safety related components and do not present a spatial interaction hazard for safety related components, thus, do not perform an intended function within the meaning of the 10 CFR 54.4(a) criteria. Furthermore, these lines are not filled with liquid or steam during plant operation. Therefore, the staff's concerns described in RAI 2.3.3.26-1 are resolved.

2.3.3.26.3 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 fuel pool cooling and cleanup 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 fuel pool cooling and cleanup system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.27 HVAC Diesel Generator Building

2.3.3.27.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.27, the applicant described the HVAC diesel generator building. The purpose of the HVAC diesel generator building is to maintain temperature conditions to allow for optimum operation of equipment located in the diesel generator building and fuel oil storage tank vault while providing comfort and safety for attendant personnel even during design-basis conditions. This system supplies ventilation for the DG cells, associated 4160 VAC emergency switchgear rooms, 480 VAC emergency switchgear rooms, diesel generator building basement area, and the tank vault area.

The HVAC diesel generator building contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the HVAC diesel generator building could potentially prevent the satisfactory accomplishment of an SR function. In addition, the HVAC diesel generator building 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 structural support/seismic integrity

In LRA Table 2.3.3-21, the applicant identified the following HVAC diesel generator building 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)
- duct (duct fittings, access doors, and closure bolts)
- duct (equipment frames and housing)
- duct (seals in dampers and doors)

2.3.3.27.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.27 and UFSAR Section 9.4.7 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.

2.3.3.27.3 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 diesel generator building 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 diesel generator building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.28 HVAC Reactor Building

2.3.3.28.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.28, the applicant described the HVAC reactor building. The HVAC reactor building system consists of two basic systems: the normal system and the emergency cooling system. During normal operation, the HVAC reactor building equipment provides a suitable ambient temperature for plant personnel and equipment by providing "once through" ventilation and cooling using outside air. The system maintains a negative pressure on the reactor building. The primary containment cooling system uses NSR fan coil cooling units, cooled by RBCCW, to provide drywell cooling during normal reactor operation. The drywell and torus purge subsystem can be used to purge primary containment via either a purge system exhaust fan or the standby gas treatment system. The reactor building emergency cooling subsystem provides SR cooling for the RHR, HPCI, RCIC, and CS rooms to maintain the environment in those areas required for operation of equipment during emergency operation. Dampers in the system operate to maintain secondary containment integrity in response to an accident signal. In the accident mode, the reactor building ventilation normal supply and exhaust equipment is shut down and the duct isolation dampers at the reactor building pressure boundaries are closed (secondary containment isolation). The SGTS is operated to maintain a negative pressure in the reactor building. During this mode, the reactor building HVAC system performs an SR function; since it supports limiting the release of radioactivity and provides cooling to SR equipment of the core standby cooling systems following DBEs.

The HVAC reactor building contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the HVAC reactor building could potentially prevent the satisfactory accomplishment of an SR function. In addition, the HVAC reactor building 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
- provides heat transfer

In LRA Table 2.3.3-22, the applicant identified the following HVAC reactor building 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)
- duct (duct fittings, access doors, damper housings, and closure bolts)
- duct (equipment frames and housing, 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)

2.3.3.28.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.28 and UFSAR Sections 9.4.2, 9.4.3, and 9.4.6 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 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) and need to be identified in LRA Table 2.3.3-22. The staff did not identify any omissions.

2.3.3.28.3 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 reactor building 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 reactor building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.29 HVAC Service Water Intake Structure

2.3.3.29.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.29, the applicant described the HVAC service water intake structure. The HVAC service water intake structure consists of two 100-percent capacity independent ventilation systems (one for each unit). Each independent system contains discharge fans, discharge dampers, associated electrical equipment, instrumentation and controls, and supply air openings with bird screens. The system is necessary to control the environment in SR equipment areas so that contained SR equipment can perform its SR function. The HVAC

service water intake structure provides ventilation and cooling of the SW intake structure for proper operation of SW system equipment; however, the fans are not ducted and do not have an associated pressure boundary.

The HVAC service water intake structure contains SR components that are relied upon to remain functional during and following DBEs.

The HVAC service water intake structure components that are within the scope of license renewal and subject to an AMR are addressed as electrical and I&C component/commodities or civil commodities in Sections 2.5 and 2.4, respectively.

2.3.3.29.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.29 and UFSAR Section 9.4.10.2.7 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 2.3.3.29 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 2.3.3.29-1, dated May 18, 2005, the staff requested that the applicant clarify whether all the system components, including discharge fan housings, discharge damper housings, screens (bird screens) for air intake (supply air) and exhaust structures 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:

SWIS fans 1-VA-1A-EF-SWIS and 2-VA-2A-EF-SWIS, including fans, dampers, bird screens, and mountings/supports are within the scope of license renewal in accordance with 10 CFR 54.4(a). The SWIS fans, dampers, and bird screens are not ducted, but are mounted in a shrouded housing directly into an opening in the SWIS wall. Considering this configuration, the initial aging management approach reflected in the LRA was to consider that the fans and dampers were active, and the passive features were essentially mounting/support features and would be addressed as part of the SWIS building structure. BSEP has revised this approach to specifically address the subcomponents that the NRC has identified (i.e., fan and damper housings and bird screens) in the AMR for SWIS Auxiliary Systems.

This revision modifies the discussion for the Heating, Ventilation, and Air Conditioning (HVAC) system for the SWIS described in LRA Section 2.3.3.29 to reflect that the system includes fan and damper housings, bird screens, and mountings/supports that are passive, long-lived features requiring AMR in accordance with 10 CFR 54.21(a)(1). Accordingly, three line items (i.e., one for fan housings, one for damper housings, and one for bird screens) will be added to the AMR associated with LRA Table 3.3.2-24.

The Systems Monitoring Program is described in LRA Subsection B.2.29, and includes criteria applicable to the components and aging effects addressed herein. Structural supports and mounting of the fan/damper housing will continue to be addressed as structural commodities within the SWIS building structure in LRA Table 3.5.2-7, with the Structures Monitoring Program specified for aging management.

Based on its review, the staff found the applicant's response acceptable because the applicant clarified that all applicable system components consisting of discharge fan housings, discharge damper housings, screens (bird screens) for air intake (supply air) and 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).

2.3.3.29.3 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 service water intake structure 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 service water intake structure components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.30 HVAC Turbine Building

2.3.3.30.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.30, the applicant described the HVAC turbine building. The HVAC turbine building is designed to provide effective control of airflow throughout the turbine building to maintain all areas at the temperature conditions which provide optimum operation of equipment and comfort and safety of personnel, to limit the spread of contamination during power and shutdown operations of the plant, and to minimize radioactive releases. The system is a recirculating system, designed to operate during startup, normal operation, and shutdown of the plant. The turbine building is maintained at a slight negative pressure by a separate air filtration exhaust system to prevent buildup of radioactivity in the building and to ensure that no unfiltered leakage occurs. The treatment of exhaust air by filters and charcoal absorption filters removes airborne particulates and gaseous radioactivity that might be present before discharging this air to the atmosphere. A separate ventilation system is provided for the reactor recirculation pumps motor generator set room, which maintains the motor generator set room at a higher pressure than the turbine building, thereby, preventing leakage of radioactivity into the room.

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

The HVAC turbine building components that are within the scope of license renewal and subject to an AMR are addressed as civil commodities in LRA Section 2.4.

2.3.3.30.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.20 and UFSAR Section 9.4.5 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.

2.3.3.30.3 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 turbine building 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 turbine building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.31 HVAC Radwaste Building

2.3.3.31.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.31, the applicant described the HVAC radwaste building. The HVAC radwaste building limits the spread of contamination within the radwaste building, ensuring air movement from clean areas to areas with progressively higher contamination potential. The system also keeps the building at a slight negative static pressure to prevent the exfiltration of potentially radioactive air through other-than-normal exhaust paths connected to the plant stack.

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

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

2.3.3.31.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.31 and UFSAR Section 9.4.5 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.

2.3.3.31.3 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. On the basis of its review, the staff concluded that there is reasonable assurance that the applicant adequately identified the HVAC radwaste building 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 radwaste building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1). No omissions were identified.

2.3.3.32 *Torus Drain System*

2.3.3.32.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.32, the applicant described the torus drain system. The torus drain system functions as part of the primary containment pressure boundary, and it supports retention of the suppression pool inventory following postulated fires and SBO events.

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

In LRA Table 2.3.3-23, the applicant identified the following torus drain system component type that is within the scope of license renewal and subject to an AMR: piping and fittings (misc. auxiliary and drain piping and valves).

2.3.3.32.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.32 and UFSAR Section 6.2 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).

2.3.3.32.3 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 torus drain 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 torus drain system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.33 Civil Structure Auxiliary Systems

2.3.3.33.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.33, the applicant described the civil structure auxiliary systems. Most civil structures have support systems that provide auxiliary services for the structure, such as floor drains, sump pumps, and associated discharge piping and valves. These systems may be within the scope of license renewal because they contain components that perform license renewal intended functions. These systems have been evaluated to identify mechanical or electrical/I&C components that support license renewal intended functions. Applicable components include: (1) primary containment auxiliary system, (2) SW intake structure auxiliary system, (3) reactor building auxiliary system, (4) AOG building auxiliary system, (5) auxiliary boiler house auxiliary system, (6) diesel generator building auxiliary system, (7) control building auxiliary system, and (8) radwaste building auxiliary system.

The civil structure auxiliary systems contain SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the civil structure auxiliary systems 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 2.3.3-24, the applicant identified the following civil structure auxiliary systems 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)
- gauge glasses (pressure-retaining housing)

2.3.3.33.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.33 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 2.3.3.33 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 2.3.3.33-1, dated April 8, 2005, the staff stated that the civil structure auxiliary systems are not described in the UFSAR. The LRA states that civil structure auxiliary systems are within the scope of license renewal. LRA Table 2.3.3 24, which lists component commodity groups requiring an AMR and their intended functions, identifies several components and commodity groups that are within the scope of license renewal; however, no license renewal drawings were provided to determine if the list is complete. Therefore, the staff requested that the applicant provide additional information to allow for a determination that the appropriate civil structure auxiliary systems have been included within the scope of license renewal.

In its response, by letter dated May 4, 2005, the applicant stated that the components noted in the civil/structural auxiliary system consist of miscellaneous equipment database (EDB) entries of a mechanical type without a corresponding system designation or piping and instrument drawing. The civil/structural auxiliary system components identified as within the scope of license renewal provide a mechanical function in support of a structure (e.g., sump pumps for a building). All pressure-retaining mechanical components associated with these civil/structural auxiliary systems were included in LRA Table 2.3.3-24.

Based on its review, the staff found the applicant's response acceptable because a summary of determinations for structure-systems 8020, 8230, 8340, and 8355 can be found in BNP-LR-103 - "Mechanical Screening for Aux. Systems Calculation," and was found to be complete. Therefore, the staff's concern described in RAI 2.3.3.33-1 is resolved.

2.3.3.33.3 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 civil structure auxiliary systems components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the civil structure auxiliary systems components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.34 Non-Contaminated Water Drainage System

2.3.3.34.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.34, the applicant described the non-contaminated water drainage system (NCWDS). The NCWDS is part of the sewage, sanitary, and roof drains system that collects storm water, non-contaminated drainage, and sanitary wastes, and transports them to collection and processing points for treatment prior to off-site discharge. The overall system is not essential for safe shutdown of the plant and does not satisfy any SR quality criteria; however, the NCWDS has components (roof drain piping) that are within the scope of license renewal because of potential spatial interactions with SR components. 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 NCWDS 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 2.3.3-25, the applicant identified piping (piping and fittings) as the NCWDS component type that is within the scope of license renewal and subject to an AMR.

2.3.3.34.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.34 and USFAR Section 9.3.3.2.3 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).

2.3.3.34.3 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 NCWDS components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the NCWDS components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4 Steam and Power Conversion Systems

In LRA Section 2.3.4, the applicant identified the structures and components of the steam and power conversion systems that are subject to an AMR for license renewal.

The applicant described the supporting structures and components of the steam and power conversion systems in the following sections of the LRA:

- 2.3.4.1 main steam system
- 2.3.4.2 extraction steam system
- 2.3.4.3 moisture separator reheater drains system and reheat steam system
- 2.3.4.4 auxiliary boiler
- 2.3.4.5 feedwater system
- 2.3.4.6 heater drains and miscellaneous vents and drains
- 2.3.4.7 condensate system
- 2.3.4.8 turbine building sampling system
- 2.3.4.9 main condenser gas removal system
- 2.3.4.10 turbine electro-hydraulic control system
- 2.3.4.11 turbine generator lube oil system
- 2.3.4.12 stator cooling system
- 2.3.4.13 hydrogen seal oil system

The corresponding subsections of this SER (2.3.4.1 – 2.3.4.13, respectively) present the staff's review findings with respect to the steam and power conversion systems for Units 1 and 2.

2.3.4.1 Main Steam System

2.3.4.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.1, the applicant described the main steam (MS) system. The MS system delivers steam from the nuclear steam supply system (NSSS) piping downstream of the outermost primary containment isolation valve to the turbine throttle over the full range of reactor power operation. This system also conveys steam to the second stage reheaters, condenser steam-jet air ejectors, turbine steam seal regulators, main turbine bypass, and reactor feed pump drive turbines. The turbine stop and control valves, control isolation valves, turbine bypass valves, and associated hydraulic operators (hydraulic fluid supplied by the electro-hydraulic control (EHC) system) are included in this system. There are four main steam lines conveying steam to the turbine stop valves, with cross connections to the turbine bypass system and other equipment as required. This system interfaces with the RCPB (but is not part of the RCPB) and does not penetrate the primary containment.

