November 15, 2005

MEMORANDUM TO: Louise Lund, Branch Chief
Plant Licensing Branch A
Division of License Renewal

FROM: Steven R. Jones, Acting Chief */RA by J. Tatum for/*
Balance-of-Plant Branch
Division of Safety Systems

SUBJECT: SAFETY EVALUATION REPORT ON THE SCOPING AND SCREENING RESULTS FOR MONTICELLO NUCLEAR GENERATION PLANT LICENSE RENEWAL APPLICATION (TAC NO. MC6440)

The Plant Systems Branch of the Division of Systems Safety And Analysis, with assistance from Pacific Northwest Laboratories, has reviewed and developed a Draft Safety Evaluation for Section 2.2 "Plant Level Scoping Results ", Section 2.3.3.1 "Alternate Nitrogen System, Section 2.3.3.2 "Chemistry Sampling System", Section 2.3.3.3 "Circulating Water System", Section 2.3.3.5 "Demineralized Water System", Section 2.3.3.6 "Emergency Diesel Generators System" Section 2.3.3.8 "Emergency Service Water System", Section 2.3.3.10 "Fuel Pool Cooling and Cleanup System", Section 2.3.3.12 "Instrument and Service Air System", Section 2.3.3.13 "Radwaste Solid and Liquid System", Section 2.3.3.14 "Reactor Building Closed Cooling Water System", Section 2.3.3.15 "Reactor Water Cleanup System", Section 2.3.3.16 "Service and Seal Water System", Section 2.3.3.18 "Wells and Domestic Water System", Section 2.3.4.1 "Condensate Storage System", Section 2.3.4.2 "Condensate and Feed water System", Section 2.3.4.3 "Main Condenser System", Section 2.3.4.4 "Main Steam System", and Section 2.3.4.5 "Turbine Generator System" of the Monticello Nuclear Generation Plant License Renewal Application.

The staff's Draft SER is contained in the Attachment.

Docket Nos.: 50-263

Attachment: As stated

CONTACT: Raul Hernandez, NRR/DSS/SBPB
415-1079

November 15, 2005

MEMORANDUM TO: Louise Lund, Branch Chief
Plant Licensing Branch A
Division of License Renewal

FROM: Steven R. Jones, Acting Chief */RA by J. Tatum for/*
Balance-of-Plant Branch
Division of Safety Systems

SUBJECT: SAFETY EVALUATION REPORT ON THE SCOPING AND SCREENING RESULTS FOR MONTICELLO NUCLEAR GENERATION PLANT LICENSE RENEWAL APPLICATION (TAC NO. MC6440)

The Plant Systems Branch of the Division of Systems Safety And Analysis, with assistance from Pacific Northwest Laboratories, has reviewed and developed a Draft Safety Evaluation for Section 2.2 "Plant Level Scoping Results ", Section 2.3.3.1 "Alternate Nitrogen System, Section 2.3.3.2 "Chemistry Sampling System", Section 2.3.3.3 "Circulating Water System", Section 2.3.3.5 "Demineralized Water System", Section 2.3.3.6 "Emergency Diesel Generators System" Section 2.3.3.8 "Emergency Service Water System", Section 2.3.3.10 "Fuel Pool Cooling and Cleanup System", Section 2.3.3.12 "Instrument and Service Air System", Section 2.3.3.13 "Radwaste Solid and Liquid System", Section 2.3.3.14 "Reactor Building Closed Cooling Water System", Section 2.3.3.15 "Reactor Water Cleanup System", Section 2.3.3.16 "Service and Seal Water System", Section 2.3.3.18 "Wells and Domestic Water System", Section 2.3.4.1 "Condensate Storage System", Section 2.3.4.2 "Condensate and Feed water System", Section 2.3.4.3 "Main Condenser System", Section 2.3.4.4 "Main Steam System", and Section 2.3.4.5 "Turbine Generator System" of the Monticello Nuclear Generation Plant License Renewal Application.

The staff's Draft SER is contained in the Attachment.

