2. SCOPING AND SCREENING METHODOLOGY FOR IDENTIFYING STRUCTURES AND COMPONENTS SUBJECT TO AGING MANAGEMENT REVIEW, AND IMPLEMENTATION RESULTS

This section documents the staff's review of the methodology used by the applicant to identify structures, systems, and components (SSCs) that are within the scope of the Rule, and to identify structures and components (SCs) that are within the scope of the Rule and are subject to an aging management review (AMR). Structures and components subject to an AMR are those that perform an intended function, as described in 10 CFR 54.4, and meet two criteria:

(1) They perform such functions without moving parts or without a change in configuration or properties, as set forth in 10 CFR 54.21(a)(1)(i) (denoted as "passive" SCs).

(2) They are not subject to replacement based on a qualified life or specified time period, as set forth in 10 CFR 54.21(a)(1)(ii) (denoted as "long-lived" SCs).

The identification of the SSCs within the scope of license renewal is called "scoping." For those SSCs within the scope of license renewal, the identification of "passive," "long-lived" SCs that are subject to an AMR is called "screening."

The staff's review of the scoping and screening methodology is presented in Section 2.1 of this Safety Evaluation Report (SER). The staff's review of the results of the implementation of the scoping and screening methodology is presented in Sections 2.2 through 2.5 of this SER.

By letter dated July 30, 2002, the applicant submitted its request and application for renewal of the operating license for Ginna Nuclear Power Plant. As an aid to the staff during the review, the applicant provided evaluation boundary drawings that identify the functional boundaries for systems and components within the scope of license renewal. These evaluation boundary drawings are not part of the license renewal application (LRA).

On March 24 and March 28, 2003, the staff issued requests for additional information (RAIs) regarding the applicant's methodology for identifying SSCs at Ginna that are within the scope of license renewal and subject to an AMR and the results of the applicant's scoping and screening process. By letters dated April 11, May 13, May 23, June 3, and June 10, 2003, the applicant provided responses to the RAIs.

The staff conducted a scoping and screening inspection from June 23 — 27, 2003, to examine activities that supported the LRA, including the inspection of procedures and representative records and interviews with personnel regarding the process of scoping and screening plant equipment to select SSCs within the scope of the Rule and subject to an AMR. The inspection team did not identify any findings as defined in U.S. Nuclear Regulatory Commission (NRC) Inspection Manual, Chapter 0612, "Power Reactor Inspection Report." On this basis, the NRC staff concluded that the applicant's scoping and screening process was successful in identifying those SSCs required to be considered for aging management. In addition, for a sample of plant systems, the inspection team performed visual examinations of accessible portions of the systems to observe any effects of equipment aging. Finally, the inspection concluded that the scoping and screening portion of the applicant's license renewal activities was conducted as

described in the LRA and that documentation supporting the application is in an auditable and retrievable form.

2.1 Scoping and Screening Methodology

2.1.1 Introduction

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

In Section 2.0, “Scoping and Screening Methodology for Identifying Structures and Components Subject to Aging Management Review, and Implementation Results,” of the license renewal application (LRA), the applicant described the scoping and screening methodology used to identify SSCs at the R.E. Ginna Nuclear Plant (Ginna) within the scope of license renewal, as well as SCs that are subject to an AMR. The staff reviewed the applicant’s scoping and screening methodology to determine if it meets the scoping requirements stated in 10 CFR 54.4(a) and the screening requirements stated in 10 CFR 54.21.

In developing the scoping and screening methodology for the Ginna LRA, the applicant considered the requirements of the Rule (10 CFR Part 54), the Statements of Consideration (SOCs) for the Rule, and the guidance presented by the Nuclear Energy Institute (NEI) in 95-10, “Industry Guideline for Implementing the Requirements of 10 CFR Part 54 in the License Renewal Rule,” Revision 3, March 2001. In addition, the applicant also considered the NRC staff’s correspondence with other applicants and with the NEI in the development of this methodology.

2.1.2 Summary of Technical Information in the Application

In Sections 2.0 and 3.0 of the LRA, the applicant provides the technical information required by 10 CFR 54.21(a). In Section 2.1, “Scoping and Screening Methodology,” of the LRA, the applicant describes the process used to identify the SSCs that meet the license renewal scoping criteria under 10 CFR 54.4(a), as well as the process used to identify the SCs that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

Additionally, Section 2.2, “Plant Level Scoping Results,” Section 2.3, “System Scoping and Screening Results: Mechanical Systems,” Section 2.4, “Scoping and Screening Results: Structures,” and Section 2.5, “Scoping and Screening Results: Electrical and Instrumentation and Controls Systems,” of the LRA amplify the process that the applicant use to identify the SCs that are subject to an AMR. Section 3 of the LRA, “Aging Management Review Results,” contains the following information:

- Section 3.1 - “Review Methodology
- Section 3.2 - “Aging Management of Reactor Coolant System”
- Section 3.3 - “Aging Management of Engineered Safety Features Systems”

- Section 3.4 - “Aging Management of Auxiliary Systems”
- Section 3.5 - “Aging Management of Steam and Power Conversion Systems”
- Section 3.6 - “Aging Management of Structures and Component Supports”
- Section 3.7 - “Aging Management of Electrical and Instrument and Controls Systems.”

Section 4 of the LRA, “Time-Limited Aging Analyses,” contains the applicant’s identification and evaluation of time-limited aging analyses.

2.1.2.1 Scoping Methodology

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

2.1.2.1.1.1. Safety-Related Criteria in Accordance with 10 CFR 54.4(a)(1)

In LRA Sections 2.1.3, “System and Structure Function Determination,” 2.1.4, “Design Codes, Standards, and SSC Safety Classifications,” and 2.1.5, “Application of License Renewal Scoping Criterion,” the applicant discussed the scoping methodology as it related to the safety-related criteria in accordance with 10 CFR 54.4(a)(1). With respect to the safety-related criteria, the applicant stated that the SSCs determined, by review of the safety classification scheme established at the site, to be safety-related were included within the scope of license renewal. The applicant described the site safety classification scheme in Section 2.1.5.1 of the LRA. The safety classification scheme was recorded in the applicant’s controlled Configuration Management Information System (CMIS) database, which was used extensively during the LRA scoping activities. The applicant stated in Section 2.1.4 of the LRA that the safety classification process provided a comprehensive review of plant SSCs using the guidance contained in American National Standards Institute (ANSI)/ American Nuclear Safety (ANS)-51.1-1983. Based on functional rules, plant SSCs were designated as Safety Class 1 (SC-1), Safety Class 2 (SC-2), Safety Class 3 (SC-3), Safety Significant (SS), and Non-Nuclear Safety (NNS). The applicant concluded that the functional safety-related criterion used in the safety classification process encompasses the definition of safety-related specified in 10 CFR 54.4(a)(1). Consequently, components designated as SC-1, 2, or 3 were considered to be within the scope of License Renewal.

The scoping results for safety-related SSCs, based on the safety classification program were supplemented by reviews of the updated final safety analysis report (UFSAR), technical specifications, design documents, and design drawings to ensure that all system functions were identified and considered. The applicant concluded that the scoping process used to identify safety-related systems and structures was consistent with, and satisfied the criteria of, 10 CFR 54.4(a)(1).

2.1.2.1.1.2 Non-safety-Related Criteria in Accordance with 10 CFR 54.4(a)(2)

In Section 2.1.5.2, “Non-Safety Related Criteria Pursuant to 10 CFR 54.4(a)(2) (Criterion 2),” of the LRA, the applicant discussed the scoping methodology as it related to the non-safety-related criteria, in accordance with 10 CFR 54.4(a)(2). With respect to the non-safety-related criteria, the applicant stated, in part, that a review had been performed to identify the non-safety-related SSCs whose failure could prevent satisfactory accomplishment of the safety-related intended functions identified in 10 CFR 54.4(a)(1). The applicant used a two-phase process to identify SSCs meeting the criteria of 10 CFR 54.4(a)(2). The applicant initially

identified SSCs meeting the 10 CFR 54.4(a)(2) scoping criteria using an analytical review process which considered non-safety-related equipment explicitly identified in the current licensing basis (CLB). However, the applicant determined that the sole use of the analytical review process did not provide information relative to system spatial interactions. Therefore, the initial analytical phase was augmented with a plant spaces physical review to identify possible interactions not functionally described in the CLB. Each of the phases of the review are described in the following paragraphs:

Analytical Review Process. As described in Section 2.1.5.2 of the LRA, the applicant stated that some non-safety-related equipment whose failure could affect a safety-related function was specifically identified within the plant safety classification program. The applicant reviewed the safety classification program functional rules to identify SSC functions that met the 10 CFR 54.4(a)(2) scoping criteria. A preliminary listing of non-safety-related SSCs meeting the scoping criteria of 10 CFR 54.4(a)(2) was then generated by querying the CMIS database to identify SSCs with functional designators associated with license renewal intended functions. The applicant stated that the safety classification functional rules allowed identification of systems containing components that were:

- credited for high energy line break (pipe whip, jet impingement)
- credited for internal flooding (barriers, drains)
- credited for external flooding
- credited for internal missiles
- load handling equipment credited for NUREG-0612
- alternate/backup systems or equipment credited in mitigating licensing-basis events

The applicant stated that the analytical process used to review SSCs for 10 CFR 54.4(a)(2) applicability ensured that the UFSAR, technical specifications, design documents, design drawings, and the SSC safety classifications were reviewed, as appropriate, to make certain that all non-safety-related SSC functional interactions were identified for those instances in which non-safety-related SSC could fail and prevent the satisfactory accomplishment of a safety function.

Plant Spaces Physical Review. As discussed in Section 2.1.5.4 of the LRA, in plant areas containing safety-related equipment, field verifications were performed to ascertain if any systems or system piping segments meeting the 10 CFR 54.4(a)(2) criteria were present that had not already been included within the scope of license renewal based on the analytical review. If a newly identified system or piping segment had a failure mode or effect that met the scoping criteria of 10 CFR 54.4(a)(2), the applicant stated that the system or segment was included within the scope of license renewal.

In certain cases, the applicant stated that both mitigative features and preventive aging management techniques were applied to non-safety-related equipment whose failure could affect a safety function. Mitigative features were intended to protect safety-related equipment in the event of a postulated non-safety-related piping failure, while preventive measures were intended to manage the adverse effects of aging on the non-safety-related equipment. The applicant stated that the mitigative features credited in protecting safety-related equipment were placed within the scope of license renewal. In those cases in which preventive measures were

used, the applicant placed the associated fluid system components within the scope of license renewal.

In Section 2.1.6, “Interim Staff Guidance Discussion,” of the LRA, the applicant stated that previous staff issues associated with the interpretation of the 10 CFR 54.4(a)(2) scoping criteria were addressed by the two phase scoping approach. Specifically, the plant spaces physical review evaluated SSCs for possible interactions that were not explicitly described in the plant CLB. The applicant concluded that the 10 CFR 54.4(a)(2) criteria were applied such that non-safety-related SSCs were identified as being within the scope of license renewal when there was a potential of either physical or spatial interaction with the intended function of safety-related equipment.

2.1.2.1.1.3. Non-safety-Related Criteria in Accordance with 10 CFR 54.4(a)(3)

In Section 2.1.5.5, “Other Scoping Pursuant to 10 CFR 54.4(a)(3) (Criterion 3),” of the LRA, the applicant discussed the scoping methodology as it related to the regulated event criteria in accordance with 10 CFR 54.4(a)(3). With respect to the scoping criteria related to 10 CFR 54.4(a)(3), the applicant stated that the analytical process used to review SSCs for 10 CFR 54.4(a)(3) applicability ensured that the UFSAR, technical specifications, design documents, design drawings, and plant safety classifications were reviewed, as appropriate, to make certain that all SSCs credited for compliance with the regulated event set were identified. The applicant concluded that the scoping process used to identify systems and structures relied upon to mitigate the regulated events of concern were consistent with, and satisfied the criteria of, 10 CFR 54.4(a)(3). Specific scoping information based on the five regulated events described in 10 CFR 54.4(a)(3) presented in the following paragraphs.

Fire Protection (10 CFR 50.48). In Section 2.1.5.6 of the LRA, the applicant described the methodology used to scope SSCs associated with fire protection. All fire protection, detection, mitigation, confinement, and safe shutdown equipment used at the station was subject to a scoping review. Evaluations were made of equipment needed to meet the fire protection requirements of Appendix A to Branch Technical Position (BTP) ASB 9.5-1, as well as those needed to meet 10 CFR Part 50, Appendix R, and 10 CFR 50.48. These evaluations were used as fire protection scoping basis documents. All structures and systems that contain components used for fire protection of the SSCs important to safety were within the scope of license renewal. The applicant noted in the LRA that many of the site structures not important to safety also have fire detection and mitigation capabilities. In these cases in which a fire protection system was not credited in the CLB as important to safety, the system and the SSCs it protected were not considered to be within the license renewal scope.

Environmental Qualification (10 CFR 50.49). Section 2.1.5.7 of the LRA described the applicant’s methodology for scoping SSCs associated with environmental qualification. The applicant stated that the master list of environmental qualification (EQ) components was detailed in site-specific procedures. All systems that contain components detailed on the EQ master equipment list were considered to be within the scope of license renewal.

Pressurized Thermal Shock (10 CFR 50.61). Section 2.1.5.8 of the LRA described the applicant’s methodology for scoping SSCs associated with pressurized thermal shock (PTS). The applicant stated that RG&E has made two submittals to the NRC regarding PTS. The applicant determined that these submittals and NRC safety evaluation reports (SERs) did not

identify the need for specific plant hardware modifications or reliance on other plant systems. Consequently the only SSC credited in the PTS analysis was the reactor vessel, which was considered to be within the scope of license renewal.

Anticipated Transients Without Scram (10 CFR 50.62). Section 2.1.5.9 of the LRA describes the applicant's methodology for scoping SSCs relied upon to function to mitigate anticipated transients without scram. The applicant determined that all equipment installed, from the sensor output to the final actuation device, that was credited for compliance with 10 CFR 50.62, was within the scope of license renewal. Additionally, all systems that included those components credited for compliance with 10 CFR 50.62 were within the scope of license renewal.

Station Blackout (10 CFR 50.63). Section 2.1.5.10 of the LRA described the applicant's methodology for scoping SSCs relied upon to perform a function during station blackout (SBO) events. The SBO coping strategy basis reference documents include both primary and alternative SSCs available to manage the event. Systems and structures that provided a function for SBO coping and systems or structures that provide a function for recovery from an SBO condition were considered within the scope of license renewal. In Section 2.1.6 of the LRA, the applicant stated that the SBO scoping methodology was consistent with the interim staff guidance on scoping of equipment relied on to meet the requirements of the SBO rule.

In summary, the applicant stated that the scoping process used to identify SCs relied on to mitigate the regulated events of concern is consistent with, and satisfies the criteria of, 10 CFR 54.4(a)(3).

2.1.2.1.2 Documentation Sources Used for Scoping and Screening

In Section 2.1.1 of the LRA, the applicant stated information derived from the UFSAR, technical specifications, licensing correspondence files, design-basis documents (DBDs), controlled drawings, the Q-list, and the CMIS electronic database was reviewed during the license renewal scoping and screening process. The applicant used this information to identify the functions performed by plant systems and structures. These functions were then compared to the scoping criteria in 10 CFR 54.4(a)(1), 10 CFR 54.4(a)(2), and 10 CFR 54.4(a)(3) to determine if the associated plant system or structure performed a license renewal intended function. These sources were also used to develop the list of SSCs subject to an AMR.

2.1.2.1.3 Plant and System Level Scoping

In Section 2.1 of the LRA, the applicant described the scoping methodology for systems and structures that were safety-related, non-safety-related, and equipment relied upon to perform a function for any of the five regulated events described in 10 CFR 54.4(a)(3).

The applicant initially defined license renewal system boundaries for systems and structures to facilitate scoping and screening. The applicant stated that license renewal system boundaries were based on the preexisting CMIS database system identifiers, but were adjusted to be more consistent with UFSAR system descriptions. The applicant stated that the use of unique license renewal system boundaries did not impact the ability to identify system and structure intended functions because the results of the functionally based SSC safety classification program remained valid, regardless of the system naming or sorting scheme. During scoping

evaluations, if the system under review contained any components that met the license renewal scoping criteria detailed in 10 CFR 54.4(a), the applicant generally considered the entire system to be within the scope of license renewal. Additionally, in Section 2.1.3 of the LRA, the applicant stated that system scoping must identify all license renewal functions associated with components contained within a system. The applicant identified two specific exceptions to this dictate in the LRA:

(1) When the only in-scope portion of the system is comprised of components that will receive a commodity group evaluation (e.g., fire barriers, equipment supports, etc.), the applicant could identify the parent system or structure as not being within the scope of license renewal.

(2) When the only in-scope portion of the system is comprised of components that act as containment isolation boundaries, the applicant stated that the system could be identified as not being within the scope of license renewal. This would only be true if the components that perform the isolation boundary function were evaluated within the containment isolation boundary system.

The applicant concluded that the critical element of system scoping is to ensure that all SSCs that perform license renewal intended functions are identified and the criteria that brought them into scope are documented.

2.1.2.1.4 Component Level Scoping

After the applicant identified the intended functions of systems or structures within the scope of license renewal, a review was performed to determine which components of each in-scope system and structure supported license renewal intended functions. The components that supported intended functions were considered within the scope of license renewal and screened to determine if an AMR was required. The applicant considered three component classifications during this stage of the scoping methodology -- mechanical, civil and structural, and electrical. The scoping methodology for each of these component classifications is discussed below.

2.1.2.1.4.1 Mechanical Component Scoping

The applicant described the scoping methodology for components within mechanical systems in Section 2.1.7.1 of the LRA. For mechanical systems, the applicant stated that the component/structural component scoping and screening process was performed on each system identified to be within the scope of license renewal. This process evaluated the individual SCs included within the in-scope mechanical systems to identify the specific SCs that required an AMR. Electrical interface components associated with mechanical systems that were determined to be in scope were evaluated under the electrical component scoping methodology.

Mechanical system evaluation boundaries were established for each system within the scope of license renewal. These boundaries were determined by mapping the pressure boundary associated with system-level license renewal intended functions onto the system piping and instrumentation drawings (P&IDs). The applicant stated that the following sequence of steps

was used for component level scoping for each mechanical system within the scope of license renewal.

(1) The applicant identified mechanical components included within each system by reviewing design drawings and the system component list from the CMIS database.

(2) Based on the plant level system scoping results, the pressure boundary associated with license renewal system intended functions was mapped onto the system P&IDs. The applicant stated that the license renewal evaluation boundary on system flow diagram markups was typically extended to the first normally closed manual valve, check valve, or valve that received an automatic closure signal. The LRA stated that a normally open manual valve had also been used as a boundary in a few instances in which a failure downstream of the valve has no short term effects, could be quickly detected, and the valve could be easily closed by operators to establish the pressure boundary prior to any adverse consequences. For SBO, Appendix R, high energy line break (HELB) and flooding events, the license renewal boundaries for a system were defined to be consistent with the boundaries established in the CLB evaluations and did not always coincide with an isolation device.

    As discussed in Section 2.1.5.3 of the LRA, for piping interfaces between safety-related and non-safety-related systems, the P&IDs show safety classification boundaries at valves. However, actual safety boundaries extended to the first weld after the first seismic support beyond the P&ID depicted class change. The piping within the license renewal boundary was subject to AMR and was included as a piping commodity considered to be within the scope of license renewal.

(3) The system components that were within the scope of license renewal (i.e., required to perform a license renewal system intended function) were identified.

(4) Component intended functions for in-scope components were identified. The applicant stated that component intended functions were based on the guidance of NEI 95-10.

The applicant forwarded in-scope mechanical SCs to a screening review to determine if the equipment was subject to an AMR.

2.1.2.1.4.2 Structural Component Scoping

The applicant described the methodology for scoping civil and structural equipment in Section 2.1.7.2 of the LRA. For structures, the SC scoping and screening process was performed on each plant level structure identified to be within the scope of license renewal. This method evaluated the individual SCs included within in-scope structures to identify specific SCs or SC groups that required an AMR. The following sequence of steps was performed on each structure determined to be within the scope of license renewal.

(1) Based on a review of design drawings, the structure component list from the CMIS database and plant walkdowns, SCs that were included within the structure were identified. These SCs included items such as walls, pipe and equipment supports, conduit, cable trays, electrical enclosures, instrument panels, and related supports.

(2) The plant CLB was reviewed and compared to the walkdown results. Appurtenances, such as flood barriers, missile shields, jet impingement shields, etc., relied upon in the licensing basis were verified as accounted for within a structure.

(3) The SCs within the scope of license renewal (i.e., required to perform license renewal system intended functions) were identified.

(4) Component intended functions for in-scope SCs were identified. The component intended functions identified were based on the guidance of NEI 95-10.

The applicant identified materials, such as caulking and water stops, generically. The applicant stated that these materials supported only two license renewal structure or component intended functions. Specifically, these materials supported (1) providing a rated fire barrier and (2) providing a flood barrier. Sealants and caulking that support the fire barrier function were addressed as part of the fire barrier penetration seals. Water stops that support the flood barrier function were addressed with the wall or floor within which the sealant/water stop was contained. Flood barriers were addressed in the buildings that contain them.

In Section 2.1.7.3 of the LRA, the applicant described the use of structural commodity groups for civil and structural component level scoping. Two structural commodity evaluation groups were identified as within the scope of license renewal:

(1) Fire doors, barrier penetration seals, and wraps

(2) Racks, panels and electrical enclosures, pipe, and equipment supports

The applicant forwarded in-scope civil and structural components to a screening review to determine if the equipment was subject to an AMR.

2.1.2.1.4.3 Electrical and Instrumentation and Controls Component Scoping

In Section 2.1.7.4 of the LRA, the applicant described the scoping and screening methodology for electrical and instrumentation and controls (I&C) system components. The applicant performed screening for electrical and I&C components on a generic component commodity group basis for all electrical and I&C systems and components associated with in-scope mechanical systems and civil structures.

The applicant initially considered all passive long-lived electrical and I&C commodity groups as subject to an AMR. The methodology permitted component-specific scoping to identify any equipment within the commodity group that did not perform an intended function in order to reduce the number of components for which aging management activities were required. The applicant stated that the methodology employed was consistent with the plant spaces electrical scoping and screening approach described in NEI 95-10 and NUREG-1800.

2.1.2.2 Screening Methodology

Following the determination of SSCs within the scope of license renewal, the applicant implemented a process for determining which SSCs would be subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1). In Section 2.1.7, “Component Level Screening

(Identification of Components Subject to Aging Management Review)," of the LRA, the applicant discussed the screening activities as they related to the SSCs that are within the scope of license renewal. The screening portion of the integrated license renewal plant assessment was divided into three engineering disciplines -- mechanical, civil/structural, and electrical and I&C.

2.1.2.2.1 Mechanical Component Screening

Following component level scoping for mechanical systems, the applicant performed screening to identify those mechanical components that were subject to an AMR. The applicant stated in Section 2.1.7.1, "Mechanical Systems," of the LRA that the following screening methodology was used:

- The in-scope SCs that perform an intended function without moving parts or without a change in configuration or properties (screening criterion of 10 CFR 54.21(a)(1)(i)) were identified. Active/passive screening determinations were based on the guidance in Appendix B to NEI 95-10.

- The passive, in-scope SCs that were not subject to replacement based on a qualified life or specified time period (screening criterion of 10 CFR 54.21(a)(1)(ii)) were identified as requiring an AMR. The determination of whether passive, in-scope SCs have a qualified life or specified replacement time period was based on a review of plant-specific information, including the component database, maintenance programs, and procedures.

In Section 2.1.6, "Interim Staff Guidance Discussion," of the LRA, the applicant described the screening methodology used for the housings of active components. The applicant stated that the exclusion of an SSC due to its active nature applied only to that portion of the SSC with an active function and not to those portions of the SSC with a passive function. Therefore, the applicant considered fan housings and fire damper housings to be within the scope of license renewal and subject to an AMR.

2.1.2.2.2 Structural Component Screening

Following component level scoping for structures, the applicant performed screening to identify those civil/structural components that were subject to an AMR. In Section 2.1.7.2, "Civil Structures," of the LRA, the applicant described the methodology used to screen civil/structural components. The applicant stated that the following civil/structural screening methodology was used:

- The in-scope SCs that perform an intended function without moving parts or without a change in configuration or properties (screening criterion of 10 CFR 54.21(a)(1)(i)) were identified. Active/passive screening determinations were based on the guidance in Appendix B to NEI 95-10.

- The passive, in-scope SCs that were not subject to replacement based on a qualified life or specified time period (screening criterion of 10 CFR 54.21(a)(1)(ii)) were identified as requiring an AMR. The determination of whether a passive, in-scope SC has a qualified life or specified replacement time period was based on a review of plant-specific

information, including the component database, maintenance programs and procedures, vendor manuals, and plant experience.

Structural steel, anchor bolts, base plates, etc., that were required to support non-safety-related components to prevent physical interactions with safety-related equipment were subject to AMRs.

2.1.2.2.3 Electrical and Instrumentation and Controls Component Screening

Following component level scoping for electrical and I&C systems, the applicant performed screening to identify those electrical and I&C components that were subject to an AMR. The applicant described the screening methodology for electrical and I&C components in Section 2.1.7.4, "Electrical and I&C Systems," of the LRA. Screening for electrical and I&C components was performed on a generic component commodity group basis for all electrical and I&C systems, as well as, the electrical and I&C component commodity groups associated with in-scope mechanical systems and civil structures. The boundary components for the electrical and I&C component review were the incoming 34.5 kV switchyard bus breakers and the generator step-up transformer. These reference points represented the transition from site-controlled power systems to the power systems maintained as part of the local distribution grid. The applicant stated that the methodology employed was consistent with the guidance in NEI 95-10 and NUREG-1800.

Screening for electrical and I&C system commodity groups used the plant spaces approach and a bounding review technique. Using this methodology, initially all passive, long-lived electrical and I&C commodity groups were initially considered subject to an AMR. A review of the UFSAR, the plant's database, and design-basis documents was performed to validate the commodity group applicability to the Ginna station. Within a plant area, the applicant identified the commodity group that represented the limiting aging characteristics. The selected commodity was compared to the plant space service conditions and an assessment was made to determine whether the commodity group would be able to maintain its function for the period of extended operation (i.e., receives an AMR).

Based on the screening results, component specific scoping could be performed to reduce the number of components within a commodity group for which aging management activities were required. Additionally, components within the scope of 10 CFR 50.49 (Environmental Qualification) were subject to replacement and therefore not subject to an AMR based on the screening criteria of 10 CFR 54.21(a)(1)(ii). The applicant stated that this approach for environment qualification equipment was supported by NUREG-1800, Section 2.5.3.

In Section 2.1.6 of the LRA, the applicant described the approach used for the treatment of electrical fuse holders. Consistent with the requirements specified in 10 CFR 54.4(a), fuse holders (including fuse clips and fuse blocks) were considered to be passive electrical components. Fuse holders were scoped, screened, and included in the aging AMR in the same manner as terminal blocks and other types of electrical connections. Fuse holders were therefore passive, long-lived electrical components within the scope of license renewal and subject to an AMR. Therefore, aging management of the fuse holders was required for those cases in which fuse holders were not considered piece parts of a larger assembly. However, fuse holders inside the enclosure of an active component, such as switchgear, power supplies, power inverters, battery chargers, and circuit boards, were considered to be piece parts of the

larger assembly. Since piece parts and subcomponents in such an enclosure were inspected regularly and maintained as part of the Ginna station normal maintenance and surveillance activities, they were considered not subject to an AMR.

2.1.3 Staff Evaluation

The staff evaluated the LRA scoping and screening methodology in accordance with the guidance contained in Section 2.1, "Scoping and Screening Methodology," of NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants." The acceptance criteria for scoping and screening methodology review is based on the following regulations:

- 10 CFR 54.4(a), as it relates to the identification of plant SSCs within the scope of the rule

- 10 CFR 54.4(b), as it relates to the identification of the intended functions of plant SSCs determined to be within the scope of the rule

- 10 CFR 54.21(a)(1) and 10 CFR 54.21(a)(2), as they relate to the methods utilized by the applicant to identify plant SCs subject to an AMR

As part of the review of the applicant's LRA, the NRC staff evaluated the scoping and screening methodology described in the following Sections of the application using the guidance contained in NUREG-1800:

- Section 2.1, "Scoping and Screening Methodology," to ensure that the applicant describes a process for identifying SSCs that are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(1), 10 CFR 54.4(a)(2), and 10 CFR 54.4(a)(3)

- Sections 2.2, "Plant Level Scoping Results," Section 2.3, "Scoping and Screening Results: Mechanical Systems," Section 2.4, "Scoping and Screening Results: Structures," and Section 2.5, "Screening Results: Electrical and Instrumentation and Control Systems," to assure the applicant described a process for determining structural, mechanical, and electrical components at Ginna that are subject to an AMR for renewal in accordance with the requirements of 10 CFR 54.21(a)(1) and 10 CFR 54.21(a)(2).

In addition, the staff conducted a scoping and screening methodology audit at the Ginna Nuclear Power Plant from December 10 to 13, 2002. The focus of the audit was to ensure that the applicant had developed and implemented adequate guidance to conduct the scoping and screening of SSCs in accordance with the methodologies described in the application and the requirements of the Rule. The staff reviewed implementation procedures and engineering reports which describe the scoping and screening methodology implemented by the applicant. In addition, the staff conducted detailed discussions with the cognizant license renewal project staff on the implementation and control of the program, reviewed administrative control documentation, and selected design documentation used by the applicant during the scoping and screening process. The staff further reviewed a sample of system scoping and screening

results reports for the auxiliary feedwater, component cooling water, main steam, and main feedwater systems to ensure the methodology outlined in the administrative controls was appropriately implemented.

2.1.3.1 Scoping Methodology

2.1.3.1.1 Documentation Sources Used for Scoping and Screening

The staff reviewed implementation procedures and engineering reports which describe the scoping and screening methodology implemented by the applicant. These procedures included (1) EP-3-S-0712, "License Renewal Project Guideline," Revision 0, (2) EP-3-S-0713, "Scoping and Screening for License Renewal," Revision 1, (3) EP-3-S-0714, "Mechanical Aging Management Review for License Renewal," Revision 1, (4) EP-3-S-0901, "Records and Document Control," Revision 7, (5) EG-012, "Scoping and Screening and Mechanical AMRs," Revision 1, (6) EG-014, "Data Retrieval to Begin License Renewal Project," Revision 0, (7) EG-015, "License Renewal Issues Management ," Revision 0, (8) EG-017, "Ginna Operating Experience Failure Data Retrieval," Revision 0, (9) EP-3-S-0715, "Electrical Aging Management Review for License Renewal," Revision 0, (10) EP-3-S-0716, "Civil Aging Management Review for License Renewal," Revision 1, and (11) EP-3-S-0718, "Electrical and I&C Integrated Plant Assessment Documents for License Renewal," Revision 0. In reviewing these procedures, the staff focused on the consistency of the detailed procedural guidance with information in the LRA and the various NRC staff positions documented in NUREG-1800 and interim staff guidance documents. The staff found that the scoping and screening methodology instructions were consistent with Section 2.1 of the LRA and were of sufficient detail to provide the applicant's staff with concise guidance on the scoping and screening implementation process to be followed during the LRA activities.

Engineering procedure EP-3-S-0713 identified the UFSAR, system descriptions, the plant probabilistic risk assessment, the CMIS database, plant drawings, the maintenance rule program, and system functional reports as potential sources of information regarding systems and structures required to remain functional during and following design-basis events.

Additionally, the applicant's safety classification program, described in procedure IP-QAP-1, "Structure, System, and Component Safety Classifications," included detailed descriptions of component- and system-level functions, in addition to safety classification data. For each evaluated component, the applicant identified component level functions. System functional reports (SFRs) were developed to support and document the safety classification of systems and structures. The SFRs consider design-basis events and certain special events, but may not describe system functions not considered during the safety classification process. The applicant linked the component-level functions to the higher level system-level functions using proceduralized safety classifications rules. This safety classification methodology provided the applicant with detailed information regarding the intended functions of evaluated components. Therefore, the applicant's safety classification methodology provided a detailed breakdown of component-level functions, associated system-level functions, and the component safety classification for safety-related and non-safety-related safety significant SSCs. The applicant maintained SSC safety classification data in the CMIS database.

The applicant did not maintain a written design basis document (DBD) for each plant system, but instead utilized a virtual DBD system, accessible in the CMIS database, to support the

identification of SSC intended functions. The applicant's CMIS database included basic keyword and SSC indexing information for design criteria and analyses, engineering specifications, 10 CFR 50.59 evaluations, vendor design analyses, and correspondence. The applicant's records and document control procedures, described in procedure EP-3-S-0901, "Records & Document Control," required that the DBDs be electronically imaged and cross referenced to the associated systems and components to support document retrieval. Using document keyword and indexing data, the applicant generated virtual DBDs by performing queries of the CMIS database. During the scoping and screening audit, the staff concluded that the virtual DBD system required a knowledgeable and skilled evaluator to effectively identify system intended functions. Specifically, because user-generated CMIS queries are used to retrieve relevant system DBDs, an improper or incomplete CMIS query could result in a failure to identify all relevant system functions. However, based on discussions with the applicant's license renewal project staff, the staff concluded that the license renewal reviewers were skilled in generating virtual DBD data and knowledgeable of database limitations.

Based on discussions with the applicant's license renewal staff, the staff determined that the applicant's document review methodology adequately integrated safety classification data, the UFSAR, SFRs, and the virtual DBDs. The staff found these design documentation sources to be useful for ensuring that the initial scope of SSCs identified by the applicant was consistent with the CLB of the Ginna plant. Additionally, the staff concluded that license renewal team members were familiar with the content and limitations associated with the various sources of information used in the development of the LRA. The staff determined that the documentation review methodology used by the applicant was capable of identifying system intended functions as necessary to support SSC scoping and screening consistent with the guidance in NUREG-1800. Additionally, the documentation review methodology was consistent with the applicant's LRA and plant procedures.

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

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

As required by 10 CFR 54.4(a)(1), that the applicant must consider all safety-related SSCs which are relied upon to remain functional during and following design-basis events to ensure (1) the integrity of the reactor coolant pressure boundary, (2) the ability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11 as being within the scope of the license renewal.

Section 5.1.2 of engineering procedure EP-3-S-0713 containing guidance for the scoping of safety-related systems and structures. As part of the safety classification program, the applicant had previously identified safety-related SSCs in accordance with interface procedure IP-QAP-1. In general, the applicant categorized systems that contained safety-related components to be within the scope of license renewal scoping criterion 10 CFR 54.4(a)(1). However, the applicant noted in procedure EP-3-S-0713 that equipment that was designated as safety-related, but which did not perform an intended function described in 10 CFR 54.4(a)(1) would not necessarily be considered within the scope of license renewal. In Section 2.1.5.1 of the LRA, the applicant stated that the safety-related criteria used in the SSC safety classification process encompassed the 10 CFR 54.4(a)(1) scoping criteria.

The staff reviewed the safety classification guidance contained in interface procedure IP-QAP-1 to determine if the applicant's safety-related classification definition was consistent with 10 CFR 54.4(a)(1). The staff reviewed the safety classification rules contained in the applicant's administrative procedure IP-QAP-1 and sampled the applicant's scoping results reports to verify the process by which these SSCs were initially identified. As a result of this review, the staff determined that additional information was necessary to document how the safety classification rules were specifically applied to identify in-scope SSCs. For example, Section 2.1.5.3 of the LRA implies that non-safety SSCs credited for internal missiles were identified using the safety classification rules; however, it was not readily apparent which safety classification rule contained in IP-QAP-1 applies to this equipment. The staff was also unable to directly link the safety-related scoping criteria of 10 CFR 54.4(a)(1) to specific safety classification rules contained in IP-QAP-1. By letter dated March 21, 2003, the staff requested that the applicant provide additional clarification on how the classification rules were applied to the SSCs initially identified as within scope. This is RAI 2.1-1.

By letter dated May 13, 2003, the applicant provided a response to the request for information. In that response, the applicant provided a detailed listing of the safety classification rules applicable to the safety-related, non-safety-related, and regulated event SSCs within scope. The staff has reviewed that listing and finds that it adequately addressed the staff's concern regarding the internal missiles example cited above, as well as describing all pertinent safety classification rules applied to the scoping effort related to components that were credited for various design basis events, such as, HELB, internal flooding, external flooding, internal missiles, and load handling, in a comprehensive manner. In addition to the safety classification rules, the applicant noted that for the environmental qualification evaluation the Station EQ master list was utilized for the scoping of environmentally qualified equipment. Therefore RAI 2.1-1 is considered resolved.

As required by 10 CFR 54.4(a)(1)(iii), that the applicant must consider within the scope of license renewal those SSCs that ensure the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in 10 CFR 50.34(a)(1), 10 CFR 50.67(b)(2), or 10 CFR 100.11. Although the wording in Section 2.1.2, "Plant Level Scoping," of the LRA was consistent with this requirement, the staff noted that the scoping criteria definition documented in Section 3.2.1 of engineering procedure EP-3-S-0713, Revision 1, differed from the wording in 10 CFR 54.4(a)(1)(iii). Specifically, the EP-3-S-0713 safety-related scoping definition did not refer to offsite exposures comparable to those referred to in 10 CFR 50.34(a)(1) and 10 CFR 50.67(b)(2). As a result, in a letter dated March 21, 2003, the staff requested additional information regarding how these exposure limitations were factored into the license renewal scoping and screening process. This is F-RAI 2.1-2.

By letter dated May 23, 2003, the applicant provided additional information regarding the expanded definition for offsite exposures. In its response, the applicant stated, in part, that the values in 10 CFR 50.34(a)(1) are bounded by those provided in 10 CFR 100.11 (25 rem whole body equals 25 rem total effective dose equivalent (TEDE) and 300 rem thyroid equals 9 rem TEDE), so only the limiting value was used in the procedure. The applicant further noted that 10 CFR 50.67(a)(2) applies to licensees who seek to revise their accident source term in design basis radiological consequence analyses, and that it did not seek to revise its source term. The applicant further addressed the question by noting that procedure EP-3-S-0713 has been updated to reflect these two regulations, because the in-scope equipment for license renewal is

the same. The staff has reviewed the applicant's response and finds it acceptable based on the recognition that the limiting values were used for the evaluation, and the requirements associated with the revised source term (10 CFR 50.67(a)(2)) did not impact its evaluation because the applicant did not seek to implement the revision. Therefore RAI 2.1-2 is considered resolved.

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

2.1.3.1.2.2 Application of the Scoping Criteria in 10 CFR 54.4(a)(2)

As required by 10 CFR 54.4(a)(2), the applicant must consider all non-safety-related SSCs whose failure could prevent satisfactory accomplishment of any of the functions identified in paragraphs 10 CFR 54.4(a)(1)(i), 10 CFR 54.4(a)(1)(ii), or 10 CFR 54.4(a)(1)(iii) to be within the scope of license renewal. As part of the review, the staff evaluated the implementation guidance developed by the applicant to govern its 10 CFR 54.4(a)(2) evaluation, discussed the process and results with the applicant's cognizant license renewal project staff, and reviewed a sample of the scoping results developed by the applicant.

As described in Section 2.1.2.1.1 of this SER, the applicant used a two phase process for the scoping of non-safety-related systems and structures. During initial scoping evaluations, the applicant employed an analytical review approach to identify SSCs meeting 10 CFR 54.4(a)(2) that were specifically identified in the plant CLB. To identify potential spatial interactions, the licensee performed a plant spaces physical review to identify SSCs that could affect safety functions that were not explicitly described in the CLB.

The applicant initially developed two guidelines to control the evaluation process. Section 5.1.3 of engineering procedure EP-3-S-0712 contained guidance for the scoping of these non-safety-related systems and structures. This document specifically described that the review did not require consideration of hypothetical failures that were not part of the CLB, and that the scoping reviewer should consider those failures identified in the documentation that makes up the CLB, plant-specific operating experience, and industry operating experience that was specifically applicable to Ginna Nuclear Power Plant. Additionally, engineering guideline EG-021, "Identification of Non-Safety Equipment Whose Failure Could Affect a Safety Function for Scoping and Screening," provided additional guidance for identifying non-safety-related equipment that met the 10 CFR 54.4(a)(2) scoping criteria.

The applicant generated a preliminary list of non-safety-related SSCs that could affect a safety function by querying the CMIS database to identify non-safety-related systems and structures that met the 10 CFR 54.4(a)(2) scoping criteria. In the LRA, the applicant stated that the safety classification rules in approved plant procedures allowed identification of systems which

included components that were credited for HELB, internal flooding, external flooding, internal missiles, load handling, and alternate/backup systems, or were credited in mitigating licensing basis events.

The applicant augmented the preliminary list of non-safety-related SCs obtained from the CMIS database by evaluating non-safety-related SSCs for failure modes and effects or spatial interactions not explicitly functionally described in the plant CLB. This phase also included field verifications of plant areas containing safety-related equipment. In Section 2.1.5.3 of the LRA, the applicant noted that the pressure boundary aspects of non-safety-related piping whose failure could affect a safety function would be addressed by the plant walkdown portion of the non-safety-related equipment scoping. Although the applicant's scoping procedure, EP-3-S-0713, did not include specific requirements for performing field walkdowns, engineering guideline EG-021, Attachment A, Section 1.1.1.3 stated that field verifications must be performed to ascertain if any systems or system piping segments not already included within the scope of license renewal were present in areas containing safety-related equipment. The staff noted that the applicant did not use formalized procedures to control the performance of the field verifications. However, during the audit, the applicant stated that knowledgeable members of the Ginna LRA project team participated in the performance and review of the plant walkdowns. Therefore, based on discussions with the applicant related to the performance of the plant walkdowns and a sampling review of walkdown results, the staff concluded that the plant walkdowns were adequately controlled to support the scoping methodology.

During the scoping and screening audit, the applicant noted that the CLB included alternate coping strategies to mitigate the loss of safety-related function due to the failure of certain non-safety-related equipment. In particular, the applicant noted that NUREG-0821, "Integrated Plant Safety Assessment, Systematic Evaluation Program, R.E. Ginna Nuclear Power Plant," documented the licensing basis for some modifications or strategies used to cope with the loss of safety-related SSCs from a variety of events. Where modifications alone were not sufficient to prevent the loss of a safety function due to a failure of non-safety-related equipment, the applicant stated that the CLB permitted alternate or backup equipment to be credited to achieve safe shutdown.

During discussions, the applicant identified that the failure of the heating steam boiler in the screenhouse was an example in which an alternate system was credited. In this case, a failure of the non-safety-related screenhouse steam heating boiler could result in loss of all redundant trains of service water; consequently, the licensee installed an alternate service water supply to the emergency diesel generators to cope with this failure. Based on the availability of the alternate service water supply to the diesel generators (which was considered to be within the scope of license renewal), the applicant concluded that the portions of the steam heating system in the screenhouse that could result in the failure of the safety-related service water system pumps were not considered to be within the scope of license renewal. The applicant noted that the alternate service water supply to the diesel generators was intended to mitigate a loss of service water event due to a heating steam failure, but did not provide all the safety-related functions normally provided by the service water system.

The staff determined that the applicant did not consider the potential failure of the non-safety-related steam heating boiler during other design-basis events, such as loss-of-coolant accidents, during the scoping process. Because the staff concluded that failure of the screenhouse steam heating boiler could result in loss of certain safety-related service water

system intended functions, the staff questioned the basis for excluding this screenhouse steam heating boiler from the scope of license renewal.

As part of the discussion of the 10 CFR 54.4(a)(2) issues, the staff described the staff's interim guidelines on the subject. In letters dated December 3, 2001, and March 15, 2002, the NRC issued a staff position to the NEI which described areas to be considered and options it expects licensees to use to determine what SSCs meet the 10 CFR 54.4(a)(2) criteria (i.e., "all non-safety-related SSCs whose failure could prevent satisfactory accomplishment of any safety-related functions identified in paragraphs (a)(1)(i),(ii),(iii) of this section"). The December 3rd letter (ADAMS accession number ML013380013) provided specific examples of operating experience which identified pipe failure events (summarized in Information Notice (IN) 2001-09, "Main Feedwater System Degradation in Safety-Related ASME Code Class 2 Piping Inside the Containment of a Pressurized Water Reactor") and the approaches the NRC considers acceptable to determine which piping systems should be included in scope based on the 10 CFR 54.4(a)(2) criteria. The March 15th letter (ADAMS accession ML020770026) further described the staff's expectations for the evaluation of non-piping SSCs to determine which additional non-safety-related SSCs are within scope. The position states that applicants should not consider hypothetical failures, but rather should base their evaluation on the plant's CLB, engineering judgment and analyses, and relevant operating experience. The paper further describes operating experience as all documented plant-specific and industry-wide experience which can be used to determine the plausibility of a failure. Documentation would include NRC generic communications and event reports, plant-specific condition reports, industry reports such as significant operational event reports (SOERs), and engineering evaluations.

Based on the 10 CFR 54.4(a)(2) staff position letters, the staff identified two specific areas for which additional information was required to complete the review of scoping pursuant to 10 CFR 54.4(a)(2). By letter dated March 21, 2003, the staff requested the following additional information from the applicant in RAI 2.1-4.

- Based on the aforementioned information regarding the scoping of heating steam system components in the vicinity of the service water pumps, and the results of the scoping and screening methodology audit interactions with the staff, the applicant was requested to describe any additional scoping evaluations performed to address the 10 CFR 54.4(a)(2) criteria. In particular, the staff noted the failure to consider the screenhouse steam heating boiler to be within the scope of license renewal even though an age-related failure of the boiler could result in the loss of a safety-related intended function. The staff requested that the applicant list any additional SSCs included within scope as a result of these efforts, and list those SCs for which AMRs were required.

- Consistent with the staff position described in the March 15th letter, the applicant was requested to describe the scoping methodology implemented for the evaluation of the 10 CFR 54.4(a)(2) criteria as it relates to the non-fluid-filled SSCs of interest. The staff determined that the LRA did not describe the scope and depth of the operating experience review conducted for non-fluid-filled systems. The staff requested that the applicant indicate the non fluid-filled SSCs evaluated and describe the site and industry operating experience relied on to determine the potential for failures of such non-fluid-filled SSCs which could impact safety-related SSCs within scope.

By letter dated May 13, 2003, the applicant provided a response to the staff's request for additional information (RAI). In that response, the applicant stated, in part, that it had reviewed its 10 CFR 54.4(a)(2) evaluation and concluded that additional non-safety-related SSCs, including the block walls in the intermediate building and the steam heating system in the screenhouse, (including the boiler) met the criteria for 10 CFR 54.4(a)(2) inclusion. The applicant noted that the block walls are already addressed by an AMP, because they are included in the scope of license renewal under 10 CFR 54.4(a)(3) for fire protection. The steam heating system is already within the scope of license renewal. As a result of this RAI, the applicant stated that the house heating boiler and associated components located in the screenhouse have been included as components requiring AMR. They will be managed by the Periodic Surveillance and Preventive Maintenance Program described in B2.1.23 of the application. A review of the AMP for these SSCs is included in Section 3.0.3.8 of this report.

Additionally, the applicant described the evaluation of non fluid-filled systems in its May 13, 2003, letter. These evaluations were performed in the same manner as fluid-filled system 10 CFR 54.4(a)(2) evaluations, as described in Sections 2.1.5.2 through 2.1.5.4 of the application. The affected systems are containment ventilation, essential ventilation, non-essential ventilation, and radiation monitoring. The equipment in scope of 10 CFR 54.4(a)(2) is described in each of these sections within the LRA. The applicant noted that there is no plant-specific operating experience that would indicate potential failure modes of these systems affecting safety-related SSCs; however, supports and hangers are in the scope of License Renewal as a Component Supports Commodity Group. As noted in that section, "all supports for any equipment contained within a safety-related structure, regardless of the equipment's seismic classification, shall be considered in-scope to License Renewal unless a support is specifically excepted and that exception documented."

The staff has reviewed the additional information provided by the applicant regarding expansion of the scope of SSCs to include the steam heating system house heating boiler and associated components located in the screenhouse and the evaluation of non-fluid-filled systems for potential interaction with safety-related SSCs. On the basis of the additional information supplied by the applicant, including the expansion of the systems within the scope of license renewal and the addition of new portions of systems within scope as a result of the revised methodology, determination of the credible failures which could impact the ability of safety-related SSCs from performing their intended functions, evaluation of relevant operating experience, incorporation of identified non-safety-related SSCs into the applicant's AMPs, and the results of NRC inspection and audit activities, the staff concludes that the applicant has supplied sufficient information to demonstrate that all SSCs that meet the 10 CFR 54.4(a)(2) scoping requirements have been identified as being within the scope of license renewal. Therefore, RAI 2.1-4 is considered resolved.