The failure of NSR SSCs in the MS system could potentially prevent the satisfactory accomplishment of an SR function. The MS system also 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 post-accident containment, holdup, and plateout of MSIV bypass leakage

In LRA Table 2.3.4-1, the applicant identified the following MS system component types that are within the scope of license renewal and subject to an AMR:

- piping and fittings [steam lines to main turbine (Group B)]
- piping and fittings (steam drains)
- valves (check, control, hand, motor operated, safety valves) (body and bonnet)

2.3.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.1 and UFSAR Section 10.3.2 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 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).

2.3.4.1.3 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 MS 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 MS system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.2 Extraction Steam System

2.3.4.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.2, the applicant described the extraction steam system. The extraction steam system provides steam heating to two strings (A and B) of five feedwater heaters which progressively increase the feedwater temperature before it enters the reactor. The system also provides steam to the heater drains deaerator to remove non-condensable gases from the condensate. This system consists of the piping and valves that extract steam from selected stages of the high pressure (HP) and low pressure (LP) turbines and supply the steam to the

shell side of the feedwater heaters. Non-return valves are used to prevent overspeed of the turbine due to flashback of the condensate in the heaters after a turbine trip.

The failure of NSR SSCs in the extraction steam system could potentially prevent the satisfactory accomplishment of an SR function. The extraction steam system component types that are within the scope of license renewal and subject to an AMR are addressed as civil commodities in Section 2.4.

2.3.4.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.2 and USFAR Section 10.3.2 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).

2.3.4.2.3 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 extraction steam 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 extraction steam system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.3 Moisture Separator Reheater Drains System and Reheat Steam System

2.3.4.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.3, the applicant described the moisture separator reheater (MSR) drains system and reheat steam system. The MSR drains system and reheat steam system returns large quantities of saturated water, removed in the moisture separator and condensed from the reheat steam system in the first and second stage reheater tubes, to the condensate cycle to improve cycle efficiency, operating stability, and reliability. System components include moisture separator drain tanks, first-stage reheater drain tanks, second-stage reheater drain tanks, and the valves and piping necessary to remove liquid from the MSRs and direct it to the condensate system for reuse.

The failure of NSR SSCs in the MSR drains system and reheat steam system could potentially prevent the satisfactory accomplishment of an SR function.

The MSR drains system and reheat steam 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.

2.3.4.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.3 and UFSAR Section 10.2.2 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).

2.3.4.3.3 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 MSR drains system and reheat steam 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 MSR drains system and reheat steam system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.4 Auxiliary Boiler

2.3.4.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.4, the applicant described the auxiliary boiler. The auxiliary boiler system provides a source of non-contaminated steam independent of the NSSS. This is a unit-shared system providing: (1) steam for operation of the CAC vaporizer and (2) steam to Unit 1 and 2 for HPCI, RCIC, and reactor feed pump turbine testing prior to start up. Auxiliary steam is supplied by one packaged, fire tube boiler and distributed to the plant via a network of headers and piping. This system consists of the auxiliary boiler and the following principal subsystems: fuel oil, combustion air, burner control, exhaust, feedwater, chemical addition, blowdown, and deaerator.

The failure of NSR SSCs in the auxiliary boiler 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 2.3.4-2, the applicant identified the following auxiliary boiler 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)

2.3.4.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.4 and UFSAR Section 10.4.8 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 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).

2.3.4.4.3 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 auxiliary boiler components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the auxiliary boiler components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.5 Feedwater System

2.3.4.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.5, the applicant described the feedwater (FW) system. The FW system receives demineralized water from the condensate system and delivers this water to the reactor at increased temperature and pressure. Condensate is pumped from the condenser hotwell through the three LP heaters to the common suction header for the two, 50 percent capacity, turbine-driven reactor feed pumps. FW heaters receive shell-side steam and preheat the tube-side feedwater, thus increasing the heat cycle efficiency. All FW heaters and drain coolers are included in the FW system, and this system ends at the interfacing system SR outermost primary containment isolation valves.

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

that support fire protection and SBO. The intended function, within the scope of license renewal, is to provide a pressure-retaining boundary/flow.

In LRA Table 2.3.4-3, the applicant identified the following FW system component types that are within the scope of license renewal and subject to an AMR:

- main feedwater line (pipe and fittings (Group B or D))
- valves (control, check, and hand valves) (body and bonnet)

2.3.4.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.5 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 2.3.4.5 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 2.3.4.5-1, dated April 8, 2005, the staff stated that license renewal drawing D-25021-LR, sheet 1C, locations B-7 and C-7, and drawing D-02521 LR, sheet 1C, locations B-8 and C-8, have LRA flags in the middle of a section of pipe. Therefore, the staff requested that the applicant explain how the LRA boundary can occur in the middle of a section of pipe.

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

Failure of the referenced portion of the non-safety related feedwater system lines, shown on drawing D-25021-LR, sheet 1C, locations B-7 and C-7, and drawing D-02521-LR, sheet 1C, locations B-8 and C-8, have been evaluated. The evaluation was performed as part of the stress analysis of the interface between the non-safety related feedwater system piping boundary shown with the license renewal flag and the piping boundary at the safety related F032A/B outside containment isolation valves which are part of the reactor vessel and internals system. The intended function of —1 was conservatively chosen for this portion of the feedwater system piping. The license renewal boundary flag is shown correctly on drawings D-25021-LR, sheet 1C, and D-02521-LR, sheet 1C.

The subject Unit 1 and Unit 2 non-safety related feedwater piping is in scope since it is seismically analyzed, connected to safety related reactor vessel and internals system components, and could have spatial interactions with safety related components. Failure of feedwater piping outside the license renewal boundary flag has been evaluated and will not affect the safety related intended function of reactor vessel and internals system

components. The BSEP scoping methodology included piping as in-scope where piping failure could affect nearby safety related components through spray, falling down, or being seismically connected. The subject in-scope feedwater piping is seismically connected but is also located in the reactor building and, therefore, cannot be allowed to spray or fall on safety related components in the reactor building. The intended function of —1 for the subject in-scope feedwater system piping was conservatively chosen to provide an aging management program for both the piping internal and external surface. ISG-9 recommends that if the in-scope connected non-safety related component is of a similar material/environment combination, a similar aging management program should be applied for the connected safety related component. For the subject piping, similar aging management programs were chosen as those of the connected safety related reactor vessel and internals system components. In summary, the license renewal boundary flag is shown correctly on D-25021-LR, Sheet 1C, and D-02521-LR, sheet 1C, with a pressure boundary mechanical intended function.

Based on its review, the staff found the applicant's response to RAI 2.3.4.5-1 acceptable because the subject portions of the feedwater system lines are non-safety related, and the applicant performed analysis to demonstrate that the failure of these subject portions of the feedwater system lines would not have spatial interactions with safety related components. Therefore, the staff's concern described in RAI 2.3.4.5-1 is resolved.

2.3.4.5.3 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 FW 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 FW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.6 Heater Drains and Miscellaneous Vents and Drains

2.3.4.6.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.6, the applicant described the heater drains and miscellaneous vents and drains systems. The heater drains (HD) system is a cascading drain system. Extraction steam enters the heater shell side, gives up its energy to the condensate/feedwater passing through the tubes and is gravity-drained to the next lower pressure heater. This system maintains the feedwater heaters and deaerator level, removes non-condensable gases from the feedwater heaters, supplies heating steam to the Number 3 feedwater heaters, and recovers the steam used for heating in the feedwater heaters. The miscellaneous vents and drains (MVD) system provides equipment drainage and vent paths to collection locations, including the main condenser. MVD piping includes drains from the main steam system, miscellaneous condensate header, turbine building area equipment, the HPCI steam supply drain pot, and the RCIC steam supply drain pot.

The failure of NSR SSCs in the HD and MVD systems could potentially prevent the satisfactory accomplishment of an SR function.

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

- provides a pressure-retaining boundary/flow
- provides structural support/seismic integrity
- provides post-accident containment, holdup, and plateout of MSIV bypass leakage

In LRA Table 2.3.4-4, the applicant identified the following HD and MVD systems component types that are within the scope of license renewal and subject to an AMR:

- piping and fittings (lines to feedwater heaters)
- piping and fittings (steam drains)
- valves (body and bonnet)

2.3.4.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.6 and UFSAR Section 10.4.7.2.5 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).

2.3.4.6.3 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 HD and MVD systems components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the HD and MVD systems components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.7 Condensate System

2.3.4.7.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.7, the applicant described the condensate system. Condensate originates in the main condenser hotwells and comes primarily from exhaust steam exiting the main turbine and the reactor feed pump turbines. The condensate pumps take suction from the hotwells, pump the condensate forward through the tube side of several equipment condensers, and

maintain balanced condensate flow to the feedwater heaters. Downstream, the condensate is processed through the condensate filter demineralizers to condensate deep-bed demineralizers (CDDs), and the condensate booster pumps. BSEP Units 1 and 2 are each equipped with a 500,000 gallon capacity condensate storage tank (CST) providing suction to condensate transfer pumps, makeup water to the main condenser hotwells, alternate suction source to the CS and CRD hydraulic systems, and normal suction source to the RCIC and HPCI systems. The main condenser provides a heat sink for the turbine exhaust steam, turbine bypass steam, and reactor feed pump turbine exhaust steam, and it is cooled by the circulating water system. The main condenser is credited in alternative source term analyses.

The condensate system contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the condensate system could potentially prevent the satisfactory accomplishment of an SR function. In addition, the condensate 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 post-accident containment, holdup, and plateout of MSIV bypass leakage

In LRA Table 2.3.4-5, the applicant identified the following condensate system component types that are within the scope of license renewal and subject to an AMR:

- condensate lines (piping and fittings)
- valves (body and bonnet)
- condensate storage (tank)
- condensate cleanup system (piping and fittings)
- valves (body and bonnet)
- condensate coolers/condensers (tubes)
- condensate coolers/condensers (tubesheet)
- condensate coolers/condensers (shell)

2.3.4.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.7 and UFSAR Sections 3.4.2.6, 9.2.6, and 10.4.2 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 2.3.4.7 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 2.3.4.7-1, dated April 8, 2005, the staff stated that UFSAR Section 3.4.2.6 states that various flood-level alarms in the circulation water condenser pits warn the operator that an abnormal condition exists and that water is entering the pit. The UFSAR further states that a set of three level alarms installed 9 feet above the pit floor will, when activated, automatically shut off the circulating water pumps. In light of the fact that the main condenser will not be designated to serve as a pressure-retaining boundary for license renewal, the staff requested that the applicant provide additional information to address whether any SR equipment or equipment that supports a safety function could be affected by flooding in this area.

In its response, by letter dated May 4, 2005, the applicant stated that a review of flood susceptibility noted that the failure of the expansion joints in the circulating water condenser pits had the potential to result in the automatic shutdown of both reactors, and NSR leak detection equipment was installed in the condenser pits to address this concern. The applicant also stated that while such a failure might represent a challenge to SR equipment, it would not impair any SR function and is not the basis for including SSCs in the scope of license renewal.

The staff found the applicant's response acceptable because flooding of this area would be addressed by the existing leak detection equipment and because a flood in this area would not impair any SR function. Therefore, the staff's concern described in RAI 2.3.4.7-1 is resolved.

Also, as stated in RAI 2.3.4.7-1, the main condenser will not be designated to serve as a pressure-retaining boundary for license renewal. This is an intended revision to the —1 designation given to it in LRA Table 2.3.4-5. The main condenser will however retain the —7 designation of "Provide post-accident containment, holdup, and plateout of MSIV bypass leakage." It is the applicant's intention to revise LRA Table 2.3.4-5 accordingly. The staff discussed this issue with the applicant during a March 2005 site visit. The applicant stated that the main condenser is not needed to perform any function post-accident that would require it to retain pressure. The main condenser in fact operates at a slight vacuum during normal operation. The applicant stated that integrity of the main condenser is continuously monitored during normal operation and that loss of vacuum would cause a plant shut down. The applicant stated that the —7 designation is placed on the main condenser due to application of the alternative source term.

The staff found the deletion of the —1 designation to be acceptable because there is no post-accident function of the main condenser which requires that it be capable of serving as a pressure-retaining boundary and because the integrity of the main condenser is continuously monitored during normal operation for its ability to operate sub-atmospheric.

2.3.4.7.3 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 condensate 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 condensate system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.8 Turbine Building Sampling System

2.3.4.8.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.8, the applicant described the turbine building sampling system. In the turbine building, there is a central sample station, essentially a package of sample conditioning and analyzing sections and a sample hood. Samples can be taken continuously or obtained as grab samples for laboratory analysis and consist of three basic types: liquid sampling, steam sampling, and gaseous sampling. Grab samples are taken at the hood, which is designed for constant recovery and splashless withdrawal. The purpose of plant process sampling is to monitor the plant and equipment performance and to determine routine chemical properties and radiation levels necessary to provide information for equipment operation, corrosion control, and radiation activity. The system is not required either for safe shutdown or following an accident and is, therefore, not classified as an essential system. A small amount of tubing in the turbine building sampling system is credited in alternative source term analyses for mitigation of radioactive releases following postulated accidents.

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

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

- provides a pressure-retaining boundary/flow
- provides post-accident containment, holdup, and plateout of MSIV bypass leakage

In LRA Table 2.3.4.6, the applicant identified the following turbine building sampling system component types that are within the scope of license renewal and subject to an AMR: piping and fittings (steam drains).

2.3.4.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.6 and UFSAR Section 9.3.2 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).