Docket Nos.: 50-263

Attachment: As stated

DISTRIBUTION: ADAMS SPLB R/F RHernandez
SJones DMerzke DShum

ADAMS ACCESSION NUMBER: ML053120069

| OFFICE | SBPB:DSS:NRR | | SC:SBPB:DSS:NRR | |
|---|---|---|---|---|
| NAME | RHernandez | | SJones | |
| DATE | 11 / 10 /05 | | 11 / 15 /05 | |

**OFFICIAL RECORD COPY**

DRAFT SAFETY EVALUATION REPORT INPUT
PLANT SYSTEMS BRANCH
DIVISION OF SAFETY SYSTEMS
MONTICELLO NUCLEAR GENERATING PLANT
LICENSE RENEWAL APPLICATION (LRA)
DOCKET No.50-263
(TAC No. MC6440)

## 2.2 Plant-Level Scoping Results

### 2.2.1 Introduction

The statements of consideration (SOC) for the license renewal rule (60 *Federal Register* (FR) 22478) indicate that an applicant is flexible in determining the set of systems, structures, and components (SSCs) for which an aging management review (AMR) is performed. In license renewal application (LRA) Section 2.1, the applicant described the methodology for identifying the SSCs within the scope of license renewal. In LRA Section 2.2, the applicant used the scoping methodology to determine which of the SSCs are required to be included within the scope of license renewal. The staff reviewed the plant-level SSCs relied upon to mitigate design-basis events (DBEs), as required by 10 CFR 54.4(a)(1), or whose failure could prevent satisfactory accomplishment of any of the safety-related functions, as required by 10 CFR 54.4(a)(2), as well as the SSCs relied on in safety analysis or plant evaluations to perform a function that is required by any of the regulations referenced in 10 CFR 54.4(a)(3).

The staff reviewed the SSCs that the applicant did not identify as being within the scope of license renewal to verify whether the systems and structures have any intended functions that would require their inclusion within the scope of license renewal. The staff also reviewed selected SSCs that the applicant identified as being within the scope of license renewal to verify that the applicant had properly identified their components, within the evaluation boundaries, that are subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1). To determine whether the applicant identified the SSCs that are subject to an AMR, the staff reviewed the components that the applicant did not identify as being subject to an AMR.

### 2.2.2 Summary of Technical Information in the Application

In LRA Table 2.2-1, the applicant provided a list of the plant level scoping results, identifying those systems, structures, and commodities that are within the scope of license renewal. Based on the design-basis events (DBEs) considered in the plant's current licensing basis (CLB), other CLB information relating to nonsafety-related systems and structures, and certain regulated events, the applicant identified those plant-level systems and structures that are within the scope of license renewal, as defined by 10 CFR 54.4.

### 2.2.3 Staff Evaluation

In LRA Section 2.1, the applicant described its methodology for identifying the systems and structures that are within the scope of license renewal and subject to an AMR. The staff reviewed the scoping and screening methodology and provided its evaluation in Section 2.1 of

this SER. To verify that the applicant properly implemented its methodology, the staff focused its review on the implementation results, as shown in LRA Table 2.2-1, to confirm that there were no omissions of plant-level systems and structures within the scope of license renewal.

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

In reviewing LRA Section 2.2, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's plant-level scoping results. Therefore, the staff issued requests for additional information (RAIs), concerning each specific issue, to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4. The following paragraphs describe the staff's RAIs and the applicant's related responses.

RAI 2.2-1

The Control Rod Velocity Limiters are described in Section 6.4 of the USAR. The Control Rod Velocity Limiters are provided as an integral part of each control rod. They provide hydraulic damping to reduce the free fall velocity of the rod and thereby reduce the consequences in the event the control rod became detached from its drive and dropped from the core. The LRA does not mention this component nor does it appear to refer to USAR Section 6.4 in the text. The applicant was asked to clarify if these components are included in the License Renewal scope or the basis for their exclusion.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.2-1 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

RAI 2.2-2

The Safety Parameter Display System is described in Section 7.13 of the MNGP USAR. The purpose of the Safety Parameter Display System (SPDS) is to provide a concise display of critical plant variables to control room operators to aid them in rapidly and reliably determining the safety status of the plant. The LRA does not mention this system nor does it appear to refer to USAR Section 7.13 in the text. The applicant was asked to clarify if this system is included in the License Renewal scope or the basis for its exclusion.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.2-2 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