On the basis of this sample review, discussions with the applicant, and evaluation of the applicant's responses to the staff's requests for additional information, the staff determined that the applicant's methodology for identifying systems and structures meeting the scoping criteria of 10 CFR 54.4(a)(2) was adequate.

2.1.3.1.2.3 Application of the Scoping Criteria in 10 CFR 54.4(a)(3)

As required by 10 CFR 54.4(a)(3), the applicant must consider all SSCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the

Commission’s regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63) to be within the scope of the license renewal.

Section 5.1.4 of engineering procedure EP-3-S-0713 contained guidance for the scoping of the SSCs relied upon for these regulated events. The applicant identified SSCs within the scope of 10 CFR 54.4(a)(3) by performing reviews of associated plant documents. The specific documentation referenced in EP-3-S-0713 included the following:

- fire protection virtual design basis document
- Appendix R analysis
- listing of 10 CFR 50.49 equipment contained in IP-EQP-1
- anticipated transients with scram design evaluations
- the station blackout coping study contained in EWR-4520

The staff also noted that the safety classification program included specific rules associated with these regulated events. For example, the applicant’s IP-QAP-1 safety classification rules included the following functions:

- fire detection, suppression, principal barriers, and mitigation systems and components used to protect safety-related or safe shutdown equipment

- system/components required to respond to or mitigate anticipated transients without scram in accordance with 10 CFR 50.62 requirements

- systems or components whose specific function was to ensure alternate shutdown capability and were subject to the requirements of 10 CFR 50, Appendix R

- systems or components required to respond to or mitigate the consequences of station blackout in accordance with NUMARC 87-00 and 10 CFR 50.63 including the committed to portions of RG 1.155

In addition, the applicant relied on the station EQ master list for the scoping of Environmentally Qualified equipment pursuant to the 10 CFR 54.4(a)(3) requirements.

As described in Section 2.1.3.1.1 of this SER, the staff evaluated the applicant’s safety classification rules and the additional information requested relative to the use of the IP-QAP-1 safety classification rules for identifying systems and structures meeting the scoping criteria of 10 CFR 54.4(a), and determined that the rules adequately bounded the license renewal intended functions described in 10 CFR 54.4(a)(3).

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

provided by the applicant in response to the staff's RAI, the staff determined that the applicant's methodology for identifying systems and structures meeting the scoping criteria of 10 CFR 54.4(a)(3) was adequate.

2.1.3.1.3 Plant Level Scoping of Systems and Structures

Procedure EP-3-S-0713 outlined the following methodology for identifying systems and structures within the scope of license renewal. Initially, the applicant compiled a complete listing of functions performed by each plant system and structure. The applicant then compared system and structure functions to the 10 CFR 54.4(a) license renewal scoping criteria to identify those systems and structures with license renewal intended functions and, for those systems and structures with license renewal intended functions, the applicant determined the system and structure evaluation boundaries. In order to assure that all components required to support system intended functions were considered during subsequent SC level scoping, Section 5.1.5.c of EP-3-S-0713 required an engineering cross-discipline review of boundary information to ensure that components at evaluation boundaries were not excluded from the review process.

The applicant developed license renewal implementation procedures to provide guidance in completing each of these system and structure scoping tasks. The methodology used in identifying systems and structures with license renewal specific intended functions is discussed in the following sections.

2.1.3.1.4 Component Level Scoping

After the applicant identified the intended functions of systems or structures within the scope of license renewal, a review was performed to determine which components of each in-scope system and structure supported license renewal intended functions. The components that supported intended functions were considered to be within the scope of license renewal and screened to determine if an AMR was required. The applicant considered three component classification types during this stage of the scoping methodology -- mechanical, civil and structural, and electrical. The scoping methodology for each of these component classifications is discussed below.

2.1.3.1.4.1 Mechanical Component Scoping

To support component level scoping, the applicant identified license renewal scoping evaluation boundaries for in-scope mechanical systems utilizing P&IDs to identify functional and pressure boundaries. The applicant stated that all safety-related pressure boundaries were identified on the plant P&IDs. Additionally, Section 5.1.5.a.3 of EP-3-S-0713 specified that all interfacing pressure boundaries, such as branch lines and instrument lines for the required flow paths, must also be identified within scope unless analysis or calculation demonstrates that loss of the branch line or instrument line pressure boundary will not affect performance of the system intended function. In Section 2.1.5.3 of the LRA, the applicant stated that for interfaces between safety-related and non-safety-related piping, the license renewal scoping boundary extended to the weld after the first seismic support beyond the class change depicted on the plant P&ID.

The applicant generated an initial listing of components within the scope of license renewal by populating the license renewal database for each in-scope system with system components as identified in the plant CMIS database. For components not uniquely identified in the plant electronic databases, such as structural components and piping, the applicant created component identifiers in the license renewal database for the purposes of license renewal scoping and screening. After the licensee initially populated the license renewal database with system and structural components, the consistency and accuracy of the component scoping was verified in accordance with engineering guideline EG-012, "Scoping and Screening and Mechanical AMRs." The EG-012 review methodology included use of P&IDs to verify system boundaries and that components supporting an intended function were within the scope of license renewal. In some cases, the applicant migrated components within the scope of license renewal to a different parent system or commodity group. In Section 2.1.3 of the LRA, the applicant stated that components within the scope of license renewal were moved from the original parent system in two specific cases:

(1) when the only in-scope portion of the system was comprised of components that received a commodity group evaluation

(2) when the only in-scope portion of the system was comprised of components that acted as containment isolation boundaries

During the audit, the applicant also stated that all reactor coolant pressure boundary components were moved to the reactor coolant system regardless of their initial parent system. The staff reviewed a sampling of components that had been migrated to a different parent system and determined that for all cases reviewed, the applicant appropriately scoped the migrated component. As part of the review of the applicant's scoping methodology, the staff reviewed a sample of the license renewal database scoping results for mechanical systems. Based on this sampling review and discussions with the applicant, the staff determined that the applicant's methodology for identifying mechanical system structures and components within the scope of license renewal was adequate.

2.1.3.1.4.2 Structural Component Scoping

Section 5.2 of EP-3-S-0713 included general guidance applicable to structural and civil component scoping. The applicant stated civil and structural scoping plant walkdowns were conducted by contractor personnel. Although there was not a formal site specific training or qualification program to support these plant walkdowns, the applicant stated that on-the-job training was provided to the contractor personnel performing the walkdowns. Specifically, the applicant reviewed the results of preliminary walkdowns and provided feedback and guidance to contractor personnel. This process was repeated until the applicant determined that contractor personnel were performing adequate civil and structural walkdowns. The applicant stated that the walkdown results were monitored and reviewed by Ginna LRA project personnel knowledgeable of license renewal requirements.

Based on discussions with the applicant and review of plant procedures, the staff determined that the structural and civil component scoping methodology used by the applicant was consistent with the process described in Section 2.1.7.2 of the LRA. Specifically, the structural scoping determinations were made based on a review of the CLB, plant drawings, CMIS data, and plant walkdowns. For components not uniquely identified in the plant electronic CMIS

database the applicant created component identifiers in the license renewal database for the purposes of license renewal scoping and screening. The staff reviewed a sampling of structural and civil scoping results and determined that, for the items reviewed, the scoping results appeared to be reasonable. On the basis of the above evaluation, the staff determined that the applicant's structural and civil component scoping methodology was adequate.

2.1.3.1.4.3 Electrical and Instrumentation and Controls Component Scoping

Engineering procedure EP-3-S-0718, "Electrical and I&C Integrated Plant Assessment Documents for License Renewal," provided procedural guidance for the conduct of electrical component scoping. The applicant stated that the plant spaces approach was used to facilitate electrical component scoping and screening. Using this approach, the applicant initially assumed that all electrical and I&C components were within the scope of license renewal.

The applicant's methodology allowed component scoping reviews to limit the number of components within a commodity group for which aging management activities were required. Section 5.34 of EP-3-S-0718 provided guidance for determining if a specific component could be scoped out of license renewal. This guidance included an evaluation of component functions against the scoping criteria of 10 CFR 54.4(a) when assessing if an electrical component had a license renewal intended function. Additionally, Attachment 5 to EP-3-S-0718 stated that consideration shall be given to the guidance provided in NUREG-1800 relative to electrical and I&C scoping determinations.

The staff reviewed a sampling of electrical and I&C system scoping results and determined that, for the items reviewed, the scoping results appeared to be reasonable.   Because the applicant's electrical spaces approach integrated the scoping and screening phases of the methodology, additional evaluation of this methodology is documented in Section 2.1.3.2.3, below.

2.1.3.1.4.4 Scoping Conclusion

The staff reviewed the scoping implementation procedures and a selected sample of the system scoping reports to ensure consistent application of the applicant's scoping methodology. The staff noted that the sample reports reviewed were developed in accordance with the administrative controls governing the process, and were consistent in level of detail and presentation. The staff further reviewed a sample of the license renewal drawings and system scoping results reports to ensure that the individual components identified in the system scoping results reports were reflected appropriately on the drawings. On the basis of the evaluation described above, including evaluation of the applicant's responses to the staff's requests for additional information, the staff determined that the scoping methodology was consistent with the requirements of the Rule, and that the scoping methodology is capable of identifying SSCs that meet the criteria of 10 CFR 54.4(a).

2.1.3.2 Screening Methodology

The staff reviewed the screening methodology used by the applicant to determine if mechanical, structural, and electrical components within the scope of license renewal would be subject to further aging management evaluation. The applicant described its screening process in Section 2.1.5 of the LRA. In general, the applicant's screening approach consisted of

evaluations to determine which in-scope SCs were passive and long-lived. Passive, long-lived SCs were then subject to further AMR.

The staff evaluated the applicant's screening methodology against the criteria contained in 10 CFR 54.21(a)(1) and (a)(2) using the review guidance contained in NUREG-1800, Section 2.1.3.2, "Screening." As 10 CFR 54.21(a)(1) states, the applicant's integrated plant assessment must identify and list those SCs subject to an AMR. Further, 10 CFR 54.21(a)(1) requires that SCs subject to an AMR shall encompass those SCs that (1) perform an intended function, as described in 10 CFR 54.4, without moving parts or a change in configuration or properties and (2) are not subject to replacement based on a qualified life or specified time period. Pursuant to 10 CFR 54.21(a)(2), the applicant must describe and justify the methods used to meet the requirements of 10 CFR 54.21(a)(1).

During the methodology audit, the applicant provided the staff with a detailed discussion of the processes used for each discipline and provided technical reports that described the screening methodology, as well as a sample of the screening results reports for a selected group of safety-related and non-safety-related systems. The applicant's screening process followed the guidance provided in NEI 95-10 and consisted of the following three activities:

(1) review of system and structure intended functions

(2) identification of the components that support system or structure intended functions

(3) identification of long-lived passive components that support a system or structure intended function and are therefore subject to an AMR

These major activities provided a mechanism to verify that system intended functions, based on detailed system design documentation, were captured adequately, and that the components selected for further review supported those intended functions. The results of the screening review for each system and structure were documented in the license renewal database and the associated scoping/screening report, in accordance with EP-3-S-0713. Screening methodologies unique to the mechanical, structural, and electrical reviews are discussed below.

2.1.3.2.1 Mechanical Component Screening

The staff reviewed the methodology used by the applicant to identify and list the mechanical components subject to an AMR, as well as the applicant's technical justification for this methodology. The staff also examined the applicant's results from the implementation of this methodology by reviewing an overview of the mechanical systems identified as being within the scope, a sample of evaluation boundaries drawn within those systems, the resulting components determined to be within the scope of the rule, the corresponding component-level intended functions, and the resulting list of mechanical components subject to an AMR.

The applicant provided procedural guidance for the conduct of mechanical component screening in procedure EP-3-S-0713 and EG-012. Section 5.2.2.b of EP-3-S-0713 referenced the use of Appendix B to NEI 95-10 when determining when a component should be considered active or passive. Additionally, the applicant determined which components were subject to replacement based on a qualified life or specified time period and therefore considered not

subject to an AMR. For those passive components subject to an AMR, the applicant identified component intended functions.

As described in a May 1, 2002, License Renewal Issue letter (ADAMS accession ML021220429), the staff expects applicants to identify active component housings which require an AMR. This determination should consider whether the failure of the housing would result in failure of the associated active component to perform its function and whether the housing meets the long-lived and passive criteria as defined in the rule. In Section 2.1.6 of the LRA, the applicant described the screening methodology used for the housings of active components. The applicant considered fan housings and fire damper housings to be within scope and subject to an AMR. Therefore, the staff determined that the applicant's screening methodology for mechanical equipment, including the housings of active equipment, was adequate.

2.1.3.2.2 Structural Component Screening

The staff reviewed the methodology for identifying structural components subject to an AMR, as well as the applicant's technical justification for this methodology. The staff also examined the applicant's results from the structural screening methodology by reviewing the structural components identified as being within the scope of license renewal, the corresponding structural component intended functions, and the resulting list of structural components subject to an AMR.

General guidance for the conduct of structural screening was provided in Section 5.2 of EP-3-S-0713. The applicant identified structural components within the license renewal evaluation boundaries of each plant-level structure. For components not uniquely identified in the CMIS database, the applicant created component identifiers in the license renewal database for the purposes of scoping and screening. The applicant also placed certain structural components into a component support commodity group, which was then evaluated as a separate in-scope plant-level system. As described in Section 5.2.2 of EP-3-S-0713, all structural components within license renewal structural scoping evaluation boundaries, with the exception of snubbers, were assumed to be long-lived and passive, and thus subject to an AMR. On this basis, the staff determined that the applicant's screening methodology for civil and structural equipment was adequate.

2.1.3.2.3 Electrical and Instrumentation and Controls Component Screening

After identifying the SSCs within the scope of license renewal, the staff reviewed the applicant's screening review to determine which electrical components would be subject to an AMR. The applicant used a plant spaces approach for electrical and I&C scoping which screened components on a plant-wide basis rather than on a system basis. In Section 2.5 of the LRA, the applicant identified the following commodity groups used for electrical and I&C screening:

- medium voltage insulated cables and connections
- low voltage insulated cables and connections
- electrical portions of electrical and I&C penetration assemblies
- electrical phase bus
- switchyard bus
- transmission conductors

- uninsulated ground conductors
- high voltage insulators

The applicant stated in Section 2.1.7.4, "Electrical and I&C Systems," of the LRA, that a review of the UFSAR, the plant's database, and DBDs did not identify the need to add any additional commodity groups. The plant was segregated into areas where common, bounding environmental parameters could be assigned. The applicant then identified electrical commodity groups that were installed in the identified plant space and determined which group had the limiting aging characteristics for the plant space. The limiting commodity group was then subject to an AMR. Based on the information presented in the LRA, the staff questioned if the electrical and I&C screening methodology could result in the failure to subject in-scope commodity groups, that were not the most age-limited, to an AMR. In RAI 2.1-3, dated March 21, 2003, the staff requested that the applicant provide additional information regarding the screening methodology treatment of electrical and I&C system commodity groups to demonstrate that all in-scope commodity groups are subject to an AMR.

On May 23, 2003, the applicant responded to the staff's RAI by providing additional information regarding the screening methodology treatment of electrical and I&C system commodity groups to demonstrate that all in-scope commodity groups are subject to an AMR. The applicant stated that Section 2.1.7.4 of the LRA describes a process of using a preliminary analysis to avoid inefficiencies in the scoping and screening process and focuses on the limiting (bounding) materials of construction and limiting (bounding) environmental conditions. The analysis was used to avoid an exclusionary scoping review for those commodity groups and components that have no aging effects requiring management, or are intended to be included in an AMR program due to regulatory precedent. As stated in the LRA, all passive, long-lived electrical and I&C commodity groups were initially considered subject to an AMR, and the conclusions of the preliminary analysis did not change this initial position. The applicant further stated that only commodity specific, or component specific exclusion scoping, are used to identify passive long-lived components that are not subject to an AMR.

Furthermore, the staff has confidence that the preliminary analysis performed by the applicant, which focused on the bounding materials of construction and environmental conditions, should help to avoid inefficiencies in the scoping and screening process and does not change the position in the LRA that all passive, long-lived electrical and I&C commodity groups are considered subject to an AMR. Therefore, the staff considers the F-RAI 2.1-3 resolved.

Based on the information provided by the applicant in the LRA, the staff's audit of the applicant's scoping and screening methodology, and the additional information provided by the applicant in response to the staff's RAI, the staff concluded that the applicant's screening methodology for electrical and I&C equipment is acceptable.

2.1.3.2.4 Screening Conclusion

The staff reviewed the screening implementation procedures and a selected sample of the system screening reports to ensure consistent application of the applicant's screening methodology. The staff noted that the sample reports reviewed were developed in accordance with the administrative controls governing the process and were consistent in level of detail and presentation. The staff further reviewed a sample of the license renewal drawing and system screening table results to ensure that the individual components identified in the system

screening tables were reflected appropriately on the drawings. For those components identified in the screening table and not requiring an AMR, the individual screening report provided an explanation for the component exclusion from an AMR. The staff reviewed a sample of these explanations and found that they were consistent with the guidance and provided adequate justification for the determination made. The staff did not observe any discrepancies between the sample tables and drawings evaluated. On the basis of the evaluation described above, the staff determined that the screening methodology was consistent with the requirements of the Rule, and that the screening methodology will identify SCs that meet the screening criteria of 10 CFR 54.21(a)(1).

2.1.4 Evaluation Findings

The staff review of the information presented in Section 2.1 of the LRA, the supporting information in the implementing guidelines and engineering procedures, the information presented during the scoping and screening audit, the NRC scoping inspection, and the applicant's responses to the staff's RAIs formed the basis of the staff's safety determination. The staff verified that the applicant's scoping and screening methodology, including its supplemental 10 CFR 54.4(a)(2) review which brought additional non-safety-related components into the scope of license renewal, was consistent with the requirements of the Rule and the staff's position on the treatment of non-safety-related SSCs. On the basis of this review, the staff concludes that there is reasonable assurance that the applicant's methodology for identifying the SSCs within the scope of license renewal and the SCs requiring an AMR is consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.2 Plant-Level Scoping Results

2.2.1 Summary of Technical Information in the Application

This section addresses the plant-level scoping results for license renewal. Per 10 CFR 54.21(a)(1), the applicant is required to identify and list structures and components subject to an AMR. These are passive and long-lived structures and components that are within the scope of license renewal.

In LRA Table 2.2-1, the applicant provided a list of the plant systems and structures, identifying those that are within the scope of license renewal. The Rule does not require the identification of all plant systems and structures. However, providing such a list allows for a more efficient staff review. On the basis of design-basis events considered in the plant's current licensing basis (CLB), and other CLB information relating to non safety-related systems and structures and certain regulated events, the applicant identified those plant-level systems and structures within the scope of license renewal, as defined in 10 CFR 54.4(a). To verify that the applicant has properly implemented its methodology, the staff focuses its review on the implementation results to confirm that there is no omission of plant-level systems and structures within the scope of license renewal.

2.2.2 Staff Evaluation

The Statement of Considerations (SOC) for the license renewal rule (60 FR 22478) indicates that an applicant has the flexibility to determine the methodology it will use to identify the set of

structures and components for which the scoping and screening process specified in 10 CFR 54.21(a)(1) will be performed. Accordingly, the staff focused its review on verifying that the implementation of the applicant's methodology discussed in Section 2.1 of this SER did not result in the omission of structures and components that perform an intended function that meets the 10 CFR 54.4 scoping criteria. In LRA Table 2.2-1, the applicant listed the R.E. Ginna Nuclear Power Plant SSCs within the scope of license renewal. The staff reviewed this list to determine whether any SSCs that met the 10 CFR 54.4 scoping criteria had been omitted.

The staff performed the following evaluations:

- R.E. Ginna was constructed before the adoption of the standard review plan (NUREG-0800). As described in more detail in the following sections of this SER, the staff reviewed the plant's CLB as documented in the Ginna updated final safety analysis report (UFSAR), the final report from the Ginna integrated plant safety assessment study performed as part of the Systematic Evaluation Program (NUREG-0821), and related documents and drawings. All of the systems and structures identified in these documents and drawings were reviewed to confirm that the applicant did not omit systems or structures from within the scope of license renewal that meet the 10 CFR 54.4 scoping criteria.

- To determine whether the applicant had properly identified the components and commodity groups subject to an AMR that make up the systems and structures identified above. The staff reviewed design documents and drawings for the systems and structures within the scope of license renewal to verify that the applicant did not omit components that meet the criteria in 10 CFR 54.21(a)(1).

In the comments column of LRA Table 2.2-1, the applicant stated that certain components from out-of-scope systems were evaluated as part of other systems within the scope of license renewal. This practice is acceptable as long as the components so treated are clearly identified in a manner traceable to the current licensing basis documentation. In part, 10 CFR 54.21(a)(1) states that components and their intended functions that meet the scoping criteria of 10 CFR 54.4(a) and are subject to an AMR must be identified, so that their aging effects can be adequately managed consistent with Ginna's current licensing basis. In order to confirm that SSCs with intended functions described in the UFSAR using traditional (i.e., CLB) nomenclature have been captured in the license renewal process, the staff needs to identify components from out-of-scope systems that were evaluated as part of the systems within the scope of license renewal in the LRA and the scoping boundary drawings. By letter dated March 21, 2003, the staff requested that the applicant identify the components from the out-of-scope systems (identified below) in the tables contained in LRA Section 2.3 (RAI 2.2-1):

- circulating water
- plant air
- plant sampling
- fuel handling
- nonessential ventilation

Also, RAI 2.2-1 requested that the applicant identify the components of these systems that perform intended functions that are evaluated with other systems, the intended functions they perform, and if they are subject to an AMR.

By letter dated June 16, 2003, the applicant responded that the philosophy of evaluating specific components within other systems is provided in LRA Section 2.1.3. In the cases of plant air and plant sampling systems, the containment isolation portions of the systems were grouped in accordance with the SRP-LR, Section 2.3.1 and Table 2.1-2, as well as NUREG-1801, Chapter V, Section C. For nonessential ventilation, those portions of the system that act as fire barriers have been evaluated as a commodity, again in accordance with the SRP. Section 2.1.3 of the LRA, "System Function Determination," states, system scoping must identify all license renewal functions associated with components contained within a system. Generally, within the license renewal system boundary, if the system under review contains any components that meet the license renewal scoping criteria detailed in 10 CFR 54.4(a), the entire system is considered in scope and that system moves forward to the license renewal screening process.

There are two specific exceptions to this dictate:

(1) When the only in-scope portion of the system comprises components that will receive a commodity group evaluation (e.g., fire barriers, equipment supports, etc.). In this case, it is appropriate to identify the system or structure as not being within the scope of license renewal; however, the basis for that determination must be clearly identified.

Example: The nonessential ventilation systems contain components that act as fire barriers (fire dampers). Within the system evaluation boundary, no other functions performed by the system are license renewal intended functions. Therefore, this method of evaluation of the system components that perform the fire barrier function within the fire barrier commodity group results in designation of the nonessential ventilation systems as not being within the scope of license renewal.

(2) When the only in-scope portion of the system comprises components that act as containment isolation boundaries. In that case, it is appropriate to identify the system as not being within the scope of license renewal so long as the components that perform the isolation boundary function are evaluated within the containment isolation boundary system.

Example: The plant sampling system contains components that act as containment isolation boundaries (e.g., valves or pipes). Within the system evaluation boundary, no components, other than those that perform the isolation function, perform any additional license renewal intended functions. Therefore, this method of evaluation of the system components that perform the containment isolation boundary function within the containment isolation system results in the designation of plant sampling as not being within the scope of license renewal.

Components of the specific systems addressed in RAI 2.2-1 are listed below:

- For plant air, the affected components are addressed in LRA Section 2.3.2.5, "Containment Isolation Components." The components are shown between the safety class 2 flags bounding the containment penetrations on drawings 33013-1882-LR; 33013-1884,1-LR; 33013-1884,2-LR; 33013-1886,2-LR; and 33013-1893-LR (on this drawing, the appropriate components are not highlighted; this is a drafting error). The affected components are pipe, valve bodies, and flanges as listed in Table 2.3.2-5.

- For plant sampling, the affected components are addressed in LRA Section 2.3.2.5, "Containment Isolation Components." The components are shown between the safety class 2 flags bounding the containment penetrations on drawings 33013-1278,1-LR and 33013-1279-LR. The affected components are pipe, valve bodies, delay coil, and flanges as listed in Table 2.3.2-5.

- For fuel handling, the affected components are addressed in LRA Section 2.3.2.5, "Containment Isolation Components." The components are shown between the safety class 2 flags bounding the containment penetration on drawing 33103-1248-LR and are associated with the fuel transfer slot containment penetration. The affected components are pipe, valve bodies, and flanges as listed in Table 2.3.2-5.

- For nonessential ventilation systems, the affected components are addressed in LRA Section 2.3.3.6, "Fire protection." As noted in the system description, fire dampers are treated within the fire protection commodity group. The affected dampers are designated with an "f" adjacent to the damper identification number associated with both the essential and nonessential ventilation system (LRA Sections 2.3.3.10 and 2.3.3.19). These devices are not highlighted on the drawings (unless they act with a pressure boundary function to support the host systems ductwork intended function) because they are treated as a commodity group. Specific damper identification numbers are called out in the fire protection program implementing procedures. The affected components are listed under the component group "structure" in Table 2.3.3-6 with the link to Table 3.4-1 line number 19 being appropriate to fire damper frame housings.

- The circulating water system and the service water system share certain components within the scope of license renewal. In the application, the emergency intake from the discharge canal as well as the combined service water/circulating water discharge piping is included in the service water system boundary. The affected components are pipe and valve bodies as listed in Table 2.3.3-5.

The staff finds the applicant's response to RAI 2.2-1, relating to the circulating water, plant sampling, plant air, fuel handling, and nonessential ventilation systems, to be acceptable on the basis that it confirmed the applicant's determination that these systems, with the evaluation boundaries specified in the LRA and delineated in the accompanying scoping boundary drawings, do not perform an intended function that meets the scoping criteria of 10 CFR 54.4(a). The applicant's RAI response clarified that certain fire dampers in the essential and nonessential ventilation systems were evaluated as commodities with the fire protection system and also confirmed that the specific components of the plant air, plant sampling, and fuel handling systems that the LRA identified as being evaluated with other systems were in fact included as components of the containment isolation system within the scope of license renewal.

2.2.3 Evaluation Findings

On the basis of this review, the staff concludes that there is reasonable assurance that the applicant has appropriately identified the systems and structures within the scope of license renewal in accordance with 10 CFR 54.4.

2.3 Scoping and Screening Results: Mechanical Systems

This section addresses the mechanical systems' scoping and screening results for license renewal. The mechanical systems consist of the following (the SER sections are also provided):

- reactor systems

  - reactor coolant (Class 1) (2.3.1.1)
  - reactor vessel (2.3.1.2)
  - reactor vessel internals (2.3.1.3)
  - pressurizer (2.3.1.4)
  - steam generators (2.3.1.5)
  - reactor coolant (non-Class 1) (2.3.1.6)

- engineered safety feature systems

  - safety injection (2.3.2.1)
  - containment spray (2.3.2.2)
  - residual heat removal (2.3.2.3)
  - containment hydrogen detectors and recombiners (2.3.2.4)
  - containment isolation components (2.3.2.5)

- auxiliary systems

  - chemical and volume control (2.3.3.1)
  - component cooling water (2.3.3.2)
  - spent fuel pool cooling and storage (2.3.3.3)
  - waste disposal (2.3.3.4)
  - service water (2.3.3.5)
  - fire protection (2.3.3.6)
  - heating steam (2.3.3.7)
  - emergency power (2.3.3.8)
  - containment ventilation (2.3.3.9)
  - essential ventilation (2.3.3.10)
  - cranes, hoists, and lifting devices (2.3.3.11)
  - treated water (2.3.3.12)
  - radiation monitoring -- mechanical (2.3.3.13)
  - circulating water (2.3.3.14)
  - chilled water (2.3.3.15)
  - fuel handling (2.3.3.16)
  - plant sampling (2.3.3.17)
  - plant air (2.3.3.18)
  - nonessential ventilation (2.3.3.19)
  - site service and facility support (2.3.3.20)

- steam and power conversion systems

- main and auxiliary steam (2.3.4.1)
- feedwater and condensate (2.3.4.2)
- auxiliary feedwater (2.3.4.3)
- turbine generator and supporting systems (2.3.4.4)

According to 10 CFR 54.21(a)(1) an applicant must identify and list SCs subject to an AMR. These are passive, long-lived structures and components that are within the scope of license renewal. To verify that the applicant has properly implemented its methodology, the staff focuses its review on the implementation results. Such a focus allows the staff to confirm that there is no omission of mechanical system components that are subject to an AMR. If the review identifies no omission, the staff has the basis to find that there is reasonable assurance that the applicant has identified the mechanical system components that are subject to an AMR.

During its review, the staff determined that additional information was needed to clarify the information presented in certain tables in Section 2.3 of the LRA. By letter dated March 21, 2003, the staff requested that the applicant clarify the usage of system function code "S", which LRA Table 2.1-1 describes as indicating a “Special Capability Class Function” (RAI 2.3-1).

By letter dated May 16, 2003, the applicant clarified that the Ginna plant process for functionally based classifications was used in the development of the application. The "S" system function code broadly identifies a wide variety of components that are in the augmented quality assurance category. The basis for the augmented quality status is described in the applicant’s component classification procedure IP-QAP-1 by rule number 3.1.4.27, "Components or systems that do not perform a nuclear safety function, but are required to be operable by Ginna Station Technical Specification Limiting Conditions for Operation including the Technical Requirements Manual (TRM).” The "S" system function is generic and meant to prompt the reviewer to look further down the list for other codes which may indicate a license renewal intended function. The applicant’s response to RAI 2.3-1 is acceptable to the staff, on the basis that it clarifies that system function code "S" does not directly relate to a license renewal intended function.

By letter dated March 21, 2003, the staff requested that the applicant clarify whether the component group “pipe” includes all fittings such as reducers, enlargers, flanges, and end caps, shown as part of a piping run on the license renewal boundary drawings shown as being subject to an AMR on the license renewal system boundary drawings, but not specifically listed in the tables in LRA Section 2.3 (RAI 2.3-2). Some LRA tables have a component identified as “pipe” (for example, Table 2.3.2-2 for containment spray), while tables for other LRA sections have components identified as “piping and fittings.”

By letter dated May 16, 2003, the applicant responded that the component group "pipe" includes all fittings such as reducers, enlargers, flanges, and end caps, shown as part of a piping run on the license renewal boundary drawings. The staff considers the applicant’s response to RAI 2.3-2 to be acceptable on the basis that it clarifies that these pipe fittings are included in the scope of license renewal and are subject to an AMR.

By letter dated March 21, 2003, the staff asked the applicant to identify the standards that are relied upon for the replacement of consumable items such as O-rings and filters (RAI 2.3-3). By letter dated May 28, 2003, the applicant responded with the following information:

> The double O-ring seals used to provide containment isolation pressure boundaries are in the scope of the license renewal rule and are subject to AMR. Table 3.6-1, line number 6 of the LRA identifies these components and the programs that monitor their performance. These O-rings are replaced each time a flange is removed.
>
> The charcoal and HEPA filters are subject to the requirements of the plant Technical Specification Ventilation Filter Testing Program (TS 5.5.10). This program uses the standards endorsed by Regulatory Guide 1.52, Revision 2, as modified in the specification.
>
> The low and moderate efficiency (roughing) filters are subject of the requirements of the station periodic surveillance and preventive maintenance program which has repetitive tasks (reptasks) which require inspection of the filter condition on a frequency between 4 and 8 weeks, depending on the filter. These frequencies were established through years of operational experience and include consideration of physical location. When a filter shows signs of debris accumulation and fouling, it is replaced.

The staff considers the applicant’s response to RAI 2.3-3 to be acceptable, on the basis that specific replacement criteria were provided for consumable items not subject to an AMR in accordance with the requirements of the Rule.

Because the review identified no omission, the staff has the basis to find that there is reasonable assurance that the applicant has identified the mechanical system components that are subject to an AMR.

2.3.1 Reactor Systems

In Section 2.3.1, “Reactor Coolant System,” of the Ginna Nuclear Power Plant LRA, RG&E (the applicant) described the SSCs of the reactor coolant system (RCS) that are subject to AMR for license renewal.

2.3.1.1 Reactor Coolant (Class 1)

2.3.1.1.1 Summary of Technical Information in the Application

As described in the LRA, the RCS transports the heat generated in the reactor core to secondary heat removal systems. The RCS also acts in conjunction with the fuel and the primary containment systems to provide defense in depth with respect to preventing fission products from escaping to the environment. Consequently, the RCS is associated with mitigating virtually all accidents, transients, and events.

The principal components of the RCS include the reactor vessel, pressurizer, steam generators, reactor coolant pumps, and the essential class 1 piping and valves (including the regenerative and letdown heat exchangers). The RCS consists of two identical heat transfer loops connected in parallel to the reactor vessel. Each loop contains a circulating pump and a steam generator.

The AMR for the following system components was performed using the Westinghouse Commercial Atomic Power (WCAP) AMR and the corresponding applicant action item requirements detailed in the appropriate NRC Safety Evaluation Report :

- reactor vessel

- reactor vessel internals
- reactor coolant system Class 1
- reactor coolant system non-Class 1
- pressurizer
- steam generator

The fluid systems that interface with the RCS are plant sampling, waste disposal, residual heat removal, safety injection, chemical and volume control, and component cooling water.

The following are the RCS subsystems, whose descriptions are provided in the following sections:

- reactor vessel
- reactor vessel internals
- pressurizers
- steam generators

Additional details of the RCS are provided in Sections 5.1, 5.2, and 5.4 of the UFSAR.

The component groups for this system that require AMR are indicated in Table 2.3.1-1 of the LRA along with each component group's passive functions and references to the corresponding AMR tables in Section 3 of the LRA. The component groups identified in the table include valves; reactor coolant pump (RCP) casing, main flange, and thermal barrier flange; heat exchanger tubing; orifices and reducers; piping and fittings; primary loop elbows; bolting for flanged piping joints, RCPs, and valve closures; and RCP lugs. The intended functions identified are pressure boundary, heat transfer, throttling, and mechanical closure integrity.

2.3.1.1.2 Staff Evaluation

The staff reviewed this section of the LRA to determine whether there is reasonable assurance that the reactor coolant (Class 1) and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This review is described below.

The staff reviewed the relevant portions of the UFSAR for Ginna for the reactor coolant (Class 1) and associated pressure boundary components and compared the information in the UFSAR with the information in the LRA to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed the SCs that were identified as not being within the scope of license renewal to verify that these SCs do not have any of the intended functions delineated under 10 CFR 54.4(a). For those SCs that have applicable intended functions, the staff verified that they either perform these functions with moving parts or a change in configuration or properties, or that they are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1).

The staff also reviewed the UFSAR for any functions delineated under 10 CFR 54.4(a) that were not identified as intended functions in the LRA, to verify that the SSCs with such functions

will be adequately managed so that the functions will be maintained consistent with the CLB for the extended period of operation.

After completing the initial review, the staff requested the applicant to provide additional information on the RCS (Class 1).

The pressurizer surge and spray nozzle thermal sleeves were not identified in the LRA (Table 2.3.1-4) as within the scope of license renewal (LR). The staff understands that the intended function of the thermal sleeves is to provide thermal shielding to the nozzles (pressure boundary), and that the failure of the sleeves may prevent the nozzles from performing their pressure boundary function during the extended period of operation. As such, thermal sleeves meet the criteria identified in 10 CFR 54.4(a)(2) and, therefore, should be within the scope of LR. Furthermore, the Westinghouse Owners Group has proposed in topical report WCAP-14574-A, "License Renewal Evaluation: Aging Management Evaluation for Pressurizers," and the staff has concurred, that the pressurizer surge and spray nozzle thermal sleeves are within the scope of LR. However, the staff also understands that an in-scope component may not require an AMR if a time limited aging analysis (TLAA) was performed for the component, and the result was found to be acceptable for the extended period of operation.

Based on the above, the staff requested the applicant in RAI 2.3.1-2 to provide the following additional information:

a. On the basis of the reason cited above, include the pressurizer surge and spray nozzle thermal sleeves within scope or justify their omission.

b. Respond to the following questions: Was a TLAA performed for the thermal sleeves as an integral part of the nozzles? If so, are the results of the TLAA also applicable to the sleeves (in addition to the nozzles), and are the results acceptable for the extended period of operation?

c. If the answers to b are not affirmative, submit an AMR for the thermal sleeves that are in-scope components, or justify why an AMR is not required.

d. Identify any other thermal sleeves that perform thermal shielding function for pressure boundary components such as the return line from the residual heat removal (RHR) loop, and the charging lines and the alternate charging line connections (refer to Ginna UFSAR Section 5.4.3.1.1), which may have been excluded from the scope of LR. If any thermal sleeves are identified, justify their exclusion from the scope.

By letter dated May 13, 2003, the applicant responded point-by-point to these requests as follows:

a. The pressurizer surge and spray nozzle thermal sleeves are already accounted for in the LRA. They are within the scope of the rule and are evaluated as part of the constituent component nozzle assemblies.

b. The thermal sleeves are included within metal fatigue TLAA evaluations in LRA Section 4.3 and are accounted for in LRA Section B3.2, the Fatigue Monitoring Program. The TLAA evaluation includes the nozzles and sleeves, and the evaluation results indicate that the assemblies are acceptable for the period of extended operation, including accounting for the consequences of environmentally assisted fatigue.

c. Because the response to b was affirmative, point c is not applicable.

d. In addition to the pressurizer surge line and spray nozzles, the return line from the RHR loop, the charging and alternate charging lines, and the safety injection accumulator connections to the RCS all have nozzles containing thermal sleeves. These nozzles are within the scope of the LRA and have received TLAA evaluations. As with the pressurizer nozzles, aging effects for these components are managed within the Fatigue Monitoring Program. Additionally, the steam generator feedwater nozzles contain thermal sleeves. The steam generators were replaced in 1996, and these components did not require TLAA evaluation because an explicit fatigue analysis was performed according to the requirements of the American Society of Mechanical Engineers (ASME) Section III, Subsection NB-3600, for the 40-year design life of the steam generators. Therefore, these components do not require fatigue monitoring. They are, however, in scope to the Rule and subject to other aging management programs (AMPs) as identified in the LRA.

The staff did not identify any omissions.

2.3.1.1.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the RCS (Class 1) and its associated (supporting) SCs that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the RCS (Class 1) and its associated (supporting) SCs that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.2 Reactor Vessel

2.3.1.2.1 Summary of Technical Information in the Application

The Ginna station reactor pressure vessel (RPV), as the principal component of the RCS, contains the heat-generating core and associated supports, controls and instrumentation, and coolant circulating channels. Primary outlet and inlet nozzles provide for the exit of heated coolant and its return to the RPV for recirculation through the core.

The Ginna station RPV consists of a cylindrical shell with a hemispherical bottom head and a flanged and gasketed removable upper head. The RPV shell is fabricated from integral ring forgings joined by circumferential welds. The RPV contains the core, core support structures, rod control clusters, thermal shield or neutron shield panels, and other parts directly associated with the core. Inlet and outlet nozzles are located at an elevation between the head flange and the core. The body of the RPV is low-alloy carbon steel, and the inside surfaces in contact with coolant are clad with austenitic stainless steel to minimize corrosion. The RPV is supported by steel pads integral with the coolant nozzles. The pads rest on steel base plates atop a support structure attached to the concrete foundation.

Additional reactor vessel details are provided in Section 5.3 of the UFSAR.

The subcomponents of the reactor vessel that require AMR are indicated in Table 2.3.1-2 of the LRA along with each subcomponent's passive functions and references to the corresponding AMR tables in Section 3 of the LRA. The component groups identified in the table include control and drive mechanism (CRDM) rod travel housings, latch housing, and housing tubes (head adapters); vent pipe; closure head dome and flange; vessel flange; O-ring leak monitor tubes; upper shell; primary inlet and outlet nozzles; primary nozzle safe ends; intermediate shell (including circumferential weld); lower shell; core support lugs; bottom head torus; bottom head dome; instrumentation tubes and safe ends; BMI guide tubes; seal table fittings; ventilation shroud support ring; closure studs, nuts, and washers; refueling seal ledge; and nozzle support pads.

The intended functions identified are pressure boundary, support of reactor vessel (RPV) internals, support of thimble tubes, structural support, and mechanical closure integrity.

2.3.1.2.2 Staff Evaluation

The staff reviewed this section of the LRA to determine whether there is reasonable assurance that the RPV and associated components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This review is described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed the relevant portions of the UFSAR for Ginna for the RPV and associated components and compared the information in the UFSAR with the information in the LRA to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed the SCs that were identified as not being within the scope of license renewal to verify that these SCs do not have any of the intended functions delineated under 10 CFR 54.4(a). For those SCs that have applicable intended functions, the staff verified that they either perform these functions with moving parts or a change in configuration or properties, or that they are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1).

The staff also reviewed the UFSAR for any functions delineated under 10 CFR 54.4 (a) that were not identified as intended functions in the LRA, to verify that the SSCs with such functions will be adequately managed so that the functions will be maintained consistent with the CLB for the extended period of operation.

After completing the initial review, the staff requested the applicant to provide additional information on the RPV.

Borated water leakage through the pressure boundary in pressurized water reactors (PWRs) and resulting borated-water-induced wastage of carbon steel is a potential aging degradation mechanism for the components. Reactor vessel head lifting lugs are considered to be components requiring aging management. However, if the components are currently covered under the Boric Acid Corrosion Program, then they may not require additional aging management. It appears that the subject components were not discussed in the LRA (Table 2.3.1-2), and therefore, the staff requested the applicant in RAI 2.3.1-1 to verify whether the components are within the surveillance program and, if not, justify their omission.

By letter dated May 13, 2003, the applicant responded to the staff's RAI. The applicant clarified that the reactor vessel head lifting lugs are included in the LRA in Table 2.3.1-2, under the subcomponent "Closure Head Dome." Furthermore, the applicant confirmed that RPV head lifting lugs are included in the Boric Acid Corrosion Program, as are all carbon/low-alloy steel external surfaces in the RCS and that the AMP identified in LRA Table 3.2-1, line number 26 will be applicable for the head lifting lugs.

The staff did not identify any omissions.

2.3.1.2.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the RPV and its associated (supporting) SCs that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the RPV and its associated (supporting) SCs that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.3 Reactor Vessel Internals

2.3.1.3.1 Summary of Technical Information in the Application

The Ginna station reactor vessel internals (RVIs) consist of two basic assemblies.

(1) Upper internals assembly that is removed during each refueling operation to obtain access to the reactor core. The top of this assembly is clamped to a ledge below the vessel-head mating surface by the reactor vessel head. The core barrel fuel alignment pins of the lower internals assembly guides the bottom of the upper internals assembly.

(2) Lower internals assembly that can be removed, if desired following a complete core unload. This assembly is clamped at the same ledge below the vessel head mating surface and closely guided at the bottom by radial/clevis assemblies.

Additional details of the reactor vessel internals are provided in Section 3.9.5 and Section 4.2.1 of the Ginna UFSAR.

The subcomponents of the reactor vessel internals that require AMR are indicated in Table 2.3.1-3 of the LRA along with each subcomponent's passive functions and references to the corresponding AMR tables in Section 3 of the LRA. The component groups identified in the table include lower core plate and fuel pins; lower support forging and columns; core barrel and flange; radial keys and clevis inserts; baffle and former assembly; core barrel outlet nozzle; secondary core support; diffuser plates; upper support plate assembly; upper core plate and fuel alignment pins; upper support columns; rod cluster control assembly (RCCA) guide tubes and flow downcomers; guide tube support pins; upper core plate alignment pins; hold down

spring; head/vessel alignment pins; thermal shield and neutron panels; BMI columns and flux thimbles; head cooling spray nozzles; upper instrumentation column, conduit, and supports; bolting (upper support column, guide tube, and clevis insert); and bolting (lower support column, baffle/former, and barrel/former).

The intended functions identified are core support, flow distribution, guidance and support of RCCAs, vessel shielding, guidance and support of instrumentation, and guidance and support of thermocouples.

2.3.1.3.2 Staff Evaluation

The staff reviewed this section of the LRA to determine whether there is reasonable assurance that the RVI and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This review is described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed the relevant portions of the UFSAR for Ginna for the RVI and associated pressure boundary components and compared the information in the UFSAR with the information in the LRA to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed the structures and components that were identified as not being within the scope of license renewal to verify that these SCs do not have any of the intended functions delineated under 10 CFR 54.4(a). For those SCs that have applicable intended functions, the staff verified that they either perform these functions with moving parts or a change in configuration or properties, or that they are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1).

The staff also reviewed the UFSAR for any functions delineated under 10 CFR 54.4(a) that were not identified as intended functions in the LRA, to verify that the SSCs with such functions will be adequately managed so that the functions will be maintained consistent with the CLB for the extended period of operation.

The staff did not identify any omissions.

2.3.1.3.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant’s responses to the staff’s RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the reactor vessel and its associated (supporting) SCs that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the reactor vessel and its associated (supporting) SCs that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.4 Pressurizer

2.3.1.4.1 Summary of Technical Information in the Application

The Ginna pressurizer is part of the RCS and is located inside containment. The RCS pressure control consists of the pressurizer vessel equipped with electric heaters, safety valves, relief valves, pressurizer spray, interconnecting piping, and instrumentation. During operation, the pressurizer contains saturated water and steam maintained at the desired saturation temperature and pressure by the electric heaters and pressurizer spray. The chemical and volume control system (CVCS) maintains the desired water level in the pressurizer during steady-state operation by a pressurizer level control instrumentation system.

During normal operation, the external electrical network imposes load changes on the plant turbine generator. These load changes cause temperature changes in the RCS. Since the reactor rod control system, which controls the reactor coolant temperature, does not respond instantaneously during a load transient, the pressurizer pressure control system is designed to absorb the reactor coolant volume surges and limit pressure variations during the initial transient period prior to an effective response by the reactor rod control system. The pressurizer performs the following functions:

- maintains the required reactor coolant pressure (pressure boundary function) during steady-state operation and normal heatup and cooldown.
- limits pressure changes, that are caused by reactor coolant thermal expansion and contraction during normal plant load changes and transients to an allowable range.

Additional pressurizer details are provided in Section 5.4.7 of the Ginna UFSAR.

The subcomponents of the pressurizer that require AMR are indicated in Table 2.3.1-4 of the LRA along with each sub-component's passive functions and references to the corresponding AMR tables in Section 3 of the LRA. The component groups identified in the table include lower head, surge nozzle, surge nozzle safe end, heater well and heater sheath, shell, instrument nozzles thermowells, upper head, spray nozzle and safe end, safety nozzle and safe end, relief nozzle and safe end, manway cover, support skirt and flange, and manway cover bolts.

The intended functions identified are pressure boundary, structural support, and mechanical closure integrity.

2.3.1.4.2 Staff Evaluation

The staff reviewed this section of the LRA to determine whether there is reasonable assurance that the pressurizers, associated components, and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This review is as described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed the relevant portions of the UFSAR for Ginna for the pressurizers and associated components and compared the information in the UFSAR with the information in the LRA to identify those portions that the LRA did not identify as being within

the scope of license renewal and subject to an AMR. The staff then reviewed the SCs that were identified as not being within the scope of license renewal to verify that these SCs do not have any of the intended functions delineated under 10 CFR 54.4(a). For those structures and components that have applicable intended functions, the staff verified that they either perform these functions with moving parts or a change in configuration or properties, or that they are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1).

The staff also reviewed the UFSAR for any functions delineated under 10 CFR 54.4(a) that were not identified as intended functions in the LRA, to verify that the SSCs with such functions will be adequately managed so that the functions will be maintained consistent with the CLB for the extended period of operation.

After completing the initial review, the staff asked the applicant for additional information on the pressurizer surge and spray nozzle thermal sleeves (RAI 2.3.1-2). Section 2.3.1.1.2 of this SER discussed RAI 2.3.1-2 and the applicant’s response.

The staff did not identify any omissions.

2.3.1.4.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the pressurizer and its associated (supporting) SCs that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the pressurizer and its associated (supporting) SCs that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.5 Steam Generators

2.3.1.5.1 Summary of Technical Information in the Application

The steam generators (SGs) form the boundary between the radioactive primary (Class 1 piping) and the non-radioactive secondary systems. There are two identical SGs installed in containment, one in each RCS loop. The SG is a vertical shell and tube heat exchanger, where heat transferred from a single-phase fluid at high temperature and pressure (RCS) on the tube side is used to generate a two-phase (steam-water) mixture at a lower temperature and pressure on the shell side. The reactor coolant flows through the primary side, or inverted U-tubes, entering and leaving through the nozzles located in the hemispherical bottom head of the SG. The primary head is divided into inlet and outlet chambers by a vertical partition plate extending from the head to the tube sheet.