2.3.4.8.3 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 turbine building sampling 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 turbine building sampling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.9 Main Condenser Gas Removal System

2.3.4.9.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.9, the applicant described the main condenser gas removal system. During normal plant operation, non-condensable gases are produced and entrained in the reactor steam cycle and must be continuously removed to maintain turbine efficiency. These gases include hydrogen and oxygen from the radiolytic decomposition of water, fission products, activation products, and air from condenser in-leakage. The mixture is drawn from the main condenser via the steam jet air ejectors (SJAEs). Motive force for the SJAЕ flow is provided by steam taken off the HP steam supply to the reactor feedwater pump turbines. Two mechanical vacuum pumps are used primarily during startup when there is insufficient reactor steam to operate the SJAЕ to maintain a condenser vacuum. The steam and non-condensable mixture that exits the SJAЕ is mixed with oxygen injected from the hydrogen water chemistry system. This is done to insure sufficient oxygen is available for scavenging all free hydrogen in the offgas mixture during the recombination process. The mixture is then passed through an offgas recombiner where hydrogen and oxygen are catalytically recombined to form water. After recombination, the off-gas is routed to a condenser to remove moisture and then through a 30-minute delay pipe before entering the AOG charcoal adsorber system.

The failure of NSR SSCs in the main condenser gas removal system could potentially prevent the satisfactory accomplishment of an SR function. The main condenser gas removal system also performs functions that support fire protection and SBO.

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

In LRA Table 2.3.4-7, the applicant identified the following main condenser gas removal system component types that are within the scope of license renewal and subject to an AMR:

- condensate lines (piping and fittings)
- valves (body and bonnet)

2.3.4.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.9 and UFSAR Section 10.4.2 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 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).

2.3.4.9.3 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 main condenser gas removal 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 main condenser gas removal system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.10 Turbine Electro-Hydraulic Control System

2.3.4.10.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.10, the applicant described the turbine EHC system. The turbine EHC system maintains a fixed load or speed of the turbine, depending on requirements, and provides turbine overspeed protection in the event of excessive unbalanced energy input to the turbine shaft. The objective of the system is to provide an energy control system that coordinates turbine generator load and reactor output power. The system operates the turbine stop valves, bypass valves, control valves, combined intermediate valves, and other protective devices and provides for mechanical and electrical trips of the turbine. The turbine pressure regulator manipulates turbine control valves and turbine bypass valves, individually or in parallel, to maintain constant reactor pressure at a chosen value. The turbine controls combine standard solid-state electronic operational amplifier elements with HP hydraulic actuators to produce a quick response speed-load control system. The turbine EHC system supplies clean, cool, HP hydraulic fluid necessary for turbine valve operation. The system uses a pump that takes suction on a hydraulic reservoir to supply all components requiring EHC fluid for operation.

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

The turbine EHC 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.

2.3.4.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.10 and UFSAR Section 10.2.2 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).

2.3.4.10.3 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 turbine EHC 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 turbine EHC system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.11 Turbine Generator Lube Oil System

2.3.4.11.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.11, the applicant described the turbine generator lube oil (LO) system. The turbine generator LO system provides a reliable, continuous supply of clean, cool oil to the turbine generator bearings, hydrogen sealing system, and turbine instrumentation during all modes of operation. System equipment includes oil coolers, pumps, strainers, filters and piping.

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

The turbine generator LO 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.

2.3.4.11.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.11 and UFSAR Section 10.2.2 and 10.2.4 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 2.3.4.11 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 2.3.4.11-1, dated April 8, 2005, the staff stated that LRA section 2.3.4.11 states that the turbine generator LO system is within the scope of license renewal because it contains components which are NSR whose failure could prevent satisfactory accomplishment of SR functions. Previous BWR applicants have identified the following component groups and their intended functions within the turbine generator LO system as being within the scope of license renewal and subject to an AMR:

- closure bolting (pressure boundary)
- filters/strainers (spatial interaction)
- piping and fittings (spatial interaction)
- piping and fittings (structural integrity/attached support)
- pump casings (spatial interaction)
- tanks (spatial interaction)
- valves (spatial interaction)
- valves (structural integrity/attached support)

LRA section 2.3.4.11 states that the turbine generator LO system components that are subject to AMR are addressed as civil commodities in LRA Section 2.4 with no clarifying information provided. Therefore, the staff requested that the applicant provide additional information to confirm that all turbine generator LO system components within the scope of license renewal and subject to an AMR have been identified.

In its response, by letter dated May 4, 2005, the applicant stated that the turbine generator LO system supplies lubricating oil for proper operation of the main turbine; however, operation of the main turbine is not necessary to support any intended function for license renewal. The applicant stated that the entire turbine generator LO system is NSR; however, there are selected active electrical switches that must be seismically analyzed to prevent undesirable interactions with SR equipment and that the supports for components having this quality classification are within the scope of license renewal as civil commodities and are identified as an electrical enclosure commodity listed in LRA Table 2.4.2-10. The applicant also stated that the review conducted at BSEP pursuant to 10 CFR 54.4(a)(2) determined that the pressure boundary components and commodities of the turbine generator LO system are not within the scope of license renewal either for potential spatial interactions with in-scope equipment or for providing support for the seismically analyzed portions of systems within the scope of license renewal.

The staff found the applicant's response acceptable because the BSEP turbine generator LO system is NSR and does not perform an intended function within the meaning of the 10 CFR 54.4(a) criteria. Therefore, the staff's concerns described in RAI 2.3.4.11-1 are resolved.

2.3.4.11.3 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 turbine generator LO 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 turbine generator LO system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.12 Stator Cooling System

2.3.4.12.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.12, the applicant described the stator cooling system. The stator cooling system automatically regulates the temperature and flow of clean, low conductivity water to cool the main generator stator windings and the power rectifiers of the generator exciter. The cooling water is in direct contact with the stator windings which enhance the heat transfer rate from the copper windings and enable the generator to assume varying loads while eliminating most of the thermal stresses induced in the winding insulation. The system consists of a closed cooling loop that is, in turn, cooled by the TBCCW system. The scope of this system includes the stator leak monitoring system (SLMS). The SLMS monitors the leakage of hydrogen into the stator cooling water. Additionally, the SLMS provides for the proper oxygenation of the stator cooling water to promote the formation of cupric oxide, a tough and durable coating, on the stator bar internal surfaces.

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

The stator cooling 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.

2.3.4.12.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.12 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 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 did not identify any omissions. 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).

2.3.4.12.3 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 stator cooling 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 stator cooling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.13 Hydrogen Seal Oil System

2.3.4.13.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.13, the applicant described the hydrogen seal oil system. The hydrogen seal oil system supplies sealing oil to the generator shaft seal rings to prevent the escape of hydrogen from the generator casing. The seal oil, supplied from the turbine main bearing oil header, is vacuum-treated to remove air and moisture, and boosted in pressure above that of the hydrogen pressure in the generator casing. NSR components in the system have been classified as seismically analyzed to avoid adverse interactions with SR SSCs during an earthquake.

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

The hydrogen seal oil 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.

2.3.4.13.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.13 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 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 did not identify any omissions. 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).

2.3.4.13.3 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 hydrogen seal oil 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 hydrogen seal oil system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4 Scoping and Screening Results – Structures

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

- containment
- other Class 1 and in-scope structures

In accordance with the requirements of 10 CFR 54.21(a)(1), the applicant must identify and list SSCs that are within the scope of license renewal and subject to an AMR. To verify that the applicant properly implemented its methodology, the staff focused its review on the implementation results. This approach allowed the staff to confirm that there are no omissions of structures and components that meet the scoping criteria and are subject to an AMR.

Staff Evaluation Methodology. The staff's evaluation of the information provided in the LRA was performed in the same manner for all structures. The objective of the review was to determine if the components and supporting structures for a specific structure, that appeared to meet the scoping criteria specified in the Rule, were identified by the applicant as 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 subject to an AMR in accordance with 10 CFR 54.21(a)(1).

Scoping. To perform its evaluation, the staff reviewed the applicable LRA section and associated component drawings, focusing its review on components that had not been identified as within the scope of license renewal. The staff reviewed relevant licensing basis documents, including the UFSAR, for each structure and component to determine if the applicant had omitted components with intended functions delineated under 10 CFR 54.4(a) from the scope of license renewal. The staff also reviewed the licensing basis documents to determine if all intended functions delineated under 10 CFR 54.4(a) were specified in the LRA. If omissions were identified, the staff requested additional information to resolve the discrepancies.

Screening. Once the staff completed its review of the scoping results, the staff evaluated the applicant's screening results. For those structures and components with intended functions, the staff sought to determine (1) if the functions are performed with moving parts or a change in configuration or properties, or (2) 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 these structures and components were subject to an AMR as required by 10 CFR 54.21(a)(1). If discrepancies were identified, the staff requested additional information to resolve them.

2.4.1 Containment

2.4.1.1 Primary Containment

2.4.1.1.1 Summary of Technical Information in the Application

In LRA Section 2.4.1.1, the applicant described the primary containment. The primary containment for each BSEP unit is a pressure suppression system consisting of a drywell and a

pressure suppression chamber. The drywell houses the reactor vessel, the reactor coolant recirculation loops, and other branch connections of the RCS. In the event of a process system piping failure, reactor water and steam will be released into the drywell atmosphere. The resulting increased drywell pressure will then force a mixture of drywell atmosphere, steam, and water through the vents which open beneath the surface of the pool of water stored in the suppression chamber. The steam will condense in the water resulting in a rapid pressure reduction in the drywell. The primary containment is designed to contain the energy released during the design-basis LOCA and to limit the fission products associated with this accident that are released to the reactor building (secondary containment). Primary containment is classified as a seismic Class 1 structure and must remain functional and protect vital equipment and systems both during and following the most severe natural phenomenon postulated to occur at the site. The primary containment is a BWR Mark 1 design located in the reactor building of each BSEP unit. Unlike other BWRs which employ a Mark 1 containment fabricated of steel, the primary containment is constructed of reinforced concrete with a steel liner. The major structural components of the primary containment are the drywell, sacrificial shield, reactor pedestal, suppression chamber (also called the torus or wetwell), and a connecting venting system.

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

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

- provides pressure boundary and/or fission product barrier
- provides structural and/or functional support to SR equipment
- provides shelter/protection to SR equipment
- provides source of cooling water for plant shutdown
- provides missile barrier
- provides structural and/or functional support to NSR equipment
- provides a protective barrier for internal/external flood event
- provides structural support and/or shelter to components required for fire protection, ATWS, and/or SBO
- provides pipe whip restraint and/or jet impingement protection
- provides heat sink during SBO or DBAs
- provides spray shield or curbs for directing flow

In LRA Table 2.4.1-1, the applicant identified the following primary containment component types that are within the scope of license renewal and subject to an AMR:

- anchorage/embedment

- anchorage/embedments - exposed (at the AMR stage, this commodity was consolidated within the proper support group: piping supports, electrical supports, equipment supports, HVAC supports, instrument support, etc.)
- bellows (refueling)
- cable tray and conduit
- concrete above grade
- sacrificial shield wall
- concrete curbs
- doors and framing/hardware
- downcomers (open-ended pipes attached to torus vent header)
- drywell head
- drywell liner
- electrical enclosure
- electrical support
- equipment support
- floor drains
- HVAC support
- instrument support
- insulation
- liner (sump)
- moisture barrier
- penetration (mechanical and electrical)
- drywell personnel airlock, equipment hatch, CRD hatch
- pipe support
- reactor pressure vessel support
- seals and gaskets (manways, airlocks, doors, hatches)
- side bearing plate
- structural steel: platforms stairways, mezzanines and hardware
- torus liner
- vent header (drywell to torus vent lines and ring header)
- vent line bellows
- whip restraints (includes jet impingement shields)

2.4.1.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1.1 and UFSAR Sections 3.8 and 6.2.1 using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4, "Scoping and Screening Results - Structures."

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 2.4.1.1 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 2.4-1, dated April 25, 2005, the staff noted that BSEP primary containment encloses the reactor vessel and a number of other structures, such as the concrete pedestal and seismic bracing for the drywell. LRA Table 2.4.1-1 does not indicate that these structures are within the scope of license renewal. These structures perform SR functions; therefore, the staff requested that the applicant address the following: (1) if the structures are not included through an oversight, the staff requested that the applicant provide a description of their scope and AMR; (2) if they are covered somewhere else in the LRA, the staff requested that the applicant provide the relevant information; and (3) if they are excluded from within the scope of license renewal, the staff requested that the applicant provide the basis for excluding these items from the scope of license renewal.

In its response, by letter dated May 11, 2005, the applicant indicated that the concrete pedestal is within the scope of license renewal and is addressed within the "Concrete Above Grade" commodity group. Seismic stabilizers utilized between the RPV and the biological shield wall are within the scope of license renewal, and are addressed within the "RPV Support" commodity group. Seismic ties utilized between the biological shield wall and the drywell wall are within the scope of license renewal, and are addressed within the "Structural Steel" commodity group.

Based on the inclusion of the structures, identified in the RAIs, as part of the commodity group considered in LRA Table 2.4.1.1, the staff's concern described in RAI 2.4-1 is resolved.

In RAI 2.4-2, dated April 25, 2005, the staff noted that in the information provided in LRA Section 2.4.1, it was not clear whether all drywell and torus supports are within the scope of license renewal. The staff stated that (1) if the drywell and torus supports were not included as an oversight, the staff requested that the applicant provide a description of their scope and aging management review; (2) if they were covered somewhere else in the LRA, the staff requested that the applicant indicate the location; and (3) if they were excluded from within the scope of license renewal, the staff requested that the applicant provide the basis for excluding these items from within the scope of license renewal.

In its response, by letter dated May 11, 2005, the applicant stated that all drywell and torus supports are within the scope of license renewal. The subject supports are addressed within a variety of commodity groups such as: "Electrical Support," "Equipment Support," "HVAC Support," "Instrument Support," "Pipe Support," "Structural Steel," and "Whip Restraints," as shown in LRA Table 2.4.1-1. Although pipe supports are identified by a single commodity group in LRA Table 2.4.1-1, they are sub-categorized by American Society of Mechanical Engineers (ASME) Code Class designation, as shown in LRA Table 3.5.2-1. The structural components identified in the RAI are included as part of various commodity groups; therefore, the staff's concern described in RAI 2.4-2 is resolved.