RAI 2.2-3

The Main Turbine Bypass System is described in Section 11.4 of the MNGP USAR. The turbine bypass valves provide for the reactor vessel over pressure protection by bypassing steam directly to the condenser. The LRA does not mention this system nor does it appear to refer to USAR Section 11.4 in the text. The applicant was asked to clarify if this system is included in the License Renewal scope or the basis for its exclusion.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.2-3 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

2.2.4 Conclusion

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

2.3.3 Auxiliary Systems

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

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

- 2.3.3.1 alternate nitrogen system
- 2.3.3.2 chemistry sampling system
- 2.3.3.3 circulating water system
- 2.3.3.4 control rod drive system
- 2.3.3.5 demineralized water system
- 2.3.3.6 emergency diesel generators system
- 2.3.3.7 emergency filtration train system
- 2.3.3.8 emergency service water system
- 2.3.3.9 fire system
- 2.3.3.10 fuel pool cooling and cleanup system
- 2.3.3.11 heating and ventilation system
- 2.3.3.12 instrument and service air system
- 2.3.3.13 radwaste solid and liquid system
- 2.3.3.14 reactor building closed cooling water system
- 2.3.3.15 reactor water cleanup system
- 2.3.3.16 service and seal water system
- 2.3.3.17 standby liquid control system
- 2.3.3.18 wells and domestic water system

The corresponding subsections of this SER (2.3.3.1 – 2.3.3.18, respectively) present the staff's review findings with respect to the auxiliary systems for MNGP.

*2.3.3.1 Alternate Nitrogen System*

2.3.3.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.1, the applicant described the alternate nitrogen system (AN2). The AN2 system consists of two separate safety-related trains providing a safety-related back-up pneumatic source from nitrogen bottle racks located in the turbine building. The AN2 system interfaces with the AIR system through a check valve with the nitrogen side held at a slightly lower pressure to allow the AIR system to be used during normal operation. In the event of an accident, which also disables the AIR system, the AN2 system would automatically supply the required pneumatic loads. Manifold and system pressures of each train are monitored by pressure switches, which give control room annunciation on low pressure.

The AN2 system contains safety-related components that are relied upon to remain functional during and following design-basis events. In addition, the AN2 system performs functions that support fire protection, EQ, and SBO.

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

In LRA Table 2.3.3-1, the applicant identified the following AN2 system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- flexible connections
- piping and fittings
- tanks
- valve bodies

2.3.3.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.1 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

In reviewing LRA Section 2.3.3.1, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's plant-level scoping results. Therefore, the staff issued requests for additional information (RAIs), concerning each specific issue, to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4. The following paragraphs describe the staff's RAIs and the applicant's related responses.

RAI 2.3.3.1-1

License renewal (LR) boundary drawing LR-36049-10 at location B-8 and C-8 show the nitrogen supply bottles as being within the scope of license renewal. However, these nitrogen supply bottles are not listed in LRA Table 2.3.3-1 as a component type subject to an aging management review (AMR). These nitrogen supply bottles provide a pressure boundary intended function and are passive and long lived. The applicant was requested to clarify whether these nitrogen supply bottles are included with another component type (i.e., tanks) and if not, to justify why they are not listed in Table 2.3.3-1, or update the table to include these components.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.3.3-1 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

2.3.3.1.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the alternate nitrogen system. Therefore, the staff concludes that the applicant has adequately identified the alternate nitrogen system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the alternate nitrogen system components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).

*2.3.3.2 Chemistry Sampling System*

2.3.3.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.2, the applicant described the chemistry sampling (CHM) system. The CHM system provides for sampling the process fluid of various systems to obtain representative data from which the performance of the plant systems and equipment can be evaluated. The sampling locations are chosen to ensure that representative samples can be obtained. The sample streams are routed by the shortest route to a common sample collection area. There is a collective sample station for each building in the plant: radwaste building sample station, located in the radwaste building; reactor building sample station, located in the reactor building; and turbine building sample station, located in the turbine building. The stations are provided with closed loop process lines that discharge to the equipment drain tanks and then to the waste collector tank for reprocessing. Each sample station typically consists of a sample rack with sample shutoff valves; sample coolers; sample chillers; sample modules; instrumentation for conductivity, pH, dissolved oxygen, dissolved hydrogen, total organic carbon; and a local data acquisition system panel. There is a ventilated fume hood for collection of grab samples adjacent to the sample rack.