The steam-water mixture is generated on the secondary or shell side. Feedwater entering the SGs through a feed ring mixes with recirculated fluid and flows downward around the tube bundle inner shroud, then enters the tube bundle area where heat is transferred from the RCS.

A small portion of the tube bundle located near the tubesheet functions as a preheater to raise the temperature of the fluid to the saturation point. The remaining area of the tube bundle secondary side operates in the heat transfer nucleate boiling region. The wet vapor rises and is dried to a near moisture-free condition as it exits the SG at the outlet nozzle at the top of the shell.

At steady-state conditions, the fluid inventory and heat content on both the primary and secondary sides of the steam generator is constant, requiring a virtually constant mass flow on the primary side and a makeup (feedwater) mass flow rate that matches the combined steam flow and blowdown mass flow rates.

Additional details about the steam generators are provided in Section 5.4.2 of the Ginna UFSAR.

The subcomponents of the steam generators that require AMR are indicated in Table 2.3.1-5 of the LRA along with each subcomponent's passive functions and references to the corresponding AMR tables in Section 3 of the LRA. The component groups identified in the table include primary inlet and outlet nozzles and safe ends, tubesheet, divider plate, U-tubes, primary manways, SG shell and transition cone, feedwater nozzle, steam outlet nozzle, steam flow restrictor, blowdown piping nozzles and secondary side shell penetrations, secondary closures, internal shroud, primary and secondary decks, lattice grid tube supports, U-bend restraints, primary channel head, primary manway bolts, secondary side closure bolts, support pads, and seismic lugs.

The intended functions identified are pressure boundary, flow distribution, heat transfer, flow restriction, structural support, and mechanical closure integrity.

2.3.1.5.2 Staff Evaluation

The staff reviewed this section of the LRA to determine whether there is reasonable assurance that the steam generators, associated components, and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This review is described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed the relevant portions of the UFSAR for Ginna for the steam generators and associated components and compared the information in the UFSAR with the information in the LRA to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed the structures and components that were identified as not being within the scope of license renewal to verify that these structures and components do not have any of the intended functions delineated under 10 CFR 54.4(a). For those structures and components that have applicable intended functions, the staff verified that they either perform these functions with moving parts or a change in configuration or properties, or that they are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1).

The staff also reviewed the UFSAR for any functions delineated under 10 CFR 54.4(a) that were not identified as intended functions in the LRA, to verify that the SSCs with such functions

will be adequately managed so that the functions will be maintained consistent with the CLB for the extended period of operation.

The staff did not identify any omissions.

2.3.1.5.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the steam generators and their associated (supporting) SCs that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the steam generators and their associated (supporting) SCs that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.6 Reactor Coolant (Non-Class 1)

2.3.1.6.1 Summary of Technical Information in the Application

Reactor coolant system Class 1 components, steam generators, the pressurizer, and reactor vessel are reviewed and evaluated as unique specific topical areas. For clarity, the system drawings for non-Class 1 RCS components include the above-listed RCS equipment, but the Class 1 portion is clearly denoted with flags.

The non-Class 1 RCS components include all of the safety class 2, 3, and non-nuclear safety grade equipment used to functionally support the RCS. Non-Class 1 RCS equipment is used to sense and provide signals for reactor trip and engineered safety features actuation. Equipment included within the system boundary is also used for safe shutdown following fires and station blackout (SBO) events. The non-Class 1 RCS components system also contains equipment that is environmentally qualified.

The principal components of the non-Class 1 RCS components system include all RCS interconnected non-Class 1 piping instruments and instrument lines, reactor coolant pump motor coolers and heat exchangers, and the pressurizer power-operated relief valve (PORV) nitrogen actuation system. Also included within the evaluation boundary are the PORV and safety valve downstream tail piping up to and including the pressurizer relief tank, the reactor vessel level monitoring system, the low RCS loop level instrumentation, in-core nuclear detector drive detector isolation, and the essential piping valves and ancillary equipment necessary to support the function of the RCS.

Additional details of the RCS non-Class 1 components are provided in Section 5.1, 5.2, and 5.4 and Table 6.2-15a of the Ginna UFSAR.

The component groups for this system that require AMR are indicated in Table 2.3.1-6 of the LRA along with each component group's passive functions and references to the corresponding AMR tables in Section 3 of the LRA. The component groups identified in the table include

accumulator, condensing chamber, cooler, CS components, fasteners (bolting), heat exchanger, operator, pipe, seal table, strainer housing, temperature element, and valve body.

The intended functions identified are pressure boundary, mechanical joint integrity, heat transfer, and support of in-core instrumentation.

2.3.1.6.2 Staff Evaluation

The staff reviewed this section of the LRA to determine whether there is reasonable assurance that the reactor coolant (non-Class 1) associated components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This review is described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed the relevant portions of the UFSAR for Ginna for the reactor coolant (non-Class 1) associated components and compared the information in the UFSAR with the information in the LRA to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed the SCs that were identified as not being within the scope of license renewal to verify that these structures and components do not have any of the intended functions delineated under 10 CFR 54.4(a). For those structures and components that have applicable intended functions, the staff verified that they either perform these functions with moving parts or a change in configuration or properties, or that they are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1).

The staff also reviewed the UFSAR for any functions delineated under 10 CFR 54.4(a) that were not identified as intended functions in the LRA, to verify that the SSCs with such functions will be adequately managed so that the functions will be maintained consistent with the CLB for the extended period of operation.

The staff did not identify any omissions.

2.3.1.6.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant’s responses to the staff’s RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the reactor coolant (non-Class 1) and its associated (supporting) SCs that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the reactor coolant (non-Class 1) and its associated (supporting) SCs that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.1.7 Evaluation Findings

On the basis of this review, the staff concludes that the applicant has adequately identified the reactor system components that are within the scope of license renewal, in accordance with the requirements of 10 CFR 54.4(a), and that the applicant has adequately identified the reactor system components that are subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.2 Engineered Safety Features Systems

In Section 2.3.2, “Engineered Safety Features Systems,” of the Ginna Nuclear Power Plant LRA, RG&E described the SSCs of the engineered safety features (ESF) that are subject to AMR for license renewal.

2.3.2.1 Safety Injection

2.3.2.1.1 Summary of Technical Information in the Application

As described in the LRA, the safety injection (SI) system supports RCS inventory and reactivity control during accident and post-accident circumstances by automatically delivering borated water to the reactor vessel for cooling under high and low reactor coolant pressure conditions. Additionally, the system serves to insert negative reactivity into the reactor core in the form of borated water during an uncontrolled plant cooldown following a steam line break or an inadvertent valve operation. The SI system is also credited for use in safe shutdown following some fires and contains components that are part of the Environmental Qualification Program.

Adequate core cooling following a loss-of-coolant accident (LOCA) is provided by the SI, which operates as follows:

(1) injection of borated water by the passive accumulators

(2) injection by the high-pressure SI pumps drawing borated water from the refueling water storage tank

(3) injection by the RHR pumps also drawing borated water from the refueling water storage tank

(4) recirculation of reactor coolant and injection water from the containment sump to the RCS by the RHR pumps and the SI pumps, if needed (piggy-back operation)

The principal components of the SI system are two passive accumulators (one for each loop), high-head SI pumps, interface with low-head SI pumps (RHR pumps), and the essential piping and valves. The accumulators are passive devices that discharge into the cold leg of each loop. During Modes 1 and 2, the refueling water storage tank (RWST) is aligned to the suction of the high-head SI pumps and RHR pumps. The containment spray system shares the RWST liquid capacity with the SI system. After the injection phase, coolant spilled from the break and water injected by the SI system and the containment spray is cooled and recirculated from the sump to the RCS by the low-pressure SI system or, if needed, by the high-pressure SI system.

Several fluid systems interface with the SI system. They include reactor coolant, waste disposal, residual heat removal, plant air, containment spray, spent fuel cooling and fuel storage, chemical and volume control, component cooling water, and service water.

Additional SI system details are provided in Section 6.3 and Table 6.2-15a of the UFSAR.

The component groups for this system that require AMR are indicated in Table 2.3.2-1 of the LRA along with each component group's passive functions and references to the corresponding AMR Tables in Section 3 of the LRA. The component groups identified in the table include accumulator containment spray (CS) components, fasteners (bolting), flow element, heat exchanger, indicator, orifice, pipe, pump casing, tank, and valve body.

The intended functions identified are pressure boundary, joint integrity, heat transfer, and flow restriction.

2.3.2.1.2 Staff Evaluation

The staff reviewed this section of the LRA to determine whether there is reasonable assurance that the SI and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This review is described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed the relevant portions of the UFSAR for Ginna for the SI and associated pressure boundary components and compared the information in the UFSAR with the information in the LRA to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed the SCs that were identified as not being within the scope of license renewal to verify that these SCs do not have any of the intended functions delineated under 10 CFR 54.4(a). For those SCs that have applicable intended functions, the staff verified that they either perform these functions with moving parts or a change in configuration or properties, or that they are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1).

The staff also reviewed the UFSAR for any functions delineated under 10 CFR 54.4(a) that were not identified as intended functions in the LRA, to verify that the SSCs with such functions will be adequately managed so that the functions will be maintained consistent with the CLB for the extended period of operation.

The staff did not identify any omissions.

2.3.2.1.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No

omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the SI system and its associated (supporting) SCs that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the SI system and its associated (supporting) SCs that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.2 Containment Spray

2.3.2.2.1 Summary of Technical Information in the Application

The CS system, in conjunction with the containment ventilation system, is designed to remove sufficient heat from the containment atmosphere following an accident condition to maintain the containment pressure below design limits. The CS system, in conjunction with the sodium hydroxide (NaOH) tank, is also capable of reducing the iodine and particulate fission product inventories in the containment atmosphere such that the offsite radiation exposure resulting from a LOCA is within the guidelines established by 10 CFR 100. The CS system also contains components that are part of the Environmental Qualification Program.

The principal components of the CS system include two pumps, one tank, two spray headers, two eductors, spray nozzles, and the essential piping and valves. The system initially takes suction from the RWST. When a low level is reached in the RWST, the spray pump suction is fed from the discharge of the RHR pumps if continued spray is required. During the period that the spray pumps draw from the RWST, approximately 20 gpm of spray additive will be added to the refueling water in each train by using a liquid eductor enabled by the spray pump discharge. The fluid passing from the NaOH tank will then mix with the fluid entering the pump suction. The result will be a solution suitable for the removal of iodine. The CS system provides a 100 percent redundant backup to the containment post-accident charcoal system for iodine removal capability following a LOCA. For operation in the recirculation mode, water is supplied through the RHR pumps.

2.3.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.2 and UFSAR Sections 6.2.2 and 6.5.2 to determine whether there is reasonable assurance that the components of the CS system within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

The review confirmed the applicant’s identification of the intended functions of the CS system that meet the scoping criteria of 10 CFR 54.4(a). The review also confirmed that Table 2.3.2-2 of the LRA identifies the CS system components that have intended functions that meet the requirements of 10 CFR 54.4(a) and are subject to an AMR in accordance with 10 CFR 54.21(a)(1). On the basis of this review, the staff concludes that the applicant’s scoping and screening of the CS system is in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.2.2.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the CS system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the CS system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.3 Residual Heat Removal

2.3.2.3.1 Summary of Technical Information in the Application

The emergency core cooling systems (ECCS) includes the use of the RHR system. The system automatically delivers borated water to the reactor vessel for cooling under low reactor coolant pressure conditions. The RHR system, in conjunction with the main and auxiliary steam system, is designed to transfer the fission product decay heat and other residual heat from the reactor core to the component cooling water system and the atmosphere at a rate such that design limits of the fuel and the primary system coolant boundary are not exceeded. The RHR system also contains components credited for use in safe shutdown following some fires and components that are part of the Environmental Qualification Program.

Adequate core cooling following a LOCA is provided by the SI (emergency core cooling) system, which operates as follows:

(1) injection of borated water by the passive accumulators

(2) injection by the high-pressure SI pumps drawing borated water from the RWST

(3) injection by the RHR pumps also drawing borated water from the RWST

(4) recirculation of reactor coolant and injection water from the containment sump to the RCS by the RHR pumps

The principal components of the RHR system are two RHR (low-head SI) pumps, two heat exchangers, and the essential piping and valves. The RHR system discharge line is not used for an ECCS function that would require motor-operated valve (MOV) -720 or MOV-721 to open; however, a branch of the RHR discharge line provides low-pressure safety injection to the reactor vessel via parallel lines with one normally closed motor-operated valve (MOV-852A or B) and one check valve (CV-853A or B) in each line.

During Modes 1 and 2, the RWST is aligned to the suction of the high-head SI and RHR pumps. After the injection phase, coolant spilled from the break and water injected by the SI system and the containment spray is cooled and recirculated to the RCS by the low-pressure SI (RHR) system or, if needed, by the high-pressure SI system.

If RCS depressurization to below the shutoff head of the RHR pumps occurs before the injection mode of the SI system is terminated, the RHR pumps will be used in the recirculation mode. The RHR pumps will take suction from the containment sump, circulate the spilled coolant through the RHR heat exchangers, and return the coolant to the reactor via the reactor vessel nozzles. If depressurization of the RCS proceeds slowly, the high-pressure SI pumps are aligned to take suction from the RHR pumps and inject flow into the RCS cold legs. The RHR pumps and heat exchangers, in conjunction with the CS system, may also be used during the recirculation phase to supply water from the containment sump for use in heat and pressure control of the containment atmosphere.

After the steam generators have been used to reduce the reactor coolant temperature to 350 °F, decay heat cooling is initiated by aligning the RHR pumps to take suction from the RCS loop A hot leg and discharge through the RHR heat exchangers to the loop B cold leg.

Several fluid systems interface with residual heat removal. They include reactor coolant, safety injection, containment spray, chemical and volume control, and component cooling water.

Additional RHR system details are provided in Section 6.3.2.3, Section 5.4.5, and Table 6.2-15a of the UFSAR.

The component groups for this system that require AMR are indicated in Table 2.3.2-3 of the LRA along with each component group's passive functions and references to the corresponding AMR Tables in Section 3 of the LRA. The component groups identified in the table include fasteners (bolting), flow element, heat exchanger, indicator, orifice, pipe, pump casing, switch, temperature element, and valve body.

The intended functions identified are pressure boundary, joint integrity, heat transfer and flow restriction.

2.3.2.3.2 Staff Evaluation

The staff reviewed this section of the LRA to determine whether there is reasonable assurance that the RHR and associated components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This review is described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed the relevant portions of the UFSAR for Ginna for the RHR and associated components and compared the information in the UFSAR with the information in the LRA to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed the SCs that were identified as not being within the scope of license renewal to verify that these structures and components do not have any of the intended functions delineated under 10 CFR 54.4(a). For those structures and components that have applicable intended functions, the staff verified that they either perform these functions with moving parts or a change in configuration or properties, or that they are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1).

The staff also reviewed the UFSAR for any functions delineated under 10 CFR 54.4(a) that were not identified as intended functions in the LRA, to verify that the SSCs with such functions will be adequately managed so that the functions will be maintained consistent with the CLB for the extended period of operation.

After completing the initial review, the staff requested in RAI 2.3.2.3-1 that the applicant provide additional information on the RHR. Screen assemblies and vortex suppressors are normally used in the containment sump which provides water for the ECCS recirculation phase, and one of the intended functions is to protect the ECCS pumps from debris and cavitation due to harmful vortex following a LOCA (Ginna UFSAR, Section 5.4.5.4.3). The staff asked the applicant to explain why the subject components were not identified as within scope in Table 2.3.2-3 of the LRA, which listed component groups for the RHR system that require an AMR.

By letter dated May 13, 2003, the applicant responded to the staff's RAI. The applicant stated that the sump screens were not included in Table 2.3.2-3 of the LRA because they are considered civil/structural components rather than ECCS components. The screens are within the scope of the rule and are evaluated within the containment structure. LRA Section 2.4.1 provides a description confirming their inclusion. The screen is manufactured from stainless steel and as such is evaluated within the commodity group asset CV-SS(SS)-INT as described in Table 2.4.1-1. The RHR system design does not employ mechanical vortex suppressors. Section 5.4.5.4.3 of the UFSAR describes the instrumentation used to verify that vortexing has not occurred during reduced RCS inventory operations.

The staff did not identify any omissions.

2.3.2.3.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the RHR system and its associated (supporting) SCs that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the RHR system and its associated (supporting) SCs that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.4 Containment Hydrogen Detectors and Recombiners

2.3.2.4.1 Summary of Technical Information in the Application

The containment hydrogen detectors and recombiners detect and control combustible gas mixtures in the primary containment atmosphere. Two trains of containment hydrogen detectors and hydrogen recombiner units are available to the plant. Portions of these trains are environmentally qualified. Because containment hydrogen buildup is a relatively slow process, the recombiner equipment located outside of containment is maintained at a lesser degree of prompt readiness than any other engineered safety feature. Those portions of the recombiner system are considered non-safety-related components whose failure could prevent the

satisfactory accomplishment of a safety-related function. The principal components of the detection portion of the containment hydrogen detection and recombiner system include hydrogen concentration monitoring devices, local analyzer/control panels, remote monitoring/control panels, and their corresponding essential piping and valves. The recombiner portion consists of two blowers and combustion chambers complete with main burner, two igniters (one a spare), a pilot burner, a dilution chamber, two control panels, and the corresponding essential piping and valves. Each combustor is fired by an externally supplied fuel gas, employing containment air as the oxidant. The air supply blowers deliver primary combustion air and quench air to reduce the unit exhaust temperature.

The hydrogen monitoring system is capable of operation during post-accident conditions. The monitors are normally maintained in an isolated standby mode. Hydrogen in the containment air is oxidized in passing through the combustion chamber. Hydrogen gas is also used as the externally supplied fuel so that noncondensible combustion products, which would cause a progressive rise in containment pressure, are avoided. Oxygen gas is made up through a separate containment feed to prevent depletion of containment oxygen below the concentration required for stable operation of the combustor.

2.3.2.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.4 and UFSAR Sections 1.5.10 and 6.2.5 to determine whether there is reasonable assurance that the containment hydrogen detector and recombiner components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During its review of LRA Section 2.3.2.4 and referenced drawings, the staff determined that additional information was needed to complete its review. By letter dated March 21, 2003, the staff asked the applicant to clarify where in the LRA the “hot box” components are identified as subject to an AMR or to justify their omission (RAI 2.3.2.4-1). Two of these components are shown on license renewal boundary drawing 33013-1278, 2-LR, at locations G9 and I9, as subject to an AMR. However, these components are not listed in LRA Table 2.3.2-4.

By letter dated May 16, 2003, the applicant responded that the "hot box" components are a subcomponent of the containment hydrogen monitor A/B control panel. The hot box is an insulated carbon steel enclosure enveloping the H_2 analyzer tubing and moisture separator. The space inside the box is heated to 300 °F in order to prevent condensation within the analyzer tubing. The devices internal to the “hot box” received a separate AMR and the components are included in the LRA. Because of its unique nature, the hot box was evaluated within the component group of pipe. Although the hot box is not a pressure boundary component, the aging management programs applicable are included under component type “pipe,” material type “carbon/low allow steel,” contained in Table 3.3-2, line number 40. The staff considers the applicant’s response to be acceptable, on the basis that these components have been identified as being subject to an AMR and the applicant clarified which component group and aging management programs include these components.

By letter dated March 21, 2003, the staff asked the applicant to provide information to support the determination that it is acceptable to terminate the in-scope portion of the hydrogen recombiner system piping at an open valve boundary (RAI 2.3.2.4-2). The hydrogen recombiner system piping network branches with one path going to the hydrogen combustor and the other branch going to out-of-scope piping and components leading to the volume control tank. The branch leading to the volume control tank can be isolated at valve 1877, shown on license renewal boundary drawing 33013-1274-LR at location A9. This valve is shown as normally open; however, it forms the pressure boundary interface with an out-of-scope system.

By letter dated May 16, 2003, the applicant responded that the valve alignment to operate the hydrogen recombiners, and to maintain the hydrogen concentration in containment at a safe level, is included in Ginna station procedure S-21.1 and S-21.2. It takes several days after a severe accident for hydrogen generation to reach a level which requires recombiners. Thus, sufficient time is available to perform manual valve alignments. Both procedures isolate the volume control tank from the hydrogen manifold by closing valve 1877 and opening valve 1878. The failure of the downstream, out-of-scope piping would not affect the pressure boundary integrity intended function since this piping would be isolated when the hydrogen recombiner is in use. The staff finds the applicant's response to be acceptable, on the basis that sufficient time and approved procedures exist to close the system boundary in the event this system is required to perform its intended function.

By letter dated March 21, 2003, the staff asked the applicant to justify the omission of certain components from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) (RAI 2.3.2.4-3). These components include pipe segments, connectors, and flexible hoses downstream of isolation valves 1868 A-D and 1867A-D, which connect to the mobile hydrogen tanks. They are not shown as subject to an AMR on license renewal boundary drawing 33013-1274-LR at locations E6, E7, E10, and E11. By letter dated May 16, 2003, the applicant responded that the pipe segments, connectors and flexible hoses downstream of the isolation valves which connect to the mobile hydrogen tanks were not included in the scope of the LRA, since these components are isolated prior to the use of the hydrogen recombiners, as discussed in response to RAI 2.3.2.4-2. The staff finds the applicant's response to be acceptable, on the basis that these components will be isolated from the system in the event this system is required to perform its intended function.

2.3.2.4.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the containment hydrogen detectors and recombiners that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the containment hydrogen detectors and recombiners that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.5 Containment Isolation Components

2.3.2.5.1 Summary of Technical Information in the Application

The containment isolation components system contains the nonstructural equipment that performs a containment isolation boundary function where the system containing that equipment has no other safety-related system function. Components evaluated in the containment isolation components system are relied upon to achieve safe shutdown following some fires. The system contains components that are part of the Environmental Qualification Program. The principal parts of the containment isolation components system include pipes and valves. A summary of the system lines penetrating containment and the boundaries employed for containment isolation is presented in UFSAR Table 6.2-15a. Each system whose piping penetrates the containment boundary is designed to maintain or establish isolation of the containment from the outside environment under any accident for which isolation is required, assuming a coincident independent single failure or malfunction occurring in any active system component within the isolated bounds. Piping penetrating the containment is designed for pressures at least equal to the containment design pressure. Containment isolation boundaries are provided as necessary in lines penetrating the containment to ensure that no unrestricted release of radioactivity can occur.

2.3.2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.2.5 and UFSAR Section 6.2.4 to determine whether there is reasonable assurance that the containment isolation components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1). In the performance of the review, the staff selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of license renewal. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

During its review of LRA Section 2.3.2.5 and referenced drawings, the staff determined that additional information was needed to complete its review. By letter dated March 21, 2003, the staff asked the applicant to confirm that the mechanical portions of all containment penetrations are within the scope of license renewal and subject to an AMR (RAI 2.3.2.5-1).

By letter dated May 16, 2003, the applicant responded that all containment penetrations are included within the scope of license renewal and are designated a system function code K, “provide primary containment boundary,” in UFSAR Section 3.1.1.2.5. The staff finds the applicant’s response to be acceptable as it clarifies that all containment penetrations are within scope.

By letter dated March 21, 2003, the staff asked the applicant to justify locating out-of-scope pipe segments in close proximity to containment penetrations instead of at some minimum distance (RAI 2.3.2.5-2). Unlike plants built after the introduction of the General Design Criteria, Appendix A to 10 CFR Part 50, some of the piping passing through containment penetrations at Ginna has both isolation valves outside the containment and does not have inboard isolation valves. This situation was discussed as part of Topic VI-4, “Containment Isolation System,” in the Ginna SEP Report NUREG-0821.

In such situations, piping and pipe restraints in close proximity to the containment structure adjacent to penetrations will not be subject to an AMR. In the event of a pipe break, dynamic effects, such as pipe whip and jet impingement from rupture of the out-of-scope piping segments could damage the containment structure or adjacent, in-scope piping and penetrations. This case is similar to non-safety-related piping systems which are not connected to safety-related piping, but have a spatial relationship such that their failure could adversely impact the performance of piping and components with an intended safety function (Criteria A2 of 10 CFR 54.4). However, in this case, the concern is that the non-safety-related piping has the potential to cause damage to the containment pressure boundary.

By letter dated May 13, 2003, the applicant responded that all piping penetrations are solidly anchored to the containment wall. As discussed in UFSAR Section 3.1.1.2.5, external guides, stops, increased pipe thickness, or other means are provided, where required, to limit motion and moments. These design features prevent ruptures by making the penetration the strongest part of the system. In addition, all penetrations and anchorages are designed for forces and moments that might result from postulated pipe ruptures. The penetration design itself, as well as the containment isolation boundary on the other side of the 2 ½-ft thick reinforced concrete containment wall, has been designed to withstand these forces. After reviewing the information provided by the applicant in its response, the staff finds the response to be acceptable, on the basis that pipe rupture dynamic effects such as jet impingement and pipe whip were considered in the design of the containment penetrations.

2.3.2.5.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the containment isolation system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the containment isolation system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.2.6 Evaluation Findings

On the basis of this review, the staff concludes that the applicant has adequately identified the engineered safety features systems and components that are within the scope of license renewal, in accordance with the requirements of 10 CFR 54.4(a), and that the applicant has adequately identified the components of the engineered safety features systems that are subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3 Auxiliary Systems

In Section 2.3.3, “Auxiliary Systems,” of the Ginna LRA, RG&E (the applicant) described the SSCs of the auxiliary systems that are subject to AMR for license renewal.

2.3.3.1 Chemical and Volume Control System

2.3.3.1.1 Summary of Technical Information in the Application

As described in the LRA, the CVCS controls and maintains reactor coolant system inventory and purity through the process of makeup and letdown and provides seal injection flow to the reactor coolant pump seals. In addition to the reactivity control achieved by the control rods, reactivity control is provided by the CVCS, which regulates the concentration of boric acid solution neutron absorber in the RCS. In order to perform these functions, a continuous feed-and-bleed is maintained between the RCS and the CVCS. The CVCS is also credited for use in safe shutdown following SBO events and some fire-related events. Selected large-volume CVCS tanks are considered non-safety equipment whose failure could affect a safety function due to their potential to cause flooding effects.

The principal components of the CVCS are variable speed charging pumps, tanks, heat exchangers, demineralizers, and the essential piping and valves. The letdown portion of the system consists of a regenerative heat exchanger and a nonregenerative heat exchanger to cool the reactor coolant letdown and three parallel orifice valves to reduce the pressure. The coolant is passed through purification and deborating demineralizers, as necessary, where corrosion and fission products are removed. The coolant is then routed to the volume control tank. Seal return flow passes from the reactor coolant pump seals, through a containment isolation valve and the seal-water heat exchanger, before returning to the volume control tank. The seal return line is at low pressure and temperature. The charging pumps draw from the volume control tank and inject into the RCS, both through the normal makeup path and via the reactor coolant pump seals.

Several fluid systems interface with the CVCS. They include reactor coolant, waste disposal, residual heat removal, instrument air, spent fuel cooling and fuel storage, service water, component cooling water, and treated water.

Additional CVCS details are provided in Section 9.3.4 and Table 6.2-15a of the UFSAR.

The component groups for this system that require AMR are indicated in Table 2.3.3-1 of the LRA along with each component group's passive functions and references to the corresponding AMR tables in Section 3 of the LRA. The component groups identified in the table include condenser, cooler, CS components, fasteners (bolting), filter housing, flow element, heat exchanger, pipe, pulsation damper, pump casing, tank, temperature element, transmitter, and valve body.

The intended functions identified are pressure boundary and joint integrity.

2.3.3.1.2 Staff Evaluation

The staff reviewed this section of the LRA to determine whether there is reasonable assurance that the CVCS and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This review is described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed the relevant portions of the UFSAR for Ginna for the CVCS and associated pressure boundary components and compared the information in the UFSAR with the information in the LRA to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed the structures and components that were identified as not being within the scope of license renewal to verify that these structures and components do not have any of the intended functions delineated under 10 CFR 54.4(a). For those structures and components that have applicable intended functions, the staff verified that they either perform these functions with moving parts or a change in configuration or properties, or that they are subject to replacement based on a qualified life or specified time period, as described in 10 CFR 54.21(a)(1).

The staff also reviewed the UFSAR for any functions delineated under 10 CFR 54.4(a) that were not identified as intended functions in the LRA, to verify that the SSCs with such functions will be adequately managed so that the functions will be maintained consistent with the CLB for the extended period of operation.

The staff did not identify any omissions.

2.3.3.1.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the CVCS system and its associated (supporting) SCs that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the CVCS system and its associated (supporting) SCs that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.2 Component Cooling Water

2.3.3.2.1 Summary of Technical Information in the Application

The function of the component cooling water (CCW) system is to remove heat from safety-related heat exchangers during plant operation, plant cooldown, and post-accident conditions. Components within the CCW system are also credited for use in safe shutdown following some fire events. The principal components of the CCW system are pumps, heat exchangers, the surge tank, and the essential piping and valves. A single CCW pump circulates chromated water through parallel flow paths into various components where it picks up heat from other systems and transfers the heat to the service water system via the CCW heat exchangers. The surge tank accommodates expansion, contraction, and in-leakage of water and ensures a continuous CCW supply until a leaking cooling line can be isolated. The component cooling loop serves as an intermediate system between the radioactive fluid systems and the service water system. Since the CCW system loop is used as an engineered safety feature,

containment isolation valves are not automatically closed. That portion of the loop located outside the containment is not required to be a closed system.

2.3.3.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.2 and UFSAR Section 9.2.2 to determine whether there is reasonable assurance that the CCW system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

License renewal boundary drawing 33013-1245-LR, at locations E8 and F8, shows that a portion of the CCW system that is subject to an AMR ends at valves 747A and 747B, which are normally shown as open. There are also numerous other portions of the CCW system that are subject to an AMR that end at valves that are normally open to 3/4 inch or less diameter tubing. Section 2.3.3.2 of the LRA does not discuss why the approach of using normally open valves as license renewal boundaries is acceptable. In a letter dated March 21, 2003, the staff requested that the applicant provide additional information to support the basis for the determination that failure of the downstream piping will not affect the pressure boundary intended function (RAI 2.3.3.2-1).

By letter dated May 23, 2003, the applicant responded that the basis for the acceptability of the AMR boundary stopping at an open valve is described in LRA Section 2.1.7.1. The applicant further clarified that each location selected was evaluated to ensure that leakage could be detected and isolation performed prior to the loss of the affected equipment intended function. The affected equipment consideration included reviewing the equipment serviced by the fluid system and equipment subject to the effects of the leak in the out-of-scope piping/tubing, i.e., flooding and equipment damage from the effects of spray. The fundamental principle was that a valve position change establishes the pressure boundary at the boundary valve before a failure in the downstream components can cause a loss of intended function.

The applicant further clarified that valves 747A and 747B were selected as boundary valves because the downstream non-safety-related piping is not located in an area containing in-scope equipment that could be affected by spray or flooding. The area is routinely toured, and the isolation valves are readily accessible. The flow through the system has an established value of 15 gpm, making even an improbable catastrophic failure detectable and isolable before the loss of volume in the CCW surge tank complicates operations. Furthermore, the leak detection procedure requires operators to confirm that the desired flows are established to CCW loop components (including those served by 747A and 747B), thus necessitating that the operators physically travel to the areas that contain the out-of-scope equipment. All other applications of open boundary valves in the CCW system (typically at instrument branch lines) were subject to the same rigorous review as described above. In all cases, the determination was made that the usage was consistent with the requirements of NEI 95-10 which require that the evaluation boundary includes those portions of the system or structure that are necessary for ensuring that the intended function of the system or structure will be performed.

The staff reviewed the information provided by the applicant. The staff found that the applicant has not adequately described the basis for concluding that a failure in the out-of-scope piping will not result in failure of the CCW system in performing its intended functions. The staff cannot make its finding regarding the acceptability of the applicant's basis without information such as the available methods of detecting piping failure, the inventory of CCW that could be lost through failed piping from the time of detection to failure of the CCW system, the rate of loss of inventory through a failed pipe considering that the system is pressurized, and the time necessary for reasonable assurance that operators could identify and isolate the failed piping. This is Open Item 2.3.3.2-1.

The staff also questioned whether the capability to supply makeup water from the reactor water makeup tank to the CCW system surge tank is necessary for the CCW system to perform its intended functions. In a letter dated March 21, 2003, the staff requested that the applicant provide information to justify exclusion from the scope of license renewal of the SSCs necessary to supply makeup water from the reactor water makeup tank to the CCW system surge tank (RAI 2.3.3.2 -2). The staff identified that Section 9.2.2.4 of the Ginna UFSAR describes the CCW system makeup capability as adequate to accommodate normal system leakage during normal and post-accident operation. This section of the UFSAR also states that the CCW lines supplying cooling to the reactor coolant pumps are not protected from dynamic effects associated with accidents and that, if a cooling line is severed, the water stored in the surge tank after a low-level alarm, together with makeup flow, provides the operator with time to close the valves external to the containment in order to isolate the leak. The UFSAR also states that the CCW system functions, of cooling the RHR heat exchanger and the ECCS pumps, are essential. The CCW system license renewal flow diagram, 33013-1245-LR, indicates that only the safety-related section of piping from valves 823 and 729 (drawing location D2) to the component cooling surge tank header is within the scope of license renewal. However, the staff concluded that the SSCs necessary to supply makeup water from the reactor water makeup tank to the CCW system surge tank are within the scope of license renewal pursuant to 10 CFR 54.4. That is, the non-safety-related piping, valve bodies, and pump casings that are necessary to provide a pressure-retaining boundary so that sufficient flow at adequate pressure is delivered from the reactor makeup water tank to the component cooling surge tank are included within the scope of license renewal and subject to an AMR.

By letter dated June 10, 2003, the applicant responded that the piping, valve bodies and bonnets, and pump casings that can be used to fill the component cooling surge tank from the reactor water makeup tank, shown on drawing 33013-1245, are not within the scope of license renewal. The applicant cited UFSAR Section 9.2.2.4.1.3, which describes the evaluation performed in SEP Topic IX-3, "Station Service and Cooling Water Systems," final SER, dated November 4, 1981. This evaluation does not include providing makeup water to the CCW system until after the postulated leak is identified and isolated and repairs are made to restore the flow path to essential equipment. The section then describes how safety functions are achieved if CCW can not be recovered. Additionally, UFSAR Section 9.2.2.2 identifies the function of the CCW surge tank as ensuring "a continuous component cooling water (CCW) supply until a leaking cooling line can be isolated."

As identified in UFSAR Section 9.2.2.4.1.4, "Makeup water to the component cooling water (CCW) system is normally supplied by the reactor makeup water system via a remotely operated valve in the auxiliary building. The makeup rate is sufficient to accommodate system leakage." The makeup addressed by this statement is not relied upon for the performance of

an intended function or to maintain system operability. Plant technical specifications for the CCW system provide guidance for system operability, including surveillance requirements that must be adhered to should an individual component be isolated.

It is the applicant's position that through proper aging management of the in-scope CCW system components, system leakage will be minimized and the CCW surge tank will act as the makeup source for "normal" leakage. Thus, because a failure of any makeup capability other than that provided by the surge tank will not affect a safety function, the makeup capability from the reactor makeup water system is out of scope.

The staff does not agree with the applicant's position regarding the SSCs necessary to supply makeup water from the reactor water makeup tank to the CCW system surge tank. The Ginna CCW pumps and heat exchangers are separated into two redundant trains. However, the two trains connect to a common pipe header, so loss of inventory due to leakage can degrade the performance of the entire system. The CCW system may be required to function for an extended period of time following a design-basis accident. UFSAR Section 9.2.2.4.1.3 states that "the component cooling water (CCW) system makeup capability should be capable to cope with normal system leakage in post-accident operation." The staff believes that the makeup water supply to the CCW system is required to support the operation of the CCW and should be within the scope of license renewal and subject to an AMR.

By letter dated June 10, 2003, in response to RAI 2.3.3.2-2, the applicant stated that the piping, valve bodies, bonnets, and pump casings that can be used to fill the component cooling surge tank from the reactor water makeup tank, shown on drawing 33013-1245, are not within the scope of license renewal. The applicant cited UFSAR Section 9.2.2.4.1.3, which describes the evaluation performed in SEP Topic IX-3, "Station Service and Cooling Water Systems," final SER, dated November 4, 1981. The cited evaluation does not include providing makeup water to the CCW system until after a postulated leak is identified and isolated, and repairs made to restore the flow path to essential equipment. The applicant also references UFSAR Section 9.2.2.2, which identifies the function of the CCW surge tank as ensuring "a continuous component cooling water (CCW) supply until a leaking cooling line can be isolated." The applicant further explained that through proper aging management of the in-scope CCW system components, system leakage will be minimized and the CCW surge tank will act as the make up source for "normal" leakage. Therefore, a failure of any makeup capability other than that provided by the surge tank will not affect a safety function, so the makeup capability from the reactor makeup water system is out of the scope of the Rule.

The staff cannot reconcile the applicant's response with the fact that the Ginna CLB relies on makeup to the CCW system in the event of leakage during post-accident operation. The components of the makeup water supply to the CCW system may be required to replace system leakage necessary to maintain operation of the CCW, and as such, are within the scope of license renewal and subject to an AMR per the requirements of 10 CFR 54.4(a)(2). In a letter dated September 16, 2003, the applicant stated that the components from the reactor makeup water tank will be added to the scope of license renewal and subject to an AMR. This is Confirmatory Item 2.3.3.2-1.

2.3.3.2.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. On the basis of this review, the staff concludes that, pending satisfactory resolution of Open Items 2.3.3.2-1 and Confirmatory Item 2.3.3.2-1, the applicant has appropriately identified those portions of the CCW system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the CCW system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.3 Spent Fuel Pool Cooling and Fuel Storage

2.3.3.3.1 Summary of Technical Information in the Application

The spent fuel pool (SFP) cooling system is designed to remove heat generated by stored spent fuel from the SFP. The heat from the SFP is rejected to the service water system. The SFP is a Seismic Category I design, reinforced-concrete structure totally clad with stainless steel. The SFP provides structural support to the spent fuel racks. The spacing and materials of construction of the spent fuel racks work in conjunction with the spent fuel pool water chemistry to provide reactivity control. The concrete elements of the SFP are evaluated within the auxiliary building structure. The principal components of the spent fuel cooling and fuel storage system include pumps, tanks, heat exchangers, and essential piping and valves. Hoses are used to connect the skid-mounted equipment to the system. The new and spent fuel storage racks and the pool and transfer canal liner are also included within the spent fuel cooling and fuel storage system.

The spent fuel cooling system was originally designed as a single train, non-safety-related system. The system has been modified to add additional cooling flowpaths and equipment. The SFP cooling system now consists of three cooling loops. The primary cooling path is loop "B." This loop is safety-related and seismically qualified and functions as the preferred loop for ensuring adequate cooling in the SFP. The backup loops include permanently installed loop "A" and a skid-mounted loop. Together these loops act as a 100 percent backup to the "B" loop in that they are capable of removing the decay heat from stored spent fuel and a full core offload. The SFP cooling piping is arranged so that failure of any line does not drain the SFP. To protect against the possibility of complete loss of water in the SFP, the upper suction line penetrates the SFP near the top of the pool. The lower suction line penetrates the SFP approximately 5 feet and 4 inches above the top of the fuel racks to preclude the possibility of draining the pool and to ensure a minimum water level of 5 feet 4 inches above the top of the fuel. The SFP cooling water return line, which terminates at the bottom of the SFP, contains a 0.25-inches vent hole near the normal SFP water level so that the pool water cannot be siphoned. The clarity and purity of the spent fuel pool water are maintained by passing approximately 60 gpm of the loop flow through a filter and demineralizer.

The original spent fuel storage racks provided capacity for the storage of 210 fuel assemblies. In 1976, the NRC approved the replacement of the original racks with a higher density flux-trap type. This expanded the storage capability from 210 to 595 fuel assemblies. In 1984, the NRC approved the conversion of six flux-trap type racks to high-density, fixed-poison type racks. This further expanded the storage capacity from 595 to 1016 fuel assemblies. At this point, the

SFP was divided into two regions. Region 1 consisted of three flux-trap type racks to accommodate a full core offload. Region 2 consisted of six high-density, fixed-poison (Boraflex) type racks for the storage of 840 fuel assemblies that satisfied minimum burnup criteria and had cooled for a minimum of 60 days.

In 1998, the NRC approved an additional re-racking of the SFP. The six existing high-density Region 2 racks with a combined capacity of 828 storage locations (12 locations out of the previous 840 were lost due to the attachment of new racks) will be retained, and new borated stainless steel racks will be installed. Phase 2 of the re-rack effort has not yet been performed. This reconfiguration will result in 541 additional storage locations, for a total of 1369 locations after completion of both phases.

Boraflex fixed absorber material is provided in the existing high density Region 2 racks of the SFP. The absorber assemblies are welded in place in each storage cell, thus precluding inadvertent mechanical removal. To address the concerns about Boraflex degradation presented in Generic Letter 96-04, the applicant performed tests in February 1998 of the B-10 areal density of 24 representative Boraflex panels in Region 2 of the SFP. During the testing, degradation beyond the 4-inch gap assumption of the criticality analysis was noted on selected Boraflex panels. This data indicated that some panels had undergone dissolution beyond expected levels and placed the SFP in an unanalyzed condition. This event and the results of the applicant's associated assessment were reported to the NRC. In addition, the technical specifications were changed to ensure that controls are in place to verify that at least 2300 ppm of soluble boron is maintained in the SFP. Consequently, Boraflex is not relied upon for reactivity control of the stored spent fuel.

New fuel is delivered by truck to the site in approved containers. The assemblies are removed, inspected, and transferred to the new fuel storage racks using the auxiliary building crane. The storage location on the operating level of the auxiliary building facilitates the unloading of trucks and the transfer of the fuel assemblies. The Seismic Category I storage vault contains specially constructed racks which ensure a minimum 20-inch center-to-center spacing of the new fuel assemblies. This spacing ensures an effective multiplication factor (k_{eff}) of less than 0.95 for the accidental full-water density flooding scenario and less than 0.98 for the accidental low-water density (optimum moderation) flooding scenario. The storage area is located above grade, on the auxiliary building operating floor, to help prevent flooding. The new fuel storage area is configured to store 12 fuel assemblies

2.3.3.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.3 and UFSAR Section 9.1 to determine whether there is reasonable assurance that the spent fuel cooling and fuel storage system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During its review of LRA Section 2.3.3.3 and referenced drawings, the staff determined that additional information was needed to complete its review. By letter dated March 21, 2003, the staff asked the applicant to clarify why the components of the SFP heat exchanger “A” process monitor skid and the associated piping and valves leading to radiation element RE-20A shown on LR boundary drawing 33013-1250, 2-LR, at location J6, are not within the scope of license renewal and subject to an AMR, while the heat exchanger “B” process monitor skid, having radiation element RE-20B, is shown as subject to an AMR (RAI 2.3.3.3-1).

By letter dated May 13, 2003, the applicant responded that the piping and components leading to RE-20A are only ¾ inch, and can also be isolated with valves 12520A and 12520B. RE-20B was included because it was a much larger size line (2 ½ inches), and its intended function is pressure boundary only. There is not an electrical function for RE-20A/B. The applicant’s response is consistent with footnote 1 in LRA Table 2.3.3-5, which explains that selected instruments were conservatively included within the scope of license renewal if they are unisolable from a pressure source and are of sufficient size that a system function would be degraded should their pressure boundary fail. The staff reviewed the applicant’s response to RAI 2.3.3.3-1 and found it to be acceptable on the basis that an unisolable leak in this piping or these components would not degrade the performance of a license renewal intended function.

By letter dated March 21, 2003, the staff requested that the applicant justify the exclusion of the alternate SFP makeup water supply piping and valves from being within the scope of license renewal and subject to an AMR (RAI 2.3.3.3-2). Ginna UFSAR Section 9.1.2.1.1 states that the CLB criteria for the spent fuel storage system are defined, in part, by Regulatory Guide (RG) 1.13. Section C.8 of RG 1.13 states:

> A seismic Category 1 makeup system should be provided to add coolant to the pool. Appropriate redundancy or a backup system for filling the pool from a reliable source, such as a lake, river, or onsite seismic Category 1 water-storage facility, should be provided.

Ginna UFSAR Section 9.1.2.2.1 states that water is supplied to the SFP from the RWST by the refueling water purification pump. Alternative sources of makeup water are available from the primary water treatment plant and the reactor makeup water tank or the monitor tanks. However, the refueling water purification pump and associated valves and piping in the flow path from the SFP to the RWST are shown as not subject to an AMR on license renewal boundary drawing 33013-1248-LR at location F5. The flowpaths from the alternate makeup sources (the primary water treatment plant (location H1), the reactor makeup water tank (location H10), and the monitor tanks) are also not shown as subject to an AMR. From the UFSAR description, the staff believes that the alternative SFP makeup water supply paths should be within the scope of license renewal and subject to an AMR.

By letter dated May 13, 2003, the applicant responded that Ginna was built before RG 1.13 was issued. The applicant further stated that RG 1.13 is used as guidance, but not as a requirement. The applicant’s calculations show that it would take well over 5 hours to initiate boiling in the SFP following a complete loss of SFP cooling. With 26 feet of water over the top of the fuel assemblies, and a maximum boil-off rate of 47 gpm, water would not have to be added to the pool for over 3000 minutes (well over 2 days). Based on this calculation, the applicant concludes that there is more than enough time to take corrective operator actions, using a wide variety of equipment not limited to Seismic Category I equipment, should SFP makeup be required.

The staff cannot reconcile the applicant's argument with the fact that these alternative makeup water supply paths are relied upon in Ginna's CLB, not only to offset boiloff due to the loss of SFP cooling, but also to mitigate potential leaks in the SFP liner. The 1998 staff approval of the re-racking of the Ginna SFP was based, in part, on redundancy in the SFP makeup water supply. The applicant specifically cited the RWST and CVCS holdup tanks as alternate sources of SFP makeup in an RAI response dated November 11, 1997. Although these makeup water paths are non-safety-related, they are within the scope of 10 CFR Part 54 because their failure could prevent satisfactory performance of functions necessary to prevent or mitigate significant offsite exposures resulting from SFP accidents. The SOCs for 10 CFR Part 54 state, "the Commission believes it inappropriate to permit generic exclusion of redundant, long-lived, passive structures and components." In other words, redundancy is not an adequate basis in itself to exclude a system from being subject to an AMR. As such, all of the components comprised by these alternate flowpaths should be within the scope of license renewal and subject to an AMR per the requirements of 10 CFR 54.4(a)(2). This is Open Item 2.3.3.3-1.

By letter dated March 21, 2003, the staff asked the applicant to clarify the status of the stainless steel SFP liner and transfer canal, which the staff was unable to locate as an entry in LRA Table 2.3.3-3 (RAI 2.3.3.3-3).

By letter dated May 13, 2003, the applicant responded that the SFP liner and transfer canal are within scope and subject to an AMR. The component group of "tank" in Table 2.3.3.3-3 describes the stainless steel SFP liner and transfer canal. The staff reviewed the information provided in response to RAI 2.3.3.3-3 and finds the response acceptable because it clarified that the SFP liner and transfer canal components are within the scope of the Rule and subject to an AMR.

By letter dated March 21, 2003, the staff transmitted RAI 2.3.3.3-4, which asked the applicant to justify not identifying reactivity control as an intended function of the borated stainless steel spent fuel racks, in accordance with the requirements of 10 CFR 54.21(a)(1).

By letter dated May 23, 2003, the applicant responded that the reactivity control functions of the spent fuel racks are indicated in the LRA system description and the associated UFSAR references. The applicant agreed that reactivity control is not explicitly stated as an intended function associated with the structural elements representing the racks. NUREG-1800, Table 2.1-4, identifies "provide radiation shielding" as an intended function but does not identify reactivity control. For the purposes of license renewal, reactivity control is an intended function that was considered. The identification of the reactivity control function is indicated by the relationship made in the LRA between the structural elements describing the racks and Table 3.4-1, line number 9, which addresses the neutron-absorbing capability. The staff determined that the applicant's response was acceptable because it clarified that reactivity control is an intended function of the borated stainless steel spent fuel racks.