2.4.1.1.3 Conclusion

The staff reviewed the LRA, and RAI responses to determine whether any structure and structural components 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 primary containment components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the primary containment components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2 Other Class 1 and In-Scope Structures

In LRA Section 2.4.2, the applicant identified the structures and components of the other Class 1 and in-scope structures that are subject to an AMR for license renewal.

The applicant described the supporting structures and components of the other Class 1 and in-scope structures in the following sections of the LRA:

- 2.4.2.1 intake and discharge canals
- 2.4.2.2 refueling system
- 2.4.2.3 switchyard and transformer yard structures
- 2.4.2.4 monorail hoists
- 2.4.2.5 bridge cranes
- 2.4.2.6 gantry cranes
- 2.4.2.7 service water intake structure
- 2.4.2.8 reactor building
- 2.4.2.9 augmented off-gas building
- 2.4.2.10 diesel generator building
- 2.4.2.11 control building
- 2.4.2.12 turbine building
- 2.4.2.13 radwaste building
- 2.4.2.14 water treatment building
- 2.4.2.15 miscellaneous structures and out-buildings

The corresponding subsections of this SER (2.4.2.1 – 2.4.2.15, respectively) present the staff's review findings with respect to the other Class 1 and in-scope structures for Units 1 and 2.

Staff Evaluation. The staff reviewed LRA Sections 2.4.2.1 through 2.4.2.15, and related UFSAR sections using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 Sections 2.4.2.1 through 2.4.2.15 and identified areas in which additional information was necessary to complete the review of the applicant's scoping and screening results. In addition to the review results discussed in the specific sections of this SER, the following paragraphs summarize staff review findings that cover multiple component groups.

In RAI 2.4-4, dated April 25, 2005, the staff stated that as a result of its review of LRA Section 2.4, "Scoping and Screening Results - Structures," and LRA Figure 2.2-1, the staff found that some structures are not considered within the scope of license renewal. These structures include the circulating water intake structure, chlorination building, auxiliary boiler house, auxiliary surge tank, diesel generator fuel oil tank vault, radioactive material container storage, and service building. The staff questioned whether all these structures serve no intended function as defined in 10 CFR 54.4(a)(1); therefore, the staff requested that the applicant provide a detailed description of these structures (including their function), and describe the technical bases for their exclusion from the scope of license renewal. Also, the staff requested that the applicant verify that none of these structures serves a seismic III/II intended function as defined in 10 CFR 54.4(a)(2).

In its supplemental response, by letter dated July 18, 2005, the applicant provided a description (including structural function) for each of the above mentioned structures and stated that the determination whether a structure is within the scope of license renewal is based on the information provided in the UFSAR, DBD, EDB, Maintenance Rule database, and license renewal scoping evaluations. As such, if a structure contains any components within the scope of license renewal or if the structure supports a license renewal intended function, this structure is considered within the scope of license renewal. Those structures that contain no license renewal components and support no license renewal intended functions are outside the scope of license renewal. The applicant's justification and basis for excluding these structures from the license renewal scope are discussed below:

Circulating Water Intake Structure. The circulating water intake structure, as stated in the UFSAR, is located a sufficient distance from SR structures such that any failure of this structure during a hurricane or tornado will not affect those SR structures. In addition, this structure is classified as an NSR structure in the EDB, and does not contain any components

that are within the scope of license renewal nor does it support a license renewal intended function. Therefore, this building is not within the scope of license renewal.

Chlorination Building. The chlorination building is an unclassified sheet metal structure attached to the south side of the service water intake structure which is a Class I reinforced concrete structure designed for seismic, tornado, and hurricane loads. The chlorination building does not contain any components that are within the scope of license renewal, nor does it support a license renewal intended function. Based on the lightweight design of the chlorination building compared to the robust design of the service water intake structure, any loading due to failure of the chlorination building on the service water intake structure would be enveloped by the Class I design criteria. As such, the chlorination building is not a seismic II/I risk for the service water intake structure. Therefore, this building is not within the scope of license renewal.

Auxiliary Boiler House. The auxiliary boiler house (a steel frame structure with a reinforced concrete foundation mat and insulated metal sidings and built-up roofing) is located a sufficient distance from all Class I structures. This building is a non-classified structure. SSCs within the building do not support any license renewal intended functions based on review of the EDB safety classifications. This structure is not within the scope of license renewal.

Auxiliary Surge Tank. The auxiliary surge tank (a stainless steel tank mounted on a concrete foundation) is located east of the Unit 2 reactor building and is not directly adjacent to any Class I structure. This tank contains radioactive wastes in excess of normal operational quantities. Radioactive levels within this tank are procedurally controlled to a limit of less than 10 curies in accordance with Technical Specification (TS) Section 5.5.8; as such, the failure of this tank would not exceed limits associated with 10 CFR 54.4(a)(1)(iii). Therefore, the auxiliary surge tank, tank foundations and supports do not support license renewal intended function and are outside the scope of license renewal.

Diesel Generator Oil Tank Vault. The diesel generator oil tank vault is a reinforced concrete building for housing the underground diesel fuel storage tank, and is located to the east of the diesel generator building. Although it is not listed in LRA Table 2.4.2-9, "Component Commodity Groups Requiring Aging Management Review and Their Intended Functions: Diesel Generator Building," this tank building is considered as part of the diesel generator building, and is within the scope of license renewal.

Radioactive Material Container Storage Building. The radioactive material container storage building is located north of the Unit 1 turbine and reactor buildings, and is not adjacent to any Class I structure. This building does not contain any components that are within the scope of license renewal, and does not support any license renewal intended function. Therefore, it is not within the scope of license renewal.

Service Building. The service building (a steel frame structure with insulated metal siding and roof panels) is not adjacent to any Class I structure, and does not support any SR functions. Also, this building does not contain any components that are within the scope of license renewal, nor does it support a license renewal intended function. Therefore, this building is not within the scope of license renewal.

The staff reviewed the applicant's response and found that it provides an adequate technical basis for the scoping determination. On the basis of the above discussion, the staff's concerns described in RAI 2.4-4 are resolved.

In RAI 2.4-8, dated April 25, 2005, the staff stated that in review of LRA Tables 2.4.2-1 through 2.4.2-14, it found that some of these tables indicate that structural steel includes platforms, stairways, mezzanines, and hardware. It was not clear to the staff whether the term "structural steel" covers major structural components, such as beams, columns, and roof frames. Therefore, the staff requested that the applicant respond to the following questions: (1) what is covered under the word "hardware," (2) which structural steel components are considered "hardware," (3) are the major structural steel components (e.g., beams, columns, roof frames, other steel frames, etc.) considered hardware, and (4) if not, in which table (or tables) are these structural components listed for the AMR?

In its letter responses, dated May 11, 2005 and June 21, 2005, the applicant clarified that the term "hardware" is associated with connection components, such as, nuts, bolts, washers, etc. The applicant noted that major structural steel components, such as, beams, columns, roof frames, and other steel frames were not listed specifically in the summary tables of aging management evaluation; however, these steel components were considered to be structural steel components and were addressed within the "Structural Steel" commodity group. The staff considered the applicant's response reasonable and acceptable. Therefore, the staff's concern described in RAI 2.4-8 is resolved.

In RAI 2.4-10, dated April 25, 2005, the staff stated that LRA Section 2.4 identifies that masonry walls located in the service water intake structure, reactor building, augmented off-gas building, diesel generator building, control building, and turbine building are within the scope of license renewal. Therefore, the staff requested that the applicant identify whether there are masonry walls located in other in-scope building structures, such as the radwaste building, water treatment building, HPCI CO₂ bottle storage building, etc. If there are masonry walls located in these buildings, the applicant was also requested to include these masonry walls in the component commodity groups requiring AMR or provide justification for their exclusion from within the scope of license renewal.

In its response, by letter dated May 11, 2005, the applicant clarified that there are no masonry walls in the HPCI CO₂ bottle storage building. The masonry wall located in the water treatment building is used as a fire protection impingement barrier between the diesel fire pump and the fuel oil tank, and it is within the scope of license renewal. There are masonry walls located in the radwaste building; however, these walls do not support any license renewal intended function (including the II/I issue) and, therefore, have been screened out from license renewal. The staff found that the license's clarification is sufficient; therefore, the staff's concerns described in RAI 2.4-10 are resolved.

In RAI 2.4-11, dated April 25, 2005, regarding the scoping and screening of the crane/rail systems, the staff requested that the applicant clarify the treatment of cranes and hoists in the scoping and screening, and in the AMR. In addition, the staff requested that the applicant provide the following information:

- (a) A list of all cranes/hoists/rails and associated components in the scope of license renewal.

- (b) A list of all cranes/hoists/rails and associated components requiring an AMR (i.e., passive, long-lived).
- (c) A list of all cranes/hoists/rails and associated components requiring aging management and/or TLAA.

In its response, by letter dated May 11, 2005, the applicant provided its scoping and screening results of cranes systems (monorail hoists, bridge cranes, gantry cranes, etc.) as follows:

The Units 1 and 2 refueling platforms are considered cranes within the scope of license renewal. Monorail hoists are categorized as "Structural Steel" for the purpose of license renewal and are managed by the Structures Monitoring Program.

The applicant also stated that the commodity groups of bridge cranes and gantry crane are within the scope of license renewal. There are nine bridge cranes and two gantry cranes in the BSEP nuclear plant (Units 1 and 2): Units 1 and 2 reactor building bridge cranes, Units 1 and 2 turbine building bridge cranes, Unit 1 jib crane, four diesel generator bridge cranes, intake structure gantry crane, and the heater bay gantry crane. As a result of the screening process, only the reactor building bridge cranes, Unit 1 jib crane, diesel generator building bridge cranes, and intake structure gantry crane are within the scope of license renewal. The others are not within the scope of license renewal, because the turbine building bridge cranes and heater bay gantry crane perform no license renewal intended functions.

In its response, the applicant further indicated that the cranes and monorails that involved a TLAA include Units 1 and 2 refueling platforms, Units 1 and 2 reactor building bridge cranes, intake structure gantry crane, diesel generator bridge cranes, and miscellaneous monorails/hoists. The Units 1 and 2 refueling platforms, Units 1 and 2 reactor building bridge cranes, and the intake structure gantry crane are managed by the Inspection of Overhead Heavy Load and Light Load Handling Systems Program; the diesel generator bridge cranes and miscellaneous monorails/hoists are managed as structural steel under the Structures Monitoring Program.

The staff reviewed the applicant's response and found that the information provided by the applicant is comprehensive and sufficient to answer the three questions posed by the staff. Therefore, the staff's concerns described in RAI 2.4-11 are resolved.

In RAI 2.4-12, dated April 25, 2005, the staff requested that the applicant provide additional information regarding the following Class I Group 6 structures:

- (a) With respect to the intake pumping station, identify items such as hatches and plugs, structural steel embedments, carbon steel boltings, reinforced concrete foundation footings, grouted concrete, and water proofing membrane materials that require an AMR.
- (b) Regarding the condensate water storage tank foundations and trenches, confirm that the equipment supports and foundations as well as the trenches consist of reinforced concrete components. As appropriate, identify items such as structural steel embedments, carbon steel boltings, grouted concrete, and water proofing membrane materials that require an AMR.

In its response, by letter dated May 11, 2005, the applicant provided the following information:

- (a) Hatches and plugs associated with the service water intake structure are considered subcomponents of the "Concrete Above Grade" commodity group. Structural steel embedments are addressed within the "Anchorage/Embedment- Embedded" commodity group. Carbon steel bolting is addressed as a subcomponent of the respective commodity group; such as, "Electrical Support," "Equipment Support," "HVAC Support," etc. Reinforced concrete foundation footings are addressed within the "Concrete Below Grade" commodity group. Grouted concrete is addressed within the "Concrete Above Grade" commodity group. Water proofing membranes are addressed within the "Roof-Membrane/Built-Up" commodity group. These commodities are with the scope of license renewal and require an AMR.
- (b) The condensate storage tank (CST) foundation was correlated to a GALL Group 8 structure, not Group 6, and is within the scope of license renewal as addressed in LRA Section 2.4.2.15, "Miscellaneous Structures and Out-Buildings." The commodity groups associated with the CST are: "Anchorage/Embedment -Embedded," "Anchorage/Embedment- Exposed," "Tank Foundation," "Electrical Enclosure," and "Instrument Support." There is no water proofing membrane associated with CST foundation.

The staff verified the information discussed above with the related LRA sections and tables, and found that these components are within the scope of license renewal. On this basis, the staff considers the applicant's response acceptable; therefore, RAI 2.4-12 is resolved.

In RAI 2.4-13, dated April 25, 2005, the staff stated that based on information provided in LRA Section 2.4, the staff could not identify the insulation and insulation jacketing included in the license renewal scope nor the specific subsets of the insulation and insulation jacketing that are included in LRA Section 2.4 tables. Also, it was unclear to the staff whether the insulation and jacketing on the reactor coolant system has been included within scope. In order to allow the staff to complete the review for the insulation and insulation jacketing, the staff requested that the applicant provide the following information:

- (a) Specifically identify the structures and structural components designated within the scope of license renewal that have insulation and/or insulation jacketing, and identify their location in the plant.
- (b) List all insulation and insulation jacketing materials associated with item (a), above, that require an AMR and the results of the AMR. Also, identify the AMPs credited to manage aging.
- (c) List insulation and insulation jacketing materials associated with item (a) above that do not require aging management, and include a justification for their exclusion in relation to plant-specific operating experience.