The failure of nonsafety-related SSCs in the CHM system could potentially prevent the satisfactory accomplishment of a safety-related function.

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

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

- chillers
- fasteners/bolting
- filters/housings
- flow element
- heat exchangers
- manifolds
- piping and fittings
- thermowells
- valve bodies

2.3.3.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.2 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

On the basis of its review, the staff found that the applicant has identified those portions of the chemistry sampling system that meet the scoping requirements of 10 CFR 54.4(a) and has included them within the scope of license renewal in LRA Section 2.3.3.2. The applicant has also included chemical sampling system components that are subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff did not identify any omissions.

2.3.3.2.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the chemistry sampling system. Therefore, the staff concludes that the applicant has adequately identified the chemistry sampling system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the chemistry sampling system components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).

*2.3.3.3 Circulating Water System*

2.3.3.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.3, the applicant described the circulating water (CWT) system. The CWT system removes the heat from the main condenser that is rejected by the turbine or turbine bypass system over the full range of operating loads. The CWT system is a flexible multi-cycle system with the capability of once-through circulation of river water, recirculation in a closed cycle with cooling towers, and several variations of these basic modes. Selection of the operating mode will be determined by the prevailing river flow rate and river temperature to provide economic plant operation and conformance with restrictions on river water use. The system is equipped with two half-capacity circulating water pumps located at the intake structure. The pumps are designed to circulate cooling water through the main condenser. Two half-capacity cooling tower pumps, located at the discharge structure, are used during cooling tower operation. The pumps are designed to operate in series with the circulating water pumps, discharging flow to each of two induced draft cooling towers.

The failure of nonsafety-related SSCs in the CWT system could potentially prevent the satisfactory accomplishment of a safety-related function.

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

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

- condenser water box
- expansion joints
- fasteners/bolting
- filters/strainers
- gauges (flow, level and sight)
- manifolds
- piping and fittings
- pump casings
- tanks
- thermowells
- valve bodies

2.3.3.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.3 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

On the basis of its review, the staff found that the applicant has identified those portions of the circulating water system that meet the scoping requirements of 10 CFR 54.4(a) and has included them within the scope of license renewal in LRA Section 2.3.3.3. The applicant has also included circulating water system components that are subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff did not identify any omissions.

2.3.3.3.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the circulating water system. Therefore, the staff concludes that the applicant has adequately identified the circulating water system components that are within the scope of license renewal, as required by 10 CFR

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

*2.3.3.5 Demineralized Water System*

2.3.3.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.5, the applicant described the demineralized water system (DWS). The DWS system provides for storage and distribution of high quality, non-radioactive demineralized water for use as makeup to the CST system and other systems requiring high quality demineralized water. The DWS is nonsafety-related and is not required during or following design basis events. The DWS system includes the makeup demineralizer (MUD) subsystem. The MUD subsystem is a double-pass reverse osmosis system used to purify and demineralize well water. This demineralized water is used for various plant services where quality water is required to (1) minimize damage to components due to chemical and corrosive attack, (2) minimize the fouling of heat transfer surfaces and mechanical parts, and (3) minimize impurities available for activation in neutron flux zones. The MUD subsystem is also nonsafety-related and is not required during or following design basis events. The DWS provides for primary containment isolation.

The DWS system contains safety-related components that are relied upon to remain functional during and following design-basis events. The failure of nonsafety-related SSCs in the DWS system could potentially prevent the satisfactory accomplishment of a safety-related function.

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

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

- fasteners/bolting
- filters/housings
- flow element
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- tanks
- thermowells
- UV light housings
- valve bodies

2.3.3.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.5 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

On the basis of its review, the staff found that the applicant has identified those portions of the demineralized water system that meet the scoping requirements of 10 CFR 54.4(a) and has included them within the scope of license renewal in LRA Section 2.3.3.5. The applicant has also included demineralized water system components that are subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff did not identify any omissions.

2.3.3.5.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the demineralized water system. Therefore, the staff concludes that the applicant has adequately identified the demineralized water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the demineralized water system components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).