2.3.3.3.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. On the basis of this review, the staff

concludes that, pending satisfactory resolution of Open Item 2.3.3.3-1, the applicant has appropriately identified those portions of the spent fuel cooling and storage system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the spent fuel cooling and storage system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.4 Waste Disposal

2.3.3.4.1 Summary of Technical Information in the Application

The waste disposal system provides equipment necessary to collect, process, and prepare for disposal of potentially radioactive liquid, gaseous, and solid wastes produced as a result of reactor operation. Radioactive fluids entering the waste disposal system are collected in sumps and tanks until subsequent treatment methods can be determined. The consequences of a radioactive release from a subsystem or component are evaluated in UFSAR Section 15.7 which concludes that accidental gaseous and liquid radioactive releases from the waste disposal system will not pose a safety hazard to the public relative to 10 CFR 100 releases. The waste disposal system contains two environmentally qualified sump pumps, which discharge to the waste holdup tank. The waste holdup tank provides a holdup capacity reserved to abate RHR pump seal failure spillage. Other system tanks contain volumes of liquid, which if spilled, could prevent the satisfactory accomplishment of a safety-related function. Additionally, components within the system act in concert with structural features to prevent internal floods from propagating.

The principal components of the waste disposal system are the demineralizing systems, waste gas compressors, tanks, and essential piping, pumps, and valves. Liquid wastes requiring cleanup before release are collected and processed by a vendor-supplied demineralization system. Gaseous waste is reused as tank cover gas or stored for decay and subsequent release.

2.3.3.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.4 and UFSAR Sections 3.4.2, 9.3.3, 11.2, 11.3, and 11.4 to determine whether there is reasonable assurance that the waste disposal system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During its review of LRA Section 2.3.3.4 and referenced drawings, the staff determined that additional information was needed to complete its review. By letter dated March 21, 2003, the staff asked the applicant to clarify why vertical ball valve 1020C, from the auxiliary building sump basement piping to the auxiliary building sump, is not shown as subject to an AMR on license renewal boundary drawing 33013-1272, 2-LR, at location J4 (RAI 2.3.3.4-1). This component is relied upon to contain radiological releases in the event of an accident.

By letter dated June 16, 2003, the applicant responded that the vertical ball valve 1020C is subject to an AMR. The valve should have been highlighted on the referenced drawing. Its function, however, is not to contain radiological releases but rather to prevent backflow into the RHR pump pit from the auxiliary building sump. The staff finds the applicant's response to be acceptable on the basis that it clarified that this vertical ball valve is subject to an AMR with an intended function of backflow prevention.

2.3.3.4.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the waste disposal system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the waste disposal system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.5 Service Water

2.3.3.5.1 Summary of Technical Information in the Application

The service water (SW) system takes suction from the ultimate heat sink and supplies the cooling water used to provide heat removal from safety-related heat exchangers. The SW system is also the normal suction supply to the standby auxiliary feedwater system and an alternate supply to the preferred auxiliary feedwater system where it is used to provide emergency heat removal from the RCS using secondary heat removal capability. The SW system is also credited for use in safe shutdown following some fires. The SW system provides multiple water source flowpaths to ensure the availability of the ultimate heat sink. These flowpaths include non-safety-related equipment whose failure could prevent the satisfactory accomplishment of a safety-related function. Portions of the SW distribution system serving safeguards equipment are designed as Seismic Category I. Other portions of the SW system serving non-safety loads are designated as nonseismic and are capable of being isolated from the Seismic Category I portion. The principal components of the SW system are four service water pumps, a single loop supply header, essential isolation valves, and other essential piping including the normal and standby discharge header and the intake piping systems that transport water from the lake to the SW pump suction bay. The SW system consists of a single loop header supplied by two separate, 100 percent capacity, safety-related pump trains. The loop header supplies the cooling water to safety-related and non-safety-related components and system heat exchangers inside the containment, auxiliary, intermediate, turbine, and diesel generator buildings. The non-safety-related and long-term safety functions (e.g., component cooling water heat exchangers) can be isolated from the loop header through use of redundant motor-operated isolation valves. In addition to supplying cooling water to heat exchangers, the system supplies seal water to the circulating water pumps and the vacuum pumps, flushing water to the traveling screens, and makeup water to the fire water storage tank via the fire booster pump.

2.3.3.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.5 and UFSAR Sections 3.3.3.3.7 and 9.2.1 to determine whether there is reasonable assurance that the SW system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

In a letter dated March 21, 2003, the staff requested that the applicant justify why the corrugated metal pipe which discharges service water to Deer Creek was not included in the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) (RAI 2.3.3.5-1). LRA Section 2.4.2.11 states that the redundant SW discharge line is occasionally placed in service for such activities as surveillance testing or maintenance work. License renewal boundary drawing 33013-1250, 2-LR, at location F11, shows a portion of the redundant service water discharge line as a corrugated metal pipe to Deer Creek. This corrugated metal pipe is not shown as being subject to an AMR on that drawing, nor could this pipe be identified in LRA Table 2.3.3-5 under either the pipe or the structure component groups. Obstruction of this flowpath could prevent the SW system from performing its intended function when the primary flowpath is not in service or is unavailable.

RAI 2.3.3.5-1 also noted that an inspection program was recommended for the Deer Creek culvert in the Ginna Safety Evaluation Program (SEP) (see page 4-7 of NUREG-0821) to minimize the potential for flooding of Deer Creek. The applicant was asked to clarify if the corrugated metal SW discharge pipe empties into Deer Creek above or below the culvert identified by the SEP program report and to discuss the measures taken to prevent flooding of the alternate SW discharge if Deer Creek is flooded.

By letter dated May 23, 2003, the applicant responded that the safety-related redundant SW discharge shown on drawing 33013-1250.2-LR, flows into an intermediate structure before it makes its way through the corrugated pipe and into Deer Creek. The intermediate structure is a reinforced concrete "pillbox." The concrete "pillbox" is configured to account for the possibility that the normal (testing) discharge path provided by the corrugated pipe may becomes blocked. The discharge structure is designed so that discharge flow can exit the "pillbox" through above-grade openings. The discharged water then gravity flows across the yard and into Deer Creek. Because the corrugated discharge pipe is only a testing convenience feature, it does not perform a license renewal intended function, is not within the scope of license renewal, and consequently does not require an AMR.

The corrugated pipe empties slightly above the normal Deer Creek culvert (bed). The safety grade "pillbox" empties several feet above that level. The inspections of the Deer Creek culvert referenced in the SEP are conducted to ensure that debris flowing down, or falling into the creek, does not create a damming effect during periods of high flow and exacerbate any flooding effects. The redundant discharge flowpath is always available, even during periods of high flow, because the "pillbox" is located above the top of the creek bank.

The staff finds the applicant's response to RAI 2.3.3.5-1 to be acceptable, on the basis that it clarified that the license renewal drawings show that a continuous flowpath exists from the SW system to the discharge to Deer Creek and it has been included within the scope of license renewal.

By letter dated March 21, 2003, the staff requested that the applicant justify why a portion of the SW system piping is not subject to an AMR which connects two parallel portions of the SW system piping that are subject to an AMR at valves 4733, 4651B, and 4562B that are shown as normally open on license renewal boundary drawing 33013-1250, 3-LR, at locations I2, I7, and J7 (RAI 2.3.3.5-2). Two issues were raised in this RAI regarding this piping.

First, this piping run has two parallel trains containing air conditioning water chiller units SCI03A and SCI03B which cool the chilled water system. Drawing 33013-1920 for the chilled water system indicates that the chilled water system cools the control room ventilation system. These components are all identified as augmented quality on the drawings. Section 9.4.3 of the Ginna UFSAR states that the function of the control room ventilation system is, in part, to ensure the operability of control room components during normal operating, anticipated operational transient, and design-basis accident conditions. The staff infers that this statement applies to the cooling function of the system because the filtration and boundary integrity functions do not support control room equipment operability. UFSAR Section 6.4 states that the control room ventilation system cools the recirculated air as required using chilled water coils. Neither LRA Section 2.3.3.5, Section 2.3.3.10, nor Section 2.3.3.15 provides an adequate basis for excluding the associated systems and components from an AMR. The applicant was requested to provide information identifying important-to-safety portions of the SW, chilled water, and control room ventilation systems as SCs subject to an AMR, or to justify their exclusion from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

By letter dated May 13, 2003, the applicant responded that those portions of the SW, chilled water, and control room ventilation systems that meet the requirements for being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) are identified in the LRA. While UFSAR Sections 9.4.3 and 6.4 describe all the design functions of the control room area ventilation system, only some design functions meet the inclusionary criteria in 10 CFR 54.21(a)(1). While control room cooling via chilled water with the heat ultimately rejected to service water is the preferred method, it is not the only method and does not take into account cooling via radiant heat conduction into the surrounding building members nor the cooling provided by the exchange of air through the filtration and pressure boundary equipment. The components addressed in this question were reviewed under item III.D.3.4, "Control Room Habitability," as part of NUREG-0737 (final docketed SER dated April 11, 1983). That review included the understanding that, under certain accident conditions, service water to the chiller units is automatically isolated, thus rendering this heat removal media ineffective. The NRC design bases inspection performed in 1997 (see NRC Inspection Report IR 50-244/97-201) also led to additional reviews to verify that the control room would not heat up to a temperature above acceptable limits. Additionally, plant operating experience supports the assessment that control room equipment remains functional and operable without the use of the chiller packages to condition the air. Thus, the basis for the exclusion of these components from the scope of license renewal is that they are not important to safety and do not perform any functions listed in the scoping criteria requirements of 10 CFR 54.4.

The staff evaluated the applicant’s response to RAI 2.3.3.5-2. The staff did not identify information in the references cited by the applicant that provides the information needed to support exclusion of the piping from the scope of license renewal. While it is stated in the references that redundant isolation dampers are installed on the control room ventilation system to protect against accidental releases of toxic or radioactive gases, no information could be found in either reference to support the statement that SW to the chiller units is automatically isolated thus rendering this heat removal media ineffective. In a meeting following receipt of the response, the applicant stated that license renewal boundary drawing 33013-1250, 3-LR, dampers 4562 and 4733, are shown as isolating automatically following a “T” signal. The staff does not agree with the applicant’s assertion that closing the isolation dampers implies that control room cooling function is not required by the Ginna Station CLB, as the cooling function could continue in a recirculation mode when the dampers are closed. Therefore, the staff requested that the applicant provide additional references demonstrating that the Ginna Station CLB does not credit control room cooling using the SW system following an accident to assure the continued operability of safety-related equipment needed for accident mitigation. This is Confirmatory Item 2.3.3.5-1.

The second issue the staff identified relates to failure of the piping not subject to an AMR, which may affect the pressure boundary intended function of the piping that is subject to an AMR. LRA Section 2.3.3.5 does not discuss why this approach is acceptable. The applicant was asked to provide additional information to support the basis for this determination. For example, the applicant could discuss the steps in the procedures for identifying the locations of breaks, and for closing the valves, the amount of time required to complete these steps, and the consequences if the valves are not closed following a break of the piping that is not subject to an AMR.

In response to the second issue raised in RAI 2.3.3.5-2, the applicant noted that the basis for the acceptability of the AMR boundary stopping at an open valve is described in LRA Section 2.1.7.1. In this case, MOVs 4733 and 4663 may receive an automatic closed signal isolating the downstream non-safety piping, or they can be remotely closed should the need arise to perform SW leak isolation. Normally open manual valves 4651B and 4562B are also accounted for in the LRA boundary description. Each of the valves under discussion can be closed for leak isolation before it has deleterious effects on nearby safety systems. With regard to valves 4651B and 4562B, the physical configuration and fluid dynamics in the SW discharge header, where those lines connect, make for very low-pressure conditions after the upstream MOVs are closed.

Plant procedure AP-SW.1, “Service Water Leak,” provides guidance for detecting and mitigating leaks. The procedure invokes an attached instruction set (ATT-2.1) whose very first step is to isolate the non-safety portion of the SW system from the safety portion. That step includes ensuring that at least one of the air conditioning SW loop isolation valves (MOVs 4733 and 4663) is closed. Additionally, the consequence of the piping failure in the area containing the system components under discussion, from the event onset to leak isolation, has been evaluated. The evaluation contains a discussion of how much time is available for leak onset until safety-related equipment might be affected, as well as a description of detection methods. UFSAR Section 3.6.2.4.8.1 provides a summary of this evaluation. The staff found this justification for the location of the license renewal scope boundary at a normally open valve acceptable.

The information provided by the applicant regarding acceptability of the AMR boundary stopping at an open valve was evaluated by the staff. The staff found the applicant's response to be acceptable because it established that each of the valves under discussion can be closed for leak isolation before it has deleterious effects on nearby safety systems. During its review of LRA Section 2.3.3.5 and the referenced license renewal drawings, the staff determined that there was an apparent discrepancy in license renewal boundary drawing 33013-1250, 1-LR, at location C8, which shows a section of 14-inch piping connecting to line 16-SW-125-1 as not subject to an AMR. This pipe section connects to a piping section that is subject to an AMR. By letter dated March 21, 2003, the staff asked the applicant to clarify if the exclusion of this pipe section from the scope of license renewal was intentional, or the result of a drafting error (RAI 2.3.3.5-3). If the exclusion of this section was intentional, the applicant was asked to justify the exclusion from the scope of license renewal and being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

By letter dated May 13, 2003, the applicant responded that the section of 14-inch piping connecting to line 16-SW-125-1 shown on drawing 33013-1250,1-LR at location C8, as not in scope, reflects a typographical error, and the section is in scope. The staff finds this response acceptable because it clarifies that the pipe section in question is within the scope of license renewal and subject to AMR.

In a letter dated March 21, 2003, the staff identified major portions of the SW system discharge lines, shown on drawings 33013-1250, 1-LR (downstream of expander at the end of pipe section 6-SW-125-1 at location I2), 33013-1250, 3-LR (downstream of valve 4614 at location H2), 33013-1885, 1-LR (beginning with pipe 14-SW-125-1 at location E12 and beginning with the pipe section with identifier 125-9 at location J9), 33013-1885, 2-LR, that are shown as not being subject to an AMR. The drawings indicate that the discharge lines include sections of underground piping. Should these sections of piping fail to remove water from the SW system, the intended functions of the SW system will be impaired. The applicant was requested to provide information identifying these sections of piping as components subject to an AMR or to provide the basis for the determination that these piping sections should not be subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) (RAI 2.3.3.5-4).

For the cases cited above referencing license renewal drawings 33013-1885, 1-LR, and 33013-1885, 2-LR, the transitions from piping sections requiring an AMR to those not subject to an AMR occur at boundaries between drawings. The staff requested that, if the boundaries are not changed, the applicant provide information to precisely locate these boundaries between piping sections subject to an AMR and piping sections not subject to an AMR.

By letter dated May 13, 2003, the applicant responded that the piping shown on drawing 33013-1250,1-LR, downstream of expander at the end of pipe section 6-SW-125-1 at location I2 to the discharge header, including the discharge canal up to the lake, is in the scope of license renewal. This piping is evaluated in SW Table 3.4-1, line number 16, and Table 3.4-2, line numbers 210 and 211.

The piping on drawing 33013-1250, 3, downstream of valve 4614 at location H2, is correctly shown as being out of scope. There are several normally closed valves downstream of 4614 which could be used to isolate a break in the piping.

The 14-inch SW branch piping, shown on drawing 33013-1885, 1, at location E12, is evaluated in the LRA. The connecting discharge canal up to the lake is also evaluated in the LRA and should be shown on the drawings as requiring an AMR. This piping is evaluated in SW Table 3.4-1, line number 16, and Table 3.4-2, line numbers 210 and 211.

The staff evaluated the applicant's response and determined that the applicant's statement that there are several normally closed valves downstream of 4614 which could be used to isolate a break in the piping is too imprecise for use in future audits. The staff required that the applicant specify the exact location of the interface between the in-scope and out-of-scope piping segments and specify whether all of the piping and components within the in-scope boundaries are subject to an AMR. By letter dated July 11, 2003, the applicant responded that the exact location where the change occurs from in-scope to out-of-scope is at, and includes, valve 4614. Downstream, the service water piping and components are non-safety-related and do not meet any of the three criteria for inclusion within the Rule. The upstream piping and components are subject to an AMR as indicated on the SW drawings provided with the application. Only the passive, long-lived components screened were subject to the AMR process. Active components (i.e., flow transmitters, etc.) are not highlighted on the drawings and are not typically subject to AMR. The staff finds the applicant's response acceptable because it clearly identifies the boundary between in-scope and out-of scope piping segments and, together with the information in the LRA, the components that are subject to an AMR.

In a letter dated March 21, 2003, the staff requested that the applicant provide additional information to support the basis for the determination that the traveling screens are not subject to AMR (RAI 2.3.3.5-5). Drawing 33013-1250, 1-LR, at locations A1-A4, shows that the traveling screens are not subject to an AMR. The traveling screens perform a coarse filtration function, which protects the SW pumps and other components receiving unfiltered raw water from blockage, and are typically included within the scope of license renewal due to that intended function. The staff asked the applicant to justify the exclusion of these components from the scope of license renewal and being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

By letter dated June 10, 2003, the applicant responded that neither the intake tunnel nor the traveling screens are credited for the operation of the SW system–only the circulating water system is credited. The "coarse filtration" function of the screens is not credited for the operation of the SW pumps; the pumps themselves are equipped with suction strainers. The applicant further stated that the clearance around the screens and the inlet structure would provide enough flow area to allow operation of the SW pumps, even if the traveling screens were blocked. In addition, another flowpath exists which bypasses the intake tunnel completely. Opening valve 3123B allows flow to be directed from the discharge canal to the SW pumps. This valve and the connecting flowpath are within the scope of license renewal.

The staff evaluated the applicant's response to RAI 2.3.3.5-5 and finds it to be acceptable on the basis that there is an alternate in-scope system for directing flow from the discharge canal to the SW pumps. Therefore, the traveling screens need not be included in the scope of license renewal.

2.3.3.5.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. On the basis of this review, the staff concludes, pending resolution of Confirmatory Item 2.3.3.5-1, that the applicant has appropriately identified those portions of the SW system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the SW system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.6 Fire Protection

2.3.3.6.1 Summary of Technical Information in the Application

The applicant describes the fire protection (FP) systems in LRA Section 2.3.3.6. The FP systems include fire confinement and fire detection and suppression. The fire confinement features are discussed in terms of the fire barrier commodity groups described below. The fire detection and alarm system is described as a protective signaling system that alarms locally in selected areas and transmits fire alarm, supervisory, and trouble signals to the control room. The fire suppression systems addressed include fixed water spray and sprinkler systems, fixed halon systems, hose stations, and portable extinguishers. The water-based suppression systems are supplied from Lake Ontario using redundant fire pumps, one diesel and one electric. The city water supply from the town of Ontario supplements the fire water system by providing water to the yard hydrants and the screenhouse pump area sprinkler system. The fire water system can also be used as backup cooling water for the spent fuel pool heat exchangers, auxiliary feed water pumps, and diesel generators.

The fire barrier commodity group includes fire-rated assemblies and fire-rated penetration seals. Fire-rated assemblies are passive FP features used to separate redundant fires safe shutdown capabilities, including fire-rated walls, floors, ceilings, equipment hatches, stairwells, doors, dampers, penetration seals, and fire breaks. Fire-rated penetration seals are openings in a fire barrier for the passage of pipe, cable, etc., which have been sealed so as not to reduce the integrity of the fire barrier. Although commodity groups are used to generically represent the barrier materials, for the purposes of this review, each fire barrier is labeled in the plant with a unique identifier. Plant procedures and drawings specifically detail the construction, repair and inspection criteria distinctive to the specific application. Plant procedures and drawings also distinguish which barrier is credited in the licensing basis with respect to FP and which barrier is installed for commercial property conservation.

2.3.3.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.6, UFSAR Section 9.5.1, and other program documents such as the Fire Protection Program Report to determine whether there is reasonable assurance that the FP system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of the review the staff selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were

not omitted from the scope of license renewal. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

The fire water supply system includes a 15,000-gallon pressure tank and a 120-gpm fire booster pump to maintain pressure in the fire water system. The system boundary drawing 330B-1990, 1-LP, shows the pressure tank in scope but excludes the fire water booster pumps. In a letter dated March 21, 2003, the staff questioned the exclusion of the fire service water booster pump, piping and valves back to the SW system from the scope of license renewal (RAI 2.3.3.6-1). By letter dated May 13, 2003, the applicant responded that UFSAR Section 9.5.1, along with the associated references, identifies Branch Technical Position (BTP) 9.5-1 as the licensing basis for the FP systems for the Ginna plant. The fire water storage tank, jockey pump (fire service water booster pump), and associated appurtenances are not required by the CLB to achieve compliance with the requirements of BTP 9.5-1. Lake Ontario is the source of water for the motor- and diesel-driven fire pumps, not the storage tank. The fire water system can maintain full operability and compliance with the requirements of 10 CFR 50.48 and all other FP commitments without the storage tank and jockey pump in service. Consequently, those components and their associated piping and valve bodies are not subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). However, the applicant elected to perform aging management activities on the fire water storage tank simply because it is a pressurized tank in an occupied space.

The staff evaluated the applicant's position concerning the jockey pump and storage tank and studied the relevant documents (Ginna UFSAR Section 9.5.1 and the associated SER, as well as BTP 9.5-1). UFSAR Section 9.5.1.2.3.3 states, "A 15,000-gal pressure tank (10,000 gallons of water) and a 120-gpm centrifugal jockey pump maintain system pressure at a minimum of 100 psig." The staff concluded, based upon this review, that NFPA 20, "Standard for the Installation of Centrifugal Fire Pumps," is endorsed by Section 6.b.6 of BTP 9.5-1, which was cited by the Ginna UFSAR as the licensing basis for the plant. The requirement for the jockey pumps/pressure maintenance device is stated in Section 31(e) of the 1972 edition of NFPA 20. The 1978 edition forbids the use of the fire pump for pressure maintenance. The 1996 edition further clarifies this requirement in Section 2-19.5, which states, "The primary or standby fire pump shall not be used as a pressure maintenance pump." The jockey pump and storage tank and their associated piping and valves perform a pressure maintenance function, as stated in the UFSAR, which protects the large fire pumps from damage during low-flow, high-pressure operation and is an essential part of the fire water system. The staff therefore disagrees with the applicant's response to RAI 2.3.3.6-1 concerning the fire service water booster pump, piping, and valves back to the SW system. This is Open Item 2.3.3.6-1.

Part of the fire water system, from the screenhouse housing the fire pumps to the other plant buildings, is underground. LRA Table 2.3.3-6 references portions of LRA Tables 3.4-1 and 3.4-2 for aging management of the piping component group. The aging management references included in LRA Table 2.3.3-6 under piping do not include references to buried piping, such as LRA Table 3.4.1, item 17. Since item 17 specifically references the Fire Protection Program, it should be included in LRA Table 2.3.3-6. However, none of the references in LRA Tables 3.4-1 or 3.4-2 address internal corrosion of buried (underground) ductile iron piping. LRA Section 2.1.6, "Fire Protection Component Aging Management," states the applicant will continue to conduct flow tests as part of the fire water system program described in LRA Appendix B, Section B2.1.14. In a letter dated March 21, 2003, the staff asked the applicant to clarify the aging management program for underground fire water piping,

including the adequacy of flow tests in managing internal corrosion of the underground piping (RAI 2.3.3.6-2).

By letter dated May 23, 2003, the applicant responded that the fire water system program at Ginna station is implemented by a number of plant procedures which include activities such as fire pump full-flow capacity tests, velocity flushes of piping and components, operability tests of hydrants and valves, and verification of the capability of the fire water system to maintain pressure during performance tests. The velocity flush procedure includes measurement of flow rate and residual and static pressures, and calculation of the internal pipe roughness at various locations throughout the system. The applicant noted that trending data from periodic velocity flushes has accurately identified degraded internal conditions in sections of buried yard loop piping which were subsequently verified by excavation and internal inspection. In one case, the applicant discovered that a section of unlined ductile iron pipe had been installed during original construction instead of cement-lined pipe as required by piping specifications. In another case, internal obstruction due to bio-fouling was found at incorrectly installed mechanical clamps. Both conditions were addressed by appropriate corrective maintenance.

In addition to system performance tests, the internal condition of buried system components is evaluated under the Fire Water System Program when they are excavated and disassembled during maintenance activities. Internal remote visual inspections of significant lengths of cement-lined ductile iron pipe have been performed during maintenance activities in 2001 and 2002, and the internal condition of the piping was found to be clean and free of corrosion or obstruction due to fouling/bio-fouling. On the basis of this response, the staff concurs that the fire service water program adequately identifies the components and aging management programs for the underground fire water piping.

As identified in the LRA, the yard hydrants and portions of the screenhouse building are in the scope of license renewal but are supplied by a non-safety-related, non-seismic water line from the Town of Ontario municipal water system. The screenhouse building is not designed to protect the safety-related components, housed within, against external events or pipe break events. As explained in LRA Section 2.4.2.7, protection against these events is not needed because alternative shutdown means are available, which do not rely upon components housed in the screenhouse. However, the alternate shutdown procedure relies upon the fire hydrants as an alternative source of cooling water for the diesel generators, and as stated above, the yard hydrants are supplied from the nonqualified municipal water system. The staff has reviewed this configuration in the past and found it to be acceptable. As discussed in Topic III-5.B, “Pipe Breaks Outside Containment,” of NUREG-0821, the SEP safety evaluation report issued in December 1982, the NRC concluded that further modification of the screenhouse was unwarranted. It is also likely that degradation of this water supply to the yard hydrants would be quickly noticed, as this supply line is also the source of domestic water to the site. The staff therefore considers the exclusion of the municipal supply line to the yard hydrants from the scope of license renewal to be acceptable, because the Ginna SEP specifically approved this configuration and because it is likely that degradation of this supply would be promptly identified and corrected. This position is similar to the staff guidance on SBO, where the staff has historically relied upon the well-distributed, redundant, and interconnected nature of the grid to provide the necessary level of reliability to support nuclear power plant operations. However, the staff has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of the rule.

The fire barrier commodity groups adequately address the various components as being in scope. However, the AMR references in LRA Table 2.3.3-6 do not specifically address fire-proofing materials mentioned in 2.3.3.6. No reference was found in LRA Section 2.4 to the fire-proofing commodity group. In a letter dated March 21, 2003, the staff asked for clarification of whether fire-proofing of structural steel was used as part of in-scope fire barriers and where it was included in AMR (RAI 2.3.3.6-3).

By letter dated May 13, 2003, the applicant responded that fire proofing of structural steel is used in the Ginna plant at selected locations. For each building that utilizes this feature, the system description in LRA Section 2.4.2 calls out that usage. For example, in LRA Section 2.4.2.3, in the description of features and appurtenances credited in the CLB, item b states, “Selected structural steel building members are coated with a protective material to resist the effects of fires.” These materials are evaluated in the FP system as part of fire barriers and are evaluated for aging management in LRA Table 3.4-2 line numbers 322 -- 329 component type “structure,” material “grout.” Typically, structural steel coating fire-proofing materials are not considered grouts; however, the applicant’s response to this request for clarification has verified that these materials are in scope and are subject to an AMR.

Also listed in the fire barrier commodity groups were fire breaks or stops intended to limit the propagation of fire along a cable tray. Section 9.5.1.1.2 of the UFSAR references the use of fire-retardant coatings for some cable concentrations for cables which did not meet the flame spread qualification of IEEE-383. These coatings are referenced in LRA Table 3.4.2 as fire stop materials. The staff finds the applicant’s response to RAI 2.3.3.6-3 acceptable, on the basis that it verified that these components are within the scope of license renewal and are subject to an AMR.

The fire detection and alarm system is included in LRA Section 2.1.5.6 as part of the FPP necessary to meet the requirements of 10 CFR 50.48 and is identified as being in scope of license renewal in LRA Section 2.3.3.6. Neither LRA Table 2.3.3-6 nor LRA Section 2.5 includes any reference to the AMR of this system or its components. In a letter dated March 21, 2003, the staff requested that the applicant confirm that these systems are in scope and identify where the LRA addresses the AMR of these components (RAI 2.3.3.6-4).

By letter dated May 13, 2003, the applicant responded that the AMR of low-voltage cables and connections is performed in LRA Section 3.7 and is applicable to fire detection and alarm systems. The AMPs are listed in LRA Table 3.7-1. The fire detection and alarm system components are with the scope of license renewal. However, all components are active with the exception of cables, connectors, and other passive electrical devices which are included in LRA Table 3.7-1. The staff finds the applicant’s response to RAI 2.3.3.6-4 acceptable, on the basis that it verified that these components are within the scope of license renewal and are subject to an AMR.

Part of compliance with 10 CFR 50.48, Appendix R to part 50, Section III O, requires an oil collection system be provided for the reactor coolant pumps. LRA Section 2.3.3.6 specifically addresses the components of the oil collection system by referencing LRA Table 3.4.1, line number 6, “Components in the Reactor Pump Oil Collection System,” including the tank and piping.

2.3.3.6.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. On the basis of this review, the staff concludes, pending satisfactory resolution of Open Item 2.3.3.6-1, that the applicant has appropriately identified those portions of the FP system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the FP system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.7 Heating Steam

2.3.3.7.1 Summary of Technical Information in the Application

The heating steam system supports habitability and equipment reliability by maintaining plant area temperatures within acceptable bounds. In addition to supporting ventilation functions, the heating system also provides process steam for the waste disposal system evaporator. The system does not perform any nuclear safety function. (Note that at one time the heating steam penetrated containment. Those blanked-off sections of abandoned pipe are evaluated with the containment isolation components system discussed in Section 2.3.2.5.) The heating steam system contains pressurized, high-temperature fluid and has pipe routing and equipment locations in close proximity to safety-related equipment. Accordingly, some localized pipe segment and equipment meet the scoping criteria of 10 CFR 54.4(a)(2) (they are considered non-safety components whose failure could prevent the satisfactory accomplishment of a safety function).

The heating steam system is categorized as a moderate energy system. Consequently, the effects of heating steam pipe breaks have been evaluated. Evaluations were subsequently performed to ensure the plant could achieve and maintain safe shutdown following postulated system failures. As a result of the evaluation, pipe whip and jet impingement protection was provided for the 6-inch heating steam line riser located on the intermediate floor of the auxiliary building to protect safety-related electrical equipment in the vicinity of the riser. Additionally, heating steam lines were removed from the relay room and air handling room in order to maintain a mild environment for the purpose of environmental qualification of electrical equipment in the rooms. The mitigative equipment is evaluated in the appropriate civil/structural assessment. As a result of these analyses and modifications, the only portion of the heating steam system considered as non-safety components whose failure could prevent the accomplishment of a safety function are those portions of the system contained in the diesel generator rooms.

The principal components of the heating steam system are the boiler, tanks, pumps, condensate collection tanks, unit heaters, and essential piping and valves. The heating steam is provided from the house boiler, located in the screenhouse or from a connection in the main steam system. The systems provided with house steam include unit heaters in the screenhouse, intermediate building, auxiliary building, turbine building, diesel generator rooms, auxiliary building air handling units, containment purge supply unit, boric acid batch tank, gas stripper, and the boron recycle evaporator.

2.3.3.7.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.7 and UFSAR Sections 3.6 and 9.4.10 to determine whether there is reasonable assurance that the heating steam system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During its review of the LRA, the applicant's scoping and screening implementation procedures, and discussions with the applicant, the staff determined that additional information was required with respect to certain aspects of the applicant's evaluation of the 10 CFR 54.4(a)(2) criteria. For example, the applicant noted that the auxiliary boiler in proximity to the service water pumps in the screenhouse was not included in scope because its failure had been analyzed as part of the SEP and design features had been put in place to mitigate the effects of such a failure. The staff considers that non-safety-related SSCs, such as the auxiliary boiler, meet the 10 CFR 54.4(a)(2) criteria and therefore must be included in the scope of license renewal. By letter dated March 21, 2003, the staff requested that the applicant describe any additional scoping evaluations performed to address the 10 CFR 54.4(a)(2) criteria (F-RAI 2.1-4, discussed in SER Section 2.1).

In a letter dated May 13, 2003, the applicant responded that it reviewed its 54.4(a)(2) evaluations and concluded that the steam heating system in the screenhouse, including the boiler, met the criteria for 54.4(a)(2) inclusion, and thus it included these components as requiring an AMR. These components will be managed by the Periodic Surveillance and Preventive Maintenance Program described in B2.1.23 of the LRA. In its response dated June 10, 2003, the applicant provided the revised wording for Section 2.3.3.7 and the additional components for Table 2.3.3-7 in the LRA. The staff finds the applicant's response to be acceptable, on the basis that these components are considered to meet the 10 CFR 54.4(a)(2) criteria and are subject to an AMR.

During its review of LRA Section 2.3.3.7, the staff determined that additional information regarding several component groups that are subject to an AMR was needed to complete its review. These component groups are identified by the applicant as subject to an AMR; however, the staff could not locate several of the components on the five license renewal boundary drawings. By letter dated March 21, 2003, the staff requested that the applicant provide the drawing numbers and equipment identification numbers for the components in the component groups listed in LRA Table 2.3.3-7 (RAI 2.3.3.7-1).

In a letter dated May 13, 2003, the applicant responded that affected components are shown on license renewal boundary drawing 33013-1914-LR, generally in locations B1 -- B3 and F1 -- F3, and should have been highlighted. This is a typographical error. The applicant provided the equipment identification numbers for the affected components as requested. The staff finds the applicant's response to be acceptable, on the basis that certain components subject to an AMR were inadvertently not highlighted on the license renewal boundary drawings.

2.3.3.7.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the heating steam system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the heating steam system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.8 Emergency Power

2.3.3.8.1 Summary of Technical Information in the Application

The diesel generator emergency power system provides electrical power for safety-related components when the preferred power supply is not available. The emergency power sources become available automatically following the loss of the preferred power supply within a time consistent with the requirements of the engineered safety features and the shutdown systems under both normal and accident conditions. Components within the emergency power system are also credited for use in safe shutdown following some fires. Emergency power system reliability is a critical element in ensuring that the station demonstrates compliance with regulations for station blackout. Included in the emergency power system are two safety-related station emergency diesel generators (EDGs) and the technical support center (TSC) diesel generator. Each EDG is capable of automatically starting and sequentially accepting the power requirements of one complete set of safeguards equipment. Each EDG provides the necessary power to cool the core and maintain the containment pressure within the design value for a LOCA (coincident with a loss of offsite power). The diesels start automatically when loss of voltage is sensed on the bus they supply. The EDGs also start automatically upon receipt of a safety injection signal. The EDGs are normally operated from the control room, but EDG A is equipped with a control station that allows the unit to be electrically divorced from the control room and operated locally. The TSC diesel generator can be used to supply a battery charger in order to support vital direct current (DC) for long-term recovery following some fire scenarios.

The principal components of the EDGs include two diesel engines. Each engine is equipped with its own turbo charger, air start subsystem, lube oil and cooling water subsystems, fuel oil subsystem, ventilation system, and essential piping and valves. (Ventilation requirements are evaluated separately within the ventilation systems discussions.) The TSC diesel generator requires its own similar subsystems to function but uses batteries rather than air as a starting mode of force.

2.3.3.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.8 and UFSAR Sections 8.3.1.1.6, 9.5.4, 9.5.5, 9.5.6, 9.5.7, and 9.5.8 to determine whether there is reasonable assurance that the emergency power system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During review of license renewal boundary drawings 33013-1239-LR, sheets 1 and 2, the staff found that manways associated with the diesel generator fuel oil storage tanks is shown to be subject to an AMR. Also, a similar bolted access cover associated with the diesel generator cooling water expansion tanks are shown to be subject to an AMR on license renewal boundary drawings 33013-1239-LR, sheets 1 and 2. However, the manways and access covers have not been included in Table 2.3.3-8 or Tables 3.4-1 and 3.4-2. Furthermore, Section 9.5.4 of the Ginna UFSAR states that watertight doors have been installed on the concrete manways of the underground diesel oil storage tanks. The purpose of the doors is to prevent the accumulation of water in the manways. Water might seep into the oil through the flanged manhole on the top of each storage tank. Based on the above, the staff believes that the manways and access covers should be subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). By letter dated March 21, 2003, the staff asked the applicant to justify the exclusion of the manways, access covers, watertight doors, and bolting mechanisms from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) (RAI 2.3.3.8-1).

In a letter dated May 13, 2003, the applicant responded that the manways associated with the diesel generator fuel oil storage tank, and the bolted access cover associated with the diesel generator cooling water expansion tanks are grouped within the component group “tank.” Line number 7 in Table 3.4.1 and numbers 335, 337, 340 and 341 in Table 3.4-2 are applicable to these components. The concrete enclosure referred to in UFSAR Section 9.5.4 is evaluated in the LRA within the essential yard structures system in Table 2.4.2-11 under component groups YARD-C-BUR and YARD-CAPTION-EXT. The staff finds the applicant’s response to be acceptable, on the basis that the identified components are subject to AMR and included in the cited tables of the LRA.

During a review of license renewal boundary drawings 33013-1239, 1-LR, and 33013-1239, 2-LR, the staff found that foot valves 5919 and 5920 are shown to be subject to an AMR. Note 4 on these drawings indicates that the valves contain a screen. However, Table 2.3.3-8 does not list any screens as a component group subject to an AMR. By letter dated March 21, 2003, the staff asked the applicant to clarify if the screens associated with these valves are subject to an AMR, and if not, to justify the exclusion of these screens from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) (RAI 2.3.3.8-2).

In a letter dated May 13, 2003, the applicant responded that the screens associated with foot valves 5919 and 5920 are subject to an AMR and that the applicable aging management programs (AMPs) are listed in Table 3.4-1, line number 5 -- Periodic Surveillance and Preventive Maintenance Program, Fuel Oil Chemistry Control Program and One-Time Inspection Program. The applicant further noted that currently there is a Reptask P301699 to inspect/clean DG "A" fuel oil storage tank (TDG01A) which includes inspection of valve 5919 and the associated screen and a Reptask P301700 to inspect "B" tank and valve 5920 and the associated screen. The staff finds the applicant’s response to RAI 2.3.3.8-2 to be acceptable, on the basis that the screens in question are subject to an AMR and the applicable aging management programs are identified.

2.3.3.8.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the emergency power system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the emergency power system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.9 Containment Ventilation

2.3.3.9.1 Summary of Technical Information in the Application

The functions of the containment ventilation system are to provide emergency heat removal from the containment atmosphere, to remove radioactive material from the containment atmosphere, and to provide containment pressure control. Portions of the system maintain containment concrete temperatures below the threshold where long-term aging effects are manifested. Thus, the containment ventilation system is considered to contain non-safety-related equipment whose failure could prevent the satisfactory accomplishment of a safety function (e.g., penetration cooling). The containment ventilation system also contains components used for fire detection and components that are environmentally qualified.

Included within the scope of the containment ventilation system are the following subsystems:

- containment recirculation cooling and filtration system
- control rod drive mechanism cooling system
- reactor compartment cooling system
- refueling water surface and purge system
- containment auxiliary charcoal filter system
- containment post-accident charcoal filter system
- containment shutdown purge system
- containment mini-purge system
- penetration cooling system

The principal components of the containment ventilation system include filters, fans, dampers, valves, heat exchangers, and the essential ductwork and piping. Fire dampers contained in the system are evaluated as a separate commodity group.

The containment recirculation fans, control rod drive mechanism fans, and reactor compartment fans are direct-driven units, each with standby units for redundancy. The fans and motors of these units are provided with vibration detecting devices to detect abnormal operating conditions in the early stages of the disturbance. Each of the associated systems is provided with flow switches to verify existence of air flow in the associated duct system. Dampers in the following systems and ducts are provided with air by dual supply air mains, including primary

compartment ducts, dome ducts, containment auxiliary charcoal filter systems, butterfly valves which isolate the post-accident charcoal filters, and containment purge supply and exhaust ducts. Two of the four fans and coolers plus one containment spray pump (i.e., one train of each system) are required to provide sufficient capacity to maintain the containment pressure within design limits after a LOCA or steam line break accident. The containment recirculation fan cooler electrical connections and other equipment in the containment necessary for operation of the system are capable of operating under the environmental conditions following a LOCA.

The control rod drive cooling system consists of fans and ductwork that draw air through the control rod drive mechanism shroud and eject it to the main containment volume. The reactor compartment cooling system consists of a plenum, cooling coils, fans, and ductwork arranged to supply cool air to the annulus between the reactor vessel and the primary shield and to the nuclear instrumentation external to the reactor. The refueling water surface and purge system supplies air to the surface of the refueling cavity and exhausts from the area above the refueling manipulator crane to protect the operators during refueling operations. The containment auxiliary charcoal filter system's purpose is to absorb radioactive iodine vapor and radioactive particles that may occur as a result of normal primary system leakage inside the containment. The containment shutdown purge system is independent of the main auxiliary building exhaust system and includes provisions for both supply and exhaust air. The supply system includes an outside air connection to roughing filters, heating coils, fans, duct system, and supply penetration with a butterfly valve outside containment and a blind flange inside containment. The exhaust system includes an exhaust penetration with a butterfly valve and a blind flange identical to those above, a duct system, a filter bank with high-efficiency particulate air and charcoal filters, fans, and a building exhaust vent. The shutdown purge supply and exhaust duct blind flanges inside the containment are closed during Modes 1, 2, 3, and 4. The containment mini-purge system is capable of purging containment during Modes 1 and 2 at a relatively low flow rate (approximately 1500 cfm). The exhaust is through a 6-inch line to the auxiliary building charcoal filters. The penetration cooling system is used to cool hot mechanical containment penetrations. The containment penetration cooling system is designed to prevent the bulk concrete temperature surrounding the penetrations from exceeding 150 °F.

2.3.3.9.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.9 and UFSAR Sections 6.2.2 and 9.4.1 to determine whether there is reasonable assurance that the containment ventilation system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During the review of license renewal boundary drawing 33013-1866-LR, the staff identified flanged flexible hoses located at each of the 15 containment penetrations shown for the containment penetration cooling system. The drawing indicated that these hoses were all within the scope of license renewal. However, LRA Table 2.3.3-9 does not list flanged flexible hoses

as a component group. By letter dated March 21, 2003, the staff requested that the applicant justify the exclusion of these hoses from the table (RAI 2.3.3.9-1).

By letter dated May 21, 2003, the applicant responded that the 2-inch flanged flexible hoses were included in the component group “Pipe” in LRA Table 2.3.3-9. Furthermore, the neoprene lining of these hoses received aging management evaluation as duct in accordance with NUREG-1801, Chapter VII, item F3.1-b.

The staff considers the applicant’s response to RAI 2.3.3.9-1 to be acceptable on the basis that clarification was provided indicating that flanged flexible hoses, while not considered a separate component group in LRA Table 2.3.3-9, were incorporated into the table under a different component group heading. Additionally, the lining of these hoses is subject to an AMR, in accordance with NUREG-1801.

2.3.3.9.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the containment ventilation system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the containment ventilation system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.10 Essential Ventilation

2.3.3.10.1 Summary of Technical Information in the Application

The essential ventilation system functions to maintain temperatures within specified limits in areas containing safety-related equipment. Additionally, the control room emergency air treatment portion of the system is designed to filter the control room atmosphere during periods when the control room is isolated. It is designed to maintain radiation levels in the control room at acceptable levels following design-basis accidents. (Radiation detection and toxic gas monitoring are evaluated within the discussion of the radiation monitoring system.) Ventilation is also required for EDG operation, for the TSC diesel generator and its associated equipment, and the standby auxiliary feedwater pumps, all of which may be used for safe shutdown following some fire events.

Included within the scope of the essential ventilation system are the following subsystems:

- auxiliary building ventilation
- intermediate building ventilation
- standby auxiliary feedwater building ventilation
- diesel generator building ventilation
- control building ventilation
- technical support center ventilation

The principal components of the essential ventilation system include filters, fans, dampers, valves, heat exchangers, conditioning/chiller packages, and the essential ductwork and piping. Fire dampers contained in the system are evaluated as a separate commodity group. The auxiliary building has a non-safety heating, ventilation, and air conditioning system which provides clean, filtered, and tempered air to the operating floor of the auxiliary building and to the surface of the decontamination pit and spent fuel storage pool. The system exhausts air from the equipment rooms and open areas of the auxiliary building and from the decontamination pit and SFP through a closed exhaust system.

The exhaust system includes a 100 percent capacity bank of high-efficiency particulate air (HEPA) filters and redundant 100 percent capacity fans discharging to the atmosphere via the plant vent. This arrangement ensures the proper direction of air flow for removal of airborne radioactivity from the auxiliary building. Included in the auxiliary building exhaust system is a separate charcoal filter circuit, which exhausts from rooms where fission product activity may accumulate during Modes 1 and 2 in concentrations exceeding the average levels expected in the rest of the building. Although no credit for this system is assumed in the plant safety analysis, this circuit is capable of providing exhaust ventilation from the areas containing pumps and related piping and valving which are used to recirculate containment sump liquid following a LOCA. A full-flow charcoal filter bank is provided in the circuit, along with two 50 percent capacity exhaust fans. The air-operated suction and discharge dampers associated with each fan are interlocked with the fan such that they are fully open when the fan is operating and fully closed when the fan is stopped. These dampers fail to the open position on loss of control signal or control air. The fans discharge to the main auxiliary building exhaust system containing the HEPA filter bank. To ensure a path for the charcoal (and HEPA) filtered exhaust to the plant vent if the main exhaust fans are not operating, a fail-open damper is installed in a bypass circuit around the two main exhaust fans.

In addition to the main auxiliary building ventilation system (ABVS), the residual heat removal, safety injection, containment spray, and charging pump motors are provided with additional cooling provisions when the pumps are operating. The safety injection and containment spray pump motors are located in an open area in the basement of the auxiliary building and share three heat exchangers cooled by service-water. In 1992, service water to these heat exchangers was blanked off. The charging pumps and RHR pumps are located in individual rooms, with each room provided with two cooling units consisting of redundant fans, water-cooled heat exchangers, and ductwork for circulating the cooled air. The capacity of each charging pump cooling unit is sufficient to maintain acceptable room-ambient temperatures with the minimum number of pumps required for system operation in service.

The cooling units in the RHR pump pit are not required for the operation of the RHR pumps, even if both pumps are operating. In the event of a loss of offsite power, the ABVS main supply and exhaust fans would be inoperable. However, all other fans in the ABVS are supplied by emergency diesel power, including the pump cooling circuits for safety-related pump motors, as described above. Analysis has shown that the three levels of the auxiliary building and the RHR pump pit would remain within acceptable limits when the outside air is at its maximum expected temperature and no cooling units are operating. Since the auxiliary building has a very large volume, a significant post-accident temperature increase is not expected except in some local areas near hot piping and large motors.

The SFP area ventilation system is a part of the ABVS. The system serves to control airborne radioactivity in the SFP area during normal operating conditions. This is accomplished by directing air from the auxiliary building supply air unit across both the SFP and the decontamination pit to exhaust air ducts which are connected to the suction of the auxiliary building exhaust fan C. Exhaust air from the SFP water surface is drawn through roughing filters and, depending on system alignment, charcoal filters. Discharge from the auxiliary building exhaust fan C passes through HEPA filters, a main auxiliary building exhaust fan, and then out the plant vent. The non-safety intermediate building ventilation system includes a supply fan that exhausts air from the intermediate building clean side to the intermediate building restricted area side. Two additional exhaust fans, which are located in the intermediate building restricted area side, draw ventilation air from various areas of both the clean and restricted area sides of the intermediate building and discharge to the auxiliary building discharge header plant vent duct. Ventilation air is provided to the intermediate building clean side through louvered outside air intakes, which are located in the east wall of the intermediate building. Additional ventilation air can be drawn into the intermediate building clean side from the turbine building through a louvered wall opening, which is installed in front of a rolling fire door in the fire barrier wall.

The standby auxiliary feedwater (SAFW) pump room cooling and heating system provides cooling and heating as required to maintain the pump room temperature within the design temperature range. This cooling and heating system is needed to provide an acceptable environment for the equipment in the pump room, which includes the two SAFW pumps and their electric drive motors. The SAFW room cooling system is capable of operation whenever the SAFW pumps are needed because the cooling system provides the air cooling required for continuous operation of the pump motors. A given cooling unit is automatically started whenever its corresponding SAFW pump is started. Because of its safety-related nature, the cooling system must remain functional during all modes of plant operation including the period during and after a safe shutdown earthquake.

The diesel generators are housed in adjacent but separate rooms, each of which is serviced by a safety-related ventilation system having two inlet fans supplying outside air. Each fan takes suction from a common header and discharges through separate ductwork, dampers, and discharge diffusers. One fan in each room discharges a supply of air directly on the instrument and control cabinets. Excess air is discharged to the outdoors through automatic, pressure-actuated room vents, backdraft dampers, and wall-mounted louvers. No refrigeration or service water air cooling is used.