In its response, by letter dated May 11, 2005, the applicant stated that the only insulation credited within LRA Section 2.4 is associated with the drywell hot penetrations (LRA Table 2.4.1-1). Insulation and jacketing of the reactor coolant system was not credited in LRA Section 2.4, since drywell internal temperatures are controlled by TSs. The drywell bulk

average temperature is managed under TS 3.6.1.4, which requires the plant to enter limiting condition for operation actions if the drywell bulk average temperature exceeds 150 °F.

The applicant also stated that the insulation on hot penetrations is within the scope of license renewal and identified for an AMR in LRA Table 3.5.2-1. No aging effects were identified, based on operating experience; no AMP was specified. Hot penetration temperatures, recorded on chart paper, were reviewed back to 1997. No penetration temperatures exceeded 200 °F, with the highest recorded temperature, 185 °F, being on one of the main steam lines. As such, the insulation has proven effective in maintaining hot penetration temperatures below 200 °F.

Based on the applicant's response, the staff found that the applicant has provided sufficient information in response to the staff's request and considers RAI 2.4-13 resolved.

In RAI 2.4-14, dated April 25, 2005, the staff stated that for some in-scope building structures, the applicant identified the "Fire Barrier Assembly" as one of the commodity groups requiring an AMR. Therefore, the staff requested that the applicant provide a list of buildings within the scope of license renewal with fire proofing material applied to some of their structural steel members or components as part of fire barriers. The applicant was also requested to discuss how and where these fire proofing materials are included in the AMR as part of the fire barrier review.

In its response, by letter dated May 11, 2005, the applicant stated that the BSEP in-scope buildings with fire proofing material applied to some of their structural steel members or components are the service water intake structure, reactor buildings, diesel generator building, and control building. In LRA Tables 2.4.2-6, 2.4.2-7, 2.4.2-9, and 2.4.2-10, the applicant indicated that the fire proofing material is addressed within the "Sprayed on Coatings" commodity group and is managed by the Fire Protection Program. The staff verified the applicant's response with the LRA sections and tables as well as related UFSAR sections, and found that the applicant had properly addressed this issue. On this basis, the staff's concern described in RAI-2.4-14 is resolved.

Conclusion. The staff reviewed the LRA, related structural components, and RAI responses to determine whether any SSCs that should be within the scope of license renewal had not been 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 had not been 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 had adequately identified the components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and the components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.1 Intake and Discharge Canals

2.4.2.1.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.1, the applicant described the intake and discharge canals. The intake and discharge canals are part of the circulating water system in which water is taken from the Cape Fear River and discharged into the Atlantic Ocean. The inlet canal begins at the Cape

Fear Estuary and terminates at the plant intake structures. Adjacent to the service water intake structure and the circulating water intake structure, within the intake and discharge canals system, are circular sheet-pile caissons acting as a transition between the earthen intake canal and the concrete intake structures. The discharge canal, originating at the southwest area of the plant site, at the discharge weir, travels southwest, crossing under the intracoastal waterway through reinforced concrete pipes. The concrete pipes discharge into a stilling basin, which terminates at the Caswell Beach Pumping Facility.

The failure of NSR SSCs in the intake and discharge canals could potentially prevent the satisfactory accomplishment of an SR function.

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

- provides source of cooling water for plant shutdown
- provides structural and/or functional support to NSR equipment

In LRA Table 2.4.2-1, the applicant identified the following intake and discharge canals component types that are within the scope of license renewal and subject to an AMR: canal (intake canal only) and sheet piles.

2.4.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.1 and UFSAR Section 10.4.5.2 using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 2.4.1.1 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 2.4-6, dated April 25, 2005, the staff stated that as described in UFSAR Section 10.4.5.2, an expanded metal fence and eight traveling screens (four for each unit) are installed in the intake canal to prevent marine life and debris from entering the system. From its review of LRA Section 2.4.2.1, the staff also found that these items are not subject to aging management. Therefore, the staff requested that the applicant submit a more detailed description of these items, including their functions, and describe the technical bases for their exclusion from the scope of license renewal.

In its response, by letter dated May 11, 2005, the applicant indicated that the expanded metal fence is associated with the fish diversion structure. A fish diversion screen is located across the intake canal to keep fish from entering the intake canal, thus minimizing impingement and

improving traveling screen reliability. There are no credible DBEs associated with the structure that would prevent or mitigate the completion of an SR function. As such, the fish diversion structure, along with the expanded metal fence, supports no license renewal function and are not considered within the scope of license renewal.

With regard to the eight traveling screens identified in UFSAR Section 10.4.5.2, the applicant stated that these traveling screens are associated with the circulating water system and are located in the circulating water intake structure. Since the intake bays of the circulating water system are classified in the equipment database as NSR structures, and the circulating water intake structure does not contain any components within the scope of license renewal nor support a license renewal intended function, the traveling screens are not within the scope of license renewal.

Based on the applicant's response, the staff concurs with the applicant's assessment that the fish diversion structure, along with the expanded metal fence, and the traveling screens support no license renewal function and thus, considers RAI 2.4-6 resolved.

2.4.2.1.3 Conclusion

The staff reviewed the LRA, related structural/component information, 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 intake and discharge canals components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the intake and discharge canals components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.2 Refueling System

2.4.2.2.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.2, the applicant described the refueling system. The refueling system comprises the refuel platforms, the auxiliary work platform, and various tools, equipment, and structures associated with fuel handling for both new and spent fuel. The refuel platform is unique to each unit; however, the auxiliary work platform and various tools are shared between units. The refuel platform for each unit runs on rails over the fuel pool and reactor well at the 117-foot elevation of the reactor building. The passive physical crane structures, such as the main structural members, bridge, trolley, structural girders, rail system, and anchorage brackets, are considered subcomponents of the refuel platform. The auxiliary work platform is common to both units and is disassembled and moved to support the unit being refueled. Fuel preparation machines are suspended from the side of the spent fuel pools and are used to load new fuel into the fuel pool and to serve as a workstation from which irradiated fuel is de-channeled for inspection.

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

The intended function, within the scope of license renewal, is to provide structural and/or functional support to NSR equipment.

In LRA Table 2.4.2-2, the applicant identified the following refueling system component types that are within the scope of license renewal and subject to an AMR: fuel preparation machines, auxiliary work platform, and refueling platforms.

2.4.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.2 and Table 2.4.2-2 using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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).

In addition to RAI 2.4-11 (screening of crane/rail systems) discussed in Section 2.4.2 above, no other RAI was identified.

2.4.2.2.3 Conclusion

The staff reviewed the LRA, related structural/component information, 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 concludes that there is reasonable assurance that the applicant adequately identified the refueling 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 refueling system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.3 Switchyard and Transformer Yard Structures

2.4.2.3.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.3, the applicant described the switchyard and transformer yard structures. The relay building and structures in the switchyard and transformer yard have been combined under the one structural system: switchyard and transformer yard structures. These structures are located west of the turbine building. The relay building is shared between units, and each unit has its own switchyard and transformer yard. The design function of these structures is to support, house, and protect components associated with the switchyard, transformer yard, and relay building.

The switchyard and transformer yard structures perform functions that support SBO.

The intended function, within the scope of license renewal, is to provide structural support and/or shelter to components required for fire protection, ATWS, and/or SBO.

In LRA Table 2.4.2-3, the applicant identified the following switchyard and transformer yard structures component types that are within the scope of license renewal and subject to an AMR:

- anchorage/embedment - embedded
- anchorage/embedments - exposed (at the AMR stage, this commodity was consolidated within the proper support group: piping supports, electrical supports, equipment supports, HVAC supports, instrument supports, etc.)
- cable tray and conduit
- concrete above grade
- concrete below grade
- electrical enclosure
- electrical support
- equipment support
- piles
- siding
- structural steel: platforms, stairways, mezzanines, and hardware

2.4.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.3 using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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).

2.4.2.3.3 Conclusion

The staff reviewed the LRA and related structural/component information 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 concludes that there is reasonable assurance that the applicant adequately identified the switchyard and transformer yard structures components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the switchyard and transformer yard structures components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.4 Monorail Hoists

2.4.2.4.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.4, the applicant described the monorail hoists. The monorail hoists are structural/mechanical systems used during plant maintenance to move or remove equipment. The monorail hoist system is not shared between units and is not required for abnormal or accident plant operating modes.

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

Monorails are considered to be structural steel within the license renewal civil screening process. The basis for this is that monorails are fixed, permanent, structural members upon which removable hoists are installed when maintenance is required. The hoisting apparatus is typically removed from the monorail when not required for maintenance; however, in some cases the hoists are moved to a safe location on the monorail and secured to prevent inadvertent movement or interaction with SR components. Therefore, only the structural members and anchorages associated with monorail hoists are considered to be license renewal commodities, and the AMR results for monorail hoists are documented under the review of the structural steel commodity in the structures containing the hoists.

2.4.2.4.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.4 using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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).

In addition to RAI 2.4-11 (screening of crane/rail systems) discussed in Section 2.4.2 above, no other RAI was identified.

2.4.2.4.3 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 monorail hoists components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the monorail hoists components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.5 Bridge Cranes

2.4.2.5.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.5, the applicant described the bridge cranes. The bridge cranes are structural/mechanical systems used during plant maintenance to move or remove equipment. The bridge cranes within scope of license renewal are the 125-ton reactor building bridge cranes; the diesel generator bridge cranes; and the refueling jib cranes. Two of the refueling jib cranes have been removed from service. The remaining refueling jib crane and the diesel generator bridge cranes have been screened as structural steel with monorail hoists in the previous subsection. The passive physical crane structures, such as the main structural members, bridge, trolley, structural girders, rail system, and anchorage brackets, are considered subcomponents of the reactor building bridge cranes. The reactor building bridge cranes were designed to Crane Manufacturers Association of America (CMAA) Specification No. 70 (CMAA-70), with a service class of A1, corresponding to a cyclic loading of between 20,000 and 100,000 cycles.

The bridge cranes contain SR components that are relied upon to remain functional during and following DBEs. The intended function, within the scope of license renewal, is to provide structural and/or functional support to SR equipment.

In LRA Table 2.4.2-4, the applicant identified the following bridge cranes component types that are within the scope of license renewal and subject to an AMR: Unit 1 reactor building bridge crane and Unit 2 reactor building bridge crane.

2.4.2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.5 and the referenced UFSAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 addition to RAI 2.4-11 (screening of crane/rail systems) discussed in Section 2.4.2 above, no other RAI was identified.

2.4.2.5.3 Conclusion

The staff reviewed the LRA, related structural/component information, 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 bridge cranes components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the bridge cranes components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.6 Gantry Cranes

2.4.2.6.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.6, the applicant described the gantry cranes. The gantry cranes are structural/mechanical components used during plant maintenance to move or remove equipment. Gantry cranes are not required for abnormal or accident plant operating modes. The gantry cranes are shared between units and consist of the heater bay gantry crane and the intake structure gantry crane. The gantry cranes are designed in accordance with CMAA-70 and American National Standards Institute (ANSI) B30.2.0-67. Only the intake structure gantry crane is within scope for license renewal, because it has the potential to impact the Class 1 service water intake structure should a structural failure occur. The passive physical crane structures, such as the main structural members, bridge, trolley, structural girders, rail system, and anchorage brackets, are considered subcomponents of the intake structure gantry crane.

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

The intended function, within the scope of license renewal, is to provide structural and/or functional support to NSR equipment. In LRA Table 2.4.2-5, the applicant identified the intake structure gantry crane as the gantry cranes component type that is within the scope of license renewal and subject to an AMR.

2.4.2.6.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.6 and the referenced UFSAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 addition to RAI 2.4-11 (screening of crane/rail systems) discussed in Section 2.4.2 above, no other RAI was identified.

2.4.2.6.3 Conclusion

The staff reviewed the LRA, related structural/component information, 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 gantry cranes components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the gantry cranes components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.7 Service Water Intake Structure

2.4.2.7.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.7, the applicant described the service water (SW) intake structure. The SW intake structure is located west of the intake canal and east of the augmented off-gas building. The SW intake structure is a seismic Class 1 structure approximately 104 feet long by 72 feet wide that directs cooling water to the service water pumps via four intake bays from the intake canal. In the SW intake structure, a separate chamber is provided for the 10 SW pumps, and two chambers are provided for the four screen wash water pumps with two pumps per chamber. The purpose of the SW intake structure is to house and protect SW system components. The structure is common to both units. The scope of the SW intake structure initially included the circulating water intake structure concrete and other concrete wetted structures in close proximity to the SW intake structure. However, the seismic Class 2 circulating water intake structure was screened out, because it is located a sufficient distance from the SW intake structure to preclude adverse interactions. The intake structure gantry crane is located within the physical boundary of the SW intake structure; and the crane, crane rails, and associated hardware have been screened with other gantry cranes, above. The concrete structure supporting the crane rails in the vicinity of the SW intake structure is addressed with the SW intake structure.

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

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

- provides structural and/or functional support to SR equipment
- provides shelter/protection to SR equipment
- provides rated fire barrier
- provides source of cooling water for plant shutdown
- provides missile barrier
- provides structural and/or functional support to NSR equipment
- provides a protective barrier for internal/external flood event
- provides structural support and/or shelter to components required for fire protection, ATWS, and/or SBO
- provides spray shield or curbs for directing flow

In LRA Table 2.4.2-6, the applicant identified the following SW intake structure component types that are within the scope of license renewal and subject to an AMR:

- anchorage/embedment - embedded
- anchorage/embedments - exposed (at the AMR stage, this commodity was consolidated within the proper support group: piping supports, electrical supports, equipment supports, HVAC supports, instrument supports, etc.)
- cable tray and conduit
- concrete above grade
- concrete below grade
- concrete submerged
- doors and framing/hardware
- electrical enclosure
- electrical support
- equipment support
- fire hose station
- floor drains
- HVAC support
- instrument racks
- instrument support
- masonry walls
- penetration
- pipe support

- roof-membrane / built-up
- seals and gaskets
- spray shield
- sprayed on coatings
- structural steel: platforms, stairways, mezzanines, and hardware

2.4.2.7.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.7 and the UFSAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 addition to RAIs 2.4-8, 2.4-10, 2.4-12, and 2.4-14 discussed in Section 2.4.2 above, no other RAI was identified.