*2.3.3.6 Emergency Diesel Generators System*

2.3.3.6.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.6, the applicant described the emergency diesel generators (DGN) system. The DGN system provides a dependable on-site power source capable of automatically starting and supplying the loads necessary to safely shutdown the plant and maintain it in a safe shutdown condition upon the loss of offsite power simultaneous with a design-basis accident. The emergency diesel generators are normally in the standby mode of operation and remain in this mode unless called upon to start by receipt of appropriate automatic signals or by a manual start. The DGN system is comprised of two identical diesel generators. Each diesel generator supplies 4160 VAC power to its respective emergency bus. Each diesel generator is an electro-motive, turbocharged, 20-cylinder, diesel engine. The following subsystems within the DGN system support operation of the emergency diesel generators: (1) an engine fuel oil system, an (2) engine lubricating oil system, (3) a starting air system, (4) a closed cycle engine cooling water system, and (5) an air intake and exhaust system. The engine fuel oil system provides clean, water-free fuel oil to the diesel cylinders. The engine lubricating oil system provides filtered lubricating oil to the diesel engine to ensure adequate lubrication during engine startup and operation. The starting air system consists of two independent air-starting systems for each diesel that provide the motive force to initially put the diesel engine in motion and begin the diesel cycle. The closed cycle engine cooling water system provides cooling to the diesel cylinders and heads and the aftercooler of the turbocharger via two engine-driven centrifugal pumps. The EDG air intake and exhaust system

removes exhaust gases from the diesel cylinders and supplies fresh air for the combustion process. The DGN system includes the diesel oil (DOL) system as a subsystem for license renewal purposes. The DOL subsystem provides for the storage and distribution of fuel oil used in the operation of the plant emergency diesel generators, diesel fire pump, and heating boiler.

The DGN system contains safety-related components that are relied upon to remain functional during and following design-basis events. The failure of nonsafety-related SSCs in the DGN system could potentially prevent the satisfactory accomplishment of a safety-related function. In addition, the DGN system performs functions that support fire protection.

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

- provides filtration
- provides for heat transfer
- provides a pressure-retaining boundary

In LRA Table 2.3.3-6, the applicant identified the following DGN system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- filters/housings
- filters/strainers
- flame arrestors
- flow element
- gauges (flow, level and sight)
- heat exchangers
- heaters/coolers
- manifolds
- piping and fittings
- pump casings
- silencer
- tanks
- thermowells
- valve bodies

2.3.3.6.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.6 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

In reviewing LRA Section 2.3.3.6, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results. Therefore the staff issued a request for additional information (RAI) concerning the specific issues to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4 (a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAIs and the applicant's related responses.

RAI 2.3.3.6-1

The DGN system includes a diesel oil (DOL) subsystem which stores and supplies diesel fuel oil for the operation of the plant DGNs, diesel fire pump, and heating boiler. The DOL subsystem (with the exception of portions of the DOL subsystem, such as the heating boiler oil storage tank and its associated day tank) is safety-related and is within the scope of LR. However, LR boundary drawing LR-36051 sheet 1 shows the truck fill connection at location B-5 and the diesel oil receiving tank (T-83) system (including pump, piping, etc.) at location A-7 as not within the scope of LR. The applicant was asked to clarify that these components are within the scope of LR and subject to an AMR in accordance with the applicable requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a), respectively, or justify their exclusion.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.3.6-1 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

2.3.3.6.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the emergency diesel generators system. Therefore, the staff concludes that the applicant has adequately identified the emergency diesel generators system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the emergency diesel generators system components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).

*2.3.3.8 Emergency Service Water System*

2.3.3.8.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.8, the applicant described the emergency service water (ESW) system. The ESW system includes the following three plant subsystems: (1) emergency diesel generator-emergency service water subsystem, (2) emergency service water subsystem, and (3) RHR service water subsystem. These subsystems are combined into the emergency service water system for license renewal purposes. The emergency diesel generator emergency service water subsystem consists of two separate and independent emergency cooling water loops that provide cooling water to the emergency diesel generators. The loops

are capable of providing cooling water during a loss of offsite power and during accident conditions. Each loop contains one full capacity pump that supplies strained cooling water to one of the emergency diesel generators. The emergency service water subsystem consists of two separate and independent emergency cooling water loops that provide cooling water to the ECCS pump motor coolers, ECCS room coolers and the emergency filtration train. Each loop is capable of providing cooling water during a loss of offsite power and/or a loss of normal service water. Each loop contains one full capacity pump that supplies strained cooling water to the cooling loads. The RHR service water subsystem (RSW) consists of two separate and independent emergency cooling water loops that provide cooling water to the RHR heat exchangers. Each loop is capable of providing cooling water during a loss of offsite power and during accident conditions. The RHR auxiliary air compressors are included in the RHR service water subsystem. The RHR auxiliary air compressors provide a safety-related back-up air supply to the RHR heat exchanger RSW outlet control valves, and the combustible gas control system isolation valves upon occurrence of low pressure in the instrument and service air (AIR) system. The RHR auxiliary air compressors are normally in standby mode of operation.