The control room ventilation system is normally operated using a large percentage of recirculated air. The fresh air intake can be closed to control the intake of airborne activity if monitors indicate that such action is appropriate. The control room emergency air treatment system is designed to filter the atmosphere during periods when the control room is isolated and to maintain radiation levels at acceptable levels following a design-basis accident. This system circulates air from the control room, control room office, and kitchen through return air ductwork to a central air conditioning unit located in the air handling room. The air is drawn into the unit through roughing type filters and either heated or cooled as required by electric heating or chilled water coils. Conditioned air is directed back to the rooms through a supply air ductwork system. The entire control room emergency zone air volume is turned over approximately 12 times every hour. During normal operation, fresh makeup air is admitted to this system through an intake louver located in the outside wall of the turbine building, with the

amount varying between 0 to 25 percent of the unit flow rate, depending on outside air temperature. Pneumatically operated dampers can be positioned from the control room to isolate the fresh air intake and to place a separate charcoal filter unit in service. The charcoal filter unit includes both HEPA filters and 2-inch deep charcoal adsorbers for removing radioactive particulates and gaseous iodine from the control room atmosphere. Its capacity is approximately 25 percent of the system flow rate and the unit is installed in a normally isolated bypass circuit.

In the event of high radiation levels in the control room, the radiation instrumentation will automatically close the redundant dampers in the fresh air intake duct and the dampers in the return air duct to the turbine building, and open the damper in the charcoal filter unit inlet duct to allow 2000 cfm of the recirculation air to flow through the HEPA filters and charcoal adsorbers. This signal will also start a separate fan to provide flow through the charcoal filter unit. Until radioactivity in the control room atmosphere is reduced to a safe level, system flow will be in a closed cycle from the control room, with approximately 25 percent bypass flow through the charcoal filter unit, through the air conditioning unit, and back to the control room. The dampers can also be positioned to permit fresh air makeup to the system through the charcoal filter unit. Since all control room penetrations, including doors, are designed to high leak-tightness standards and the control room is maintained at essentially atmospheric pressure, the infiltration of contaminated air into the control room is very limited.

The control building ventilation system includes within its boundary battery and relay room ventilation. Supplemental heating and cooling to the battery rooms are provided by a non-seismic air conditioning unit, with associated service water piping, ventilation ductwork, electric heating coil, and fire dampers. The electric heating coil is seismically mounted in the heating, ventilation, and air conditioning unit discharge duct. The unit and associated ductwork and piping are designed to function during all plant modes. Although the overall design is nonseismic, the piping and ductwork are designed to maintain structural integrity during a design-basis earthquake. Each battery room has an alternating current (AC)-powered propeller exhaust fan that takes suction from the area to remove hydrogen gas generated by the batteries. Also, there is a separate emergency DC-powered ventilation system that is manually actuated in the event of low air flow in the ductwork of either of these battery room exhaust fans. The relay room contains two self-contained, water-cooled air cooling units that maintain a normal room temperature.

The TSC houses the computers and equipment, including emergency power supplies (diesel generators and batteries), necessary to provide the staff with technical support during an emergency. The TSC heating, ventilation, and air conditioning system maintains year-round occupancy comfort levels, provides personnel protection from airborne radiological contaminants, and maintains a positive pressure relative to the outside. Additionally, it provides cooling, heating, and ventilation required by special areas and equipment.

2.3.3.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.10 and UFSAR Sections 1.2, 6.4, 7.4, and 9.4.2 through 9.4.10 to determine whether there is reasonable assurance that the essential ventilation system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During the review of license renewal boundary drawing 33013-1256-LR, which depicts systems that provide ventilation to the TSC, the staff noted that only those structures and components that serve the TSC diesel-generator room, the TSC uninterruptible power supply, and the TSC battery room were shown to be within the scope of license renewal and subject to an AMR (see locations H1, 2, 3, 4; I1, 2, 3, 4, 5; and J1, 2, 3, 4). Section 1.2.3.7 of the UFSAR states that the TSC "is located on the second floor of the all-volatile treatment building and houses the computers and equipment, including emergency power supplies (diesel generators and batteries), necessary to provide the staff technical support during an emergency event."

In order for the staff to confirm that all TSC ventilation structures and components serving an intended function meeting the scoping criteria of 10 CFR 54.4(a) have been considered, the staff requested, in a letter dated March 21, 2003, that the applicant identify all equipment which relies on the ventilation SCs considered within scope and justify the omission from scope of those ventilation structures and components serving other areas of the TSC (RAI 2.3.3.10-1).

By letter dated May 13, 2003, the applicant responded that not all ventilation structures and components serving the TSC are relied upon for safe shutdown in the CLB. The only ventilation structures and components included in the scope of license renewal are those used for post-fire safe shutdown activities, a 10 CFR 54.4(a)(3) function. Regarding equipment that relies on these ventilation SCs, the applicant identified the TSC diesel generator located in the TSC diesel-generator room, and a battery charger located in the TSC battery room. The diesel generator can be used to supply the battery charger, thus supporting vital DC power for long-term recovery following certain fire scenarios. (These components are addressed in Section 2.3.3.8 of the LRA.)

The staff considers the applicant's response to RAI 2.3.3.10-1 to be acceptable because information was provided that clarified that all TSC ventilation SCs within the scope of license renewal and subject to an AMR have been identified in the LRA, in accordance with 10 CFR 54.4 and 54.21(a)(1). No omissions were found upon further review.

Section 7.4 of the UFSAR, which addresses the alternative shutdown system, states that in case of fire within the control room fire zone, the control room may be evacuated and the plant shut down from alternative shutdown stations located in other areas of the plant. However, during its review, the staff noted that the systems providing ventilation to the alternative shutdown stations and controls were not addressed in either the LRA or the UFSAR.

By letter dated March 21, 2003, the staff asked that the applicant identify the structures and components used to provide ventilation to the alternative shutdown stations that are within the scope of license renewal and subject to an AMR, in accordance with 10 CFR 54.4(a)(1) and (a)(2). The staff also requested that justification be provided for excluding any ventilation SCs that were not considered to be within scope (RAI 2.3.3.10-2).

By letter dated May 23, 2003, the applicant responded that all ventilation structures and components required to support the functioning of equipment used for safe shutdown have

been identified in the LRA and are within the scope of license renewal and subject to an AMR. These include SCs that support operation of the emergency diesel generators, the TSC diesel generator and battery charger, and the SAFW pumps. The applicant also noted that the auxiliary building local indicating panel and the intermediate building local indicating panel, which are used to support safe shutdown, do not require ventilation to function because they are located in areas where ambient temperatures will not rise to a level at which their operation would be affected.

The staff considers the applicant's response to RAI 2.3.3.10-2 to be acceptable on the basis that clarification was provided which identified those ventilation SCs that are within the scope of license renewal and subject to an AMR, and the exclusion from scope of other ventilation SCs was justified.

During the review of license renewal boundary drawing 33013-1869-LR, which depicts systems that provide ventilation to the residual heat removal, containment spray, charging, safety injection, and standby auxiliary feedwater (AFW) pumps, the staff noted that only those SCs that serve the standby AFW pumps were shown to be within the scope of license renewal and subject to an AMR.

Two redundant cooling units each are provided for both the RHR pump pit and the charging pump room. Three cooling units, headered into common ductwork, are provided for the safety injection and containment spray pumps. A separate cooling unit is provided for each of the two standby AFW pumps. LRA Section 2.3.3.10 states that the fans for all of these cooling units are supplied by emergency diesel power.

All of the pumps listed above are safety-related and are within the scope of license renewal, in accordance with 10 CFR 54.4(a)(1), items (i) and (ii). The systems providing ventilation to the areas housing these pumps and associated pump motors have the function of maintaining an acceptable environment for operation of these components under accident conditions. Therefore, the staff considers these ventilation systems to be within the license renewal boundary. By letter dated March 21, 2003, the staff requested that the applicant provide justification for excluding the ventilation systems servicing the RHR, containment spray, charging, and safety injection pumps from the scope of license renewal. If the justification is based on analysis, the applicant should summarize the assumptions made and the resulting conclusions for each of these pumps (RAI 2.3.3.10-3).

By letter dated May 13, 2003, the applicant responded that the RHR, safety injection, and containment spray pump motors have been analyzed to operate with no ventilation required following a design-basis LOCA. This analysis, documented in ALTRAN Technical Report 99124TR001, computed peak temperatures in various areas of the auxiliary building following a design-basis LOCA. Based on these peak temperatures, the environmental qualification (EQ) of all safety-related equipment in the auxiliary building, which includes these pump motors, was reviewed. This review concluded that these motors were still capable of performing their safety-related functions without ventilation. The magnitude of peak temperatures as well as their short duration resulted in a negligible decrease in qualified life. On this basis, the applicant concluded that the cooling units serving the areas housing the RHR, safety injection, and containment spray pumps did not support a safety-related function and therefore are not within the scope of license renewal nor are they subject to an AMR.

The applicant also stated that the charging pumps are not required to operate following a LOCA but need only survive the environmental effects of a steam heating line break in the auxiliary building (with a calculated temperature of 150 °F). Since normal operation of these pumps produces a temperature in the motor windings greater than the 150 °F environment, the charging pump motors were removed from the Ginna EQ master list. Accordingly, the two cooling units serving the charging pump room do not support a safety-related function and therefore are not within the scope of license renewal nor are they subject to an AMR.

The staff considers the applicant's response to RAI 2.3.3.10-3 to be acceptable on the basis that justification was provided for excluding those systems providing ventilation to the RHR, containment spray, charging, and safety injection pumps from the scope of license renewal. All ventilation structures and components within the scope of license renewal and subject to an AMR have been identified in the LRA, in accordance with 10 CFR 54.4 and 54.21(a)(1). No omissions were found upon further review.

Section 9.4.9 of the UFSAR states that the engineered safety features ventilation and cooling systems include those systems that service equipment required either following an accident or to ensure safe plant shutdown. Included on the provided list of equipment and/or areas serviced by these systems are the relay room and battery rooms, located in the control building. However, during its review of license renewal boundary drawing 33013-1868-LR, the staff found that the ventilation SCs servicing the relay room and the two battery rooms were excluded from the scope of license renewal. By letter dated March 21, 2003, the staff requested that the applicant justify the exclusion of the ventilation SCs servicing these rooms (RAI 2.3.3.10-4).

By letter dated June 10, 2003, the applicant responded that although the battery and relay rooms contain SSCs that perform license renewal intended functions, the ventilation systems for these rooms do not have a license renewal intended function. These ventilation systems are not safety related, as described in UFSAR Section 3.11.3.5. Testing and analysis have demonstrated that the post-accident temperature rise in these rooms is not rapid, and operator response measures such as opening doors and using portable air units or fans would maintain room temperatures at acceptable levels, even if the non-safety air conditioning units provided for these rooms did not operate. Also, as stated in UFSAR Section 8.1.4.5.2, expected room temperatures during an SBO were evaluated, per Devonrue August 1990 and December 15, 1993, analyses. This evaluation determined that the equipment would remain operable even with a loss of ventilation.

The staff considers the applicant's response to RAI 2.3.3.10-4 to be acceptable because it clarified the exclusion of the ventilation SCs servicing the relay room and the two battery rooms from the scope of license renewal. All ventilation SCs within the scope of license renewal and subject to an AMR have been identified in the LRA, in accordance with 10 CFR 54.4 and 54.21(a)(1).

During the review of the LRA and associated license renewal boundary drawings, the staff identified two additional items, each applicable to both the containment ventilation and essential ventilation systems, which needed clarification by the applicant.

The first item concerned the symbol for "air opening" appearing at various air intakes and exhausts in many of the boundary drawings. (This symbol is shown in the symbol legend, drawing 33013-2242, 3-LR, location H4.) Many of these air openings are highlighted to identify

them as being within the scope of license renewal and subject to an AMR. However, because a different symbol was used for “louvers” in the drawings, the physical nature of “air openings” (e.g., screens and grillwork) was not clear to the staff. Furthermore, “air openings” were not listed as a component group in LRA Tables 2.3.3-9 and 2.3.3-10.

By letter dated March 21, 2003, the staff requested that the applicant describe these air openings and justify their exclusion from the above-mentioned tables (RAI Generic HVAC-1).

By letter dated May 13, 2003, the applicant responded that all air openings identified as being within the scope of license renewal, regardless of design, are included in Tables 2.3.3-9 and 2.3.3-10 under the component group “ventilation ductwork.”

The staff considers the applicant's response to RAI Generic HVAC-1 to be acceptable on the basis that clarification was provided confirming that no air openings identified as being within scope were excluded from LRA Tables 2.3.3-9 and 2.3.3-10.

The second item concerns the cooling coils and heating coils shown to be within the scope of license renewal on the boundary drawings for the containment ventilation and essential ventilation systems. Cooling coils and heating coils are listed as component groups in LRA Tables 2.3.3-9 and 2.3.3-10, with pressure boundary as the only intended function specified.

Heat transfer, however, is not specified as an intended function for these coils. “Heat exchangers” are also listed as a separate component group in LRA Tables 2.3.3-9 and 2.3.3-10 with the specified intended functions of both heat transfer and pressure boundary.

The staff considers both cooling coils and heating coils to be heat exchangers. However, cooling and heating coils appear to be the only heat exchangers shown to be within scope on the license renewal boundary drawings for the containment ventilation and essential ventilation systems. Therefore, it was not clear to the staff what differentiates the “heat exchangers” component group from the “cooling coils” and “heating coils” component groups in LRA Tables 2.3.3-9 and 2.3.3-10.

By letter dated March 21, 2003, the staff requested that the applicant identify any heat exchangers, other than cooling coils and heating coils, that are within the scope of license renewal and have not been identified on the license renewal boundary drawings, and explain why heat transfer is not listed as an intended function for the cooling and heating coils (RAI Generic HVAC-2).

By letter dated May 21, 2003, the applicant responded that “the specific cooling/heating coils and heat exchangers in question only have a pressure boundary intended function, that is their heat transfer function is not credited in the current licensing basis.” However, the staff noted that under the component group “heat exchangers” in LRA Tables 2.3.3-9 and 2.3.3-10, both pressure boundary and heat transfer are listed as intended functions. This appears to contradict the above response and was discussed with the applicant. The applicant stated that the tables were in error and committed to making the necessary corrections. This is Confirmatory Item 2.3.3.10-1.

Additionally, the applicant explained that the symbols assigned to heat exchangers in the symbol legend did not appear on the license renewal boundary drawings because all in-scope

heat exchangers were considered subcomponents of the cooling and heating coils and thus were not illustrated.

The staff considers the applicant's response to RAI Generic HVAC-2 to be acceptable, pending the above-cited corrections to LRA Tables 2.3.3-9 and 2.3.3-10, because the applicant justified specifying pressure boundary as the only intended function for cooling coils and heating coils and explained the absence of the symbols for heat exchangers on the license renewal boundary drawings.

2.3.3.10.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. On the basis of this review, the staff concludes, pending satisfactory resolution of Confirmatory Item 2.3.3.10-1, that the applicant has appropriately identified those portions of the essential ventilation system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the essential ventilation system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.11 Cranes, Hoists, and Lifting Devices

2.3.3.11.1 Summary of Technical Information in the Application

The cranes, hoists, and lifting devices equipment group consists of overhead load handling systems considered to contain non-safety-related components whose failure could affect a safety function, specifically a heavy load drop that could result in damage to safe shutdown equipment. The components in this category were identified in the Ginna response to NUREG-0612, "Control of Heavy Loads." The principal components of the cranes, hoists and lifting devices equipment group include the reactor head lifting device, the reactor internals lifting device, and the load carrying elements of the containment main crane, the auxiliary building main crane, and the SFP and containment refueling bridge cranes as well as selected jib and monorail hoists. Included are cables, hooks, and the moving load-bearing elements. The crane rails and supports that interface with building structural members are evaluated within the building that contains them. The majority of the plant crane hoists and lifting devices are excluded from this category because of administrative controls over their use or because their distance from safety-related equipment precludes the possibility of damaging safe shutdown equipment, as documented in NUREG-0612.

2.3.3.11.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.11 and UFSAR Section 9.1 to determine whether there is reasonable assurance that the cranes, hoists, and lifting devices within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During its review of LRA Section 2.3.3.11, the staff determined that additional information was needed to complete its review. By letter dated March 21, 2003, the staff asked the applicant to identify the specific component types and locations that are within the scope of license renewal and subject to an AMR (RAI 2.3.3.11-1).

In its response dated May 23, 2003, the applicant stated that the specific components of the cranes, hoists, and lifting devices equipment group are the containment main overhead crane, containment 3-ton jib, containment fuel manipulator crane, containment 10-ton jib crane, containment 2-ton jib, auxiliary building main overhead crane, auxiliary building SFP bridge crane, auxiliary building RHR pumps monorail, intermediate building 3-ton monorail on the upper level, and the screenhouse overhead crane. This information was provided in the applicant’s response to NUREG-0612, dated March 2,1983. The staff finds the applicant’s response to be acceptable, as it identified the specific components that are included in the cranes, hoists, and lifting devices equipment group.

By letter dated March 21, 2003, the staff asked the applicant to list the structures and/or sub-components of the cranes, hoists, lifting devices, etc., that are within the scope of license renewal and subject to an AMR (RAI 2.3.3.11-2). Listing “crane” as the structures and components subject to an AMR does not satisfy the requirement of 10 CFR 54.21(a)(1) because an entire crane is not subject to an AMR.

By letter dated May 13, 2003, the applicant responded that, as noted in LRA Section 2.3.3.11, the component group “crane” includes cables, hooks, and moving load-bearing elements (bridges and trolleys). Crane rails are evaluated as part of the structures that contain them. The staff considers the applicant’s response to RAI 2.3.3.11-2 to be acceptable, because it identified the subcomponents of the component group “crane” that are subject to an AMR.

2.3.3.11.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the components of cranes, hoists, and lifting devices that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the components of the cranes, hoists, and lifting devices that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.12 Treated Water

2.3.3.12.1 Summary of Technical Information in the Application

The treated water system comprises several secondary plant subsystems including demineralized water production, domestic (potable) water, secondary water chemical treatment, and nonradioactive liquid waste disposal (floor drains, secondary sample effluents, etc.). The treated water subsystems are non-safety auxiliary systems that support the functionality of other process systems. The treated water system contains floor drains and equipment whose failure could prevent the satisfactory accomplishment of a safety function (flood mitigation and backflow of oil through floor drain prevention).

The principal components of the treated water system are pumps, tanks, ion exchange vessels and the piping, hoses, and valves necessary for the subsystems to function. The primary water treatment system or mobile demineralizer trucks process domestic water to provide demineralized water to the reactor makeup water tank, the component cooling water surge tank, the condensate storage tanks, and various locations throughout the plant via a piping distribution network. The all-volatile-treatment (AVT) chemistry system uses chemical addition and ion exchange to treat condensate water in order to reduce the corrosion of equipment in the secondary system and minimize the fouling of heat transfer surfaces. The AVT regeneration wastes are collected in neutralization tanks and sampled to determine disposition methods. The catalytic oxygen removal system reduces condensate-dissolved oxygen by mixing hydrogen with the condensate and reducing the free oxygen to water by exposure of the mixture to a metal catalyst surface. The secondary plant equipment and floor drains serve to route leakage from equipment and compartments to provide proper control of leakage, prevent uncontrolled communication between areas as necessary, and allow monitoring of leakage prior to disposition. Where drains from safety-related areas are tied into drains from areas that contain a large quantity of flammable liquid, backflow protection is provided to prevent possible spread of a liquid fire via the drain system. An underground retention tank is the collection point for the various building floor and equipment drains. It retains these effluents for sampling and treatment prior to discharging them into the circulating water discharge.

2.3.3.12.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.12 and UFSAR Sections 9.2.3, 9.5.1.2.4.5, and 10.7.7 to determine whether there is reasonable assurance that the treated water system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

In a letter dated March 21, 2003, the staff requested that the applicant explain why all of the treated water system discharge piping comprising the flowpaths to a retention tank or the discharge canal is not subject to an AMR, or describe how the maximum flood inventory is accommodated (RAI 2.3.3.12-1). License renewal boundary drawing 33013-2681-LR shows six sump pumps and connecting piping and valves as being subject to an AMR. The six pumps are in DG room “A” (location A6), DG room “B” (location A8), the control building ventilation room (location F6), and battery room “A” (location F7). The DG room vault sump pumps discharge to piping that is subject to an AMR; however, the scoping boundary for this piping does not extend completely to the discharge canal, the final depository for the discharge flow. The sumps

containing the diesel generator “B” floor drain sump pump and the battery room “A” floor drain sump pump gravity drain through ball check valves. The discharge piping subject to an AMR extends only to the floor drain outside of the subject room. It is not clear from the information provided in license renewal boundary drawing 33013-2681 where the three sump pumps PWT28, PWT29, and PWT30 (at locations B7, E7, and E6, respectively) discharge to, as the sumps all appear to be gravity drained. In each of these cases, the intended system function of preventing flooding would appear to require that the complete discharge piping flowpath, up to the final discharge point, be subject to an AMR. An exception could occur where the capacity of an interim storage location is sufficient to hold the maximum flood inventory.

In a letter dated May 13, 2003, the applicant responded that the capacity of the interim storage volume can be viewed as infinite. After initial construction, the sump water boxes were modified to prevent potential backflow of oil into spaces containing safety-related equipment. In some instances, the modification consisted of installing a baffle, horizontally bisecting the water box. The sump pumps move the water that might collect on top of the baffle, through a check valve, to the bottom of the water boxes where the fluid flows by gravity through the drain header. The check valves and baffles prevent fluids from being forced from the common drains back into the space.

The applicant reasoned that the entire treated water system discharge path is not subject to AMR lies in the configuration of the flowpath. The drainage portion of the system outside the areas of concern is not a closed system. Numerous water boxes that are open to the atmosphere exist in the drain system. Should the path to the retention tank be unavailable, the water volume simply overspills these water boxes, with ultimate dewatering occurring though flow across the turbine building floor into the yard. Thus, the treated water system discharge piping flowpaths are not subject to an AMR in their entirety; only the piping and components that drain water from or prevent water from backing up into rooms that contain safety-related equipment are within the scope of license renewal. During the AMP audit, the staff verified that the discharge piping is not a closed system and that none of the accessible piping appeared damaged. The staff also verified that the water boxes are open to the atmosphere and any overspills would flow across the turbine building floor thus providing a virtual infinite storage volume.

Location E8 of license renewal boundary drawing 33013-2681, 3-LR, shows the floor drain line for battery room “B” as not being within the scope of license renewal. However, at location E7 of this same drawing, the drainage line from battery room “A” is shown as being within scope. In a letter dated March 21, 2003, the staff requested that the applicant document the basis for concluding that the floor drain line for battery room “B” is not within the scope of license renewal, so that the staff may verify compliance with 10 CFR 54.4(a) (RAI 2.3.3.12-2).

By letter dated May 13, 2003, the applicant responded that the referenced license renewal drawing inadequately depicts the “B” battery room drainage configuration. The room does not contain a floor drain; rather, the floor is sloped to provide gravity drainage to battery room “A.” The configuration of the “A” battery room drainage prevents the backflow of oil or combustible liquids into the battery rooms from external sources. There are no fluid systems in the battery rooms that could be internal flood sources. Therefore, the battery room “B” drainage has no license renewal intended function and is not within scope. The staff determined the applicant’s response was acceptable because it clarified that the battery room “B” drainage does not perform a license renewal intended function and therefore is not included within scope.

2.3.3.12.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. On the basis of this review, the staff concludes, that the applicant has appropriately identified those portions of the treated water system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the treated water system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.13 Radiation Monitoring -- Mechanical

2.3.3.13.1 Summary of Technical Information in the Application

The function of the radiation monitoring system is to detect any plant problem, that may lead to a radiation hazard and/or release of radioactivity to the environment. The system also warns the operators of this hazard so that appropriate actions may be taken. To accomplish this function, the system utilizes both area and process radiation monitors. Some radiation monitors sense parameters and generate signals that interface with engineered safety features actuation (e.g., containment isolation) or are used to monitor for reactor coolant leakage. Others provide automatic non-safety process system control functions as a result of a high alarm. Radiation monitors also ensure control room habitability by generating an isolation signal used to secure the control room ventilation envelope. The control room emergency air treatment system also contains non-nuclear safety toxic gas detection that electrically interfaces with the radiation monitoring systems control room ventilation isolation signal. These toxic gas monitors are included within the evaluation boundary of the radiation monitoring system as non-safety components whose failure could prevent the satisfactory accomplishment of a safety-related function. The radiation monitoring system also contains post-accident monitoring instrumentation that is environmentally qualified. The principal components of the radiation monitoring system include area monitors; process monitors; system-level particulate, iodine, and noble gas monitors (SPING); data acquisition modules (DAM); computer interface and terminal equipment; toxic gas detectors; and the pumps, valves, and essential ductwork and piping necessary for their functioning. Section 11.5 of UFSAR provides a detailed description of all the radiation monitors and their functions.

2.3.3.13.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.13 and UFSAR Sections 6.4.2.2.3, 6.4.5, 11.5, and 12.3.4 to determine whether there is reasonable assurance that the radiation monitoring system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During its review of LRA Section 2.3.3.13, the staff determined that additional information regarding the components on the containment ventilation process radiation monitor skid was needed to complete its review. These components were identified in license renewal boundary drawing 33013-1866-LR, location G11, as being outside the scope of license renewal. The staff believes that these components are passive and long-lived and perform an intended function of providing process conditions and generating signals for reactor trip and engineered safety features actuation, and therefore should be subject to an AMR. Monitors included on the skid are the containment gas monitor, containment iodine monitor, and the containment particulate monitor. Piping and associated fittings and valves that transport the material to be monitored from the containment are subject to an AMR only up to the containment boundary.

The piping that continues inside containment also appears to be needed for the system to perform its intended function. By letter dated March 21, 2003, the staff requested that the applicant clarify whether these components were subject to an AMR or justify their exclusion from the scope of license renewal (RAI 2.3.3.13-1).

By letter dated May 13, 2003, the applicant responded that the piping that continues inside containment is not in scope because it does not provide an intended containment isolation boundary function. Isolation occurs outside of containment. The portion of piping, valve, and components leading to the containment gas, iodine, and particulate monitor skid was conservatively included in the scope of license renewal, although as stated in UFSAR Section 6.2.4.3, the containment ventilation isolation signal serves as a backup to the containment isolation signal and is not specifically credited in the accident analysis.

The staff finds the applicant’s clarification that containment isolation is the only intended function of the radiation monitoring skid equipment acceptable. On the basis of this additional information, the staff concurs that the components on the containment ventilation process radiation monitor skid are not in the scope of license renewal and are not subject to an AMR.

During its review of LRA Section 2.3.3.13, the staff determined that additional information was needed regarding the components on the control room radiation monitor skid in order to complete its review. License renewal boundary drawing 33013-1867-LR shows the control room radiation monitor skid. The only components shown on this skid are radiation monitors. By letter dated March 21, 2003, the staff requested that the applicant confirm that the only components on these skids are the radiation monitors. If this was not the case, the applicant was requested to identify the other components and justify the exclusion of these components from the scope of license renewal and from being subject to an AMR (RAI 2.3.3.13-2).

In a letter dated May 13, 2003, the applicant responded that the radiation monitoring system includes specific components on the control room radiation monitor skid such as valves, pumps, piping, tubing, flow meter, filter housings, and detectors which were evaluated and determined to require an AMR. Drawing 33013-1867-LR shows a box around RE-36/37/38, which represents the skid. The applicant confirmed that all components on the skid are subject to an AMR. During the AMP audit, the staff walked down the control room radiation monitor skid and verified that the skid included: valves, flow meter, filter housing and detectors, and verified that the identified components were included in the applicant's review tool (could be traced back to the LRA) and are subject to an AMR.

By letter dated March 21, 2003, the staff requested several clarifications from the applicant regarding the basis for including or excluding certain SSCs from the scope of license renewal and/or being subject to an AMR (RAI 2.3.3.13 -3).

License renewal boundary drawing 33013-1866-LR, location H9, shows components FT-112, PT-111, and DPS-110 as requiring an AMR. Since these components did not appear to serve a license renewal intended function, the staff questioned whether footnote 1 of Table 2.3.3-13 on page 2-169 of the LRA applies in this instance (RAI 2.3.3.13-3a). This footnote states that selected instruments were conservatively included within the scope of license renewal, with consideration given to the consequences of an instrument housing pressure boundary failure. Where an instrument is unisolable from a pressure source and is of sufficient size that a system function would be degraded should the pressure boundary fail, that instrument is included in the scope of license renewal.

By letter dated May 23, 2003, the applicant responded that including FT-112, PT-111 and DPS-110 as within scope was a typographical error. These components are not in the scope of license renewal. The staff finds this response to be acceptable, on the basis that these components do not serve a license renewal intended function.

The staff also requested clarification regarding apparent differences between the list of license renewal drawings shown on page 2-168 of the LRA and the information on the drawings themselves. According to information provided by the applicant in the LRA, SSCs referenced in the application but not subject to AMR, have drawing and UFSAR references indicated. However, those references are not hypertext linked. The staff incorrectly interpreted this information to mean that drawings that are hypertext linked in a given section show components that are within the scope of license renewal and subject to an AMR. In RAI 2.3.3.13-3b, the staff cited instances where no components on highlighted drawings in the list on page 2-168 were shown as being within scope and subject to an AMR, even though the drawings indicated that the components performed a safety-significant function. For example, on drawing 133013-2287-LR, note 2 states that RE-21 performs a safety-significant detection function. However, neither RE-21 nor the connecting piping was shown as requiring an AMR. On drawing 33013-1278, 2-LR, note 3 states that RE-19 and RM-19 combine to perform a safety-significant detection function, yet neither of these is shown as requiring an AMR.

By letter dated May 23, 2003, the applicant responded by explaining how the drawings indicating which SSCs require an AMR interact with, and are related to, the lists of drawings associated with systems such as those on LRA page 2-168. The color-coded information on the drawing indicates the SSCs that require an AMR. With respect to notes and flags on drawings that indicate safety-significant functions, as detailed in LRA Section 2.1.4 and as clarified in the applicant’s response to RAI 2.3-1, the safety-significant (augmented quality) classification is not in and of itself a basis for inclusion within the scope of license renewal. Thus both the lists of drawings and the drawings themselves are correct, but the drawings that indicate which SSCs require an AMR are generally more useful. The staff finds the applicant’s response to be acceptable on the basis that the explanation clarified regarding how the license renewal drawings and LRA text interact to identify components that are subject to an AMR.

2.3.3.13.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the radiation monitoring system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the radiation monitoring system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.14 Circulating Water

2.3.3.14.1 Summary of Technical Information in the Application

Circulating water (CW) is a nonseismic system, designed to provide a reliable supply of water, regardless of weather or lake conditions, to the suction of the screenhouse pumps. The water supplied is used to condense the steam exhausted from the low-pressure turbines. Those portions of the CW system that support the delivery of lake water sufficient for the use of service water and fire water pumps are evaluated within the service water system. Those portions of the circulating water system that provide circulating water flood detection are evaluated within the reactor protection system. Consequently, within the system evaluation boundary, no components perform license renewal intended functions, and the CW system is not within the scope of license renewal.

The principal components of the CW system are the circulating water pumps, traveling screens, chlorine addition tanks and pumps, and the essential piping and valves. The system includes an intake structure specially designed to minimize the possibility of clogging, an inlet tunnel, four traveling screens, two circulating water pumps, and a discharge canal. The intake tunnel and the intake tunnel bypass (loss of lake valve and bypass piping) are evaluated within the service water system. The intake is designed to withstand, without loss of function, ground accelerations of 0.2 g, acting in the vertical and horizontal planes simultaneously. The probability of water stoppage due to plugging of the inlet has been reduced to an extremely low value by incorporating design features in the system. Before the inlet plenum water reaches the pump suctions, the water passes through the four parallel traveling screens. Service water pump discharge is used to periodically flush the debris off the screens into a collecting trough where it is carried away.

2.3.3.14.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.14 and UFSAR Section 10.6 to determine whether there is reasonable assurance that the CW system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

As stated in LRA Section 2.3.3.14, those portions of the CW system that provide circulating water flood detection are evaluated within the reactor protection system. Also, those portions of the circulating water system that support the delivery of lake water sufficient for the use of the service water and fire water pumps are evaluated within the service water system. In part, 10 CFR 54.21(a)(1) states that components and their intended functions that meet the scoping criteria of 10 CFR 54.4(a) and are subject to an AMR must be identified and listed, so that their aging effects can be adequately managed consistent with the CLB. To confirm that SSCs with intended functions described in the UFSAR using traditional (i.e., CLB) nomenclature have been captured in the license renewal process, the staff needs to identify components from out-of-scope systems that were evaluated as part of the in-scope systems in the information provided in the LRA and the license renewal boundary drawings. In a letter dated March 21, 2003, as part of F-RAI 2.2-1, the staff requested that the applicant identify the components (identified above) from out-of-scope systems in the tables contained in LRA Section 2.3. The staff requested that the applicant identify the components of the CW system that perform intended functions that are evaluated with the service water and reactor protection systems, the intended functions they perform, and if they are subject to an AMR.

In a letter dated June 10, 2003, the applicant responded that the CW system and the SW system share certain components within the scope of license renewal. In the application, the emergency intake from the discharge canal, as well as the combined SW/CW discharge piping, is included in the SW system boundary. The affected components are pipe and valve bodies as listed in Table 2.3.3-5.

The staff reviewed the applicant’s response to RAI 2.2-1 regarding the evaluation of those portions of the CW system that support the delivery of lake water sufficient for the use of the service water and fire water pumps that are evaluated within the SW system. The staff finds the applicant’s response to be acceptable, on the basis that the applicant has adequately identified the components of the CW system that are subject to AMR.

2.3.3.14.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the CW system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the CW system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.15 Chilled Water

2.3.3.15.1 Summary of Technical Information in the Application

The chilled water system supports normal habitability and equipment reliability by maintaining control room and office space temperature within acceptable bounds during normal operating conditions. Accordingly, components within the chilled water system do not perform any license

renewal intended functions, and this system is not within the scope of license renewal. The principal components of the chilled water system are the chilled water pumps, the chiller units, a surge tank, and essential piping and valves. The chilled water system supplies chilled water to the control room HVAC unit and various cooling coils within individual service building HVAC units. Service water removes heat from the chilled water system.

2.3.3.15.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.15 and UFSAR Section 6.4.2.2 to determine whether there is reasonable assurance that the chilled water system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During its review of LRA Section 2.3.3.15, the staff determined that additional information was needed to complete its review. By letter dated March 21, 2003, the staff identified that the chilled water cooling coil for the control room air handling unit shown at location A9 on license renewal boundary drawing 33013-1867-LR is within the scope of license renewal, while a similar cooling coil at location J7 on license renewal boundary drawing 33013-1920 is shown as not being within the scope of license renewal. The applicant was asked to clarify whether this cooling coil is within the scope of license renewal, in accordance with 10 CFR 54.4(a) (RAI 2.3.3.15-1).

By letter dated May 13, 2003, the applicant responded that there is a typographical error on the license renewal drawing 33013-1867-LR. The control room air handling unit housing is in scope, not the coils. The letters should have been colored black on license renewal boundary drawing 33013-1867 at location A9. The housing is included for its pressure boundary function. There are no components on drawing 33013-1920 which are within the scope of license renewal. The staff considers the applicant’s response to be acceptable, on the basis that the chilling coils do not perform an intended function as defined by the Rule.

2.3.3.15.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the chilled water system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the chilled water system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.16 Fuel Handling

2.3.3.16.1 Summary of Technical Information in the Application

The applicant did not consider the fuel handling system to be within the scope of license renewal. This system provides a safe and effective means for transporting and handling reactor fuel from the time the fuel reaches the plant in an unirradiated condition until it is placed in the SFP racks to await final long-term storage. The fuel handling system boundary does not include any cranes, hoists, or lifting devices categorized under NUREG-0612, “Control of Heavy Loads.” Cranes, new and spent fuel storage racks, and the SFP and cavity liners are evaluated separately.

The principal components of the fuel handling system include the new fuel elevator, the underwater air motor driven fuel conveyor car, the pneumatic control assembly equipment for the fuel manipulator cranes, fuel and reactor internals handling tools, control equipment for safety interlocks, and essential valves and air tubing.

Special precautions are taken in all fuel handling operations to minimize the possibility of damage to fuel assemblies during transport to and from the SFP and during installation in the reactor. All handling operations on irradiated fuel are conducted underwater. The handling tools used in the fuel handling operations are conservatively designed, and the associated devices are of a fail-safe design.

In the fuel storage area, administrative controls and geometric constraints ensure that the fuel assemblies are spaced in a pattern which prevents a criticality accident. Also, crane interlocks and administrative controls prevent carrying heavy objects, such as a spent fuel transfer cask, over the fuel assemblies in the storage racks. As an additional administrative control, only one fuel assembly can be handled at a given time over storage racks containing spent fuel. The motions of the cranes that move the fuel assemblies are limited to a relatively low maximum speed. Caution is exercised during fuel handling to prevent fuel assemblies from striking other fuel assemblies or structures in the containment or SFP. The fuel handling equipment suspends fuel assemblies in the vertical position during fuel movements, except when they are moved through the transport tube.

2.3.3.16.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.16 and UFSAR Sections 1.8, 9.1, and 15.7 to determine whether there is reasonable assurance that the fuel handling system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During its review of LRA Section 2.3.3.11, the staff determined that additional information was needed to complete its review. By letter dated March 21, 2003, the staff asked the applicant to identify the components of the fuel handling system that make up the fuel and reactor internals handling tools and control equipment for safety interlocks (including housings and support structures) (RAI 2.3.3.16-1). The applicant was asked to discuss whether the fail-safe features

of these tools could be compromised by wear, impact damage, or other age-related degradation mechanisms. If so, the staff requested justification of the exclusion of this equipment from the scope of license renewal and from being subject to an AMR.

By letter dated May 13, 2003, the applicant responded that components within the fuel handling system which have intended functions are evaluated with the cranes, hoists, and lifting devices system, LRA Section 2.3.3.11. Technical Specification Surveillance Requirement TSR 3.9.3.1 verifies that the refueling manipulator crane interlocks are operable before each refueling operation. The balance of the components in the fuel handling system do not perform any license renewal intended functions. The staff finds the applicant’s response to be acceptable, as it clarifies that the equipment in the fuel handling system does not perform a license renewal intended function.

2.3.3.16.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the fuel handling system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the fuel handling system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.17 Plant Sampling

2.3.3.17.1 Summary of Technical Information in the Application

The plant sampling system provides representative nuclear process system (e.g., primary coolant) and nonnuclear, nonradioactive process system (e.g., condensate) samples for laboratory analysis. Equipment for sampling secondary and nonradioactive fluids is separated from the equipment provided for reactor coolant samples. No components within the plant sampling system evaluation boundary perform license renewal intended functions, and this system is considered not to be within the scope of license renewal. Leakage and drainage resulting from the radioactive sampling operations are collected and drained to tanks located in the waste disposal system. Components associated with containment isolation are evaluated with the containment isolation system. Safety-related interface components (e.g., heat exchangers) are evaluated within the system that is used to remove heat. The principal components of the plant sampling systems include heat exchangers, pumps, tanks, and the essential piping and valves. The two types of samples obtained by the nuclear process sampling portion of the system are (1) high-temperature, high-pressure RCS and steam generator blowdown samples which originate inside the reactor containment, and (2) low-temperature low-pressure samples from the chemical and volume control and auxiliary coolant systems. Typical information obtained from the primary coolant analyses includes reactor coolant boron and chloride concentrations; fission product radioactivity level; corrosion product concentration and chemical additive concentrations; and oxygen, hydrogen, and fission gas content. The nuclear process portion of the sample system also includes a post-accident

sampling system. The post-accident sampling system is designed to allow the station to obtain and analyze reactor coolant, containment air, and containment sump samples within 3 hours after the decision is made to sample.

The post-accident sampling system also permits routine sampling of these process streams. In-line chemical instrumentation is provided in a liquid and gas sample panel that remotely determines important chemical parameters of the reactor coolant, containment air, and containment sump A. In addition, the liquid and gas sample panel enables acquisition of both diluted and undiluted grab samples of the reactor coolant and containment air for isotopic analysis in the counting lab.

The nonnuclear or secondary sampling system is provided with a number of sampling points. In-line analyzers are provided for selected parameters to allow continuous information useful in evaluating secondary conditions and in developing corrective actions when required. Major elements of the nonnuclear process sampling portion of the system include steam generator blowdown sampling, main condenser hotwell sampling, condensate sampling, feedwater sampling, main steam sampling, and heater drain tank sampling. Typical information obtained from secondary sampling includes pH, conductivity, chlorides, sulfate, sodium, ethanolamine and ammonia.

2.3.3.17.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.17 and UFSAR Section 9.3.2 to determine whether there is reasonable assurance that the plant sampling system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

As stated in LRA Section 2.3.3.17, those portions of the plant sampling system that provide containment isolation are evaluated with the containment isolation system. Also, safety-related interface components, (e.g., heat exchangers) are evaluated within the system that is used to remove heat. Another example, in the post-accident sampling system, is the seismic category I component cooling water and control tank purge line tie-ins. In part, 10 CFR 54.21(a)(1) states that components and their intended functions that meet the scoping criteria of 10 CFR 54.4(a) and are subject to an AMR must be identified and listed, so that their aging effects can be adequately managed consistent with the CLB. In order to confirm that SSCs with intended functions described in the UFSAR using traditional (i.e., CLB) nomenclature have been captured in the license renewal process, the staff needs to identify components from out-of-scope systems that were evaluated as part of the in-scope systems in the information provided in the LRA and the license renewal boundary drawings. By letter dated March 21, 2003, as part of RAI 2.2-1, the staff requested that the applicant identify the components from out-of-scope systems (identified above) in the tables contained in LRA Section 2.3. The staff asked that the applicant identify the components of the plant sampling system that perform intended functions that are evaluated with the containment isolation and other systems, the intended functions they perform, and if they are subject to an AMR.

By letter dated June 10, 2003, the applicant responded that for plant sampling, the affected components are addressed in LRA Section 2.3.2.5, containment isolation components. The plant sampling system contains components that act as containment isolation boundaries (valves and pipe). Within the system evaluation boundary, no components, other than those that perform the isolation function, perform any additional license renewal intended functions. Therefore, this method of evaluation of the system components that perform the containment isolation boundary function within the containment isolation system results in the designation of plant sampling as not within the scope of license renewal. The components that are in scope and evaluated with the containment isolation system are shown between the Safety Class 2 flags bounding the containment penetrations on drawings 33013-1278, 1-LR and 33013-1279-LR. The affected components are pipe, valve bodies, delay coil, and flanges as listed in Table 2.3.2-5.

The staff reviewed the applicant's response to RAI 2.2-1 regarding the evaluation of those portions of the plant sampling system that support the containment isolation function. The staff considers the applicant's response to be acceptable, because the components of the plant sampling system that are subject to AMR have been adequately identified.

2.3.3.17.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified those portions of the plant sampling system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified those portions of the plant sampling system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.18 Plant Air

2.3.3.18.1 Summary of Technical Information in the Application

The plant air systems, although supplying valves in safety-related systems, are not designed as safety-related systems. Safety-related systems using instrument air are designed such that upon loss of air pressure, each component will fail in a position of greater safety. Components that require a pneumatic motive of force to achieve a safety function (e.g., pressurizer power-operated relief valves) have nitrogen backup that is evaluated with the system containing those components. Those portions of plant air that act as containment isolation devices are evaluated in the containment isolation system. Consequently, within the system evaluation boundary, there are no components that perform intended functions meeting the scoping requirements of 10 CFR 54.4(a), and the plant air system is not within the scope of license renewal.

The principal components of the plant air system are compressors, tanks, filters, dryers, and the essential piping and valves. The instrument air system supplies clean, dry air for valve

operators, and piping penetration pressurization. The service air system supplies air for maintenance and service use and the backup eductor for vapor extraction of the turbine-generator bearing drains. A backup source of air supply to the instrument air header is from the service air system. The instrument air system produces 120 to 125 psig dry, filtered air used chiefly as the motive power for valve actuation. The system consists of three air compressors with an associated aftercooler and air reservoir for each compressor. Air from the receivers is supplied to the instrument air header through filters and an air dryer. The instrument air header delivers air to the various valve actuators, piping penetration pressurization system, and containment air and proof test system. The service air system produces 115 to 125 psig dry, filtered air used in the maintenance of air connections throughout the station, for fire water storage tank pressurization, and for the turbine lube-oil system. The system consists of one air compressor with an integral after cooler and associated air receivers.

A cross-tie between service air and instrument air allows the service air system to supply the instrument air header if instrument air pressure drops below 90 psig. The cross-tie occurs prior to the instrument air filters. Therefore, air being supplied to the instrument air header will always pass through the filters and dryer. A cross-connect between the service air system and the instrument air system allows both systems to be supplied by a single rotary screw air compressor. A pressure regulator valve will stop air flow to the service air system if pressure on the service air side drops below 100 psig. As an administrative control, the instrument air system and service air system are cross-connected only when one of the rotary screw air compressors is in operation.

2.3.3.18.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.18 and UFSAR Sections 9.3.1 and 3.5.1.3.2.5 to determine whether there is reasonable assurance that the plant air system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

The review confirmed the applicant's determination that the plant air systems, with the evaluation boundaries specified in the LRA and delineated in the accompanying scoping boundary drawings, do not perform an intended function that meets the scoping criteria of 10 CFR 54.4(a). The review also confirmed that the specific components of the plant air systems that the LRA identified as being evaluated with other systems were in fact included as components of other systems within the scope of license renewal.

On the basis of this review, the staff concludes that none of the components of the plant air systems, other than those evaluated within other systems, have intended functions that meet the requirements of 10 CFR 54.4(a). The staff considers the applicant's scoping and screening of the plant air systems to be in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.3.18.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately determined that none of the components of the plant air systems is within the scope of license renewal, as required by 10 CFR 54.4(a) or subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.19 Nonessential Ventilation

2.3.3.19.1 Summary of Technical Information in the Application

The nonessential ventilation system provides heating, ventilation, and air conditioning (HVAC) to nonvital areas and plant equipment. The nonessential ventilation system is not within the scope of license renewal as none of the components of these systems within the license renewal evaluation boundary performs intended functions that meet the criteria of 10 CFR 54.4(a).

The principal components of the nonessential ventilation system include filters, fans, dampers, valves, heat exchangers, conditioning/chiller packages, and the essential ductwork and piping and valves. Fire dampers contained in the system are evaluated as a separate commodity group.

The turbine building, while not requiring an HVAC system, uses roof vent fans, wall vent fans, windows, and unit heaters for ventilation and temperature control. The fans are not supplied by emergency power, and loss of these fans would not be critical to a safe shutdown. Included in the turbine building is the main feedwater pump room. Main feedwater pump equipment cooling systems use a mixture of outside air and room air to control the room and equipment temperatures. No mechanical means of heating or cooling is used. A temperature control system controls the feedwater pump room return air dampers and equipment outside air dampers that admit air to the equipment air supply fan plenum mixed at a setpoint temperature.

The service building ventilation system consists of air handling units serving the various areas of the service building. Air from uncontaminated areas is exhausted through roof exhaust fans. Air from areas of potential contamination, such as laboratories equipped with hoods, is exhausted through the controlled intermediate building controlled access area exhaust fans. Controlled access area fans 1A and 1B include HEPA and charcoal filter banks, a low-flow alarm, dampers, and fans. These fans take suction from the following areas and discharge to the auxiliary building HEPA filter vent which is exhausted by the main auxiliary building exhaust system to the main vent header:

- men's and women's decontamination general areas
- radiation protection and chemistry office general area
- primary sample room general area
- primary sample hood
- primary and secondary sample lab hoods
- hot shop general area

The AVT building ventilation system provides ventilation and heating to maintain required temperatures for the all-volatile-treatment (condensate demineralizer) building and the condensate booster pump area of the turbine building.

The evaluation boundary for the nonessential ventilation system also includes baseboard circulating radiant heat in the service building and any HVAC equipment associated with non-safety buildings not used in direct support of power production (e.g., engineering building, Butler building, records management (steam generator) building, etc.).

2.3.3.19.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.19 and UFSAR Sections 9.4.5 through 9.4.7 to determine whether there is reasonable assurance that the nonessential ventilation system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of the review, the staff selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of license renewal. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted. As stated in the applicant's response to RAI 2.2-1 (discussed in Section 2.2 of this SER), fire dampers contained in the nonessential ventilation systems are evaluated as a separate commodity group.

The review confirmed the applicant's determination that the nonessential ventilation system, with the evaluation boundaries specified in the LRA and delineated in the accompanying scoping boundary drawings, does not perform an intended function that meets the scoping criteria of 10 CFR 54.4(a). The review also confirmed that the specific components of the nonessential ventilation system that the LRA identified as being evaluated with other systems were in fact included as components of other systems within the scope of license renewal.

On the basis of this review, the staff concludes that none of the components of the nonessential ventilation system, other than those evaluated with other systems, have intended functions that meet the requirements of 10 CFR 54.4(a). The staff considers the applicant's scoping and screening of the nonessential ventilation system to be in accordance with the requirements of 10 CFR 54.4(a), and 10 CFR 54.21(a)(1).