2.4.2.7.3 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 SW intake structure 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 intake structure components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.8 Reactor Building

2.4.2.8.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.8, the applicant described the reactor building. The reactor building encloses the primary containment which consists of the drywell and pressure suppression chamber. The reactor building houses the refueling and reactor service equipment, new and spent fuel storage facilities, and other reactor services and auxiliary equipment. The reactor building serves as a secondary containment during normal plant operation when the primary containment is functional. In addition, the reactor building serves as the containment boundary during reactor refueling and maintenance operations, when the primary containment is open.

Each unit has a reactor building; it is not a common or shared structure. The secondary containment system includes the secondary containment (reactor building) structure and the SR systems provided to control the ventilation and cleanup of potentially contaminated volumes, exclusive of the primary containment, following a design-basis accident. The safety objective of the secondary containment is to limit the release of radioactivity to the environs after an accident so that the resulting exposures are kept to a practical minimum and are within regulatory limits. The secondary containment minimizes the consequences of an accident by providing a controlled release of the reactor building atmosphere through filters at an elevated point.

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

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

- provides pressure boundary and/or fission product barrier
- provides structural and/or functional support to SR equipment
- provides shelter/protection to SR equipment
- provides rated fire barrier
- provides missile barrier
- provides structural and/or functional support to NSR equipment
- provides a protective barrier for internal/external flood event
- provides structural support and/or shelter to components required for fire protection, ATWS, and/or SBO
- provides pipe whip restraint and/or jet impingement protection
- provides spray shield or curbs for directing flow

In LRA Table 2.4.2-7, the applicant identified the following reactor building component types that are within the scope of license renewal and subject to an AMR:

- anchorage/embedment - embedded
- anchorage/embedments - exposed (at the AMR stage, this commodity was consolidated within the proper support group: piping supports, electrical supports, equipment supports, HVAC supports, instrument supports, etc.)
- bellows (RCIC line bellows - MSIV pit)
- blow-out panel
- cable tray and conduit
- concrete above grade
- concrete below grade

- concrete curbs
- damper mounting
- doors and framing/hardware (includes airlock doors)
- electrical enclosure
- electrical support
- equipment support
- fire barrier assembly
- fire hose station
- floor drains
- HVAC support
- instrument racks
- instrument support
- liner (reactor cavity and spent fuel pool)
- masonry walls
- penetration (mechanical and electrical)
- pipe support
- roof-membrane / built-up
- seals and gaskets
- siding (pressure boundary)
- slide bearing plate (torus radial beams and spent fuel rack support)
- spent fuel storage rack
- spray shield
- sprayed on coatings
- structural steel: platforms, stairways, mezzanines, and hardware
- tendons (concrete girders spanning the reactor building)
- whip restraints

2.4.2.8.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.8 and the UFSAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 2.4.2.8 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 RAIs as discussed below.

In RAI 2.4-3, dated April 25, 2005, the staff stated that Group 2 structures defined in GALL Report, Chapter III, include the BWR reactor building with steel superstructure (enclosure building) and should be included within the scope of license renewal. As shown in LRA Table 2.4.2-7, it was not clear to the staff whether the entire enclosure building (including the metal structure, metal panels) was within the scope of license renewal. Therefore, the staff requested that the applicant clarify the extent to which the enclosure building is within the scope of license renewal, and to identify the location(s) of all its components in the LRA.

In its response dated May 11, 2005, the applicant indicated that the entire reactor building, including the metal superstructure, is within the scope of license renewal. The structural steel associated with the superstructure is addressed within the "Structural Steel" commodity group, the metal panels are addressed within the "Siding" and "Blow-Out Panel" commodity groups, and the roof is addressed within the "Roof-Membrane/Built-Up" commodity group, in LRA Table 2.4.2-7. With confirmation that the metal superstructure and metal panels are within the scope of license renewal, the staff's concern described in RAI 2.4-3 is resolved.

In RAI 2.4-5, dated April 25, 2005, the staff stated that in LRA Section 2.4.1.1, the applicant provided a discussion of the scoping and screening results for the primary containment structure. It was the staff's understanding that this LRA section addresses not only the primary containment (drywell, pressure suppression chamber, and vent system connecting the two structures), but all the structures inside the primary containment, all attachments to the containment, and the containment supports. LRA Table 2.4.1-1 identifies the primary containment component types requiring an AMR and the associated component intended function(s). Since LRA Table 2.4.1-1 combines many components under a single component type, the staff requested that the applicant identify the component type intended to cover the specific components listed below as (a) through (f); or to identify the locations in the LRA where these specific components are addressed. If these specific components are not considered to be within the scope of license renewal, the staff requested that the applicant provide the technical bases for their exclusion:

- (a) stabilizers between the reactor vessel and biological shield wall
- (b) stabilizer between the biological shield wall and drywell wall
- (c) biological shield wall anchor bolts
- (d) reactor vessel anchor bolts
- (e) reactor vessel support ring girder including anchor bolts and reactor vessel support pedestal
- (f) drywell head closure bolts and double gasket, tongue-and-groove seal arrangement

In its response, by letter dated May 11, 2005, the applicant responded to the staff's question as follows:

- (a) RPV stabilizers, located between the RPV and the biological shield wall, are within the scope of license renewal and are addressed within the "RPV Support" commodity group.
- (b) Stabilizers between the biological shield wall and drywell wall are seismic ties. These stabilizers are within the scope of license renewal and are addressed within the "Structural Steel" commodity group.
- (c) Biological shield wall anchor bolts associated with the biological shield wall are considered subcomponents of the "Sacrificial Shield Wall" commodity group, which is within the scope of license renewal.
- (d) Reactor vessel anchor bolts associated with the reactor vessel support are considered subcomponents of the "RPV Support" commodity group, which is within the scope of license renewal.
- (e) Reactor vessel support ring girder and anchor bolts are subcomponents of the "RPV Support" commodity group. The reactor vessel support pedestal is addressed within the "Concrete Above Grade" commodity group, which is within the scope of license renewal.
- (f) The drywell head closure bolts and double gasket, tongue-and-groove seal arrangement are subcomponents of the "Drywell Head" commodity group, which is within the scope for license renewal. The associated seals for the drywell head are addressed within the "Seals and Gaskets" commodity group, which is also within the scope of license renewal.

The staff found the applicant's response reasonable and acceptable. Therefore, the concerns described in RAI 2.4-5 are resolved.

In RAI 2.4-7, dated April 25, 2005, the staff stated that in its review of LRA Table 2.4.2-7, the staff found that a number of components are not listed. Therefore, the staff specifically requested that the applicant provide a description of the neutron-absorbing sheets used for the spent fuel storage racks, and confirm that they are part of the spent fuel storage racks that are within the scope of license renewal.

In its response, by letter dated May 11, 2005, the applicant stated that boral plates are an integral non-structural part of the basic fuel storage tube. These plates are sandwiched between the inner and outer wall of the storage tube and are not subject to dislocation, deterioration, or removal. Boral is considered a subcomponent of the "Spent Fuel Storage Rack" commodity group. As indicated in LRA Table 3.5.2-8, the boral sandwiched between two stainless steel tubes is within the scope of license renewal. Based on the above response, the staff's concern described in RAI 2.4-7 is resolved.

In RAI 2.4-9, dated April 25, 2005, the staff stated that, as a result of its review of LRA Section 2.4.2.8 and Table 2.4.2-7, the staff requested that the applicant clarify whether the reactor building pipe penetrations include some type of silicone rubber seals that allow for pipe movement while providing a seal between the pipe and the reactor buildings to maintain the

differential pressure. In addition, the applicant was requested to confirm whether these penetration seals are designated within the scope of license renewal and are included in LRA Table 2.4.2.7.

In the response, by letter dated May 11, 2005, the applicant indicated that the reactor building pipe penetrations are sealed around the piping by installation of an expandable rubber seal or other suitable fill material. These penetrations are within the scope of the AMR and are included in LRA Table 2.4.2-7. On this basis, the staff's concern described in RAI 2.4-9 is resolved.

2.4.2.8.3 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 building 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 building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.9 Augmented Off-Gas Building

2.4.2.9.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.9, the applicant described the AOG building. The AOG building, also known as the nitrogen and off-gas services building, is located east of the Unit 1 reactor building and west of the SW intake structure. The AOG building is constructed of reinforced concrete with three working elevations. The primary purpose of the AOG building is to house SR SSCs that provide a makeup source of nitrogen to control combustible gases in the reactor containment following a LOCA. The primary system providing the combustible gas control is the CAD subsystem of the CAC system, which is an ESF. Portions of the CAD are located in the AOG building. The AOG building is a seismic Class 1 structure designed to meet seismic, tornado, hurricane, and flooding requirements.

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

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

- provides structural and/or functional support to SR equipment
- provides shelter/protection to SR equipment
- provides rated fire barrier
- provides missile barrier

- provides structural and/or functional support to NSR equipment
- provides a protective barrier for internal/external flood event
- provides structural support and/or shelter to components required for fire protection, ATWS, and/or SBO

In LRA Table 2.4.2-8, the applicant identified the following AOG building component types that are within the scope of license renewal and subject to an AMR:

- anchorage/embedment - embedded
- anchorage/embedments - exposed (at the AMR stage, this commodity was consolidated within the proper support group: piping supports, electrical supports, equipment supports, HVAC supports, instrument supports, etc.)
- cable tray and conduit
- concrete above grade
- concrete below grade
- doors and framing/hardware
- electrical enclosure
- electrical support
- equipment support
- fire hose station
- instrument racks
- instrument support
- masonry walls
- penetrations (mechanical and electrical)
- pipe support
- slide bearing plate (nitrogen tank supports)
- structural steel: platforms, stairways, mezzanines, and hardware

2.4.2.9.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.8 and the UFSAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 addition to RAIs 2.4-8 and 2.4-10, discussed in Section 2.4.2 above, no other RAI was identified.

2.4.2.9.3 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 AOG building components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the AOG building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.10 Diesel Generator Building

2.4.2.10.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.10, the applicant described the DG building. The DG building is located east of the radwaste building and the reactor buildings. The diesel generator building is a reinforced concrete structure consisting of three levels housing an electrical spreading area, four diesel generator units, auxiliary equipment, electrical switchgear, diesel generator intake and exhaust equipment, and building ventilating equipment. The DG exhaust silencers are located on the DG building roof. After passing through the silencers, exhaust gases are routed away from DG building structures and do not impinge on any structures that could fall and block the DG exhaust flow path. Underground diesel fuel storage tanks are located to the east of the building in a reinforced concrete vault (i.e., the tank building).

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

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

- provides structural and/or functional support to SR equipment
- provides shelter/protection to SR equipment
- provides rated fire barrier
- provides missile barrier
- provides structural and/or functional support to NSR equipment
- provides a protective barrier for internal/external flood event

- provides structural support and/or shelter to components required for fire protection, ATWS, and/or SBO
- provides spray shield or curbs for directing flow

In LRA Table 2.4.2-9, the applicant identified the following DG building component types that are within the scope of license renewal and subject to an AMR:

- anchorage/embedment - embedded
- anchorage/embedments - exposed (at the AMR stage, this commodity was consolidated within the proper support group: piping supports, electrical supports, equipment supports, HVAC supports, instrument supports, etc.)
- blow-out panel
- cable tray and conduit
- concrete above grade
- concrete below grade
- concrete curbs
- damper mounting
- doors and framing/hardware
- electrical enclosure
- electrical support
- equipment support
- fire barrier assembly
- fire hose station
- floor drains
- HVAC support
- instrument racks
- instrument support
- masonry walls
- penetrations (mechanical and electrical)
- pipe support
- roof-membrane/built-up
- siding
- spray shield
- sprayed on coatings
- structural steel: platforms, stairways, mezzanines, and hardware

- vibration isolators (at the AMR stage, this commodity was consolidated within the proper support group: piping supports or HVAC supports)

2.4.2.10.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1.10 and the UFSAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 addition to RAIs 2.4-8, 2.4-10, and 2.4-14, discussed in Section 2.4.2 above, no other RAI was identified.

2.4.2.10.3 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 DG building 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 building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.11 Control Building

2.4.2.11.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.11, the applicant described the control building. The control building is a reinforced concrete structure located inside the protected area, between the two reactor buildings. The control building is a shared structure between the two units and is subdivided into the following principal areas: (1) cable spreading areas and battery rooms, (2) control room and electronic equipment rooms, and (3) HVAC equipment room located in a one-story penthouse. The control building is a seismic Class 1 structure designed to support, house, and protect SR systems and components. In addition, the control building supports the post-accident habitability function by providing radiation shielding and a barrier to fission products for control room operating staff.

The control building contains SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the control building could potentially prevent

the satisfactory accomplishment of an SR function. In addition, the control building performs functions that support fire protection, ATWS, and SBO.

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

- provides pressure boundary and/or fission product barrier
- provides structural and/or functional support to SR equipment
- provides shelter/protection to SR equipment
- provides rated fire barrier
- provides missile barrier
- provides structural and/or functional support to NSR equipment
- provides a protective barrier for internal/external flood event
- provides structural support and/or shelter to components required for fire protection, ATWS, and/or SBO

In LRA Table 2.4.2-10, the applicant identified the following control building component types that are within the scope of license renewal and subject to an AMR:

- anchorage/embedment - embedded
- anchorage/embedments - exposed (at the AMR stage, this commodity was consolidated within the proper support group: piping supports, electrical supports, equipment supports, HVAC supports, instrument supports, etc.)
- battery rack
- cable tray and conduit
- concrete above grade
- concrete below grade
- control room ceiling
- damper mounting
- doors and framing/hardware
- electrical enclosure
- electrical support
- equipment support
- fire barrier assembly
- fire hose station
- HVAC support
- instrument racks
- instrument support

- masonry walls
- penetration (mechanical and electrical)
- pipe support
- raised floor
- roof-membrane/built-up
- seals and gaskets
- sprayed on coatings
- structural steel: platforms, stairways, mezzanines, and hardware

2.4.2.11.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.11 and the UFSAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 addition to RAIs 2.4-8, 2.4-10, and 2.4-14, discussed in Section 2.4.2 above, no other RAI was identified.