The ESW system contains safety-related components that are relied upon to remain functional during and following design-basis events. The failure of nonsafety-related SSCs in the ESW system could potentially prevent the satisfactory accomplishment of a safety-related function. In addition, the ESW system performs functions that support fire protection and EQ.

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

- provides filtration
- provides flow restriction
- provides for heat transfer
- provides a pressure-retaining boundary

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

- fasteners/bolting
- filters/housings
- filters/strainers
- flow element
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- tanks
- thermowells
- valve bodies

2.3.3.8.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.8 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

On the basis of its review, the staff found that the applicant has identified those portions of the emergency service water system that meet the scoping requirements of 10 CFR 54.4(a) and has included them within the scope of license renewal in LRA Section 2.3.3.8. The applicant has also included emergency service water system components that are subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff did not identify any omissions.

2.3.3.8.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the emergency service water system. Therefore, the staff concludes that the applicant has adequately identified the emergency service water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the emergency service water system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

*2.3.3.10 Fuel Pool Cooling and Cleanup System*

2.3.3.10.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.10, the applicant described the fuel pool cooling and cleanup (FPC) system. The FPC system is designed to handle the spent fuel cooling load and to maintain pool water purity and clarity. The system provides sufficient filtering capacity to filter the entire spent fuel pool water volume every 12 hours. The fuel pool temperature is normally maintained at 125ºF or less in order to maintain a reasonable working environment in the pool area, to keep the demineralizer at an operable temperature, and to maintain visual clarity of the air above the pool. However, operation at temperatures up to 140ºF is acceptable in order to remove decay heat from the spent fuel. The fuel pool cooling and cleanup system consists of circulating pumps, heat exchangers, filter/demineralizers, piping, valves and instrumentation. The pumps take suction from the skimmer surge tank, located at the top of the spent fuel storage pool water level, which continuously skims the water from the surface, and circulates the water to the heat exchangers, and filter/demineralizers before discharging the water through the diffusers at the bottom of the spent fuel pool. This arrangement of taking suction from the top and discharging to the bottom of the pool provides a cross flow which tends to sweep the pool and to carry off dirt and small particles. This system may also be used to drain the steam-separator storage pool and the reactor well after refueling.

The failure of nonsafety-related SSCs in the FPC system could potentially prevent the satisfactory accomplishment of a safety-related function.

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

In LRA Table 2.3.3-10, the applicant identified the following FPC system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- tanks
- thermowells
- valve bodies

2.3.3.10.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.10 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

In reviewing LRA Section 2.3.3.10, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's plant-level scoping results. Therefore, the staff issued requests for additional information (RAIs), concerning each specific issue, to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4. The following paragraphs describe the staff's RAIs and the applicant's related responses.

RAI 2.3.3.10-1

LRA Section 2.3.3.10 states that components in the FPC system are non-safety related and their failure could affect the capability of safety related systems, structures and components (SSCs) to perform their safety function; therefore, they are in-scope in accordance with 10CFR 54.4(a)(2). Also, LR drawing LR-36256 Note 2 states that the spent fuel pool liner is within the scope of LR as part of the reactor building structure. This spent fuel pool liner interfaces with the weirs and their associated connecting surface, FPC system, and fuel pool drains.