2.3.3.19.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately determined that none of the components of the nonessential ventilation system is within the scope of license renewal, as required by 10 CFR 54.4(a) or subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.20 Site Service and Facility Support

2.3.3.20.1 Summary of Technical Information in the Application

The site service and facility support systems evaluation boundary includes domestic (potable) water, domestic hot water, and the site sewage transfer to the municipal treatment system. This system is not within the scope of license renewal as components within the site service and facility support systems do not perform intended functions that meet the scoping criteria of 10 CFR 54.4(a). The principal components of the site service and facility support systems include heat exchangers, hot water heaters, pumps, and essential piping and valves. Domestic water is used for drinking, showers, eye wash stations, and various domestic applications. The sewage transfer system pumps collected sanitary discharges from the site to the municipal sanitary header offsite. The sewage transfer system does not interconnect with any potentially radioactive systems, so no radiation monitoring is required.

2.3.3.20.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.20 and UFSAR Sections 1.2.6 and 1.2.12 to determine whether there is reasonable assurance that the site service and facility support system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

The review confirmed the applicant’s determination that site service and facility support systems do not perform intended functions that meet the scoping criteria of 10 CFR 54.4(a). On the basis of this review, the staff concludes that the applicant’s scoping and screening of the site service and facility support systems is in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.3.20.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the components of the site service and facility support systems that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the components of the site facility and support systems that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.3.21 Evaluation Findings

On the basis of this review, the staff concludes that, pending satisfactory resolution of Open Items 2.3.3.2-1, 2.3.3.3-1, and 2.3.3.6-1, and Confirmatory Items 2.3.3.2-1, 2.3.3.5-1, and 2.3.3.10-1, the applicant has adequately identified the auxiliary systems and components that are within the scope of license renewal, in accordance with the requirements of 10 CFR 54.4(a), and that the applicant has adequately identified the auxiliary systems and components that are subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.4 Steam and Power Conversion Systems

The steam and power conversion systems consist of the main and auxiliary steam, main feedwater and condensate, auxiliary feedwater, steam generator, turbine generator and support systems, and the associated components.

2.3.4.1 Main and Auxiliary Steam

2.3.4.1.1 Summary of Technical Information in the Application

The main and auxiliary steam system provides heat removal from the RCS during normal, accident, and post-accident conditions. During off-normal conditions, the system provides emergency heat removal from the RCS using secondary heat removal capability. Some non-safety-related portions of piping in the system have failure modes which could prevent the satisfactory accomplishment of safety-related functions (high-energy line breaks). The system is also credited for safe shutdown following SBO and some fire events and contains components that are part of the Environmental Qualification Program. Selected safety valve discharge vent piping is considered non-safety equipment whose failure could affect a safety function due to its importance in directing steam flow out of a safety-related area. The conversion of the heat produced in the reactor to electrical energy is evaluated in the discussion of the turbine generator system (Section 2.3.4.4).

The principal components of the main steam portion of the system include the secondary side of two steam generators, where the main steam lines begin. Each steam line has a flow restrictor, four main steam safety valves, an atmospheric dump valve, and a steam admission valve to the turbine-driven auxiliary feedwater (TDAFW) pump. The two steam lines join together in the intermediate building before entering the turbine building. Each steam line is also equipped with a fast-closing main steam isolation valve (MSIV) and a main steam nonreturn check valve. These valves prevent reverse flow in the steam lines which would result from an upstream steam line break, or they isolate any downstream steam line break at the common header. The atmospheric relief valves (ARVs) have two functions. They offer overpressure protection to the steam generator at a setpoint below the main steam safety valve (MSSV) setpoints and can be used to maintain no-load T_{AVG} or perform a plant cooldown in the event the steam dump to the condenser is not available.

The principal components of the auxiliary steam portion of the system include the piping valves and tanks in the extraction steam and steam generator blowdown subsystems. In extraction steam, five stages of extraction are provided -- two from the high-pressure turbine, one of which is the exhaust, and three stages from the low-pressure turbines. There are also two steam dump lines with four relief valves each to the condenser.

Continuous steam generator blowdown is used to reduce the quantities of solids that accumulate in the steam generators as a result of the boiling process. The blowdown recovery system is designed to recover both the blowdown water and heat. Each steam generator has a blowdown header located at the bottom of the shell side just above the tubesheet. Both steam generators are equipped with independent blowdown piping from the connecting steam generator nozzles to a flash tank. The piping transports the removed fluid and entrapped debris away from the steam generator, through containment penetrations, to a common flash tank in the turbine building basement. Flashed steam is vented from the flash tank to low-pressure feedwater heater 3A for heat recovery. The vented steam condenses in the feedwater heater and returns to the condenser through the feedwater heater drain system. The remaining condensate in the blowdown flash tank is drained directly to condenser 1B through a level control valve.

2.3.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.1 and UFSAR Sections 5.4.6, 10.1.1, 10.3, and 10.7 to determine whether there is reasonable assurance that the main and auxiliary steam system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During its review of LRA Section 2.3.4.1, the staff determined that additional information regarding the safe shutdown motive force (i.e., nitrogen bottles) for the atmospheric dump valves, also referred to as ARVs, was needed to complete its review. Section 10.3.2.5 of the Ginna UFSAR states that “backup supply (to the ARVs) is provided by two non-seismic nitrogen supply systems in the event that a loss of offsite power causes loss of the instrument air system.” License renewal boundary drawing 33013-1231-LR identifies the nitrogen bottles, associated tubing, piping, and valves as subject to an AMR. However, Table 2.3.4-1 of the LRA does not list the nitrogen bottles of interest as requiring an AMR. Since the UFSAR identifies the nitrogen bottles as a power supply for the atmospheric dump valves, and the dump valves are required for safe shutdown, the staff believes the nitrogen supply is within the scope of license renewal per 10 CFR 54.4(a) and is subject to an AMR per 10 CFR 54.21(a)(1). By letter dated March 21, 2003, the staff requested that the applicant explain the apparent omission of nitrogen bottles from being subject to an AMR (RAI 2.3.4.1.-1). If the nitrogen bottles are considered to be consumable, the staff requested a description of the replacement program.

In a letter dated May 13, 2003, the applicant responded that the nitrogen bottles are in the scope of license renewal with no aging management program required since they are a commodity item, replaced on condition. A daily operation log check, per Ginna procedure O-6.11 is performed, and if the pressure is found to be less than 1000 psi, the bottle is changed. The staff finds the applicant’s response to be acceptable, on the basis that the nitrogen bottles are a consumable item that are replaced according to specified criteria, as documented in the letter from Stephen S. Koenick, NRC, to the NEI entitled, “Summary of the December 8, 1999 Meeting on License Renewal Issue (LR) 98-12, ‘Consumables,’” January 12, 2000.

During the review of the license renewal boundary drawings associated with the main steam system, the staff determined that additional information was needed regarding ending the licensing renewal boundary at normally open valves (see license renewal boundary drawing 33013-1232-LR at locations E7 and F7 and 33013-1277, 1-LR, at locations C5 and H5). In the LRA on page 2-19, the applicant states, the following:

> The LR evaluation markups for a system have typically been extended to the first normally closed manual valve, check valve or automatic valve that gets a signal to go closed. A normally open manual valve has also been used as a boundary in a few instances where a failure downstream of the valve has no short term effects, can be quickly detected, and the valve can be easily closed by operators to establish the pressure boundary prior to any adverse consequences. However, for station blackout (SBO), Appendix R, high-energy line break (HELB), and flooding events, the license renewal boundaries for a system have been defined consistent with the boundaries established in the CLB evaluations. Those boundaries do not always coincide with an isolation device.

By letter dated March 21, 2003, the staff requested that the applicant provide a brief discussion of the steps for closing the valves during events such as HELBs, SBO, and fires, the amount of time required to complete these steps, and any other pertinent information to justify an open boundary at these valves (RAI 2.3.4.1-2). Similarly, the staff requested justification for the exclusion of several branch lines depicted on license renewal drawing 33013-1232-LR (see locations B6 and E6) from being subject to an AMR (RAI 2.3.4.1-3). Failure of these branch lines may affect the pressure boundary intended function of the main steam line.

In a letter dated May 13, 2003, the applicant responded that an explanation is included in Note 3 of the drawing which states, "In accordance with EWR 5114, 30" and 24" main steam lines up to and including valves 3544 and 3545 as well as the 12" lines up to and including valves 3532 and 3533 are safety significant class for high-energy consideration only. Class boundary for all branch lines is at the connection to the main piping." The Ginna station is designed to withstand the effects of HELB on all other piping segments, and therefore no isolation is required. The applicant pointed out that the NRC reviewed and accepted the analyses and facility design modifications for HELBs outside containment, and that acceptance is documented in a letter dated August 24, 1979, to L.D. White, Jr., RG&E, subject: Amendment No. 29 to License No. DPR-18. With regard to RAI 2.3.4.1-3, the applicant referred to the NRC letter dated August 24, 1979. The applicant further stated that the HELBs were subsequently identified on the main steam and feedwater system P&ID's through EWR 5114. The staff finds the applicant's response to be acceptable, on the basis that the applicant's position is consistent with the CLB of the Ginna plant.

During the review of license renewal drawing 33013-1231-LR, the staff identified flanged flexible hose connections that are shown to be subject to an AMR (see locations C7 and I7). However, Table 2.3.4-1 of the LRA does not contain an entry for this component type. By letter dated March 21, 2003, the staff requested that the applicant clarify if flanged flexible hose connections are considered to be part of the component group "pipe" or some other component type listed in Table 2.3.4-1, and if not, justify the exclusion of these components from the scope of license renewal (RAI 2.3.4.1-4).

In a letter dated May 13, 2003, the applicant responded that the flanged flexible hose connections are considered as part of the component group "pipe." The staff finds the applicant's response to be acceptable, on the basis that it clarifies that the flanged flexible hose connections are subject to an AMR.

During the review of license renewal drawing 33013-1231-LR, the staff identified at location E8 a screwed cap that is shown as being subject to an AMR because it serves as a pressure boundary intended function. However, a similar screwed cap at location I8 is not shown as being subject to an AMR. By letter dated March 21, 2003, the staff requested that the applicant clarify if this is a drafting error or if this segment of piping was intentionally shown as not subject to an AMR (RAI 2.3.4.1-5).

In a letter dated May 13, 2003, the applicant responded that this is a typographical error. The screwed cap at location I8 is in scope and is subject to an AMR. The staff finds the applicant's response to be acceptable, as it explains that the component was omitted because of a typographical error and clarifies that the screw cap is subject to an AMR.

During the review of Table 2.3.4-1 of the LRA, the staff identified "operator" as a component group that requires an AMR. However, the referenced drawings for the main and auxiliary steam systems do not show any valve operators as requiring an AMR. By letter dated March 21, 2003, the staff requested that the applicant clarify whether the operator listed in Table 2.3.4-1 is associated with the atmospheric dump or relief valve (valves 3410 and 3411) (F-RAI 2.3.4.1-6).

In a letter dated May 13, 2003, the applicant confirmed that the operator listed in Table 2.3.4-1 is associated with the atmospheric dump and relief valves 3410 and 3411. Furthermore, the applicant stated that the operators should be shown as requiring AMR on drawing 33013-1231-LR for these two valves. Thus, this is a typographical error. The staff finds the applicant's response to be acceptable, as it explains that the operators were omitted because of a typographical error and clarifies that the operators are subject to an AMR.

2.3.4.1.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the components of the main and auxiliary steam systems that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the components of the main and auxiliary steam systems that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.2 Feedwater and Condensate

2.3.4.2.1 Summary of Technical Information in the Application

The feedwater and condensate systems function to condense the steam exhausted from the low-pressure turbines, collect and store this condensate, and then send it back to the steam generator for reuse. Components within the system are used to provide emergency heat removal from the RCS using secondary heat removal capability. The engineered safety features actuation system (ESFAS) provides actuation signals for feedwater isolation. Portions of the main feedwater piping systems in the intermediate building and the turbine building have

failure modes and effects which could prevent the satisfactory accomplishment of a safety-related function HELBs. The feedwater lines are equipped with a nonreturn check valve and an isolation valve in each line. The nonreturn valve is the boundary between Seismic Category I and nonseismic feedwater piping and prevents the steam generator from blowing back through the feedwater lines if damage occurs to the nonseismic portion. Components within the feedwater and condensate system are also credited for use in safe shutdown following SBO events and some fires. Additionally, components within the system perform functions used to mitigate anticipated transients without a scram (ATWS) and components that are part of the Environmental Qualification Program.

The principal components of the feedwater and condensate system are the feedwater and condensate pumps, the feedwater regulating and bypass valves, the feedwater heaters, and the essential piping and valves. The steam that leaves the exhaust of the low-pressure turbines enters the main condenser as saturated steam with low moisture content. This steam is condensed by the circulating water, which passes through the tubes of the condenser. The condensed steam collects in the condenser hotwell from which the condensate pumps take suction. The condensate pumps increase the pressure of the water and provide suction head for the condensate booster pumps. The condensate booster pumps, in turn, provide sufficient suction head for the main feedwater pumps. Between the condensate pumps and the condensate booster pumps is the condensate demineralizer system, which maintains condensate water purity. The condensate booster pumps flow condensate through the condensate cooler, hydrogen coolers, air ejector condensers, gland steam condenser, and low-pressure heaters to the suction of the feedwater pumps. The feedwater pumps send feedwater through the high-pressure heaters to the steam generators via the feedwater regulating valves.

2.3.4.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.2 and UFSAR Sections 5.4.6, 10.1.1, and 10.4 to determine whether there is reasonable assurance that the feedwater and condensate system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During the review of license renewal boundary drawing 33013-1236, 2-LR, the staff determined that additional information regarding flow transmitters was needed to complete its review. One flow transmitter is shown as being subject to an AMR, but others on the drawing are not. Note 5 on the drawing indicates that these flow transmitters are considered “safety significant” class for pressure boundary considerations. Note 1 to Table 2.3.4-2 of the LRA indicates that selected instruments were conservatively included in the scope of license renewal if the instrument is unisolable from a pressure source and is of sufficient size that a system function would be degraded should the pressure boundary fail. Although the transmitters in question appear to be isolable, the instrument line size is not indicated. By letter dated March 21, 2003, the staff requested that the applicant briefly discuss the justification for these specific transmitters not being subject to an AMR (RAI 2.3.4.2 -1).

In a letter dated May 13, 2003, the applicant responded that flow transmitter FT 466 at location B4 is shown to be subject to an AMR due to a typographical error; therefore, FT 466 is not within the scope of license renewal. Flow transmitters are considered active devices and do not require an AMR. The staff finds the applicant's response to be acceptable because it acknowledges that the flow transmitter in question was incorrectly identified as subject to an AMR due to a typographical error.

During the review of LRA Section 2.3.4.2 and Ginna UFSAR Section 15.1.1.1, the staff determined that additional information regarding the main feedwater regulating valve was needed to complete its review. By letter dated March 21, 2003, the staff asked the applicant to clarify why the operator to the main feedwater regulating valve is not subject to AMR, while other operators are included in the scope of license renewal and subject to an AMR (F-RAI 2.3.4.2-2). The operator in question is credited for isolation in the CLB analysis presented in Section 15.1.1.1 of the UFSAR.

In a letter dated May 13, 2003, the applicant responded that the operators to the main feedwater regulating valves are not subject to AMR because those valves fail to the safe position (closed) on loss of operator pressure boundary, thus providing the feed regulating valve isolation function. The steam generator atmospheric relief valves and pressurizer PORVs must operate both open and closed to satisfy their safety functions; thus, the operators and their associated pressure boundaries provide a license renewal intended function and require an AMR. The staff finds the applicant's response to be acceptable, as the operators do not perform an intended function per the scoping criteria of 10 CFR 54.4(a).

2.3.4.2.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the components of the feedwater and condensate systems that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the components of the feedwater and condensate systems that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.3 Auxiliary Feedwater

2.3.4.3.1 Summary of Technical Information in the Application

The AFW system is designed to maintain the steam generator water inventory when the normal feedwater system is not available. During accident and post-accident conditions, the AFW system supplies feedwater to the steam generators in order to provide emergency heat removal from the RCS using secondary heat removal capability (atmosphere or main condenser). The AFW system is also credited for use in mitigating ATWS, and safe shutdown following SBOs and some fires.

The principal components of the AFW system are electric-motor-driven and steam-turbine-driven pumps, the turbine-driven feedwater pump (TDAFW) oil system, and the essential piping and valves. The preferred AFW system is divided into two independent trains. Two motor-driven pumps are powered from separate redundant 480-V safeguard emergency buses which can receive power from either onsite or offsite sources. Each motor-driven pump can provide 100 percent of the preferred AFW system flow required for decay heat removal and can be cross-connected to provide flow to either steam generator. There is also a turbine-driven pump which can receive motive steam from each steam line and provide flow to either or both steam generators. The turbine-driven pump provides 200 percent of the flow required for decay heat removal.

An SAFW system provides flow in case the preferred AFW system pumps are inoperable (e.g., an HELB event could render inoperable the three preferred AFW pumps). The SAFW uses two motor-driven pumps which can be aligned to separate service water system loops. The SAFW has the same features as the preferred auxiliary feedwater system pumps with regard to functional capability and power supply separation. The system is manually actuated from the control room.

The CSTs are the normal (preferred) suction source for delivery of cooling water to the steam generators. The safety-related supply is from the plant service water system with the fire water system as a backup source.

2.3.4.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.3 and UFSAR Sections 7.2.6, 10.5, 10.7.4, and Table 6.2-15a to determine whether there is reasonable assurance that the AFW system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

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

During the review of license renewal boundary drawing 33013-1234-LR, the staff determined that additional information was needed regarding the condensate storage tanks (CSTs). The manways on CSTs "A" and "B" are shown to be subject to an AMR; however, they are not listed in Table 2.3.4-3. A 6-inch vent on the top of CSTs "A" and "B" is not shown to be subject to an AMR. By letter dated March 21, 2003, the staff asked the applicant to explain why manways are not included in the subject table, and why the vent is not subject to an AMR, or to indicate whether there is an alternate means to provide vacuum protection for this tank (RAIs 2.3.4.3-1 and 2.3.4.3-2).

In a letter dated May 13, 2003, the applicant responded that the manways on CSTs "A" and "B" which are shown in scope on drawing 33013-1234-LR are evaluated as part of the tank. The applicant further stated that all manways were evaluated as part of the associated tank with the exception of the pressurizer where the manway construction is unique (bolted loose liner versus integral or weld overlay clad on vessel interior). With regard to the 6-inch vent, the applicant stated that there is no credible aging effect that would cause a large vent to fail in a manner

which would create a tight seal on top of these tanks. Therefore the 6-inch vents were not included within the scope of license renewal. The staff finds the applicant's responses to be acceptable as the manways were evaluated as part of their associated tank and no credible aging effect could cause the 6-inch vents to fail in a way that would affect tank operation.

During the review of license renewal boundary drawing 33013-1234-LR, the staff determined that additional information was needed regarding ending the license renewal boundary for AMR at a normally open valve (valve 4047 at location I5). The staff noted that a piping class change occurs at this valve. The note on page 2-19 of the LRA indicates that normally open manual valves are used as a boundary if failure of the downstream piping has no short-term effects, can be quickly detected, and can be easily closed by the operators to establish the pressure boundary before any adverse consequences occur. The staff was unable to determine which of these cases apply for this particular valve. By letter dated March 21, 2003, the staff requested that the applicant explain why it is acceptable to terminate the license renewal boundary at this normally open valve (RAI 2.3.4.3-3).

In a letter dated May 13, 2003, the applicant responded by referring to Section 2.1.7.1 of the LRA, which states for SBO, Appendix R, HELB, and flooding events, the license renewal boundaries for a system have been defined consistent with the boundaries established in the CLB evaluations. Those boundaries do not always coincide with a closed isolation device. Valve 4047 is used to establish an SBO boundary that envelops the CSTs. Should the need arise, operating procedures reconfigure the valve to closed and establish a boundary so that the tanks can be refilled from various sources (in scope of license renewal). In this manner, a steady supply source or the turbine-driven AFW pump is maintained for the required SBO coping duration. The staff finds the applicant's response to be acceptable, on the basis that sufficient time and approved procedures exist to close the valves in question if necessary.

During review of license renewal boundary drawing 33013-1237-LR, the staff determined that additional information regarding flow elements was needed to complete its review. Flow elements at locations F9, I7, and J8 are shown to be subject to an AMR; however, flow element FE 2006 at location I10 is not. By letter dated March 21, 2003, the staff requested that the applicant clarify if this is a typographical error, or justify its exclusion from an AMR (RAI 2.3.4.3-4).

In a letter dated May 13, 2003, the applicant responded that this is a typographical error. Flow element FE 2006 at location I10 is in the scope of license renewal and should have been shown on the drawing as requiring an AMR. The staff finds the applicant's response to be acceptable, as it acknowledges that flow elements are subject to an AMR.

During a review of Table 2.3.4-3 of the LRA, the staff determined that additional information regarding the component group "governor" was needed to complete its review. In the table, a "governor" is indicated to be subject to an AMR. After review of the various documents and drawings, the staff was unable to identify which "governor" or "governors" are intended to be subject to an AMR. By letter dated March 21, 2003, the staff asked the applicant to clarify which valve governor or governors are intended by the component group listed in Table 2.3.4-3 (RAI 2.3.4.3-5).

In its response dated May 13, 2003, the applicant stated that the governor for valve 9519E, should have been shown as requiring an AMR on drawing 33013-1231-LR, since it is within the

scope of license renewal. This is a typographical error. The governor for valve 9519E is the only component applicable to the group governor listed in Table 2.3.4-3. The staff finds the applicant's response to be acceptable, on the basis that the valve governor in question was omitted due to a typographical error but is now acknowledged to be subject to an AMR.

During review of relevant portions of the Ginna UFSAR, the staff determined that additional information regarding yard fire hydrant connections was needed to complete its review. Section 10.5.3.1.4 of the Ginna UFSAR states that connections have been provided allowing the use of the yard fire hydrant system to fill the CSTs as a source of water for the motor-driven and turbine-driven pumps. The staff could not identify these connections on the license renewal boundary drawings. Based on the statement in the UFSAR, it appears that the hydrant connections should be within the scope of license renewal and subject to an AMR. By letter dated March 21, 2003, the staff requested that the applicant explain why such connections do not require an AMR (RAI 2.3.4.3-6).

In a letter dated May 13, 2003, the applicant responded that this is a typographical error. The use of the yard fire hydrant system to fill the CSTs is documented in Ginna Emergency Response Procedure ER-AFW.1. This procedure specifies running the fire hose from hose reel #2 and connect at valve 4049C. Hose reel #2 (shown on drawing 33013-1990, 2), along with the yard fire hydrant system piping, is included in the scope of license renewal and is shown within the drawings listed for the fire protection system in LRA Section 2.3.3.6. The fire system piping connection shown on drawing 33013-1234, at location H7, is shown incorrectly as black, and is a typographical error. The staff finds the applicant's response to be acceptable, on the basis that the connections were omitted due to a typographical error but are now acknowledged to be subject to an AMR.

2.3.4.3.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the components of the auxiliary feedwater system that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the components of the auxiliary feedwater system that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.4 Turbine Generator and Supporting Systems

2.3.4.4.1 Summary of Technical Information in the Application

The turbine generator and supporting systems function to convert the energy of the heat contained in the main steam into mechanical energy for use in turning the electric generator. These systems have no safety-related functions. Turbine first-stage pressure instruments provide a signal used in ATWS mitigation system actuation circuitry (AMSAC).

The plant subsystems with a boundary of the turbine generator and supporting systems include the high- and low-pressure turbine generator and controls, the main electrical generator, the electro-hydraulic control system, the turbine lube oil system, condenser air ejector and vacuum priming, generator hydrogen cooling, and generator seal oil systems.

The principal components of the turbine generator systems include turbines, the main generator, pumps, tanks, heat exchanges, and the essential piping and valves. The main turbine is made up of one high-pressure and two low-pressure turbines, all mounted on a common shaft. The steam flowpath is first through the high-pressure turbine, then in a parallel path to the two low-pressure units via the four moisture separator reheaters. High-pressure steam is admitted to the high-pressure turbine through two stop and four governing control valves. These valves are controlled by the electro-hydraulic control system. Turbine supervisory instrumentation is provided to monitor turbine vibration, eccentricity, and differential thermal expansion and provide alarms in the control room in the case of abnormal conditions.

The main turbine is supported by a number of auxiliary systems that improve the efficiency and safety of its operation. First- and second-stage air ejectors remove air and noncondensible gases from the condenser and maintain it under a vacuum, improving the efficiency of the main turbine by reducing the backpressure seen by the turbine exhaust. The gland sealing and exhaust system applies steam to a labyrinth seal around the rotor shaft to preclude air in-leakage into the turbine casings and condenser and to prevent steam leakage into the turbine building. The vacuum priming system uses mechanical vacuum pumps to prevent air buildup in the condenser water boxes or tubes, a condition that would reduce condenser efficiency. The exhaust hood spray prevents overheating of the last-stage, low-pressure blading under low-steam flow conditions. The turbine lube-oil system provides lubrication and cooling of the turbine bearings and supplies oil to the auto-stop header for turbine protection. It also provides backup oil to the seal-oil system to prevent hydrogen leakage into the turbine building. A purification system is an adjunct to the turbine lube-oil system to remove water and contaminants from the lube-oil, as well as to provide storage space for makeup oil. The generator auxiliary systems are required to ensure that the main generator will operate safely and efficiency at its maximum rated output. This is accomplished by cooling the generator rotor, stator, exciter, main output bushings, and the isophase bus ducts. Pressurized hydrogen is circulated by the internal ventilation of the generator to remove heat produced in the rotor and stator. The hydrogen then transfers this heat to hydrogen coolers which are supplied with cooling water from the condensate system. To prevent the escape of hydrogen along the generator shaft and out of the casing, a seal-oil system is utilized. The air-side seal-oil pump and the hydrogen-side seal-oil pump provide oil for sealing at pressure higher than generator hydrogen pressure. The main turbine oil system can provide a backup source of pressurized seal oil.

2.3.4.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.4 and UFSAR Sections 7.2.6 and 10.2 to determine whether there is reasonable assurance that the turbine generator and supporting system components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of the review, the staff selected system functions described in the UFSAR that were required by 10 CFR 54.4 to verify that components having intended functions were

not omitted from the scope of license renewal. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

During its review of Section 2.3.4.4 and the Ginna UFSAR, the staff determined that additional information regarding the turbine stop valves was needed to complete its review. Section 7.2.6 of the Ginna UFSAR states that the AMSAC is a non-Class 1E system designed to trip the turbine and start the AFW pumps if main feedwater flow is lost with reactor power above 40 percent. The valves and piping associated with the pressure transmitters have been included in the scope of license renewal and are listed in LRA Table 2.3.4-4 as being subject to an AMR. Section 2.3.4.4 of the LRA states that pressure sensors for the turbine first-stage pressure provide a signal used in the AMSAC. The turbine stop valves are also identified as being subject to an AMR on license renewal boundary drawing 33013-1232 at locations B6 and E6. However, the LRA system function listing for code Z4 does not cite the turbine stop valves as having an ATWS intended function. Intended functions should be identified in accordance with the requirements of 10 CFR 54.4(a)(3). By letter dated March 21, 2003, the staff requested that the applicant clarify the intended function of the turbine stop valves that led to their inclusion in the scope of license renewal and to their being subject to an AMR (RAI 2.3.4.4-1).

In a letter dated May 23, 2003, the applicant responded that, in accordance with 10 CFR 50.62, the scope of ATWS includes “equipment from the sensor output to final actuation device...to...initiate a turbine trip....” For the Ginna station, that equipment includes the turbine first-stage pressure sensors (sensor output) to the turbine auto stop trip solenoids (final actuation device). The turbine stop valves are in the scope of license renewal according to 10 CFR 54.4(a)(2), in that they are the boundary valves for high-energy piping, the failure of which could cause damage to safety-related equipment in the intermediate building, which is adjacent to the turbine building in which the turbine stop valves are located. The staff finds the applicant’s response to be acceptable, on the basis that the turbine stop valves are within the scope of license renewal because they are boundary valves.

2.3.4.4.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the components of the turbine generator and supporting systems that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the components of the turbine generator and supporting systems that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.3.4.5 Evaluation Findings

On the basis of this review, the staff concludes that there is reasonable assurance that the applicant has appropriately identified the steam and power conversion systems and components that are within the scope of license renewal, in accordance with the requirements of 10 CFR 54.4(a), and that the applicant has appropriately identified the steam and power

conversion system components that are subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.4 Scoping and Screening Results: Structures

This section addresses the scoping and screening results of structures for license renewal. The structures consist of the following:

- containment structures (2.4.1)
- auxiliary building (2.4.2.1)
- intermediate building (2.4.2.2)
- turbine building (2.4.2.3)
- diesel building (2.4.2.4)
- control building (2.4.2.5)
- all volatile water treatment building (2.4.2.6)
- screenhouse building (2.4.2.7)
- standby auxiliary feedwater building (2.4.2.8)
- service building (2.4.2.9)
- cable tunnel (2.4.2.10)
- essential yard structures (2.4.2.11)
- component supports commodity group (2.4.2.12)
- nonessential buildings and yard structures (2.4.3)

Per 10 CFR 54.21(a)(1), an applicant must identify and list structures and components subject to an AMR. These are passive, long-lived structures and components that are within the scope of license renewal. To verify that the applicant has properly implemented its methodology, the staff focuses its review on the implementation results. Such a focus allows the staff to confirm that there is no omission of structural components that are subject to an AMR. If the review identifies no omission, the staff has the basis to find that there is reasonable assurance that the applicant has identified the structural components that are subject to an AMR.

2.4.1 Containment Structures

2.4.1.1 Summary of Technical Information in the Application

The applicant describes the containment structure in LRA Section 2.4.1 and provides a list of components subject to an AMR in LRA Table 2.4.1-1.

The reactor containment structure is a reinforced concrete, vertical right cylinder with a flat base and a hemispherical dome. The structure houses and supports safety-related equipment, provides radiation shielding, and a barrier against the release of radioactive nuclides. A welded steel liner is attached to the inside face of the concrete shell to ensure a high degree of leak tightness. The thickness of the liner in the cylinder and dome is 3/8 inch and in the base is 1/4 inch. The cylindrical reinforced concrete walls are 3 feet 6 inches thick, and the concrete hemispherical dome is 2 feet 6 inches thick. The concrete base slab is 2 feet-thick with an additional 2 feet-thick concrete fill over the liner plate. The containment structure is 99 feet high to the spring line of the dome and has an inside diameter of 105 feet. The containment vessel provides a minimum free volume of approximately 972,000 cubic feet.

Access to the containment structure is provided by means of two airlocks designed with an interlocked single-door-opening feature that is leak testable at containment design pressure between doors. One airlock is removable so that large equipment can be moved into and out of containment. The major components of the RCS are located within the containment structure. The containment structure provides a physical barrier to protect the equipment from natural disasters and shielding to protect personnel from radiation emitted from the reactor core while at power. Thick reinforced concrete walls are located around selected RCS components to serve as shielding for plant personnel. These walls also serve as a missile barrier to prevent damage to the containment wall and to components of the SI system should a failure occur in one of the RCS components located inside the walls.

The containment structure also provides housing and interfaces with equipment and component supports. Major component supports include the reactor vessel, steam generators, reactor coolant pumps, and the pressurizer. The component supports are attached either to the concrete foundation, concrete floor slabs, or shield walls through steel embedments or structural steel members encased in concrete. The containment structure consists of a reinforced concrete cylinder post-tensioned in the vertical direction and reinforced circumferentially with mild steel deformed bars. The dome is hemispherical and constructed of reinforced concrete. The base slab and ring beam support the dome and cylinder walls. The ring beam rests directly on rock and is the location of the end anchorage for the rock anchors. No drainage or de-watering system is provided under the containment structure. The base of the cylinder is supported by a neoprene pad, which provides a hinge support at the base. The vertical post-tensioning system is anchored at the base of the cylinder to rock anchors. The rock anchors are post-tensioned and grouted, which ensures that the rock acts as an integral part of the containment.

A tendon surveillance program, in accordance with RG 1.35, Revision 2, is required by the station technical specifications. Provision is made to periodically monitor leakage by pressurizing the penetrations and containment. The containment structure and all penetrations are designed to withstand, within design limits, the combined loadings of the design-basis accident and design seismic conditions. All piping systems that penetrate the containment are anchored in the penetration sleeve or the structural concrete of the containment structure. The penetrations for the main steam, feedwater, blowdown, and sample lines are designed so that the penetration is stronger than the piping system and the containment will not be breached due to a postulated pipe rupture. For mechanical penetrations that interface with hot fluid systems, a containment penetration cooling system is used to prevent the bulk concrete temperature surrounding the penetrations from exceeding 150 °F. Containment electrical penetrations are designed so the containment structure can, without exceeding the design leakage rate, accommodate the postulated environment resulting from a LOCA. The electrical penetrations have been shown to maintain structural integrity when subjected to mechanical stresses caused by large magnitude fault currents.

A fuel transfer penetration is provided for fuel movement between the refueling transfer canal in the reactor containment and the SFP. The penetration consists of a stainless steel pipe installed inside a larger pipe. The inner pipe acts as the transfer tube and connects the refueling canal with the SFP. The tube is fitted with a standard stainless steel flange in the refueling canal and a stainless steel sluice gate valve in the SFP. The outer pipe is welded to the containment liner. The fuel transfer penetration, like all other penetrations, is anchored in the containment shell. Because this anchor point moves when the containment vessel is

subjected to load, expansion joints are provided where the penetration is connected to structures inside and outside of the containment vessel. The expansion bellows inside the containment vessel provide a water seal for the refueling canal and accommodate thermal growth of the penetration from the anchor, as well as the pressure and earthquake produced motion of the anchor (the containment shell). The expansion joint accommodates motion of the sleeve within the containment shell relative to the portion of the sleeve anchored in the wall of the refueling canal in the auxiliary building.

The containment structure contains racks, panels, electrical enclosures, and equipment supports. Additionally the structure contains radiant heat shields and a reactor coolant pump oil collection system credited with preserving the ability to achieve safe shutdown in the event of a fire in the containment. These equipment sets receive a separate commodity group evaluation independent of the structure evaluation. Refueling equipment and the cranes located in the containment also are evaluated separately.

Table 2.4.1-1 of the LRA lists 23 structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions for these structural component groups:

- structural/functional support for non-safety related equipment
- structural support for safety related equipment
- pressure boundary/leak barrier
- radiation/heat shielding
- pipe-whip restraint
- shelter/protection of equipment
- pressure boundary

2.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.1 and UFSAR Sections 3.8.1, 3.8.2, and 3.8.3 to determine whether there is reasonable assurance that the containment structural components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In its performance of the review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.1-1 of the LRA lists the following 23 component groups that require an AMR:

(1) CV-BLOCK-INT (masonry block walls and mortar)
(2) CV-C-BUR (concrete in the containment vessel that is in contact with the soil and ground water; and embedded steel, reinforcement, and the embedded portion of anchor bolts and sealing materials used below grade in the containment vessel)
(3) CV-C-EXT (concrete in the containment vessel that is exposed to the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts; and containment tendon conduit, expansion bellows, etc., encased in concrete)

(4) CV-C-INT (concrete in the containment vessel that is protected from the weather including the biological shield walls and missile barriers; embedded steel, reinforcement, and the embedded portion of anchor bolts; grout, used under column base plates)
(5) CV-ELAST-EXT (elastomer materials used in the containment vessel that are exposed to the weather, and neoprene gaskets used to seal the tendon grease cans)
(6) CV-ELAST-INT(elastomer materials used in the containment vessel that are protected from the weather; and caulking used between thermal insulation panels and between the containment floor and the insulation)
(7) CV-EPOX-INT (epoxy in the containment vessel that is protected from the weather, and epoxy resin used to encapsulate the exposed tendon fill port piping)
(8) CV-FAST(CS)-INT (the exposed portion of carbon steel threaded fasteners for the containment vessel that are protected from the weather)
(9) CV-INSULATION (the containment vessel thermal insulation panels)
(10) electrical penetrations (pressure retaining boundary of the electrical penetration, including any sleeves or dissimilar metal welds)
(11) CV-SS(CS)-EXT (carbon structural steel in the containment vessel that is exposed to the weather, such as containment tendon grease cans)
(12) CV-SS(CS)-INT (carbon structural steel in the containment vessel that is protected from the weather; columns, posts, beams, baseplates, bracing, crane support girders, crane rails, and the exposed faces of plates and structural members, but not including carbon structural steel used as component supports)
(13) CV-SS(CS)-LINER (carbon steel of the containment vessel liner that is protected from the weather)
(14) CV-SS(CS)- ROCK ANCHOR (high-strength carbon steel rock anchors grouted into bedrock, including the button head of the bottom anchor)
(15) CV-SS(CS)-TENDONFILL (carbon steel grease fill ports)
(16) CV-SS(CS)-TENDONS (high-strength carbon steel tensioning tendon wire cluster encapsulated in NO-OX-ID (paraffin/mineral oil wax) and the top rock anchor button head)
(17) CV-SS(SS)-INT (stainless structural steel of the containment vessel that is protected from the weather, the refueling cavity, and fuel transfer liners, including attachments)
(18) mechanical penetrations (pressure retaining boundary of the mechanical penetration, including any penetration sleeves, bellows, and dissimilar metal welds)
(19) SPP01 (the movable hatch and mechanical wear surfaces of the personnel hatch)
(20) SPP01-GASKET (the inner and outer elastomeric seals for the hatch doors)
(21) SPP02 (The movable hatch and mechanical wear surfaces of the equipment hatch)
(22) SPP02-GASKET (the inner and outer elastomeric seals for the hatch doors as well as the containment vessel to hatch seal)
(23) VALVE BODY (the bronze manual valves attached to the tendon fill port piping)

The LRA states that the initial step in scoping is defining the entire plant in terms of major systems and structures. All of these systems and structures are evaluated against the scoping criteria in 10 CFR 54.4 (a)(1), (2), and (3), to determine if they perform, support, or could adversely impact a critical safety function for responding to a design-basis accident event, or perform or support a specific requirement of one of five regulated events (fire protection, environmental qualification, pressurized thermal shock, and anticipated transients without a scram). This step is accomplished using the UFSAR, technical specifications, licensing correspondence files, design-basis documents (DBDs), controlled drawings, the Q-list, and the configuration management information system (CMIS), a controlled data base which stores

equipment and licensing basis information. During the scoping process, even if only a portion of a system or structure meets the scoping criteria of 10 CFR 54.4, the system or structure is identified as in the scope of license renewal for subsequent screening. The screening process defines the intended functions, such as pressure boundary, for structures and structural components for license renewal purpose. The screening process identifies those structures and structural components that meet the requirements contained in 10 CFR 54.21 as requiring an AMR. The LRA states that, to optimize the AMR, structures that are attached to or contained within larger structures have been reviewed with the larger structure, and that structural elements that have similar materials and experience similar environments have been grouped and reviewed together. The staff has reviewed the information in LRA Section 2.4.2.1 and the UFSAR. The staff finds that the applicant made no omissions in scoping and screening the Containment Structures for license renewal.

2.4.1.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the containment that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the containment that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2 Essential Buildings and Yard Structures

2.4.2.1 Auxiliary Building

2.4.2.1.1 Summary of Technical Information in the Application

The applicant describes the auxiliary building in LRA Section 2.4.2.1 and provides a list of components subject to an AMR in LRA Table 2.4.2-1.

The auxiliary building is a Seismic Category I three-story rectangular structure measuring approximately 70 feet by 214 feet. It is located south of the containment and intermediate buildings and adjacent to the service building. The auxiliary building houses the major support and engineered safety features equipment required for plant operation. Portions of the structure act as fire barriers. The building contains non-safety elements whose failure can affect a safety function (portions of the structure are designed to resist, and protect equipment from, high-energy line breaks, flooding, and tornadoes). The auxiliary building is part of a complex of interconnected buildings surrounding, but structurally independent of, the containment building. These buildings are interconnected as follows. The Seismic Category I auxiliary building is contiguous with the nonseismic service building on the west side. The Seismic Category I intermediate building adjoins the seismically analyzed turbine building to the north and the auxiliary building to the south. The turbine building adjoins the Seismic Category I diesel generator building to the north and the Seismic Category I control building to the south. The facade, a cosmetic rectangular structure that encloses the containment building, has all

four sides partly or totally in common with the auxiliary and intermediate buildings. The auxiliary building adjoins the Seismic Category I standby auxiliary feedwater building on the south.

In the original building analysis, each Seismic Category I structure was treated independently. During the SEP plant evaluation, it was found that the interconnection nature of the buildings was an important feature, especially in view of the lack of detailed original seismic design information. Therefore, both Seismic Category I and nonseismic category buildings were included in a complicated three-dimensional structural system reanalysis model. As part of this effort, the interconnected turbine building was determined to be capable of withstanding safe shutdown earthquake forces. Based on the SEP review, audits, and plant inspections, the NRC safety evaluation reports found acceptable the evaluation and resolution of SEP Topics III-2, Wind and Tornado Loadings; III-4.A, Tornado Missiles; III-6, Seismic Design Considerations; and III-7.B, Load Combinations. The NRC also concluded that the RG&E analysis and implementation of the Structural Upgrade Program were acceptable.

Below grade, the auxiliary building is primarily concrete. Above grade, the building has two roofs constructed of steel beam and bracing systems and supported by a steel frame bracing system. Insulated siding is used for most of the walls above the operating floor. The south side of the building has a combination of concrete block finished with architectural brick and siding, while portions of the east and north sides contain concrete block and siding. The low roof section of the auxiliary building parapets has been provided with scuppers designed to ensure that any rainwater, resulting from a design-basis storm, would not accumulate on the roofs and cause overload. The scuppers are located so that their outflow will not damage any surrounding plant structures. The roofing and siding provide weather resistance and allow habitability control but are not designed to be wind or tornado missile resistant.

The structure has a concrete basement floor that rests on a sandstone foundation at elevation 235 feet 8 inches, and two reinforced concrete floors, an intermediate floor at elevation 253 feet and an operating floor at elevation 271 feet. The refueling water storage tank extends through all three levels. The intermediate and operating level floors have a minimum thickness of 1.5 feet, and are supported by 2.5 feet-thick concrete walls at the south, east, and part of the north sides of the building. There are a number of 2.5-feet to 3.5-feet-thick concrete shield walls and compartments located on the floors.

The northwest corner of the building is adjacent to the circular wall of the containment building. The west concrete wall, which encloses the spent fuel storage pool, is 6 feet thick. The spent fuel storage pool, located in the auxiliary building, is a rectangular concrete structure lined with stainless steel. It contains approximately 255,000 gallons of borated water. A fuel transfer penetration is provided for fuel movement between the refueling transfer canal in the reactor containment and the SFP. The penetration consists of a stainless steel pipe installed inside a larger pipe. The inner pipe acts as the transfer tube and connects the reactor refueling canal with the SFP. The tube is fitted with a standard stainless steel flange in the refueling canal and a stainless steel sluice gate valve in the SFP. The outer pipe is welded to the containment liner, and provision is made for gas leak testing of all welds essential to the integrity of the penetration. The gasketed expansion joint accommodates motion of the sleeve within the containment shell relative to the portion of the sleeve anchored in the wall of the refueling canal in the auxiliary building. The expansion bellows inside the auxiliary building perform the same function as described for that within the containment.

The west end of the auxiliary building superstructure is connected with a portion of the service building and on the northwest with the intermediate building. The major structures of the Ginna station have experienced no visible evidence of settlement since their construction. During the SEP and evaluation of Topic II-4.F, Settlement of Foundations and Buried Equipment, the NRC concluded that the settlement of foundations and buried equipment is not a safety concern for Ginna. In addition to structural and load-bearing elements, the auxiliary building contains features and appurtenances credited in the licensing basis and relied upon to ensure the health and safety of the public.

In addition to the equipment noted above, the auxiliary building contains racks, panels, electrical enclosures, equipment supports, fire doors, penetration barriers, and seals. Those equipment sets receive a separate commodity group evaluation independent of the building evaluation. Building interior floor drains are evaluated within the waste disposal system and the nonbuilding elements of the cranes are evaluated in the cranes, hoists, and lifting devices evaluation or the fuel handling equipment review as appropriate.

Table 2.4.2-1 lists 15 structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions that these structural component groups provide:

- structural support for non-safety-related equipment
- structural support for safety-related equipment
- pipe-whip restraint
- shelter/protection of equipment
- pressure boundary
- flood barrier
- fire barrier
- high-energy line break barrier
- missile barrier

2.4.2.1.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.1 and UFSAR Section 3.8.4 to determine whether there is reasonable assurance that the auxiliary building structural components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In its performance of the review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.2-1 of the LRA lists the following 15 structural component groups that require an AMR:

(1) AAD86 (structural support for safety-related equipment)
(2) AB-ARCH-EXT (non-load-bearing building elements not relied upon in the safety analysis which provide normal habitability control and weatherproofing, e.g., building siding, built-up roof systems, windows, etc.)

(3) AB-BLOCK-EXT (masonry block walls and mortar of the auxiliary building exposed to the weather)
(4) AB-BLOCK-INT (masonry block walls and mortar of the auxiliary building protected from the weather)
(5) AB-C-BUR (concrete in the auxiliary building that is in contact with the soil and ground water; embedded steel, reinforcement, and the embedded portion of anchor bolts; elastomer sealing material used below grade; post-construction urethane foam resin injected into seams and cracks to prevent ground water intrusion)
(6) AB-C-EXT (concrete in the auxiliary building that is exposed to the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts; post-construction urethane foam resin injected into seams and cracks to prevent ground water intrusion)
(7) AB-C-INT (concrete in the auxiliary building that is protected from the weather including the spent fuel pool; embedded steel, reinforcement, and the embedded portion of anchor bolts and grout under column base plates)
(8) AB-ELAST-INT (elastomer sealing material used in the auxiliary building that is protected from the weather)
(9) AB-FAST(CS)-EXT (the exposed portion of carbon steel threaded fasteners for the auxiliary building that is exposed to the weather)
(10) AB-FAST(CS)-INT (the exposed portion of carbon steel threaded fasteners in the auxiliary building that is protected from the weather)
(11) AB-SS(CS)-EXT (carbon structural steel in the auxiliary building frame that is exposed to the weather)
(12) AB-SS(CS)-INT (carbon structural steel of the auxiliary building that is protected from the weather; columns, posts, beams, baseplates, bracing, crane support girders, crane rails, and the exposed faces of plates and structural members)
(13) flood barrier
(14) flood barrier-seal (bladder for flood barrier)
(15) tank (local air flask dedicated for inflating flood barrier pneumatic seals)

Since the terms threaded fasteners and anchor bolts have been used interchangeably in several tables in Section 2.4 of the LRA, the staff requested the applicant, in RAI 2.4-2, to clarify whether the terms refer to the same item. The applicant responded to RAI 2.4-2 as follows:

> Although the terms "threaded fasteners" and "anchor bolts" are different terms, the exposed portion of the structural anchor bolt receives the same evaluation as threaded fasteners. This is explained in the LRA within the descriptions for the component groups. For example: See the description for the component group "AB-C-EXT" in LRA Table 2.4.21.

The staff has reviewed the information in LRA Section 2.4.2.1, the UFSAR, and the additional information submitted by the applicant in response to the staff's RAI. The staff finds that the applicant made no omissions in scoping and screening the auxiliary building for license renewal.

2.4.2.1.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In

addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the auxiliary building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the auxiliary building that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.2 Intermediate Building

2.4.2.2.1 Summary of Technical Information in the Application

The applicant describes the turbine and service building in LRA Section 2.4.2.2 and provides a list of components subject to an AMR in LRA Table 2.4.2-2.

The intermediate building is a Seismic Category I multi-story steel frame structure measuring approximately 136 feet by 141 feet. The building includes a facade structure on each side. The intermediate building surrounds the containment building to the west and north and joins the service building, turbine building, and auxiliary building. It is divided into two sections called the hot side (restricted area access) and the cold side. The intermediate building houses and supports safety-related equipment. Portions of the structure act as fire barriers. Structural elements within the building, along with the ability to open selected doors, are factors considered for heat removal during SBO events. Additionally, the building contains non-safety elements whose failure can affect a safety function (portions of the structure are designed to resist HELB and flooding).