2.4.2.11.3 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 control building components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the control building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.12 Turbine Building

2.4.2.12.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.12, the applicant described the turbine building. The turbine building is located north of the service building and west of reactor and control buildings, within the protected area. The turbine building and adjacent auxiliary bay houses the turbine generators,

condensers, reactor feedwater systems, as well as other turbine plant auxiliary equipment, electrical switchgear and reactor recirculation pump motor generator sets. The building is supported on spread footings founded on structural backfill and is constructed of reinforced concrete up to and including the operating floor. Reinforced concrete shield walls for equipment are provided above the operating floor for radiation protection. The superstructure above the operating floor is a steel-framed crane bay with panel siding and roof constructed of metal deck, insulation, and membrane roofing. The turbine building is a seismic Class 2 structure that provides support for equipment credited in the performance of the AST function.

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

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

- provides structural and/or functional support to SR equipment
- provides shelter/protection to SR equipment
- provides rated fire barrier
- provides structural and/or functional support to NSR equipment
- provides a protective barrier for internal/external flood event
- provides structural support and/or shelter to components required for fire protection, ATWS, and/or SBO

In LRA Table 2.4.2-11, the applicant identified the following turbine building component types that are within the scope of license renewal and subject to an AMR:

- anchorage/embedment
- anchorage/embedments - exposed (at the AMR stage, this commodity was consolidated within the proper support group: piping supports, electrical supports, equipment supports, HVAC supports, instrument supports, etc.)
- cable tray and conduit
- concrete above grade
- concrete below grade
- concrete curbs
- doors and framing/hardware
- electrical enclosure
- electrical support
- equipment support
- fire barrier assembly
- fire hose station

- instrument racks
- instrument support
- masonry walls
- penetrations (mechanical and electrical)
- pipe support
- roof-membrane/built-up
- siding
- structural steel: platforms, stairways, mezzanines, and hardware

2.4.2.12.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.12 and the UFSAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 addition to RAIs 2.4-8 and 2.4-10, discussed in Section 2.4.2 above, no other RAI was identified.

2.4.2.12.3 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 turbine building components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the turbine building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.13 Radwaste Building

2.4.2.13.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.13, the applicant described the radwaste building. The radwaste building is located inside the protected area and is constructed on a reinforced concrete mat founded on structural fill. The building consists of two principal levels constructed with reinforced

concrete walls and slabs. The thickness of the walls and slabs was determined by shielding and structural requirements. The radwaste building was designed as a Class 2 structure; however, to ensure the integrity of the Class 1 control building and Class 1 storage tanks in the radwaste building basement, the radwaste building was designed for Class 1 seismic loads. The radwaste building foundation mat supports the following augmented quality equipment: (1) concentrated waste tank, (2) waste collector tank, and (3) waste neutralizer tanks. The radwaste building is a shared structure between the two units. The design function of the radwaste building is to support, house, and protect radwaste systems and components.

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

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

- provides structural and/or functional support to SR equipment
- provides shelter/protection to SR equipment
- provides missile barrier
- provides structural and/or functional support to NSR equipment
- provides a protective barrier for internal/external flood event
- provides structural support and/or shelter to components required for fire protection, ATWS, and/or SBO

In LRA Table 2.4.2-12, the applicant identified the following radwaste building component types that are within the scope of license renewal and subject to an AMR:

- anchorage/embedment - embedded
- anchorage/embedments - exposed (at the AMR stage, this commodity was consolidated within the proper support group: piping supports, electrical supports, equipment supports, HVAC supports, instrument supports, etc.)
- cable tray and conduit
- concrete above grade
- concrete below grade
- doors and framing/hardware
- electrical enclosure
- electrical support
- fire hose station
- instrument support
- pipe support
- roof-membrane/built-up

2.4.2.13.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.13 and the UFSAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 addition to RAI 2.4-10, discussed in Section 2.4.2 above, no other RAI was identified.

2.4.2.13.3 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 radwaste building components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the radwaste building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.14 Water Treatment Building

2.4.2.14.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.14, the applicant described the water treatment building. The water treatment building is a steel frame structure located within the protected area north of the Unit 1 reactor building. The water treatment building contains fire protection pumps and other fire protection-related SSCs, which support BSEP fire protection commitments. The water treatment building is a single structure that contains both Units 1 and 2 components. It is a seismic Class 2 structure that does not support any SR components or functions.

The water treatment building performs functions that support fire protection.

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

- provides rated fire barrier
- provides structural support and/or shelter to components required for fire protection, ATWS, and/or SBO

In LRA Table 2.4.2-13, the applicant identified the following water treatment building component types that are within the scope of license renewal and subject to an AMR:

- anchorage/embedment - embedded
- anchorage/embedments - exposed (at the AMR stage, this commodity was consolidated within the proper support group: piping supports, electrical supports, equipment supports, HVAC supports, instrument supports, etc.)
- battery rack
- cable tray and conduit
- concrete above grade
- concrete below grade
- electrical enclosure
- electrical support
- equipment support
- fire barrier assembly
- instrument support
- pipe support
- siding
- structural steel: platforms, stairways, mezzanines, and hardware

2.4.2.14.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1.14 and the UFSAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 addition to RAI 2.4-12, discussed in Section 2.4.2 above, no other RAI was identified.

2.4.2.14.3 Conclusion

The staff reviewed the LRA, related structural/component information, 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 water treatment building components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the water treatment building components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.15 Miscellaneous Structures and Out-Buildings

2.4.2.15.1 Summary of Technical Information in the Application

In LRA Section 2.4.2.15, the applicant described the miscellaneous structures and out-buildings. The miscellaneous structures and out-buildings consist of those structures and outbuildings that are stand-alone structures and not part of, or attached to, one of the major building systems. The miscellaneous structures and out-buildings evaluated for license renewal include foundations and structural support arrangements for mechanical system equipment such as outside tanks, electrical racks, and oil loading stations. Typically, the license renewal classification for miscellaneous structures or out-buildings is the same as the classification of the electrical or mechanical SCs that the miscellaneous structures or out-buildings support. The following miscellaneous structures and out-buildings were determined to be within the scope of license renewal: (1) HPCI CO₂ bottle storage buildings, Units 1 and 2, (2) condensate storage tank foundations, Units 1 and 2, (3) diesel generator building oil tank room foam system concentrate tank, (4) SW valve pits, Units 1 and 2, (5) fuel oil storage tank foundation, (6) fire protection water tank foundation, (7) stack and filter house, (8) manholes and duct banks, and (9) demineralized water tank.

The miscellaneous structures and out-buildings contain SR components that are relied upon to remain functional during and following DBEs. The failure of NSR SSCs in the miscellaneous structures and out-buildings could potentially prevent the satisfactory accomplishment of an SR function. In addition, the miscellaneous structures and out-buildings perform functions that support fire protection and SBO.

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

- provides structural and/or functional support to SR equipment
- provides shelter/protection to SR equipment
- provides structural and/or functional support to NSR equipment
- provides a path for release of filtered or unfiltered gaseous discharge
- provides structural support and/or shelter to components required for fire protection, ATWS, and/or SBO

In LRA Table 2.4.2-14, the applicant identified the following miscellaneous structures and out-buildings component types that are within the scope of license renewal and subject to an AMR:

- anchorage/embedment - embedded
- anchorage/embedments - exposed

- cable tray and conduit
- concrete above grade
- concrete below grade
- concrete BWR vent stack
- tank foundation
- electrical enclosure
- electrical support
- instrument support
- manholes (addressed under concrete below grade)
- piles
- siding
- structural steel: platforms, stairways, mezzanines, and hardware

2.4.2.15.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.15 and the UFSAR using the evaluation methodology described in SER Section 2.4. The staff conducted its review in accordance with the guidance described in SRP-LR Section 2.4.

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 addition to RAI 2.4-10, discussed in Section 2.4.2 above, no other RAI was identified.

2.4.2.15.3 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 miscellaneous structures and out-buildings components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant adequately identified the miscellaneous structures and out-buildings components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5 Scoping and Screening Results – Electrical & Instrumentation and Controls Systems

This section documents the staff's review of the applicant's scoping and screening results for electrical and I&C systems. Specifically, this section discusses the electrical and instrumentation and controls component commodity groups system.

In accordance with the requirements of 10 CFR 54.21(a)(1), the applicant must identify and list SSCs that are within the scope of license renewal and subject to an AMR. To verify that the applicant properly implemented its methodology, the staff focused its review on the implementation results. This approach allowed the staff to confirm that there were no omissions of electrical and I&C system components that meet the scoping criteria and are subject to an AMR.

Staff Evaluation Methodology: The staff's evaluation of the information provided in the LRA was performed in the same manner for all electrical and I&C systems. The objective of the review was to determine if the components and supporting structures for a specific electrical and I&C system, that appeared to meet the scoping criteria specified in the Rule, were identified by the applicant as 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 subject to an AMR in accordance with 10 CFR 54.21(a)(1).

Scoping: To perform its evaluation, the staff reviewed the applicable LRA section and associated component drawings, focusing its review on components that had not been identified as within the scope of license renewal. The staff reviewed relevant licensing basis documents, including the updated final safety analysis report (UFSAR), for each electrical and I&C system component to determine if the applicant had omitted components with intended functions delineated under 10 CFR 54.4(a) from the scope of license renewal. The staff also reviewed the licensing basis documents to determine if all intended functions delineated under 10 CFR 54.4(a) were specified in the LRA. If omissions were identified, the staff requested additional information to resolve the discrepancies.

Screening: Once the staff completed its review of the scoping results, the staff evaluated the applicant's screening results. For those systems and components with intended functions, the staff sought to determine if the functions are performed 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 these electrical and I&C systems and components were subject to an AMR as required by 10 CFR 54.21(a)(1). If discrepancies were identified, the staff requested additional information to resolve them.

After applying the scoping and screening methodology, the applicant categorized the components requiring an AMR into passive commodity groups. In LRA Section 2.5.1, the applicant identified the SCs of the electrical and I&C systems that are subject to an AMR for license renewal.

2.5.1 Electrical and Instrumentation and Controls Component Commodity Groups

The applicant performed the screening for electrical/I&C components on a generic component commodity group basis for the electrical/I&C systems within the scope of license renewal. The in-scope electrical/I&C component commodity group systems and structures identified at BSEP in LRA Section 2.5.1 are listed below:

ELECTRICAL/I&C COMPONENT COMMODITY GROUPS FOR IN-SCOPE SYSTEMS AND STRUCTURES AT BSEP			
Alarm Units	Electrical portions of Electrical/I&C Penetration Assemblies	Light Bulbs	Solenoid Operators
Analyzers		Load Centers	Signal Conditioners
Annunciators	Elements	Loop Controllers	Solid-State Devices
Batteries	Fuses	Meters	Splices
Phase bus	Generators	Motor Control Centers	Surge Arresters
Chargers	Heat Tracing	Motors	Switches
Circuit Breakers	Heaters	Power Distribution Panels	Switchgear
Converters	High-voltage Insulators	Power Supplies	Switchyard Bus
Communication Equipment	Indicators	Radiation Monitors	Terminal Blocks
Electrical Controls and Panel Internal Component Assemblies	Insulated Cables and Connections	Recorders	Thermocouples
		Regulators	Transducers
	Inverters	Relays	Transformers
	Isolators	RTDs	Transmitters
		Sensors	Transmission Conductors

The applicant described the supporting structures and components of the electrical/I&C component commodity groups in the following sections of the LRA:

- 2.5.3.1 non-EQ insulated cables and connections
- 2.5.3.2 phase bus
- 2.5.3.3 non-EQ electrical/I&C penetration assemblies
- 2.5.3.4 high voltage insulators
- 2.5.3.5 switchyard bus
- 2.5.3.6 transmission conductors

The corresponding subsections of this SER (2.5.1.1 – 2.5.1.6, respectively) present the staff's review findings with respect to the electrical/I&C component commodity groups for Units 1 and 2. SER Section 2.5.1.7 addresses the SBO, which is presented in LRA Section 2.1.4.2.

In its RAIs 2.5-1 and 2.5.1-1, dated May 18, 2005, the staff requested that the applicant clarify why switchyard bus connections and transmission conductor connections are not included in the electrical/I&C component commodity groups table.

In its response, by letter dated June 14, 2005, the applicant stated that the connections associated with the commodity groups "Switchyard Bus" and "Transmission Conductors" are included in these commodity groups.

The terminology shown in the table was selected for consistency with previous LRAs and to standardize electrical/I&C component commodity group terminology. Connections were evaluated as part of the AMR for the commodity groups. Switchyard bus connections were evaluated as shown in LRA Table 3.6.2-1, plant-specific note 607; while transmission conductor connections were evaluated as shown in LRA Table 3.6.2-1, plant-specific note 608.

Based on the above information, the staff found that the applicant adequately identified the switchyard bus and the transmission conductors connections that are subject to an AMR. Therefore, the staff's concerns described in RAIs 2.5-1 and 2.5.1-1 are resolved.

2.5.1.1 Non-EQ Insulated Cables and Connections

2.5.1.1.1 Summary of Technical Information in the Application

The function of insulated cables and connections is to electrically connect specified sections of an electrical circuit to deliver voltage, current or signals. Electrical cables and their connections are reviewed as a single component commodity group. The types of connections included in this review are splices, connectors, fuse holders, and terminal blocks.