LR drawing LR-36256 at location D-2 shows the adjustable weir and associated connecting surfaces to the south skimmer surge tank, T-48B, to be within the scope for LR. LR drawing

LR-36256 at location D-4 shows the similar components, adjustable weir and connecting surfaces to the north skimmer surge tank, T-48A, as not in scope for LR. The applicant was requested to clarify that the adjustable weir and associated connecting surfaces to the south skimmer surge tank, T-48A, at location D-4 are within the scope of LR and subject to an AMR in accordance with the applicable requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a), respectively, or justify their exclusion.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.3.10-1 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

RAI 2.3.3.10-2

As shown on LR drawing LR-36256 at location D-4, diffusers A and B serve as a distribution point for returning cooling water for the FPC system to the fuel storage pool. Their failure could affect the capability of safety related SSCs to perform their safety function. The applicant was requested to justify why these diffusers are not within the scope for LR.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.3.10-2 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

RAI 2.3.3.10-3

LR drawing LR-36256 shows a unisolable pipe (FPW17B-3"-MR) between the fuel storage pool and the skimmer surge tank T-48B as not within the scope for LR. All other piping and components entering the skimmer tank within the same apparent area of the plant are shown as within the scope of LR. Failure of this unisolable section of pipe could have an effect on the intended LR pressure boundary function for the skimmer tank. The applicant was requested to justify why this pipe is not within the scope for LR.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.3.10-3 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

2.3.3.10.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the fuel pool cooling and

cleanup system. Therefore, the staff concludes that the applicant has adequately identified the fuel pool cooling and cleanup system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the fuel pool cooling and cleanup system components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).

*2.3.3.12 Instrument and Service Air System*

2.3.3.12.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.12, the applicant described the instrument and service air (AIR) system. The AIR system is designed to provide the plant with a continuous supply of oil-free compressed air. The instrument air portion of the system supplies dried compressed air for most of the pneumatic instruments and controls in the plant. The service air portion of the system supplies service air to plant components that do not require dry air and to hose stations throughout the plant, for miscellaneous use by maintenance and operations personnel. The AIR system includes three non-lubricated air compressors that discharge to air receivers through after- coolers with moisture separator/traps. The AIR system is normally in continuous operation during normal plant operation and shutdown. In addition to the AIR system, there are other pneumatic systems in the plant. The other pneumatic systems include an outboard main steam isolation valve (MSIV) air supply which is part of the MST system, an AN2 system which is a separate mechanical system, an instrument nitrogen supply to containment which is part of the PCM system, and the control room breathing air system which is part of the EFT system. The AN2 system interfaces with the AIR system through a check valve, with the nitrogen side held at a slightly lower pressure to allow the AIR system to be used during normal operation. In the event of an accident, which also disables the AIR system, the AN2 system would automatically pick up the required pneumatic loads.

The AIR system contains safety-related components that are relied upon to remain functional during and following design-basis events. The failure of nonsafety-related SSCs in the AIR system could potentially prevent the satisfactory accomplishment of a safety-related function. In addition, the AIR system performs functions that support EQ.

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

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

- fasteners/bolting
- gauges (flow, level and sight)
- piping and fittings
- pump casings
- tanks
- valve bodies

2.3.3.12.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.12 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

On the basis of its review, the staff found that the applicant has identified those portions of the instrument and service air system that meet the scoping requirements of 10 CFR 54.4(a) and has included them within the scope of license renewal in LRA Section 2.3.3.12. The applicant has also included instrument and service air system components that are subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff did not identify any omissions.

2.3.3.12.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the instrument and service air system. Therefore, the staff concludes that the applicant has adequately identified the instrument and service air system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the instrument and service air system components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).

*2.3.3.13 Radwaste Solid and Liquid System*

2.3.3.13.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.13, the applicant described the radwaste solid and liquid (RAD) system. The RAD system is comprised of the solid radwaste subsystem and the liquid radwaste subsystem. The solid radwaste subsystem is designed to process, package, store, monitor, and provide shielded storage facilities for solid radioactive wastes to allow for radioactive decay and/or temporary storage prior to shipment for offsite disposal. The liquid radwaste subsystem is designed to collect, process and dispose of all radioactive liquid wastes generated during operation of the plant. The system is designed to accommodate the radioactive input resulting from the design basis maximum fuel leakage condition. The radioactive and chemical contaminants are removed from the liquid waste streams by either filtration or filtration followed by mixed deep-bed demineralization. The filters remove insoluble particulate contaminants and the demineralizer is used to remove soluble materials. The filter and demineralizer sludge are back washed into receiving tanks, dewatered and packaged as solid waste for disposal offsite at NRC approved sites.