The intermediate building is part of a complex of interconnected buildings surrounding, but structurally independent of, the containment building. The building is a 136 feet 7 inches by 140 feet 11 inches steel frame structure with facade structures on each side. The columns have individual concrete footings embedded in the rock foundation. In the south part of the building there are two floors at elevations 271 feet and 293 feet, and the low roof at elevation 318 feet. All floors are made of composite steel girders and 5-inch thick concrete slabs. Built around the circular containment building, the floors extend completely through the west side of the intermediate building, a major portion of the north side and a small portion of the south side. There are no floors on the east side. The roof is supported by steel roof girders. The floors and roof are also supported vertically on a set of interior steel columns, which are continuous from the basement floor to the roof. Concrete block walls surround the floor space between the basement floor and the roof. The roof of the intermediate building has been provided with scuppers designed to ensure that any rainwater, resulting from a design-basis storm, would not accumulate on the roof and cause damage. The scuppers are located so that their outflow will not damage any surrounding plant structures. The roofing and exterior walls provide weather resistance and allow habitability control but are not designed to be tornado missile resistant. In addition to the structural and load-bearing elements, the intermediate building contains the following features and appurtenances credited in the licensing basis and relied upon to ensure the health and safety of the public:

- a fire-resistant enclosure at the cable tunnel entrance to the intermediate building to separate trains of safe shutdown equipment

- grating versus solid manway covers in the access holes between the cold side of the intermediate building and the building sub-basement to provide a dewatering path in the event of a line break
- jet impingement shielding on the floor under the main steam header
- missile shields to protect vital cable trays from possible TDAFW pump turbine missiles,
- jet impingement shields affixed to the containment wall to separate between vital instruments
- jet impingement and missile shielding around the solenoid valves for the main steam isolation valves
- sealing material between the intermediate building/containment building rattle gaps to prevent cross communication of flood volumes
- restraining devices installed at the intermediate building/turbine building interface (above the main steam power operated relief valves) to ensure that a block wall failure will not damage the valves
- scuppers installed in the building roof to ensure water can not build up and overload roof members
- building foundations and below-grade walls constructed with water stops to prevent the intrusion of ground water
- an oil containment dike around the TDAFW lube oil tank to minimize the fire risk from any spilled oil
- selected structural steel building members coated with a protective material to resist the effects of fires
- specially constructed radiation shielding enclosures to minimize personnel dose during post accident sampling evolutions
- a standby auxiliary feedwater system (SAFW) added to further improve steam generator feedwater reliability and specifically to substitute for the preferred auxiliary feedwater in the low probability that preferred auxiliary feedwater pumps are damaged due to nearby high-energy pipe breaks within the intermediate building

In addition to these features, the intermediate building contains racks, panels, electrical enclosures, equipment supports, fire doors, penetration barriers, and seals. These equipment sets receive a separate commodity group evaluation independent of the building evaluation. The restricted access portion of the building's interior floor drains is evaluated with the waste disposal system, and the unrestricted access portion is evaluated in the discussion of the treated water system.

Table 2.4.2-2 of the LRA lists 12 structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions for these structural component groups:

- structural support for non-safety-related equipment
- structural support for safety-related equipment
- shelter/protection of equipment
- flood barrier
- fire barrier
- high- energy line break barrier
- missile barrier
- heat sink

2.4.2.2.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.2 and UFSAR Section 3.8.4 to determine whether there is reasonable assurance that the intermediate building structural components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of its review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.2-2 of the LRA lists the following 12 structural component groups that require an AMR:

(1) IB-ARCH-EXT (non-load-bearing building elements not relied upon in the safety analysis which provide normal habitability control and weatherproofing, e.g., building siding, built-up roof systems, windows, etc.)
(2) IB-BLOCK-EXT (masonry block walls and mortar of the intermediate building exposed to the weather)
(3) IB-BLOCK-INT (masonry block walls and mortar of the intermediate building that are protected from the weather)
(4) IB-C-BUR (concrete in the intermediate building that is in contact with the soil and groundwater; embedded steel, reinforcement, and the embedded portion of anchor bolts; elastomer sealing material used below grade in the intermediate building; post-construction urethane foam resin injected into seams and cracks to prevent ground water intrusion)
(5) IB-C-EXT (concrete in the intermediate building that is exposed to the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts)
(6) IB-C-INT (concrete in the intermediate building that is protected from the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts; grout used under column base plates)
(7) IB-ELAST-INT (elastomer sealing material used in the intermediate building that is protected from the weather)
(8) IB-FAST(CS)-EXT (the exposed portion of carbon steel threaded fasteners for the intermediate building that are exposed to the weather)
(9) IB-FAST(CS)-INT (the exposed portion of carbon steel threaded fasteners in the intermediate building that is protected from the weather)
(10) IB-LEAD-INT (the shielded enclosure constructed over the primary sample containment isolation valves in the intermediate building hot side; leaded glass and lead bricks)
(11) IB-SS(CS)-EXT (carbon structural steel in the intermediate building frame that is exposed to the weather)
(12) IB-SS(CS)-INT (carbon structural steel in the intermediate building that is protected from the weather; columns, posts, beams, baseplates, bracing, and the exposed faces of plates and structural members)

The staff has reviewed the information in LRA Section 2.4.2.2 and the UFSAR. The staff finds that the applicant made no omissions in scoping and screening the intermediate building for license renewal.

2.4.2.2.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the intermediate building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the intermediate building that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.3 Turbine Building

2.4.2.3.1 Summary of Technical Information in the Application

The applicant describes the turbine building in LRA Section 2.4.2.3 and provides a list of components subject to an AMR in LRA Table 2.4.2-3.

Though the turbine building was not originally designed to be Seismic Category I, it is part of complex of interconnected buildings and is connected to Seismic Category I structures. As such, the turbine building is considered a structure that supports nuclear safety-related equipment. Subsequently, the turbine building has been modified and re-evaluated to be capable of withstanding safe shutdown earthquake forces. Portions of the turbine building structure also act as fire barriers and oil confinement systems. Additionally, the building contains non-safety elements whose failure can affect a safety function (portions of the structure are designed to resist, and protect equipment from, high-energy line breaks, flooding, and tornadoes). During the SEP plant evaluation, it was determined that the interconnected turbine building was capable of withstanding safe shutdown earthquake forces.

The turbine building is a 257.5 feet by 124.5 feet rectangular building on the north side of the building complex. The turbine building foundation is a concrete mat supported by compacted fill material. In addition to the concrete basement, it has two concrete floors. The building roof includes a roof truss structure composed of top and bottom chords connected by vertical bracing. The roof and floors are supported by steel framing and bracing systems on all four sides of the building. Except between buildings, the walls of the turbine building have insulated siding. The turbine building parapets have been provided with scuppers designed to ensure that any rainwater, resulting from a design-basis storm, would not accumulate on the roof and cause damage. The scuppers are located so that their outflow will not damage any surrounding plant structures. The roofing and siding provide weather resistance and allow habitability control but are not designed to be tornado missile resistant.

For the purposes of license renewal review, the walls separating the turbine building from the intermediate building, the diesel generator building, the service building, the control building and the all-volatile-treatment (AVT) building will be evaluated as part of the review of these structures as appropriate. Additionally, the main feedwater pumps are surrounded by a block wall enclosure. In addition to the structural and load-bearing elements, the turbine building contains

the following features and appurtenances credited in the licensing basis and relied upon to ensure the health and safety of the public:

- The turbine building includes a barrier installed around the turbine lube-oil reservoir area to contain possible oil spillage
- Selected structural steel building members are coated with a protective material to resist the effects of fires
- Some building structural members also interface with the pressure-shielding steel diaphragm walls that were installed at the control building-turbine building wall and at the diesel building-turbine building wall to ensure continued operability of safety-related equipment following a postulated high-energy pipe break in the turbine building
- The turbine seal oil unit is enclosed in a fire-resistant shelter
- The building foundations and below-grade walls were constructed with water stops to prevent the intrusion of ground water

The turbine building contains racks, panels, electrical enclosures, equipment supports, fire doors, penetration barriers, seals, and coatings. These equipment sets receive a separate commodity group evaluation independent of the building evaluation.

Table 2.4.2-3 of the LRA lists 8 structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions that these structural component groups provide:

- Structural support for non-safety related equipment
- Structural support for safety related equipment
- Shelter/protect equipment

2.4.2.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.3 and UFSAR Section 3.8.4 to determine whether there is reasonable assurance that the structural components of the turbine building within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of its review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.2-3 of the LRA lists 8 structural component groups that require an AMR. These component groups are:

- TB-ARCH-EXT (non-load bearing building elements not relied upon in the safety analysis which provide normal habitability control and weather proofing, e.g., building siding, built up roof systems, windows, etc.)
- TB-C-BUR (Concrete in the turbine building that is in contact with the soil and ground water; embedded steel, reinforcement, and the embedded portion of anchor bolts; elastomer sealing material used below grade in the turbine building; post-construction urethane foam resin injected into seams and cracks to prevent ground water intrusion)

- TB-C-EXT (Concrete exposed to the weather that acts as part of the building siding system; non-load-bearing building elements not relied upon in the safety analysis which provide normal habitability control and weather proofing, e.g., building siding, built up roof systems, windows, etc.)
- TB-C-INT (Concrete in the turbine building that is protected from the weather, including oil confinement curbing around the seal oil unit; embedded steel, reinforcement, and the embedded portion of anchor bolts; grout, used under column base plates)
- TB-FAST(CS)-EXT (The exposed portion of carbon steel threaded fasteners for the turbine building that is exposed to the weather)
- TB-FAST(CS)-INT (The exposed portion of carbon steel threaded fasteners in the turbine building that are protected from the weather)
- TB-SS(CS)-EXT (Carbon structural steel in the turbine building frame that is exposed to weather)
- TB-SS(CS)-INT (Carbon structural steel of the turbine building that is protected from the weather; columns, posts, beams, baseplates, bracing, crane support girders, crane rails, and the exposed faces of plates and structural members)

The staff has reviewed the information in LRA Section 2.4.2.3, and the UFSAR. The staff finds that the applicant made no omissions in scoping and screening the turbine building for license renewal.

2.4.2.3.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the turbine building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the turbine building that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.4 Diesel Building

2.4.2.4.1 Summary of Technical Information in the Application

The applicant describes the diesel building in LRA Section 2.4.2.4 and provides a list of components subject to an AMR in LRA Table 2.4.2-4.

The diesel building is a Seismic Category I structure that houses and supports nuclear safety related equipment. The diesel building also protects connections for an alternate diesel cooling water source should the service water system be disabled. The structure also acts as a fire barrier and contains non-safety elements whose failure can affect a safety function (portions of the structure are designed to resist, and protect equipment from, HELBs, flooding, and tornadoes).

The diesel building is part of a complex of interconnected buildings surrounding, but structurally independent of, the containment building. The diesel building is a one-story reinforced-concrete structure divided into two rooms, each with a cable vault underneath the floor. The south wall, which is common with the turbine building, is reinforced to be a pressurization wall to protect the areas adjacent to the turbine building from the effects of HELBs. The foundations of the diesel generator buildings were excavated to the surface of bedrock. Lean concrete or compacted backfill was placed on the rock surface to a depth such that the elevation of the top of the fill material was coincident with the elevation of the bottom of the concrete foundation.

The diesel building was modified as part of the Structural Upgrade Program to withstand tornado winds and missiles, external flooding, seismic loads, and extreme snow loads. A new reinforced-concrete north wall was constructed 4 feet north of the existing north wall. Reinforced-concrete wing walls were constructed that extended the east and west walls to meet the new north wall, enclosing the space between the existing and new north wall. The new wall includes missile-resistant watertight equipment and personnel doors. A new reinforced-concrete slab roof with a reinforced-concrete parapet was constructed covering the entire diesel building. The building as modified was designed to remain undamaged during and after an operating basis earthquake and remain functional during and after a safe shutdown earthquake. In addition to structural and load bearing elements, the diesel building contains features and appurtenances credited in the licensing basis and relied upon to ensure the health and safety of the public. These features include:

- The B diesel room vault contains a fire-resistant enclosure to provide electrical train separation
- The building foundations and below-grade walls were constructed with water stops to prevent the intrusion of ground water
- The common wall between the diesel building and turbine building is reinforced with heavy sheet piling and stiffeners to form a pressurization wall to resist the effects of a high energy line break in the turbine building
- The diesel building exterior was modified during the Structural Upgrade Program to withstand the effects of tornado wind, tornado differential pressure, tornado missiles, and flooding of Deer Creek
- Scuppers are installed in the building roof to ensure water can not build up and overload roof members

The diesel building contains sump pumps to remove any ground water that may leak into the vaults. This equipment is not considered part of the structure and is evaluated with the treated water system. The building also contains racks, panels, electrical enclosures, equipment supports, fire doors, penetration barriers, and seals. These equipment sets receive a separate commodity group evaluation independent of the building evaluation.

Table 2.4.2-4 of the LRA lists 12 structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions for these structural component groups:

- structural support for non-safety-related equipment
- structural support for safety-related equipment
- shelter/protection of equipment
- flood barrier

- fire barrier
- high-energy line break barrier
- missile barrier

2.4.2.4.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.4 and UFSAR Section 3.8.4 to determine whether there is reasonable assurance that the diesel building structural components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of its review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.2-4 of the LRA lists the following12 structural component groups that require an AMR:

(1) DB-ARCH-EXT (non-load bearing building elements not relied upon in the safety analysis which provide normal habitability control and weatherproofing, e.g., building siding, built up roof systems, windows, etc.)
(2) DB-C-BUR (concrete in the diesel building that is in contact with the soil and ground water; embedded steel, reinforcement, and the embedded portion of anchor bolts; elastomer sealing material used below grade in the diesel generator building; post-construction urethane foam resin injected into seams and cracks to prevent ground water intrusion)
(3) DB-C-EXT (concrete in the diesel generator building that is exposed to the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts)
(4) DB-C-INT (concrete in the diesel generator building that is protected from the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts; grout used under column base plates)
(5) DB-ELAST-INT (elastomer sealing material used in the door seals for the diesel generator building that is protected from the weather)
(6) DB-FAST(CS)-EXT (the exposed portion of carbon steel threaded fasteners for the diesel generator building that is exposed to the weather)
(7) DB-FAST(CS)-INT (the exposed portion of carbon steel threaded fasteners in the diesel generator building that is protected from the weather)
(8) DB-FAST(HSLAS)-INT (the exposed portion of high strength carbon steel threaded fasteners in the diesel generator building that is protected from the weather)
(9) DB-SS(CS)-EXT (structural carbon steel in the diesel generator building, e.g., missile barriers, that is exposed to the weather)
(10) DB-SS(CS)-INT (structural carbon steel for the diesel generator building, e.g., plates, beams, columns, grating, high-energy line break pressurization wall, etc., that is protected from the weather)
(11) EXT-DOOR (carbon steel exterior doors that resist tornados and floods)
(12) INT-DOOR (carbon steel interior doors resist high energy line breaks and floods)

The staff has reviewed the information in LRA Section 2.4.2.4, and the UFSAR. The staff finds that the applicant made no omissions in scoping and screening the diesel generator building for license renewal.

2.4.2.4.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the diesel building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the diesel building that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.5 Control Building

2.4.2.5.1 Summary of Technical Information in the Application

The applicant describes the control building in LRA Section 2.4.2.5 and provides a list of components subject to an AMR in LRA Table 2.4.2-5.

The control building is a Seismic Category I three-story structure measuring approximately 41 feet by 54 feet. It is located north of the containment building and adjacent to the turbine building. The control building houses and supports the safety-related control room, vital battery rooms, the relay room, and the mechanical equipment room. These rooms provide power and controls for the engineered safety features equipment and most other equipment required for plant operation. The control room portion of the control building functions in concert with the control room emergency air treatment ventilation equipment to maintain a habitable environment for plant operators during design-basis events. Portions of the structure act as fire barriers. Some structural elements of the building are credited with providing a heat sink to ensure that vital equipment can function for the required coping duration of an SBO. Additionally, the building contains non-safety elements whose failure can affect a safety function (portions of the structure are designed to resist, and protect equipment from, HELBs, flooding, and tornadoes).

The control building is part of a complex of interconnected buildings surrounding, but structurally independent of, the containment building. The foundation of the control building is supported on lean concrete or compacted backfill. The foundation of the control building was excavated to the surface of the bedrock. The fill material was placed on the rock surface to a depth coincident with the control building foundation. The roof of the control building has a parapet provided with a scupper designed to ensure that any rainwater, resulting from a design-basis storm, will not accumulate on the roof and cause damage. The scupper is located so that its outflow will not damage any surrounding plant structures or equipment.

The control room floor and the relay room floor are 6 inch thick reinforced-concrete slabs supported by steel girders that are tied to turbine building floors at the respective elevations. The relay room east interior wall is primarily insulated siding and some concrete block. The east

relay room exterior wall was installed during the Structural Upgrade Program and is designed to withstand the effects of tornado wind, tornado differential pressure, tornado missiles, and flooding of Deer Creek. The modification consisted of installing a reinforced-concrete Seismic Category I structure adjoining the east wall of the relay room. The entire north wall of the control building is protected from the effects of a HELB in the turbine building by steel barrier. In the basement of the structure are the battery rooms and the control building mechanical equipment room. Analysis concluded that a failure in the service water system or fire main system in the mechanical equipment room was capable of flooding both battery rooms. To preclude that event the original door between the air handling room and the B battery room has been replaced by a wall and a water relief valve has been installed between the mechanical equipment room and the turbine building. The relief valve will ensure that the room can de-water sufficiently to prevent wall collapse.

The control room portion of the structure acts in conjunction with the control room ventilation system as part of the control room emergency air treatment system (CREATS). The control room’s role is to provide a non-leak-tight pressure boundary envelope to support emergency air treatment. The CREATS boundary ,encompasses the entire room interior boundary, including the room access doors. The false ceiling is not included in the CREATS boundary but the structural ceiling and the room's interface with the ventilation ductwork are. The false ceiling panels are non-safety equipment whose failure can affect a safety function, and they are seismically restrained. Additionally, the panels can be removed during SBO events in order to allow optimum heat transfer to the structural members.

In addition to structural and load-bearing elements, the control building contains the following features and appurtenances credited in the licensing basis and relied upon to ensure the health and safety of the public. These features include:

- The common wall between the Control Building and Turbine Building is reinforced with heavy sheet piling and stiffeners form a pressurization wall to resist the effects of a high energy line break in the Turbine Building
- The north and east wall of the control room has 1/4-inch armor plate to resist the effects of tornado missiles and malicious acts
- The east wall of the relay room was modified during the Structural Upgrade Program to withstand the effects of tornado wind, tornado differential pressure, tornado missiles, and flooding of Deer Creek
- Scuppers are installed in the building parapet to ensure that water can not build up and overload roof members
- Selected below grade construction joints, seams, and cracks are sealed to prevent ground-water intrusion
- Battery room and mechanical equipment room doors at the turbine building entrances are elevated to preclude water intrusion into the rooms from floods
- A barrier exists at the cable tunnel entrance to the control building to provide fire area separation
- Selected structural steel building members are coated with a protective material to resist the effects of fires
- Design configuration control is strictly maintained to ensure that the building structural features credited in heat sink calculations for station blackout are maintained
- The south and west above-grade concrete walls provide radiation shielding for plant operators

- Block walls were evaluated and upgraded as necessary to ensure their continued functioning during a design basis earthquake
- The building foundations and below grade walls were constructed with water stops to prevent the intrusion of ground water

In addition to the equipment noted above, the control building contains racks, panels, electrical enclosures, equipment supports, fire doors, penetration barriers, and seals. These equipment sets receive a separate commodity group evaluation independent of the building evaluation. Building interior floor drains are evaluated as part of the treated water system.

Table 2.4.2-5 of the LRA lists 15 structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions for these structural component groups:

- structural support for safety-related equipment
- shelter/protect equipment
- flood barrier
- fire barrier
- high-energy line break barrier
- missile barrier
- heat sink
- radiation/heat shielding

2.4.2.5.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.5 and UFSAR Section 3.8.4 to determine whether there is reasonable assurance that the control building structural components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of the review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.2-5 of the LRA lists the following 15 structural component groups that require an AMR:

(1) CB-ARCH-EXT (non-load-bearing building elements not relied upon in the safety analysis which provide normal habitability control and weatherproofing, e.g., building siding, built-up roof systems, windows, etc.)
(2) CB-BLOCK-INT (masonry block walls and mortar of the control building that are protected from the weather)
(3) CB-C-BUR (concrete in the control building that is in contact with the soil and ground-water; embedded steel, reinforcement, and the embedded portion of anchor bolts; elastomer sealing material used below grade in the control building; post-construction urethane foam resin injected into seams and cracks to prevent ground water intrusion)
(4) CB-C-EXT (concrete in the control building that is exposed to the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts)

(5) CB-C-INT (concrete in the control building that is protected from the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts; grout used under column base plates)
(6) CB-ELAST-INT (elastomer sealing material for door seals and the dewatering valve closure seal used in the control building that is protected from the weather)
(7) CB-FAST(CS)-EXT (the exposed portion of carbon steel threaded fasteners for the control building that are exposed to the weather)
(8) CB-FAST(CS)-INT (the exposed portion of carbon steel threaded fasteners in the control building that is protected from the weather)
(9) CB-FAST(HSLAS)-INT (the exposed portion of high strength carbon steel threaded fasteners in the control building that is protected from the weather)
(10) CB-SS(CS)-EXT (carbon structural steel in the control building frame that is exposed to the weather)
(11) CB-SS(CS)-INT (carbon structural steel in the control building that is protected from the weather; columns, posts, beams, baseplates, bracing, and the exposed faces of plates and structural members)
(12) S51F (the carbon steel interior door to resist high-energy line breaks and along with the water curtain, also to provide a fire barrier)
(13) EXT-DOOR (the carbon steel interior doors to resist high-energy line breaks and floods),
(14) INT-DOOR (the carbon steel interior doors to resist high-energy line breaks)
(15) VALVE BODY (the valve to dewater the control building in the event of a service water or fire water line break in the mechanical equipment room)

The staff has reviewed the information in LRA Section 2.4.2.5, and the UFSAR. The staff finds that the applicant made no omissions in scoping and screening the control building for license renewal.

2.4.2.5.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the control building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the control building that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.6 All Volatile Water Treatment Building

2.4.2.6.1 Summary of Technical Information in the Application

The applicant describes the all volatile water treatment building in LRA Section 2.4.2.6 and provides a list of components subject to an AMR in LRA Table 2.4.2-6.

The AVT building is a nonseismic structure that houses non-nuclear safety equipment considered important to safety. Specifically, the AVT building houses and supports the TSC

diesel generator and battery which may be used to mitigate the effects of fires and SBOs. Additionally, building walls act as fire barriers. Accordingly, the AVT building is considered a non-safety structure whose failure could affect a safety function. The AVT building houses demineralizers and other equipment necessary for the condensate polishing system to allow AVT of secondary water. The TSC is located on the second floor of the AVT building and houses the computers and equipment, including emergency power supplies (diesel generator and batteries), necessary to provide the staff with technical support during an emergency event.

The AVT building is founded on a concrete mat. The building abuts the turbine building at the east end of the turbine building. A small section of masonry block separates the turbine building from the AVT building. Some exterior portions of the east and north sides of the structure are masonry block. The load-bearing portions of the building include steel support framing and reinforced concrete. Select portions of the bottom floor of the building have 2 feet thick concrete walls and ceiling to minimize operator exposure in case of radioactivity buildup in the resin beds should a steam generator tube leak occurs. The building's concrete roof is supported by steel decking and trusses.

The AVT building is not designed to be resistant to high winds or tornado missiles. The technical support center is above the maximum external flood water level. The AVT building contains racks, panels, electrical enclosures, equipment supports, fire doors, penetration barriers, and seals. Those equipment sets receive a separate commodity group evaluation independent of the building evaluation. Building interior floor drains are evaluated as part of the treated water system.

Table 2.4.2-6 of the LRA lists six structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions for these structural component groups:

- structural support for non-safety-related equipment
- shelter/protection of equipment
- fire barrier

2.4.2.6.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.6 and the UFSAR to determine whether there is reasonable assurance that the all volatile water treatment building structural components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of the review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.2-6 of the LRA lists the following eight structural component groups that require an AMR. These component groups are:

(1) AVT-ARCH-EXT (non-load-bearing building elements not relied upon in the safety analysis which provide normal habitability control and weatherproofing, e.g., building siding, built-up roof systems, windows, etc.)
(2) AVT-BLOCK-EXT (masonry block and mortar exposed to the weather that acts as part of the building siding system; non-load-bearing building elements not relied upon in the safety analysis which provide normal habitability control and weatherproofing, e.g., building siding, built up roof systems, windows, etc.)
(3) AVT-BLOCK-INT (masonry block walls and mortar of the AVT/TSC building protected from the weather)
(4) AVT-C-BUR (concrete in the AVT/TSC building that is in contact with the soil and ground water; embedded steel, reinforcement, and the embedded portion of anchor bolts; elastomer sealing material used below grade in the AVT/TSC building; post-construction urethane foam resin injected into seams and cracks to prevent ground water intrusion)
(5) AVT-C-EXT (concrete in the AVT/TSC building that is exposed to the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts)
(6) AVT-C-INT (concrete in the AVT/TSC building that is protected from the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts; grout under column base plates; the fuel oil confinement curb for the TSC diesel)
(7) AVT-FAST(CS)-INT (the exposed portion of carbon steel threaded fasteners in the AVT/TSC building that is protected from the weather)
(8) AVT-SS(CS)-INT (structural carbon steel of the AVT/TSC building that is protected from the weather; columns, posts, beams, baseplates, bracing, crane support girders, crane rails, and the exposed faces of plates and structural members)

The staff has reviewed the information in LRA Section 2.4.2.6. The staff finds that the applicant made no omissions in scoping and screening the AVT building for license renewal.

2.4.2.6.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the AVT building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the AVT building that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.7 Screenhouse Building

2.4.2.7.1 Summary of Technical Information in the Application

The applicant describes the screenhouse building in LRA Section 2.4.2.7 and provides a list of components subject to an AMR in LRA Table 2.4.2-7.

The screenhouse building is partially a Seismic Category 1 structure. It is located north of the turbine building and is not immediately adjacent to any other major structure. The screenhouse structurally supports and houses safety-related equipment, including equipment used to mitigate

fires and components used for safe shutdown following fires and SBO events. Included within the screenhouse evaluation boundary is the circulating water system discharge canal which functions to ensure the availability of essential service water from the ultimate heat sink. Additionally, the screenhouse also contains non-safety equipment whose failure could prevent the satisfactory accomplishment of a safety function (internal flood protection). The screenhouse is located 115 feet north of the turbine building and 80 feet south of the lake shore. The structural configuration of the screenhouse is integral to the functioning of the service water system, the circulating water system and the fire protection system. The below grade and submerged portions of the structure make available the flow path from the ultimate heat sink to the referenced system pump suctions. Should the circulating water system intake tunnels be lost, the structure supports provisions for an alternate lake suction path by providing a flow path from the discharge canal to the service water and fire system water pump bay. The components supporting this feature are evaluated within the service water system.

The screenhouse building comprise two structural steel superstructures, one on the service water system side and one on the circulating water system side. The superstructures share a reinforced concrete substructure. The service water portion of the building (both below and above grade) is a Seismic Category I structure. The service water portion houses four safety-related service water pumps and safety-related electric switchgear. The circulating water side houses the traveling water screens and circulating water pumps. The entire screenhouse service/water building is founded in or on bedrock with the exception of the basement of the service water portion, which is founded approximately 4 feet above bedrock. The service water portion of the screenhouse consists of four rigid frame bents in the east-west direction with bracing for wind and seismic loads in the north-south direction. The roof system is designed as a rigid bent to transmit horizontal seismic loads to the frame columns and through the bracing to the foundation. Insulated siding is used for most of the walls above the operating floor. The exterior walls contain windows, doors, and louvered ventilation openings. The roof has been provided with scuppers designed to ensure that any rainwater, resulting from a design-basis storm, would not accumulate on the roofs and cause damage. The roofing and siding provide weather resistance and allow habitability control but are not designed to be resistant to tornado missile.

The screenhouse building is not designed to resist, or protect housed components, against all possible external flooding, high wind, fire, or high- or moderate- energy line break events. Complete protection against these low probability events is not needed because alternative shutdown means are available, which do not rely upon service water from the screenhouse. In the SER for SEP Topic III-5.B, Pipe Breaks Outside Containment, the NRC concluded that any further modification of the screenhouse to provide additional protection from pipe break effects for service water system components or for buses 17 and 18 is not required. The mitigative strategy developed and approved for pipe breaks was subsequently applied with respect to external flooding and tornado events. After completion of the Structural Upgrade Program, the NRC concluded that the station could achieve safe shutdown given the effects of loss of the screenhouse because of external events.

The discharge canal, included in the screenhouse evaluation boundary, is a reinforced concrete structure that directs circulating water and service water effluent back to the lake and the end of the open loop cooling cycle. As noted above the screenhouse and discharge canal have features that provide water intake from the discharge canal to the service water system should the circulating water intake tunnel become unavailable. Overtopping of the discharge canal from

storm effects in the lake is prevented by a revetment. The revetment is evaluated separately within the essential yard structures discussion. In addition to structural and load-bearing elements, the screenhouse contains the following features and appurtenances credited in the licensing basis and relied upon to ensure the health and safety of the public:

- Safety-related equipment is protected from flooding resulting from a break or leakage in the circulating water system. The first protective feature consists of tripping the circulating water pumps when a leak is detected. The circulating water pumps are tripped by redundant two-out-of-three logic receiving level information from the circulating water pump pit in the screen house and from the condenser pit in the turbine building. Electrical components that perform this function are evaluated with the reactor protection system. The second part of the flood mitigative system is a permanently installed, nonmovable Seismic Category I dike in the screenhouse, which has been built to contain the water that may escape from the circulating water system. The dike is 30 inches high and is situated to prevent water from reaching safety-related equipment
- A curb has been installed around the diesel fire pump and the diesel oil storage tank to control any diesel oil leaks. The curbed area is equipped with a floor drain which drains to a holding tank buried outside the screenhouse
- The building foundations and below-grade walls were constructed with water stops to prevent the intrusion of ground water
- Cable entrances are sealed to prevent the intrusion of ground water

The screenhouse contains racks, panels, electrical enclosures, equipment supports, fire penetration barriers, and seals. Those equipment sets receive a separate commodity group evaluation independent of the building evaluation. Building interior floor drains are evaluated with the circulating water system

Table 2.4.2-7 of the LRA lists eight structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions for these structural component groups:

- structural support for non-safety-related equipment
- structural support for safety-related equipment
- shelter/protection of equipment
- flood barrier
- fire barrier
- cooling water source

2.4.2.7.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.7 and UFSAR Section 3.8.4 to determine whether there is reasonable assurance that the screenhouse building structural components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of the review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.2-7 lists the following eight structural component groups that require an AMR:

(1) SH-ARCH-EXT (non-load-bearing building elements not relied upon in the safety analysis which provide normal habitability control and weatherproofing, e.g., building siding, built-up roof systems, windows, etc.)
(2) SH-C-BUR (concrete in the screenhouse that is in contact with the soil and ground water; embedded steel, reinforcement, and the embedded portion of anchor bolts; elastomer sealing material used below grade in the screenhouse; post-construction urethane foam resin injected into seams and cracks to prevent ground-water intrusion)
(3) SH-C-EXT (concrete in the screenhouse that is exposed to the weather; concrete used in the discharge canal; embedded steel, reinforcement, and the embedded portion of anchor bolts)
(4) SH-C-INT (concrete in the screenhouse that is protected from the weather; interior concrete to provide flood protection curbing for the sub-basement and fire protection curbing to contain diesel fuel oil spills; embedded steel, reinforcement, and the embedded portion of anchor bolts; grout under column base plates)
(5) SH-C-RW (concrete in the screenhouse that is submerged; concrete used in the discharge canal; embedded steel, reinforcement, and the embedded portion of anchor bolts)
(6) SH-ELAST-INT (elastomer sealing material used as gasketing material for flood barriers in the screenhouse that is protected from the weather)
(7) SH-FAST(CS)-INT (the exposed portion of carbon steel threaded fasteners in the screenhouse that are protected from the weather)
(8) SH-SS(CS)-INT (structural carbon steel for the screenhouse that is protected from the weather, e.g., plates, beams, columns, grating, etc., and the barrier between the CW and SW bays to protect the SW pumps from a break in the CW system and to prevent flooding of other vital equipment)

The staff has reviewed the information in LRA Section 2.4.2.7, and the UFSAR. The staff finds that the applicant made no omissions in scoping and screening the screenhouse building for license renewal.

2.4.2.7.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the screenhouse building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the screenhouse building that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.8 Standby Auxiliary Feedwater Building

2.4.2.8.1 Summary of Technical Information in the Application

The applicant describes the SAFW building in LRA Section 2.4.2.8 and provides a list of components subject to an AMR in LRA Table 2.4.2-8.

The SAFW building is a Seismic Category I high-wind and tornado-missile resistant structure located south of the auxiliary building. The SAFW building houses and supports a safety-related feedwater system that is completely different from the preferred auxiliary feedwater system (located in the intermediate building). The SAFW building also protects connections for an alternate pump suction source should the service water system be disabled.

The SAFW building is a concrete structure utilizing reinforced concrete for the walls, roof, and base mat. The building is supported by 12 caissons that are socketed into competent rock. The exterior of the building is sheathed with a combination of architectural brick and siding. The SAFW building does not need to be resistant to external flood because the safety-related equipment in the room is mounted above the maximum flood level. The seismic portion of the building is connected to an entry way enclosure that allows for building environmental control. In addition to structural and load-bearing elements, the SAFW building contains the following features and appurtenances credited in the licensing basis and relied upon to ensure the health and safety of the public:

- Safety-related equipment is mounted above the maximum external flood level
- An internal missile barrier separates the A and B SAFW pumps
- The structure provides feedwater source protected from a high winds and tornado missiles
- The structure, in conjunction with the standby auxiliary feedwater system, was added to further improve steam generator feedwater reliability and specifically to substitute for the preferred auxiliary feedwater in the low probability that preferred auxiliary feedwater pumps are damaged due to nearby high-energy pipe breaks within the intermediate building

The SAFW building contains racks, panels, electrical enclosures, equipment supports, fire, penetration barriers, and seals. These equipment sets receive a separate commodity group evaluation independent of the building evaluation.

Table 2.4.2-8 of the LRA lists six structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions for these structural component groups:

- structural support for safety related equipment
- shelter/protection of equipment
- fire barrier
- missile barrier

2.4.2.8.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.8 and UFSAR Section 3.8.4 to determine whether there is reasonable assurance that the SAFW building components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of its review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.2-8 of the LRA lists the following six structural component groups that require an AMR:

(1) AF-ARCH-EXT (non-load-bearing building elements not relied upon in the safety analysis which provide normal habitability control and weatherproofing, e.g., building siding, built-up roof systems, windows, etc.)
(2) AF-C-BUR (concrete in the SAFW building that is in contact with the soil and ground water; embedded steel, reinforcement, and the embedded portion of anchor bolts; elastomer sealing material used below grade in the SAFW building; post-construction urethane foam resin injected into seams and cracks to prevent ground-water intrusion)
(3) AF-C-EXT (concrete in the SAFW building that is exposed to the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts)
(4) AF-C-INT (concrete in the SAFW building that is protected from the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts; grout under column base plates)
(5) AF-FAST(CS)-INT (the exposed portion of carbon steel threaded fasteners in the SAFW building that is protected from the weather)
(6) AF-SS(CS)-INT (structural carbon steel in the SAFW building that is protected from the weather; columns, posts, beams, baseplates, bracing, and the exposed faces of plates and structural members)

The staff has reviewed the information in LRA Section 2.4.2.8, and the UFSAR. The staff finds that the applicant made no omissions in scoping and screening the SAFW building for license renewal.

2.4.2.8.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the SAFW building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the SAFW building that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.9 Service Building

2.4.2.9.1 Summary of Technical Information in the Application

The applicant describes the service building in LRA Section 2.4.2.9 and provides a list of components subject to an AMR in LRA Table 2.4.2-9.

The service building is a nonseismic structure that houses non-nuclear safety equipment considered important to safety. Specifically, the service building houses and supports the CST which may be used to mitigate the effects of fires and SBOs and is the preferred suction source for the AFW system. Additionally, building walls act as fire barriers. Accordingly, the service building is considered a non-safety structure whose failure could affect a safety function.

The service building is part of a complex of interconnected buildings surrounding, but structurally independent of, the containment building. The walls between the service building and the other buildings as well as the partitions in the building are made of concrete blocks. The building has a combination of architectural brick siding and glass windows. The roofing, siding, and windows provide weather resistance and allow habitability control but are not designed to be resistant to wind or tornado missile. During high wind or tornado events, the siding on the superstructure above elevation 271 feet would blow outward, thus relieving the pressure and wind loads. The components that might be affected by a tornado are the two CSTs. There is reasonable assurance that the feedwater supply will be maintained because of the available redundancy and because two-thirds of the tank volume is below grade. If the tanks are damaged, alternate protected feedwater sources are available.

The service building contains racks, panels, electrical enclosures, equipment supports and fire doors, penetration barriers, and seals. Those equipment sets receive a separate commodity group evaluation independent of the building evaluation. Building interior floor drains are evaluated with the treated water.

Table 2.4.2-9 of the LRA lists seven structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions for these structural component groups:

- structural support for non-safety-related equipment
- shelter/protection of equipment
- fire barrier

2.4.2.9.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.9 and UFSAR Section 3.8.4 to determine whether there is reasonable assurance that the service building structural components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of its review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.2-9 of the LRA lists the following seven structural component groups that require an AMR:

(1) SB-ARCH-EXT (non-load bearing building elements not relied upon in the safety analysis which provide normal habitability control and weather proofing, e.g., building siding, built up roof systems, windows, etc.)

(2) SB-BLOCK-INT (masonry block walls and mortar of the Service Building protected from the weather)

(3) SB-C-BUR (concrete in the service building that is in contact with the soil and ground-water; embedded steel, reinforcement, and the embedded portion of anchor bolts; elastomer sealing material used below grade in the service building; post-construction urethane foam resin injected into seams and cracks to prevent ground-water intrusion),

(4) SB-C-EXT (concrete in the service building that is exposed to the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts)

(5) SB-C-INT (concrete in the service building that is protected from the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts; grout under column base plates)

(6) SB-FAST(CS)-INT (the exposed portion of carbon steel threaded fasteners in the service building that are protected from the weather)

(7) SB-SS(CS)-INT (structural carbon steel in the service building that is protected from the weather; columns, posts, beams, baseplates, bracing, crane support girders, crane rails, and the exposed faces of plates and structural members)

The staff has reviewed the information in LRA Section 2.4.2.9, and the UFSAR. The staff finds that the applicant made no omissions in scoping and screening the service building for license renewal.

2.4.2.9.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the service building that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the service building that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.10 Cable Tunnel

2.4.2.10.1 Summary of Technical Information in the Application

The applicant describes the cable tunnel in LRA Section 2.4.2.10 and provides a list of components subject to an AMR in LRA Table 2.4.2-10.

The cable tunnel is a safety related structure which houses and supports the electrical control circuits for most safety-related equipment. The cable tunnel includes a cofferdam, placed to protect the structure from the effects of external flooding. Accordingly, the cable tunnel contains non-nuclear safety equipment whose failure could affect a safety function.

The cable tunnel is a below grade reinforced concrete structure supported by steel piles that has openings in the control building, the intermediate building, and the auxiliary building. The tunnel allows cables to be routed between these structures. The roof of the portion of the tunnel that

extends to the control building is level with the yard grade. This section houses an escape hatch. The tunnel is protected from the effects of external flooding by a cofferdam surrounding the escape hatch. The cable tunnel is resistant to the effects of high winds and internally or externally generated missiles due to its underground configuration, the orientation of its openings, and the shielding provided by adjacent structures and components.

The cable tunnel contains equipment supports and is also associated with fire penetration barriers and seals where it interfaces with the other structures. These equipment sets receive a separate commodity group evaluation independent of the structure evaluation. The structure interior floor drains are evaluated with the treated water system.

Table 2.4.2-10 of the LRA lists nine structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions for these structural component groups:

- structural support for safety related equipment
- shelter/protection of equipment
- fire barrier
- pressure boundary
- food barrier

2.4.2.10.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.10 to determine whether there is reasonable assurance that the cable tunnel structural components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of its review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.2-10 of the LRA lists the following nine structural component groups that require an AMR:

(1) PIPE (cable tunnel escape hatch gutter grain)
(2) TUNNEL-C-BUR (concrete in the cable tunnel that is in contact with the soil and ground water; embedded steel, reinforcement, and the embedded portion of anchor bolts; elastomer sealing material used below grade in the cable tunnel; post-construction urethane foam resin injected into seams and cracks to prevent groundwater intrusion)
(3) TUNNEL-C-EXT (concrete in the cable tunnel that is exposed to the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts)
(4) TUNNEL-C-INT (concrete in the cable tunnel that is protected from the weather; embedded steel, reinforcement, and the embedded portion of anchor bolts)
(5) TUNNEL-ELAST-EXT (elastomer sealing material in the cable tunnel that is exposed to the weather; elastomers are used between the escape hatch cofferdam and the exterior concrete)
(6) TUNNEL-FAST(CS)-EXT (the exposed portion of carbon steel threaded fasteners for the cable tunnel that are exposed to the weather)

(7) TUNNEL-SS(CS)-EXT (structural carbon steel for the cable tunnel, e.g., cofferdam, that is exposed to the weather)
(8) TUNNEL-SS(CS)-PILE (the carbon steel piles that comprise portions of the cable tunnel foundation)
(9) VALVE BODY (cable tunnel escape hatch gutter drain)

The staff has reviewed the information in LRA Section 2.4.2.10. The staff finds that the applicant made no omissions in scoping and screening the cable tunnel for license renewal.

2.4.2.10.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the cable tunnel that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the cable tunnel that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.11 Essential Yard Structures

2.4.2.11.1 Summary of Technical Information in the Application

The applicant describes, the essential yard structures in LRA Section 2.4.2.11 and provides a list of components subject to an AMR in LRA Table 2.4.2-11.

Within the site boundary there are structures and subterranean yard components that are necessary to support safety-related functions. These civil features emanate from design considerations that are typically independent of the function of the plant system associated with the feature. Accordingly, components evaluated within the essential yard structures group house and support or provide shelter and protection for safety-related or essential equipment.

The essential yard structures group is a listing of the major civil components found onsite but not included within any other LR review boundary. (Note: Above- and below-grade tanks are evaluated with the mechanical system they serve, while the discharge canal is evaluated with the screenhouse.) The following structures and components evaluated in this group:

- service water alternative discharge structure
- vital AC and DC duct banks, including their manholes and covers
- revetment armor stone
- transformer support pads

The primary service water discharge line discharges to the discharge canal and then to Lake Ontario. The redundant service water discharge line discharges to a Seismic Category I discharge structure, then to Deer Creek and to Lake Ontario. The redundant service water discharge line is normally in standby; however, it is occasionally placed in service for such activities as surveillance testing or maintenance work. Direct current control power from the

station batteries is run in underground duct, separated, and apart from the cable tunnel, in order to maintain the necessary control in the event of an emergency. The electrical connections from the diesels to buses 17 and 18 are routed inside a separate underground duct bank from the diesel-generator building to the screenhouse.

The breakwater that protects the plant from lake flooding is a stone revetment constructed in two reaches. The stone revetment was initially constructed with two layers of 5 ton minimum armor stones laid upon a 1.0 vertical to a 1.5 horizontal side slope to a minimum elevation of 257.0 feet mean sea level (msl). Because of the high lake levels that were predicted for Lake Ontario during the early 1970s, the crest elevation of the revetment was raised to a minimum of 261.0 feet msl by placement of cap stone along the top of the revetment.

Table 2.4.2-11 of the LRA lists five structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions for these structural component groups:

- cooling water source
- shelter/protection of equipment

2.4.2.11.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.11 to determine whether there is reasonable assurance that the essential yard structures components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of its review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.2-11 of the LRA lists the following five structural component groups that require an AMR:

(1) YARD-CASTIRON-EXT (cast iron for the essential yard structures, e.g., manhole covers, that are exposed to the weather)
(2) YARD-C-BUR (concrete in essential yard structures that is in contact with the soil and groundwater; embedded steel, reinforcement, and the embedded portion of anchor bolts)
(3) YARD-C-EXT (concrete in the essential yard structures that is exposed to the weather; concrete used in the service water alternate discharge structure and the exposed portions of duct bank manholes; embedded steel, reinforcement, and the embedded portion of anchor bolts)
(4) YARD-C-INT (concrete in the essential yard structures that is protected from the weather; concrete used in the duct bank manholes; embedded steel, reinforcement, and the embedded portion of anchor bolts)
(5) YARD-STONE-EXT (armor stone used in the revetment)

Table 2.4.2-11 of the LRA states that the embedded portions of anchor bolts for three component groups (YARD-C-BUR, YARD-C-EXT, and YARD-C-INT) require an AMR. However, it does not address whether the exposed portions of anchor bolts require an AMR. In

RAI 2.4-1, the staff requested the applicant to explain whether the exposed portion of anchor bolts requires an AMR and, if it does not, provide a justification for the exclusion. The applicant responded to RAI 2.4-1 in the following:

> Table 2.4.2-11, Essential Yard Structures should contain an entry for Yard-Fast(CS)-EXT. The absence of this component asset was a typographical omission. This generic asset includes the exposed portion of carbon steel threaded fasteners for Yard Structures that are exposed to the weather. The intended functions for these assets include Structural Support NSR Equipment, Cooling Water Source and Shelter/Protect Equipment. The AMR for the generic asset is contained in Table 3.6-1 line number (16).

The staff has reviewed the information in LRA Section 2.4.2.11, and the additional information submitted by the applicant in response to the staff's RAI. The staff finds that the applicant made no omissions in scoping and screening the essential yard structures for license renewal.

2.4.2.11.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the essential yard structures that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the essential yard structures that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.2.12 Component Supports Commodity Group

2.4.2.12.1 Summary of Technical Information in the Application

The applicant describes the component supports commodity group in LRA Section 2.4.2.12 and provides a list of components subject to an AMR in LRA Table 2.4.2-12.

System components physically interface with civil structures. The interface takes place in the form of component supports that position and bear the weight of the component assemblies and provide the proper amount of resistance to motion during normal operating conditions, accidents, transients and off normal events. Component supports are located throughout the plant. Included in the scope of the component support commodity group are supports for safety-related components and non-safety-related components whose failure could affect a safety function (typically referred to as seismic II/I).

The component support commodity group does not include evaluation of snubbers (considered active per NEI 95-10) or the reactor vessel, reactor coolant pumps, steam generators, pressurizer and other reactor coolant system supports, all of which receive a separate evaluation.

The component support commodity group includes those structural elements that are connected to civil structures and which extend to a system or system components for the

purpose of providing support or restraint. Included in this boundary definition are any vibration dampeners or other passive connective appurtenances intrinsic to the functioning of the support. The commodity group also includes spray or drip shields attached to equipment and electrical system rack, panels and enclosures. For mechanical systems, the evaluation boundary includes the connections to or around piping systems, bracing and framing for tanks, pumps and skids, etc.

Component supports provide the connection between a system's equipment or component and a plant structural member (e.g., wall, floor, ceiling, column, beams, etc.). They provide support for distributed loads (e.g., piping, tubing, HVAC ducting,) and localized loads (e.g., individual equipment). Pipe restraints, consisting of failure restraints and seismic restraints, limit pipe movement during postulated events. For electrical systems, the evaluation boundary includes the connections to raceways, cable trays and conduits. The evaluation boundary also includes the raceways, cable trays, and conduits, as well as racks, panels, or enclosures which house or support system components within the scope of license renewal. Raceways and cable trays identify a general component type that is designed specifically for holding electrical wires and cables. Like mechanical system supports, electrical supports provide support for distributed loads (e.g., cable trays, raceways, conduit) and localized loads (e.g., individual equipment, cabinets, junction boxes, etc.).

Only seismically analyzed supports for system piping greater than or equal to 4 inches are uniquely field labeled and tracked in the plant database. These supports do not include all of the supports that are in the scope of license renewal. Because of the difficulty in uniquely distinguishing supports, all supports for safety-related equipment and all supports for any equipment contained within a safety-related structure, regardless of the equipment's seismic classification, shall be considered within the scope of license renewal unless a support is specifically excepted and that exception documented. Additionally, other structures also house and support equipment that is in the scope of the rule. Component supports for those equipment sets are also in the scope of license renewal.