In LRA Section 2.5.3.1, the applicant stated that numerous insulated cables and connections are included in the EQ Program and, therefore, are not subject to an AMR in accordance with the screening criteria of 10 CFR 54.21(a)(1)(ii). Insulated cables and connections that perform an intended function within the scope of license renewal, but are not included in the EQ Program, meet the criterion of 10 CFR 54.21(a)(1)(ii) and are subject to an AMR. However, insulated cables and connections inside the enclosure of an active device (e.g., motor leads and connections, and cables and connections internal to relays, chargers, switchgear, transformers, power supplies, etc.) are maintained along with the other subcomponents and piece-parts inside the enclosure and are not subject to an AMR.

In LRA Section 2.5.3.1, the applicant identified the non-EQ insulated cables and connections component types that are within the scope of license renewal and subject to an AMR such as splices, connectors, fuse holders, and terminal blocks.

In LRA Section 2.1.4.5, the applicant stated that ISG-5 for screening of fuse holders determined that fuse holders that are not part of an active component or assembly, such as switchgear, power supplies, power inverters, battery chargers, and circuit boards, are considered to be passive electrical components and, therefore, require an AMR. Such fuse holders are evaluated for license renewal in the same manner as terminal blocks and other types of electrical connections. ISG-5 also determined that fuse holders that are piece parts of an active assembly are not subject to an AMR, because they would be subject to periodic inspection and maintenance in accordance with the maintenance and surveillance activities applicable to the active assembly.

The applicant performed a review of fuse holders, using the guidance of ISG-5, and determined that those fuse holders are part of a larger (active) assembly. Therefore, it was concluded that no fuse holders require an AMR.

2.5.1.1.2 Staff Evaluation

The staff reviewed LRA Section 2.5.3.1 using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR, Section 2.5.

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 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 applicant performed a review of fuse holders, using the guidance of ISG-5, and determined that those fuse holders are part of a larger (active) assembly. Therefore, the staff concluded that no fuse holders require an AMR.

The staff found that the applicant correctly identified the cables and connections as component commodity group that perform their function without moving parts or a change in configuration or properties (passive and long lived) and are, therefore, subject to an AMR.

2.5.1.1.3 Conclusion

The staff reviewed the LRA and the UFSAR 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 those cables and connectors that are within the scope of license renewal, as required by 10 CFR 54.4(a), and subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.2 Phase Bus

2.5.1.2.1 Summary of Technical Information in the Application

In LRA Section 2.5.3.2, the applicant described the phase bus. A phase bus is used to connect two or more elements (electrical equipment such as switchgear and transformers) of an electrical circuit. Isolated phase bus is an electrical bus in which each phase conductor is enclosed by an individual metal housing separated from adjacent conductor housings by an air space. Non-segregated phase bus is an electrical bus constructed with all phase conductors in a common enclosure without barriers (only air space) between the phases.

The phase bus contains SR components that are relied upon to remain functional during and following DBEs.

The intended function, within the scope of license renewal, is to provide electrical continuity.

In LRA Section 2.5.3.2, the applicant identified the following phase bus component types that are within the scope of license renewal and subject to an AMR:

- portions of the isolated phase bus used for backfeeding offsite power to the main transformers and unit auxiliary transformers (UATs) during recovery from an SBO event
- 4.16 kilovolt (kV), non-segregated phase bus connecting site auxiliary transformer (SAT) #1 disconnect links to 4.16 kV buses 1C and 1D
- 4.16 kV, non-segregated phase bus connecting SAT #2 disconnect links to 4.16 kV buses 2C and 2D
- 4.16 kV, non-segregated phase bus connecting UAT #1 to buses 1C and 1D
- 4.16 kV, non-segregated phase bus connecting UAT #2 to buses 2C and 2D
- 4.16 kV, non-segregated phase bus connecting emergency switchgear E1 and E2
- 4.16 kV, non-segregated phase bus connecting emergency switchgear E1 and E3
- 4.16 kV, non-segregated phase bus connecting emergency switchgear E2 and E4
- 4.16 kV, non-segregated phase bus connecting emergency switchgear E3 and E4
- 480V, non-segregated phase bus connecting unit substations E5 and E6
- 480V, non-segregated phase bus connecting unit substations E7 and E8

2.5.1.2.2 Staff Evaluation

The staff reviewed LRA Section 2.5.3.2 using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR, Section 2.5.

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 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 phase buses identified by the applicant consist of non-segregated phase buses that are used for backfeeding offsite power during recovery from an SBO event, 4.16 kV, and 480 V plant-wide to conduct electrical power (voltage and current), either continuously or intermittently between various equipment and components.

2.5.1.2.3 Conclusion

The staff reviewed the LRA and the UFSAR 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 phase bus that are within the scope of license

renewal, as required by 10 CFR 54.4(a), and subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.3 Non-EQ Electrical/I&C Penetration Assemblies

2.5.1.3.1 Summary of Technical Information in the Application

In LRA Section 2.5.3.3, the applicant described the non-EQ electrical/I&C penetration assemblies. Many electrical/I&C penetration assemblies are included in the EQ Program and, therefore, do not meet the criterion of 10 CFR 54.21(a)(1)(ii) and are not subject to an AMR. A review of the remaining, non-EQ, electrical/I&C penetration assemblies demonstrated that most were not within the scope of license renewal because they either did not contain any electrical circuits (such as, spare penetrations) and therefore did not support an electrical intended function, or they did not contain electrical circuits that supported a system-level electrical/I&C intended function for license renewal. After eliminating these penetration assemblies from further consideration, a small number of non-EQ Program penetrations remained. These were determined to meet the screening criterion of 10 CFR 54.21(a)(1)(ii) and are, therefore, subject to an AMR.

The non-EQ electrical/I&C penetration assemblies contain SR components that are relied upon to remain functional during and following DBEs.

The intended function, within the scope of license renewal, is to provide electrical continuity.

2.5.1.3.2 Staff Evaluation

The staff reviewed LRA Section 2.5.3.4 using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR, Section 2.5.

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 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 electrical penetrations identified by the applicant requiring an AMR are non-EQ related and used plant-wide to conduct electrical power (voltage and current), either continuously or intermittently between two sections of the electrical I&C circuits supplying power to various equipment in the containment.

2.5.1.3.3 Conclusion

The staff reviewed the LRA and the UFSAR 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 non-EQ electrical/I&C penetration assemblies that are within the scope of license renewal, as required by 10 CFR 54.4(a), and subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.4 High Voltage Insulators

2.5.1.4.1 Summary of Technical Information in the Application

In LRA Section 2.5.3.4, the applicant described the high-voltage insulators. The high-voltage insulators are provided on the circuits used to supply power from the switchyard to plant buses during recovery from an SBO. The function of high-voltage insulators is to insulate and support electrical conductors.

The high-voltage insulators contain SR components that are relied upon to remain functional during and following DBEs. In addition, the high-voltage insulators perform functions that support SBO.

The intended function, within the scope of license renewal, is to insulate and support an electrical conductor.

In LRA Section 2.5.3.4, the applicant identified the high-voltage insulators component types that are within the scope of license renewal and subject to an AMR.

2.5.1.4.2 Staff Evaluation

The staff reviewed LRA Section 2.5.3.4 using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR, Section 2.5.

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 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).

As identified by the applicant, the high-voltage insulators are associated with the in-scope portion of the offsite power system as station post insulators providing support for the switchyard bus connecting the high-voltage station auxiliary transformers and the circuit switchers. In addition, they support the circuit switches themselves.

2.5.1.4.3 Conclusion

The staff reviewed the LRA and the UFSAR 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 high-voltage insulators that are within the scope of license renewal, as required by 10 CFR 54.4(a), and subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.5 Switchyard Bus

2.5.1.5.1 Summary of Technical Information in the Application

In LRA Section 2.5.3.5, the applicant described the switchyard bus. The switchyard bus provides a portion of the circuits supplying power from the switchyard to plant buses during recovery from an SBO. The function of the switchyard bus is to provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals.

The switchyard bus contains SR components that are relied upon to remain functional during and following DBEs.

The intended function, within the scope of license renewal, is to provide electrical continuity.

In LRA Section 2.5.3.5, the applicant identified the switchyard bus component types that are within the scope of license renewal and subject to an AMR.

2.5.1.5.2 Staff Evaluation

The staff reviewed LRA Section 2.5.3.5 using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR, Section 2.5.

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 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).

As identified by the applicant, the switchyard bus associated within the scope of license renewal is the portion of the offsite power system interconnections between the Unit 1 circuit switcher and the high-voltage station auxiliary transformer, and between the Unit 2 circuit switcher and the high-voltage station auxiliary transformer.

2.5.1.5.3 Conclusion

The staff reviewed the LRA and the UFSAR 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 switchyard bus that are within the scope of license renewal, as required by 10 CFR 54.4(a), and subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.6 Transmission Conductors

2.5.1.6.1 Summary of Technical Information in the Application

In LRA Section 2.5.3.6, the applicant described the transmission conductors. The transmission conductors provide a portion of the circuits used to supply power from the switchyard to plant buses during recovery from an SBO. The function of transmission conductors is to provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals.

The transmission conductors contain SR components that are relied upon to remain functional during and following DBEs. The intended function, within the scope of license renewal, is to provide electrical continuity.

In LRA Section 2.5.3.6, the applicant identified the transmission conductor components that are within the scope of license renewal and subject to an AMR.

2.5.1.6.2 Staff Evaluation

The staff reviewed LRA Section 2.5.3.6 using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR, Section 2.5.

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 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 transmission conductors identified by the applicant that are within the scope of license renewal are the short connections from each unit's high-voltage station auxiliary transformer surge arresters to sections of aluminum switchyard bus. These conductors are aluminum jumper cables with a steel core (ACSR) in short sections between rigidly supported connecting equipment.

2.5.1.6.3 Conclusion

The staff reviewed the LRA and the UFSAR to determine whether any SSCs that should be within the scope of license renewal were not omitted 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 transmission conductors that are within the scope of license renewal, as required by 10 CFR 54.4(a), and subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.7 Station Blackout (SBO)

2.5.1.7.1 Summary of Technical Information in the Application

In LRA Section 2.1.4.2, the applicant stated that staff guidance ISG-2 clarifies that the SSCs relied on for recovery from an SBO, in addition to SSCs relied on for coping with an SBO, should be within the scope of license renewal. The staff position is that the plant system portion of the offsite power system should be included within scope. Including SBO recovery equipment within the scope of license renewal brings into scope various electrical components and associated structures associated with providing offsite power via the switchyard to plant electrical buses.

The following specific systems support recovery from an SBO event and have been included in the scope of license renewal in accordance with ISG-2.

- 230KV switchyard system (includes the main power transformers)
- startup auxiliary transformers and unit auxiliary transformers
- generator iso-phase bus system
- switchyard relay building
- structural components/commodities that support the above systems.

The passive, long-lived electrical components composing the restoration power path for offsite power that are subject to an AMR are as follows:

- generator isolated phase (iso-phase) bus duct
- non-segregated 4.16KV & 480V bus duct
- high-voltage insulators
- switchyard bus
- insulated cables and connections
- transmission conductors and connections

2.5.1.7.2 Staff Evaluation

The staff reviewed LRA Section 2.1.4.2 using the evaluation methodology described in SER Section 2.5. The staff conducted its review in accordance with the guidance described in SRP-LR, Section 2.5.

In RAI 2.1.4.2.1, dated May 18, 2005, the staff requested that the applicant (1) identify whether there are any underground power circuits used in the SBO recovery paths; (2) provide a detailed description of the SBO recovery path; and (3) confirm whether the motor-operated disconnect (MOD) qualified as a first breaker in the SBO recovery path.

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

- (1) There are no underground power circuits used in the SBO recovery path.
- (2) There are two offsite sources of auxiliary power available when recovering from an SBO event. The first (i.e., preferred) source of offsite power is via the Startup Auxiliary Transformer (SAT). The SAT is fed from the 230KV Switchyard, which has multiple sources of supply from the 230KV transmission and distribution system. The BSEP Unit 1 and Unit 2 230KV Switchyards are electrically independent of each other and have no crosstie capabilities. The second (i.e., alternate) source of offsite power when recovering from an SBO event is obtained by backfeeding through the Main Transformers from the 230KV Switchyard to the Unit Auxiliary Transformer (UAT). Prior to backfeeding the Main Transformers, the no-load disconnect switch to the Main Generator must be opened. See Figure 2.1-2 of the LRA for a drawing of the SBO recovery path.
- (3) Unit 2 Switchyard MOD M15 and MOD M16 have been replaced with 230KV gas-filled power circuit breakers (PCBs). PCB M15 and PCB M16 represent the first breaker used for the preferred source of offsite power in the Unit 2 SBO recovery path.

The License Renewal boundary for the Unit 1 SBO recovery path is currently MOD M11 and MOD M12. These MODs are scheduled to be replaced with circuit breakers during the spring of 2006. Pending installation of the Unit 1 circuit breakers, the License Renewal boundary for the Unit 1 SBO recovery path will be at the circuit breakers for the individual offsite feeders.

For both Unit 1 and Unit 2, the License Renewal boundary for the SBO recovery path will be at the first circuit breaker, consistent with ISG-2.

For a detailed description of the SBO recovery path, see the response to RAI 2.1.4.2-1.b above.

The staff concurred with the applicant's response. Therefore, the staff's concern described in RAI 2.1.4-1 is resolved.

2.5.1.7.3 Conclusion

The staff reviewed the LRA and the above RAI response for scoping and screening results of SBO components to determine whether any SCCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. On the basis of this review, the staff concluded that the applicant had adequately identified the components of the SBO system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the components of the SBO system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).