Table 2.4.2-12 of the LRA lists 20 structural component groups requiring an AMR, provides a reference to the results of the AMR for each component group, and identifies the following intended functions for these structural component groups:

- structural support for non-safety-related equipment
- structural support for safety-related equipment

2.4.2.12.2 Staff Evaluation

The staff reviewed LRA Section 2.4.2.12 to determine whether there is reasonable assurance that the component supports commodity group components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of the review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Table 2.4.2-12 of the LRA lists the following 20 structural component groups that require an AMR:

(1) CSUPP-AL-INT (aluminum alloy electrical conduit and conduit supports that are not exposed to the weather)
(2) CSUPP-ASME(CS)-EXT (structural carbon steel used in nuclear steam supply system (NSSS) pipe and component supports that is outdoors, i.e., exposed to the weather)
(3) CSUPP-ASME(CS)-INT (structural carbon steel used in NSSS pipe and component supports that is indoors i.e., protected from the weather)
(4) CSUPP-ELAST-INT (elastomer, e.g., vibration isolator equipment mounts, that i.e., protected from the weather; cabinet door seals, gaskets, and other seals)
(5) CSUPP-EXP(CS)-EXT (carbon steel expansion/grouted anchors that are exposed to the weather)
(6) CSUPP-EXP(CS)-INT (carbon steel expansion/grouted anchors that are not exposed to the weather)
(7) CSUPP-EXP(SS)-RW (stainless steel expansion/grouted anchors that are submerged in raw water)
(8) CSUPP-FAST(CS)-EXT (carbon steel structural fasteners, e.g., bolts, studs, nuts, that are exposed to the weather)
(9) CSUPP-FAST(CS)-INT (carbon steel structural fasteners, e.g., bolts, studs, nuts, that are protected from the weather; indoor air is considered to be non-air-conditioned (bounding condition), even though some fasteners are within boundaries for air conditioned areas, e.g., control building)
(10) CSUPP-FAST(HSLAS)-INT (High strength carbon steel structural fasteners, e.g., bolts, studs, nuts whose yield strength is greater than 150 ksi, that are protected from the weather, used for selected electrical enclosures and a limited number of structural steel component supports)
(11) CSUPP-FAST(SS)-RW (Stainless steel fasteners, e.g., bolts, studs, nuts, etc., that are submerged in raw water)
(12) CSUPP-G-INT (grout used in expansion/grouted anchors within the plant; expansion/grouted anchors include Hilti bolts but do not include Drillco Maxi-Bolts; grout used as a component support under equipment bases; grout used as a fire barrier is evaluated as a separate commodity group)
(13) CSUPP-SS(CS)-EXT (structural carbon steel, e.g., plates, channels, support members, that is exposed to the weather)
(14) CSUPP-SS(CS)-INT (structural carbon steel, e.g., plates, beams, support members, that is indoor, i.e., protected from the weather; indoor air is considered to be non-air-conditioned (bounding condition), even though some steel surfaces are within boundaries for air conditioned areas, e.g., control building; electrical enclosure drip guards and spray shields)
(15) CSUPP-SS(SS)-RW (Structural stainless steel, e.g., plates, beams, support members, that is submerged in raw water)
(16) CSUPP-SURFACE-ELAST-EXT (non-metallic materials used in NSSS pipe and component supports that are exposed to the weather)
(17) CSUPP-SURFACE-ELAST-INT (non-metallic materials used in NSSS pipe and component supports that are protected from the weather)
(18) CSUPP-SURFACE-METAL-EXT (metallic surfaces used in NSSS pipe and component supports that are exposed to the weather)

(19) CSUPP-SURFACE-METAL-INT (metallic surfaces used in NSSS pipe and component supports that are protected from the weather)

(20) CSUPP-WOOD-INT (wood used in electrical cable support spacers and the Intermediate Building supply fan support frame)

Table 2.4.2-12 of the LRA indicates that the grout used for Hilti bolts requires an AMR, but the grout used for Drillco Maxi-Bolts is excluded from an AMR. In RAI 2.4-3, the staff asked the applicant to provide a justification for the exclusion of the grout used for Drillco Maxi-Bolts. In response to RAI 2.4-3, the applicant stated in the following:

> All grout associated with supporting components that are within the scope of the rule, together with the grout in which Drillco Maxi-Bolts are embedded, is included for AMR. The language used in Table 2.3.2-12 was meant to distinguish that Drillco Max-Bolts have a design installation technique different from other types of embedded anchor bolt configurations. That difference typically results in bolt shaft failure rather than grout failures when the component is over stressed.

In RAI 2.4-5, the staff states that the intake structure, intake canal, cable trays and supports, tube track, reactor vessel internals, pipe hangers, and supports have been listed as items requiring an AMR for other plants submitting an LRA. The staff did not find these structures or structural components listed in the Ginna LRA as requiring an AMR. The staff asked the applicant to explain whether these structures or structural components require an AMR, and, if they do not, to justify their exclusion. In response to RAI 2.4-5, the applicant stated the following:

> The intake structure and tunnel are not within the scope of license renewal. This is explained in Section 2.4.2.7 of the LRA. The Screen House and discharge canal have features which provide water intake from the discharge canal to the Service Water system should the Circulating Water intake tunnel become unavailable. The cable trays and supports are included in LRA section 2.4.2-12, and tube track in LRA Table 2.4.1-1 under component group CV-SS(SS)-INT. The reactor vessel internals are included in LRA 2.3.1.3. Pipe hangers and supports are included in LRA section 2.4.2-12.

The staff has reviewed the information in LRA Section 2.4.2.12, and the additional information submitted by the applicant in response to the staff’s RAIs. The staff finds that the applicant made no omissions in scoping and screening the component supports commodity group for license renewal.

2.4.2.12.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the component supports commodity group that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the component supports commodity group that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.3 Nonessential Buildings and Yard Structures

2.4.3.1 Summary of Technical Information in the Application

The applicant describes the nonessential buildings and yard structures in LRA Section 2.4.3 and states that these buildings and structures are not within the scope of license renewal because they do not serve an intended function.

The nonessential buildings, structures and yard components group is a listing of the major civil components found on site but not included within any other LR review boundary. (Note: Above- and below-grade tanks are evaluated with the mechanical system they serve. Some external tanks have dikes and spill abatement features included in this list.) A review of the UFSAR, and other CLB documents, as well as field verifications were performed to ensure that these civil features do not meet the criteria to be considered in the scope to license renewal. Structures and components evaluated in this group include the following:

- nuclear engineering services building located on the northwest side of site boundary, used for office space (also contains the emergency plan engineering support facility)
- miscellaneous storage building located east of engineering building and use for equipment and spare parts storage
- office trailers at various locations around the site, used for office space and storage
- steam generator facilities building located northeast of plant, used as office space (previously used for steam generator repair training)
- radwaste storage building located northeast of plant, used for contaminated waste storage
- sodium hypochlorite tank with spill containment dike located north of plant and east of screenhouse used for chemical storage for secondary water treatment
- ammonia storage tank with spill containment dike located north of plant and south of screenhouse used for chemical storage for secondary water treatment
- roadways, paths, and sidewalks located around the site, used for personnel and equipment access/egress
- contaminated storage building located south of auxiliary building, used for personnel and equipment access/egress
- guardhouse located on the south side of site boundary, centerline, used for personnel access/egress
- warehouse/construction office (Butler Building) located west of plant, used for office space, the wellness center and the machine shop
- miscellaneous storage building located south of engineering building used for equipment and spare parts storage
- off load portal located west of guardhouse on the south site boundary used as a shipping transfer point from offsite warehouse into the secure area
- hydrogen building located south of auxiliary building contains hydrogen and nitrogen bottled gas for the volume control tank
- high mast lighting located in throughout the site, used for security lighting
- security fences and structures at various locations around the site perimeter used for site access control
- storm drainage structures various located throughout the site, used for ground water runoff control
- lube oil storage building located north of turbine building, used for oil storage

- hydrogen bottle house located north of turbine building contains hydrogen and carbon dioxide bottled gas used for the main electrical generator
- high integrity container storage facility located west of the radwaste storage building used for shielding for containerized spent resin prior to shipment
- old steam generator storage facility located northwest of the plant outside the security fence used to house the old steam generators and designed for long-term storage

2.4.3.2 Staff Evaluation

The staff reviewed LRA Section 2.4.3 to determine whether there is reasonable assurance that the nonessential buildings and yard structures components that are within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of its review, the staff selected system functions described in the UFSAR that were set forth in 10 CFR 54.4 to verify that components having intended functions were not omitted from the scope of the Rule. The staff also focused on components that were not identified as being subject to an AMR to determine if any components were omitted.

Based on its review of the LRA, the staff finds that the applicant has made adequate decisions that these nonessential buildings and yard structures components should not be in scope and subject to an AMR because they do not perform license renewal intended functions.

2.4.3.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any SSCs that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the structural components of the nonessential buildings and yard structures that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the structural components of the nonessential buildings and yard structures that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.4.4 Evaluation Findings

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

2.5 Scoping and Screening Results: Electrical and Instrumentation and Controls Systems

This section addresses the electrical systems' scoping and screening results for license renewal. The applicant has chosen to evaluate the electrical and instrumentation and controls

(I&C) components on a plant-wide basis (rather than on a system basis) as commodities utilizing the “spaces” approach and the "bounding review technique". The Ginna application identifies the following list of generic electrical and I&C commodity groups (the SER sections which evaluate the commodity groups are also provided) that are addressed in LRA Section 2.5:

- Medium Voltage Insulated Cables and Connections (2.5.1.1)
- Low Voltage Insulated Cables and Connections (2.5.1.2)
- Electrical Portions of Electrical and I&C Penetration Assemblies (2.5.1.3)
- Electrical Phase Bus (2.5.1.4)
- Switchyard Bus (2.5.1.5)
- Transmission Conductors (2.5.1.6)
- Uninsulated Ground Conductors (2.5.1.7)
- High Voltage Insulators (2.5.1.8)

Pursuant to 10 CFR 54.21(a)(1), an applicant must identify and list SCs subject to an AMR. These are passive, long-lived SCs that are within the scope of license renewal. To verify that the applicant has properly implemented its methodology, the staff focuses its review on the implementation results. Such a focus allows the staff to confirm that there is no omission of electrical system components that are subject to an AMR. If the review identifies no omission, the staff has the basis to find that there is reasonable assurance that the applicant has identified the electrical system components that are subject to an AMR.

2.5.1 Commodity Group Discussion

Section 2.1.7.4 of the application states that by using this methodology, initially all passive long-lived electrical and I&C commodity groups are considered subject to an AMR. The plant is segregated into areas where common, bounding environmental parameters can be assigned; an AMR is performed on the most limiting commodity in that area. If the AMR finds that aging management activities are required, Section 2.1.7.4 indicates that “component specific scoping” may be performed on the components in those commodity groups. This is done to limit the number of components for which aging management activities are required, or to eliminate the aging management activity altogether if no components remain in the material/environment group population following the scoping. The staff asked the applicant to identify the components that were eliminated from aging management activities through component specific scoping and to provide the justification for doing so. The applicant provided a list of these components in a letter dated May 23, 2003. These components are identified and evaluated in the staff’s evaluation of the generic commodity groups in which they are a member.

The generic electrical and I&C commodity groups identified by the applicant are addressed in the following sections.

2.5.1.1 Medium Voltage Insulated Cables and Connectors

2.5.1.1.1 Summary of Technical Information in the Application

The applicant described the medium voltage insulated cable and connection commodity group in LRA Section 2.5.1. Tables 2.5.4-1, 2.5.6-1, and 2.5.8-1 identify the systems which contain this commodity group, as well as the passive function and aging management references for the commodity group.

An insulated cable is an assembly of a single electrical conductor (wire) with an insulation covering or a combination of conductors insulated from one another. Medium voltage cables operate between 1,000 volts (V) and 15,000 V and are normally shielded. Power cables at Ginna Station operate at a nominal voltage of 4160 V. Connections (or terminations) are used to connect the cable conductors to other cables or electrical devices. Connections include, but are not limited to, mechanical connections, splices, terminal blocks, and fuse holders not included within other assemblies. The license renewal function of these components is to provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals.

2.5.1.1.2 Staff Evaluation

The staff reviewed LRA Sections 2.5.1 and 2.5.2; UFSAR Sections 8.1, 8.2, and 8.3; and the applicant's responses to the staff's requests for additional information. The purpose of the review was to determine whether there is reasonable assurance that the medium voltage insulated cables and connections within the scope of license renewal and subject to an AMR had been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of the review, the staff selected the nonessential buildings/areas identified in LRA Section 2.4.3 to verify that medium voltage insulated cables and connections having intended functions that might be located in those spaces were not omitted from the scope of the Rule. This is consistent with the treatment of the medium voltage insulated cables and connections as a commodity utilizing the "plant spaces" approach. The staff focused on medium voltage cables and connections that were not identified as being subject to an AMR to determine if any medium voltage cables and connections were omitted.

In a conference call with the applicant on January 15, 2003, the applicant stated that electrical and I&C components located within the plant spaces identified in LRA Section 2.4.3 do not perform any license renewal intended functions and, therefore, are not included within the scope of license renewal. The staff reviewed the plant spaces (buildings/areas) identified in LRA Section 2.4.3 against information contained in the Ginna UFSAR. The staff did not find any indication in the UFSAR that these spaces contain electrical or I&C components (including medium voltage insulated cables and connections) that perform a license renewal intended function. In addition, inspectors toured selected SCs listed in Section 2.4.3 of the LRA, including items (a), (b), (d), (f), (n), (s), and (t), and determined that there were no electrical components in them. Buildings u) and e) could not be entered because they were sealed with the radioactive components (See AMP audit report dated September 8, 2003).

With regard to plant spaces that do include electrical and I&C components that perform a license renewal intended function, LRA Section 2.1.7.4 indicates that component specific scoping may have been performed in those spaces. This was done to limit the number of components for which aging management activities are required, or to eliminate aging management activities altogether if nothing remains in that particular material/environment group population. An example of this is found in LRA Section 3.7, under the heading

Environment, which states that Ginna has four medium voltage power cables installed in underground duct banks. It was determined that a failure of these cables would not prevent the satisfactory accomplishment of any intended function. The LRA states that, therefore, a further review of this environment was not required. The staff asked the applicant whether there are any other underground circuits in the 2 kilovolt (kV) or higher voltage range (including 34.5 kV circuits). If so, the applicant was asked to include them in the response to the following request.

The staff asked the applicant to identify each of the electrical and I&C components (including medium voltage insulated cables and connections) that were eliminated from aging management activities through component specific scoping, and to identify the plant SSCs that are served by those components. The applicant was also asked to provide the basis used in each case for concluding that those SSCs do not provide any license renewal intended functions identified in 10 CFR 54.4(a). The response to the staff's request was provided by the applicant in a letter dated May 23, 2003.

With regard to the staff's question on 34.5 kV underground circuits, the applicant stated that Ginna is supplied by the offsite power system via two 34.5 kV circuits, This is consistent with interim staff guidance on SBO, because the evaluation boundary for the offsite power system starts at the 34.5 kV circuit breakers upstream of the startup transformers. The applicant therefore states that the 34.5 kV cables feeding these breakers are outside of the evaluation boundary and were not evaluated as part of license renewal. The staff agrees that the 34.5 kV circuits feeding the circuit breakers are outside of the evaluation boundary. The staff's evaluation of the SBO evaluation boundary used by the applicant is contained in Section 2.5.1.5.2 of this SER.

The applicant's May 23, 2003, responses also identified the medium voltage cables that were eliminated from aging management activities through component specific scoping. The following cables were identified, and justification for their elimination was provided:

- Cable M0010 provides the normal 4 kV source of power to circulating water pump A. A credible failure of this cable will result in a loss of power to the circulating water pump. Circulating water pump A does not perform an intended function. With regard to interim staff guidance on SBO, this cable is not required to recover from an SBO event.

- Cable M0170 provides the normal 4 kV source of power to circulating water pump B. A credible failure of this cable will result in a loss of power to the circulating water pump. Circulating water pump B does not perform an intended function. With regard to interim staff guidance on SBO, this cable is not required to recover from an SBO event.

- Cable M0089 provides the normal 4 kV source of power to station service transformer 18. This transformer is one of two sources of 480V power for bus 18. A credible failure of this cable does not result in a loss of an intended function. With regard to interim staff guidance on SBO, this cable is not required to recover from an SBO event.

- Cable M0108 provides the normal 4 kV source of power to station service transformer 17. This transformer is one of two sources of 480V power for bus 17. A credible failure of this cable does not result in a loss of an intended function. With regard to interim staff guidance on SBO, this cable is not required to recover from an SBO event.

The staff agrees that cables M0010 and M0170 do not provide a license renewal function. The staff, however, questioned the elimination of cables M0089 and M0108 from the license renewal scope. These circuits are part of the offsite power path that brings offsite power into the safety buses. The staff therefore asked the applicant to clarify how the Ginna plant can be brought to a shutdown condition from the offsite power supply if these circuits to the safety-related shutdown buses are not included within the scope of license renewal.

In a July 11, 2003, response to staff-clarification questions the applicant stated that circuits M0089 and M0108 are not relied upon to cope with, or recover from, a station blackout. The entry conditions for plant procedure ECA-0.0, "Loss of All AC Power," is the loss of bus 14 and bus 16. This procedure is not entered when bus 17 and bus 18 are lost. Upon restoration of bus 14 and/or bus 16, recovery actions are taken. These recovery actions do not rely upon bus 17 or bus 18, although they may be used if available. This procedure directs activities required to achieve shutdown conditions.

The response to the staff's question does not indicate how long Ginna can remain in a safe condition following recovery of only safety buses 14 and 16. The Ginna UFSAR (Section 8.3.1.1.6) indicates that buses 17 and 18, which are powered from the cables in question (M0089 and M0108), supply power to the Ginna service water pumps. The concern is that recovery of offsite power to only buses 14 and 16 following an SBO will only allow the plant to continue to operate in the hot standby or hot shutdown condition. While hot standby or hot shutdown is acceptable for plant operation during the SBO coping period, if Ginna cannot be brought to cold shutdown, recovery of buses 14 and 16 may result in only a few additional hours beyond Ginna's required 4-hour coping capability. Unavailability of condensate feedwater or other limitations could limit operation in these modes. The staff notes that recovery of the Ginna EDGs following an SBO would allow energization of the full complement of safety buses, including buses 17 and 18. Hot standby or hot shutdown has been accepted by the staff at some plants for non-SBO scenarios such as fire protection; however, it is not clear that the same limitations as those following an SBO event exist for the other scenarios. The applicant should identify the length of time Ginna can remain in a safe condition following recovery of only safety buses 14 and 16 and provide the justification for the acceptability of that time. The justification could refer to the staff's acceptance of comparable times for other scenarios at Ginna, evidence of the ability to repair a Ginna EDG in that time period, or comparability of that time to other staff-accepted time periods (e.g., required fuel oil supplies for the Ginna EDGs). This is Open Item 2.5-1.

2.5.1.1.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any electrical and I&C commodity groups that should be within the scope of license renewal were not identified by the applicant. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. On the basis of this review, the staff concludes, pending satisfactory resolution of Open Item 2.5-1, that the applicant has appropriately identified the medium voltage insulated cables and connections that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the medium voltage insulated cables and connections that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.2 *Low Voltage Insulated Cables and Connectors*

2.5.1.2.1 Summary of Technical Information in the Application

The applicant described the low voltage insulated cables and connections commodity group in LRA Section 2.5.1. Tables 2.5.2-1, 2.5.3-1, 2.5.4-1, 2.5.5-1, 2.5.6-1, 2.5.7-1, 2.5.8-1, 2.5.9-1, 2.5.10-1, 2.5.11-1, 2.5.12-1, 2.5.13-1, and 2.5.14-1 identify the systems that contain this commodity group, as well as the passive function and aging management references for the commodity group.

An insulated cable is an assembly of a single electrical conductor (wire) with an insulation covering or a combination of conductors insulated from one another. Low voltage cables operate at voltage levels below 600 volts alternating current (VAC). This includes power, instrumentation, control, and communications cables. Connections (or terminations) are used to connect the cable conductors to other cables or electrical devices. Connections include, but are not limited to, mechanical connections, splices, terminal blocks, and fuse holders not included within other assemblies. The license renewal intended function of these components is to provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals.

2.5.1.2.2 Staff Evaluation

The staff reviewed LRA Sections 2.5.1 and 2.4.3; UFSAR Sections 8.1, 8.2, and 8.3; and the applicant’s responses to the staff’s RAIs. The purpose of the review was to determine whether there is reasonable assurance that the low voltage insulated cables and connections within the scope of license renewal and subject to an AMR had been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of the review, the staff selected the nonessential buildings/areas identified in LRA Section 2.4.3 to verify that low voltage insulated cables and connections having intended functions that might be located in those spaces were not omitted from the scope of the Rule. This is consistent with the treatment of the low voltage insulated cables and connections as a commodity utilizing the “plant spaces” approach. The staff focused on low voltage insulated cables and connections that were not identified as being subject to an AMR to determine if any low voltage insulated cables and connections were omitted.

In a conference call with the applicant on January 15, 2003, the applicant stated that electrical and I&C components located within the plant spaces identified in LRA Section 2.4.3 do not perform any license renewal intended functions and, therefore, are not included within the scope of license renewal. The staff reviewed the plant spaces (buildings/areas) identified in LRA Section 2.4.3 against information contained in the Ginna UFSAR. The staff did not find any indication in the UFSAR that these spaces contain electrical or I&C components (including low voltage insulated cables and connections) that perform a license renewal intended function. In addition, selected buildings/areas identified in LRA Section 2.4.3 were audited during the NRC license renewal inspections. The inspector toured selected SCs listed in Section 2.4.3 of the LRA, including Items (a), (b), (d), (f), (n), (s), and (t), and determined that there were no electrical components in them. Buildings (u) and (e), could not be entered into because they are sealed with the radioactive components.

With regard to plant spaces that do include electrical and I&C components that perform a license renewal intended function, LRA Section 2.1.7.4 indicates that component specific scoping may be performed in those spaces. This is done to limit the number of components for which aging management activities are required, or to eliminate aging management activities altogether if nothing remains in that particular material/environment group population.

The staff asked the applicant to identify each of the electrical and I&C components (including low voltage insulated cables and connections) that were eliminated from aging management activities through component specific scoping, and to identify the plant SSCs that are served by those components.   The applicant was also asked to provide the basis used in each case for concluding that those SSCs do not provide any license renewal intended functions identified in 10 CFR 54.4(a). The response to the staff's request was provided by the applicant in a letter dated May 23, 2003. There were no components identified by the applicant in the low voltage insulated cables and connections category that were eliminated from aging management activities through component specific scoping.

2.5.1.2.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any electrical and I&C commodity groups that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the low voltage insulated cables and connections that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the low voltage insulated cables and connections that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.3 Electrical Penetration Assemblies

2.5.1.3.1 Summary of Technical Information in the Application

The applicant described the electrical penetration assemblies commodity group in LRA Section 2.5.1.

Electrical penetration assemblies consist of one or more electrical conductors and a pressure boundary between the inboard and outboard sides of the penetration capable of maintaining electrical continuity through the boundary. These penetrations are used to transmit electrical power and signals through the containment wall. The license renewal intended function of these components is to provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals. The review of the electrical penetration assemblies did not include the pressure boundary function, which is discussed in the containment structural review. All primary containment electrical penetration assemblies at Ginna Station are included in the scope of the Environmental Qualification Program in accordance with 10 CFR 50.49. The TLAA of electrical penetration assemblies is described in Section 4.4.3 of the LRA.

2.5.1.3.2 Staff Evaluation

Section 2.5-1 of the LRA states that all primary containment electrical penetration assemblies at Ginna Station are included in the scope of the Environmental Qualification Program (10 CFR 50.49). Components that are covered under this program are evaluated in Section 4.4 of this SER.

2.5.1.4 Electrical Phase Bus

2.5.1.4.1 Summary of Technical Information in the Application

The applicant described the electrical phase bus commodity group in LRA Section 2.5.1. Tables 2.5.4-1 and 2.5.5-1 identify the systems which contain this commodity group, as well as the passive function and aging management references for the commodity group.

Phase buses consists of rigid electrical conductors that are enclosed within their own enclosure or vault, and are not part of an active component such as a switchgear, load center, or motor control center. Phase buses are discussed as three distinct types, isolated phase bus, nonsegregated phase bus, and segregated phase bus. Only the nonsegregated phase bus is within the scope of license renewal at Ginna Station. This includes the 480 V diesel generator bus and the portions of the 4.16 kv bus that provide a normal source of power for the 480 V Class 1E power system. The license renewal intended function of these components is to provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals.

2.5.1.4.2 Staff Evaluation

The staff reviewed LRA Sections 2.5.1 and 2.4.3; UFSAR Sections 8.1, 8.2, and 8.3; and the applicant’s responses to the staff’s RAIs. The purpose of the review was to determine whether there is reasonable assurance that the electrical phase buses within the scope of license renewal and subject to an AMR had been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

In the performance of the review, the staff selected the nonessential buildings/areas identified in LRA Section 2.4.3 to verify that the electrical phase buses having intended functions that might be located in those spaces were not omitted from the scope of the Rule. This is consistent with the treatment of the electrical phase bus as a commodity utilizing the “plant spaces” approach. The staff focused on the electrical phase buses that were not identified as being subject to an AMR to determine if any electrical phase bus were omitted.

In a conference call with the applicant on January 15, 2003, the applicant stated that electrical and I&C components located within the plant spaces identified in LRA Section 2.4.3 do not perform any license renewal intended functions and, therefore, are not included within the scope of license renewal. The staff reviewed the plant spaces (buildings/areas) identified in LRA Section 2.4.3 against information contained in the Ginna UFSAR. The staff did not find any indication in the UFSAR that these spaces contain electrical or I&C components (including electrical phase buses) that perform a license renewal intended function. In addition, selected buildings/areas identified in LRA Section 2.4.3 were audited during the NRC license renewal inspections. The inspector toured selected SCs listed in Section 2.4.3 of the LRA, including Items (a), (b), (d), (f), (n), (s), and (t), and determined that there were no electrical components

in them. Buildings (u) and (e) could not be entered because they were sealed with the radioactive components.

With regard to plant spaces that do include electrical and I&C components that perform a license renewal intended function, LRA Section 2.1.7.4 indicates that component specific scoping may be performed in those spaces. This is done to limit the number of components for which aging management activities are required, or to eliminate aging management activities altogether if nothing remains in that particular material/environment group population.

The staff asked the applicant to identify each of the electrical and I&C components (including electrical phase buses) that were eliminated from aging management activities through component specific scoping, and to identify the plant systems, SSCs that are served by those components. The applicant was also asked to provide the basis used in each case for concluding that those SSCs do not provide any license renewal intended functions identified in 10 CFR 54.4(a). The response to the staff's request was provided by the applicant in a letter dated May 23, 2003. The responses identified the electrical phase buses that were eliminated from aging management activities through component specific scoping. The following electrical phase buses and the justification for their elimination was provided:

- 19 kV iso-phase bus provides power from the main generator to the station unit transformer and the main transformer (generator step-up transformer). A credible failure of this phase bus results in a loss of power generation. With regard to interim staff guidance on SBO, this phase bus is not required to recover from an SBO event.

- 11A/11B phase bus provides power from the station unit transformer to 4 kV buses 11A and 11B. A credible failure of this phase bus results in a loss of power generation. With regard to interim staff guidance on SBO, this phase bus is not required to recover from an SBO event.

- Control rod drive bus provides power from the motor-generator sets to the reactor trip breakers and the rod drive power distribution system. A credible failure of this bus results in a loss of power to the control rod drive mechanisms and a rod insertion. With regard to interim staff guidance on SBO, this phase bus is not required to recover from an SBO event.

The staff agrees that the above listed electrical phase buses do not provide a license renewal function.

2.5.1.4.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any electrical and I&C commodity groups that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the electrical phase buses that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately

identified the electrical phase buses that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.5 Switchgear Bus

2.5.1.5.1 Summary of Technical Information in the Application

The applicant described the switchyard bus commodity group in LRA Section 2.5.1. Table 2.5.8-1 identifies the system which contains this commodity group, as well as the passive function and aging management references for the commodity group.

The switchyard bus is an uninsulated, unenclosed, rigid electrical conductor used in switchyards and switching stations to connect two or more elements of an electrical power circuit, such as disconnect switches and transmission conductors. The switchyard bus at Ginna station is used to distribute 34.5 KV power from the offsite power circuits (751 and 767) to the oil circuit breakers and then to the station auxiliary transformers. The license renewal intended function of these components is to provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals.

2.5.1.5.2 Staff Evaluation

The staff reviewed LRA Sections 2.5.1 and 2.4.3; UFSAR Sections 8.1, 8.2, and 8.3; and the applicant’s responses to the staff’s RAIs. The purpose of the review was to determine whether there is reasonable assurance that the switchyard buses within the scope of license renewal and subject to an AMR had been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

In the performance of the review, the staff selected the nonessential buildings/areas identified in LRA Section 2.4.3 to verify that the switchyard buses having intended functions that might be located in those spaces were not omitted from the scope of the Rule. This is consistent with the treatment of the switchyard bus as a commodity utilizing the “plant spaces” approach. The staff focused on the switchyard buses that were not identified as being subject to an AMR to determine if any switchyard buses were omitted.

In a conference call with the applicant on January 15, 2003, the applicant stated that electrical and I&C components located within the plant spaces identified in LRA Section 2.4.3 do not perform any license renewal intended functions and, therefore, are not included within the scope of license renewal. The staff reviewed the plant spaces (buildings/areas) identified in LRA Section 2.4.3 against information contained in the Ginna UFSAR. The staff did not find any indication in the UFSAR that these spaces contain electrical or I&C components (including switchyard buses) that perform a license renewal intended function. In addition, selected buildings/areas identified in LRA Section 2.4.3 were audited during the NRC license renewal inspections. The inspector toured selected SCs listed in Section 2.4.3 of the LRA, including Items (a), (b), (d), (f), (n), (s), and (t), and determined that there were no electrical components in them. Buildings (u) and (e) could not be entered because they were sealed with the radioactive components.

With regard to plant spaces that do include electrical and I&C components that perform a license renewal intended function, LRA Section 2.1.7.4 indicates that component specific scoping may be performed in those spaces. This is done to limit the number of components for

which aging management activities are required, or to eliminate aging management activities altogether if nothing remains in that particular material/environment group population.

The staff asked the applicant to identify each of the electrical and I&C components (including switchyard buses) that were eliminated from aging management activities through component specific scoping; and to identify the plant SSCs that are served by those components. The applicant was also asked to provide the basis used in each case for concluding that those SSCs do not provide any license renewal intended functions identified in 10 CFR 54.4(a). The response to the staff's request was provided by the applicant in a letter dated May 23, 2003. The response identified the switchyard bus that was eliminated from aging management activities through component specific scoping. The following switchyard bus was identified and the justification for its elimination was provided:

- 115 kV switchyard bus provides a connection between the generator step-up transformer and the offsite power distribution system. A credible failure of this bus results in a loss of power generation, which is not required to perform an intended function. With regard to interim staff guidance on SBO, this switchyard bus is not required to recover from an SBO event.

The staff agrees that this switchyard bus does not serve a license renewal required function.

Switchyard buses are often used in the offsite power circuits that are required to be included within the scope of license renewal, consistent with the requirements in 10 CFR 54.4(a)(3) relative to SBO. With regard to the offsite power circuits, Section 2.5.8 of the application indicates that the 115 kV switchyard (Station 13A) is not included within the scope of license renewal. The information in the application also indicates that the 34.5 kV switchyard (Station 204) is not included within the scope of license renewal. In the Ginna design, there are two 34.5 kV circuit breakers shown in UFSAR Figure 8.1-1, upstream of station auxiliary (startup) transformers 12A and 12B, between the transformers and their respective switchyards (Stations 204 and 13A).

The staff guidance, "Scoping of Equipment Relied on to Meet the Requirements of the SBO Rule (10 CFR 50.63) for License Renewal (10 CFR 54.4(a)(3)," was provided to the Nuclear Energy Institute and the Union of Concerned Scientists in a letter dated April 1, 2002. The guidance states that –

> For purposes of the license renewal rule, the staff has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of the rule. This path typically includes the switchyard circuit breakers that connect to the offsite system power transformers (startup transformers), the transformers themselves, the intervening overhead or underground circuits between circuit breaker and transformer and transformer and the onsite electrical distribution system, and the associated control circuits and structures.

The Ginna offsite power system design is not configured like the typical design described in the guidance. It has the intervening 34.5 kV circuit breakers between the switchyard circuit breakers and the startup (station auxiliary) transformers. In order for the staff to determine whether the plant system portion of the offsite power system should end with the 34.5 kV circuit breakers or with the upstream switchyard circuit breakers at Stations 13A and 204, the staff needed to determine which circuit breakers provided the bulk of the plant system electrical

services (e.g., providing plant power, protecting downstream circuits, and providing plant operator-controlled isolation and energization capability). Both groups of circuit breakers clearly provide power to the plant. The applicant was asked to indicate which group of breakers are tripped upon actuation of the electrical protective features for the station auxiliary transformers and downstream circuits, and which group can be tripped open or closed by the Ginna plant operator.

If the bulk of the plant system electrical services were provided by the switchyard circuit breakers and not the 34.5 kV breakers, the applicant was asked to provide the basis for concluding that the plant system portion of the offsite power system ends with the 34.5 kV circuit breakers rather than the switchyard circuit breakers.

The applicant provided the following response in its May 23, 2003, letter:

> Circuit breakers 52/76702 and 52/75112 are located in the onsite transformer yard. These circuit breakers are tripped upon actuation of the electrical protective features for the station auxiliary transformers and downstream circuits and are controlled by the plant operators. Ginna Station relies upon the RG&E Energy Control Center to determine the status of 34.5 kV power from Stations 204 and 13A. Procedural guidance for restoration of offsite power does not address the control of circuit breakers upstream of 52/76702 and 52/75112.

Based on the applicant's response, the bulk of the Ginna's plant system electrical services are provided by 34.5 kV circuit breakers 52/76702 and 52/75112 located in the plant's onsite transformer yard. The staff, therefore, agrees that those breakers provide the appropriate boundary for the portion of the offsite circuits to be included within the scope of license renewal.

2.5.1.5.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any electrical and I&C commodity groups that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the switchyard buses that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the switchyard buses that are 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

The applicant described the transmission conductors commodity group in LRA Section 2.5.1.

Transmission conductors are uninsulated, stranded electrical cables used in switchyards, switching stations, and transmission lines to connect two or more elements of an electrical power circuit such as disconnect switches, power circuit breakers, transformers, and switchyard bus. At Ginna Station, transmission conductors are used to supply the onsite 34.5 kV switchyard from multiple offsite substations. The LRA states that these components are not

included in the license renewal boundary because they are primarily located offsite. It concludes, therefore, that an AMR of transmission conductors is not required.

2.5.1.6.2 Staff Evaluation

The staff reviewed LRA Sections 2.5.1 and 2.4.3; UFSAR Sections 8.1, 8.2, and 8.3; and the applicant' responses to the staff's RAIs. The purpose of the review was to determine whether there is reasonable assurance that the transmission conductors within the scope of license renewal and subject to an AMR had been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

In the performance of the review, the staff selected the nonessential buildings/areas identified in LRA Section 2.4.3 to verify that transmission conductors having intended functions that might be located in those spaces were not omitted from the scope of the Rule. This is consistent with the treatment of the transmission conductors as a commodity utilizing the "plant spaces" approach. The staff focused on transmission conductors that were not identified as being subject to an AMR to determine if any transmission conductors were omitted.

In a conference call with the applicant on January 15, 2003, the applicant stated that electrical and I&C components located within the plant spaces identified in LRA Section 2.4.3 do not perform any license renewal intended functions and, therefore, are not included within the scope of license renewal. The staff reviewed the plant spaces (buildings/areas) identified in LRA Section 2.4.3 against information contained in the Ginna UFSAR. The staff did not find any indication in the UFSAR that these spaces contain electrical or I&C components (including transmission conductors) that perform a license renewal intended function. In addition, selected buildings/areas identified in LRA Section 2.4.3 were audited during the NRC license renewal inspections. The inspector toured selected SCs listed in Section 2.4.3 of the LRA, including Items (a), (b), (d), (f), (n), (s), and (t), and determined that there were no electrical components in them. Buildings (u) and (e) could not be entered because they were sealed with the radioactive components.

With regard to plant spaces that do include electrical and I&C components that perform a license renewal intended function, LRA Section 2.1.7.4 indicates that component specific scoping may be performed in those spaces. This is done to limit the number of components for which aging management activities are required, or to eliminate aging management activities altogether if nothing remains in that particular material/environment group population.

The staff asked the applicant to identify each of the electrical and I&C components (including transmission conductors) that were eliminated from aging management activities through component specific scoping, and to identify the plant SSCs that are served by those components. The applicant was also asked to provide the basis used in each case for concluding that those SSCs do not provide any license renewal intended functions identified in 10 CFR 54.4(a). The response to the staff's request was provided by the applicant in a letter dated May 23, 2003. There were no components identified by the applicant in the transmission conductor category that were eliminated from aging management activities through component specific scoping.

Transmission conductors are often used in the offsite power circuits that are required to be included within the scope of license renewal, consistent with the requirements in

10 CFR 54.4(a)(3) relative to SBO. With regard to the offsite power circuits, Section 2.5.8 of the application indicates that the 115 kV switchyard (Station 13A) is not included within the scope of license renewal. The information in the application also indicates that the 34.5 kV switchyard (Station 204) is not included within the scope of license renewal. In the Ginna design, there are two 34.5 kV circuit breakers shown in UFSAR Figure 8.1-1, upstream of station auxiliary (startup) transformers 12A and 12B, between the transformers and their respective switchyards (Stations 204 and 13A).

The staff guidance, "Scoping of Equipment Relied on to Meet the Requirements of the SBO Rule (10 CFR 50.63) for License Renewal (10 CFR 54.4(a)(3))," was provided to the Nuclear Energy Institute and the Union of Concerned Scientists in a letter dated April 1, 2002. The guidance states that –

> For purposes of the license renewal rule, the staff has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of the rule. This path typically includes the switchyard circuit breakers that connect to the offsite system power transformers (startup transformers), the transformers themselves, the intervening overhead or underground circuits between circuit breaker and transformer and transformer and the onsite electrical distribution system, and the associated control circuits and structures.

The Ginna offsite power system design is not configured like the typical design described in the guidance. It has the intervening 34.5 kV circuit breakers between the switchyard circuit breakers and the startup (station auxiliary) transformers. In order for the staff to determine whether the plant system portion of the offsite power system should end with the 34.5 kV circuit breakers or with the upstream switchyard circuit breakers at Stations 13A and 204, the staff needed to determine which circuit breakers provided the bulk of the plant system electrical services (e.g., providing plant power, protecting downstream circuits, and providing plant operator-controlled isolation and energization capability). Both groups of circuit breakers clearly provide power to the plant. The applicant was asked to indicate which group of breakers are tripped upon actuation of the electrical protective features for the station auxiliary transformers and downstream circuits, and which group can be tripped open or closed by the Ginna plant operator.

If the bulk of the plant system electrical services were provided by the switchyard circuit breakers and not the 34.5 kV breakers, the applicant was asked to provide the basis for concluding that the plant system portion of the offsite power system ends with the 34.5 kV circuit breakers rather than the switchyard circuit breakers.

The applicant provided the following response in its May 23, 2003, letter:

> Circuit breakers 52/76702 and 52/75112 are located in the onsite transformer yard. These circuit breakers are tripped upon actuation of the electrical protective features for the station auxiliary transformers and downstream circuits and are controlled by the plant operators. Ginna Station relies upon the RG&E Energy Control Center to determine the status of 34.5 kV power from Stations 204 and 13A. Procedural guidance for restoration of offsite power does not address the control of circuit breakers upstream of 52/76702 and 52/75112.

Based on the applicant's response, the bulk of the Ginna's plant system electrical services are provided by 34.5 kV circuit breakers 52/76702 and 52/75112 located in the plant's onsite transformer yard. The staff, therefore, agrees that those breakers provide the appropriate boundary for the portion of the offsite circuits to be included within the scope of license renewal.

2.5.1.6.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any electrical and I&C commodity groups that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the transmission conductors that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the transmission conductors that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.1.7 Uninsulated Ground Connectors

2.5.1.7.1 Summary of Technical Information in the Application

The applicant described the uninsulated ground conductors commodity group in LRA Section 2.5.1.

Uninsulated ground conductors are electrical conductors (e.g., copper cable, copper bar, steel bar) that are uninsulated (bare) and are used to make ground connections for electrical equipment. Uninsulated ground conductors are connected to electrical equipment housings and electrical enclosures, as well as metal structural features such as the cable tray system and building structural steel. Uninsulated ground conductors are always isolated or insulated from the electrical operating circuits. Uninsulated ground conductors enhance the capability of the electrical system to withstand electrical system faults disturbances (e.g., electrical faults, lightening surges) for equipment and personnel protection. The LRA states that there are no license renewal intended functions for uninsulated ground conductors used at Ginna Station.

2.5.1.7.2 Staff Evaluation

The staff reviewed LRA Section 2.5.1 and UFSAR Sections 8.1, 8.2, and 8.3 to determine whether there is reasonable assurance that the uninsulated ground connector components within the scope of license renewal and subject to an AMR have been identified in accordance with 10 CFR 54.4 and 54.21(a)(1).

The staff reviewed UFSAR Sections 8.1, 8.2, and 8.3 to determine whether uninsulated ground conductors are used for any electrical purposes other than those identified in Ginna LRA Section 2.5.1. The staff found no other purposes identified. The staff agrees with the applicant that the intended purposes of the uninsulated ground conductors identified in LRA Section 2.5.1 do not serve a license renewal intended function at Ginna.

2.5.1.7.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any electrical and I&C commodity groups that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to

determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the uninsulated ground conductors at Ginna do not serve a license renewal intended function, as required by 10 CFR 54.4(a).

2.5.1.8 High Voltage Insulators.

2..5.1.8.1 Summary of Technical Information in the Application

The applicant describes the high voltage insulators commodity group in LRA Section 2.5.1. Table 2.5.8-1 identifies the system which contains this commodity group, as well as the passive function and aging management references for the commodity group.

An insulator is a material in a form designed to (a) support a conductor physically and (b) separate the conductor electrically from another conductor or object. The insulators evaluated for license renewal are those used to support and insulate high voltage electrical components in switchyards, switching stations, and transmissions, such as transmission conductors and switchyard buses. The license renewal intended function of these components is to insulate and support electrical conductors.

2.5.1.8.2 Staff Evaluation

The staff reviewed LRA Sections 2.5.1 and 2.4.3; UFSAR Sections 8.1, 8.2, and 8.3; and the applicant's responses to the staff's RAIs. The purpose of the review was to determine whether there is reasonable assurance that the high voltage insulators within the scope of license renewal and subject to an AMR had been identified in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

In the performance of the review, the staff selected the nonessential buildings/areas identified in LRA Section 2.4.3 to verify that the high-voltage insulators having intended functions that might be located in those spaces were not omitted from the scope of the Rule. This is consistent with the treatment of the high voltage insulators as a commodity utilizing the "plant spaces" approach. The staff focused on high voltage insulators that were not identified as being subject to an AMR to determine if any high voltage insulators were omitted.

In a conference call with the applicant on January 15, 2003, the applicant stated that electrical and I&C components located within the plant spaces identified in LRA Section 2.4.3 do not perform any license renewal intended functions and, therefore, are not included within the scope of license renewal. The staff reviewed the plant spaces (buildings/areas) identified in LRA Section 2.4.3 against information contained in the Ginna UFSAR. The staff did not find any indication in the UFSAR that these spaces contain electrical or I&C components (including high voltage insulators) that perform a license renewal intended function. In addition, selected buildings/areas identified in LRA Section 2.4.3 were audited during the NRC license renewal inspections. The inspector toured selected SCs listed in Section 2.4.3 of the LRA, including Items (a), (b), (d), (f), (n), (s), and (t), and determined that there are no electrical components in them. Buildings (u) and (e) could not be entered because they were sealed with the radioactive components.

With regard to plant spaces that do include electrical and I&C components that perform a license renewal intended function, LRA Section 2.1.7.4 indicates that component specific scoping may be performed in those spaces. This is done to limit the number of components for which aging management activities are required, or to eliminate aging management activities altogether if nothing remains in that particular material/environment group population.

The staff asked the applicant to identify each of the electrical and I&C components (including high voltage insulators) that were eliminated from aging management activities through component specific scoping, and to identify the plant SSCs that are served by those components. The applicant was also asked to provide the basis used in each case for concluding that those SSCs do not provide any license renewal intended functions identified in 10 CFR 54.4(a). The response to the staff's request was provided by the applicant in a letter dated May 23, 2003. The response identified the high voltage insulators that were eliminated from aging management activities through component specific scoping. The following high voltage insulators were identified, and the justification for their elimination was provided:

- 115 kV High Voltage insulators are located in the offsite power system to support the 115 kV switchyard bus and related components. These insulators and the equipment supported do not perform an intended function. With regard to interim staff guidance on SBO, these insulators are not required to recover from an SBO event.

The staff agrees with the applicant that these high voltage insulators do not serve a license renewal intended function.

High voltage insulators are often used in the offsite power circuits that are required to be included within the scope of license renewal, consistent with the requirements in 10 CFR 54.4(a)(3) relative to SBO. With regard to the offsite power circuits, Section 2.5.8 of the application indicates that the 115 kV switchyard (Station 13A) is not included within the scope of license renewal. The information in the application also indicates that the 34.5 kV switchyard (Station 204) is not included within the scope of license renewal. In the Ginna design, there are two 34.5 kV circuit breakers shown in UFSAR Figure 8.1-1, upstream of station auxiliary (startup) transformers 12A and 12B, between the transformers and their respective switchyards (Stations 204 and 13A).

The staff guidance, "Scoping of Equipment Relied on to Meet the Requirements of the SBO Rule (10 CFR 50.63) for License Renewal (10 CFR 54.4(a)(3))," was provided to the Nuclear Energy Institute and the Union of Concerned Scientists in a letter dated April 1, 2002. The guidance states that –

> For purposes of the license renewal rule, the staff has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of the rule. This path typically includes the switchyard circuit breakers that connect to the offsite system power transformers (startup transformers), the transformers themselves, the intervening overhead or underground circuits between circuit breaker and transformer and transformer and the onsite electrical distribution system, and the associated control circuits and structures.

The Ginna offsite power system design is not configured like the typical design described in the guidance. It has the intervening 34.5 kV circuit breakers between the switchyard circuit breakers and the startup (station auxiliary) transformers. In order for the staff to determine

whether the plant system portion of the offsite power system should end with the 34.5 kV circuit breakers or with the upstream switchyard circuit breakers at Stations 13A and 204, the staff needed to determine which circuit breakers provided the bulk of the plant system electrical services (providing plant power, protecting downstream circuits, and providing plant operator-controlled isolation and energization capability). Both groups of circuit breakers clearly provide power to the plant. The applicant was asked to indicate which group of breakers are tripped upon actuation of the electrical protective features for the station auxiliary transformers and downstream circuits, and which group can be tripped open or closed by the Ginna plant operator.

If the bulk of the plant system electrical services were provided by the switchyard circuit breakers and not the 34.5 kV breakers, the applicant was asked to provide the basis for concluding that the plant system portion of the offsite power system ends with the 34.5 kV circuit breakers rather than the switchyard circuit breakers.

The applicant provided the following response in its May 23, 2003, letter:

> Circuit breakers 52/76702 and 52/75112 are located in the onsite transformer yard. These circuit breakers are tripped upon actuation of the electrical protective features for the station auxiliary transformers and downstream circuits and are controlled by the plant operators. Ginna Station relies upon the RG&E Energy Control Center to determine the status of 34.5 kV power from Stations 204 and 13A. Procedural guidance for restoration of offsite power does not address the control of circuit breakers upstream of 52/76702 and 52/75112.

Based on the applicant’s response, the bulk of the Ginna’s plant system electrical services are provided by 34.5 kV circuit breakers 52/76702 and 52/75112 located in the plant onsite transformer yard. The staff therefore agrees that those breakers provide the appropriate boundary for the portion of the offsite circuits to be included within the scope of license renewal.

2.5.1.8.3 Conclusions

The staff reviewed the LRA, the supporting information in the Ginna UFSAR, and the applicant's responses to the staff's RAI to determine whether any electrical and I&C commodity groups that should be within the scope of license renewal were not identified by the applicant. No omissions were found. In addition, the staff performed an independent assessment to determine whether any components that should be subject to an AMR were not identified by the applicant. No omissions were found. On the basis of this review, the staff concludes that the applicant has appropriately identified the high voltage insulators that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has appropriately identified the high voltage insulators that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

2.5.2 Evaluation Findings

On the basis of this review, the staff concludes that pending satisfactory resolution of Open Item 2.5-1, there is reasonable assurance that the applicant has adequately identified the electrical and I&C components that are within the scope of license renewal, in accordance with the requirements of 10 CFR 54.4(a), and adequately identified the AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).