The RAD system contains safety-related components that are relied upon to remain functional during and following design-basis events. The failure of nonsafety-related SSCs in the RAD system could potentially prevent the satisfactory accomplishment of a safety-related function. In addition, the RAD system performs functions that support EQ.

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

- provides flow restriction
- provides a pressure-retaining boundary
- provides structural support to nonsafety-related components (mechanical)

In LRA Table 2.3.3-13, the applicant identified the following RAD system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- heat exchangers
- piping and fittings
- pump casings
- restricting orifices
- tanks
- valve bodies

2.3.3.13.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.13 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

In reviewing LRA Section 2.3.3.13, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results. Therefore, the staff issued a request for additional information (RAI) concerning the specific issues to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4 (a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAIs and the applicant's related responses.

RAI 2.3.3.13-1

The following cases represent unisolable piping that is defined as out of scope for LR; however, the piping is attached or interface with components that are defined as within the scope for LR and provide a pressure boundary function. Failure of these out-of-scope components could adversely impact the intended pressure boundary function of the within the scope components.

The applicant was requested to justify why the following unisolable components are out of scope for LR:

- LR drawing LR-36043 at location C-6 shows a 3-inch vent line on the top of machine shop drain tank T-103.

- LR drawing LR-36043 at location C-6 shows a 4-inch vent line on the top of reactor building floor drain sump S-37.

- LR drawing LR-36043 at location C-6 shows line RWN46-4”-MR entering the reactor building floor drain sump S-37 from the equipment drain sump S-42 overflow.

- LR drawing LR-36043 at location C-3 shows a 4-inch vent line on the top of drywell floor drain sump S-38.

- LR drawing LR-36044 at location C-2 shows a 4-inch vent line on the top of drywell equipment drain sump S-43.

- LR drawing LR-36044 at location C-2 shows a 4-inch vent line on the top of drywell equipment drain sump S-43.

- LR drawing LR-36044 at location A-3 shows a 4-inch vent line on the top of turbine building normal waste sump S-45.

- LR drawing LR-36044 at location C-5 shows piping to an obsolete sensing line on the top of reactor building equipment drain tank T-56.

- LR drawing LR-36044 at location A-5 shows a 4” vent line and piping to an obsolete sensing line on the top of the condensate drip tank T-22.

- LR drawing LR-36044 at location A-7 shows 4” vent line and RWN48-4”-MR exiting the turbine building equipment drain sump S-44.

- LR drawing LR-36044 at location C-7 shows 4” vent line and RWN46-4”-MR exiting the reactor building equipment drain sump S-42.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.3.13-1 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

RAI 2.3.3.13-2

LR drawing LR-36044 at location D-7 identifies a 10CFR54.4(a)(2) boundary for the RAD system as the section of piping before a non-scope normally open isolation valve CRW-1 from the condensate storage tank overflow tank T-67. Failure of the non isolated piping can adversely impact the LR pressure boundary function for the radwaste solid and liquid system.

The applicant was requested to justify the location of the LR scope boundary at valve CRW-1 with respect to the applicable requirements of 10CFR54.4(a).

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.3.13-2 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

RAI 2.3.3.13-3

LR drawings LR-36044 at locations A-7, C-7, C-3, and A-3 and LR-36043 at locations A-6, A-5, C-6, and C-3 show the turbine building equipment drain sump (S-44), reactor building equipment drain sump (S-42), drywell equipment drain sump (S-43), turbine building normal waste sump (S-45), condensate pump area sump (S-53), turbine building floor drain sump (S-40), reactor floor drain sump (S-37), and drywell floor drain sump (S-38) as not within the scope for LR. LRA Section 2.3.3.13, Radwaste Solid and Liquid System, page 2-147 states that all radwaste solid and liquid system components existing in either the turbine or reactor buildings, and constituting a liquid pressure boundary, are within the scope for LR. Failure of the liners for these sumps can negatively impact the intended liquid pressure boundary function of the components. The applicant was requested to clarify that the sumps and their associated liners are within the scope of LR and subject to an AMR in accordance with the applicable requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a), respectively, or justify their exclusion.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.3.13-3 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

2.3.3.13.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the radwaste solid and liquid system. Therefore, the staff concludes that the applicant has adequately identified the radwaste solid and liquid system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the radwaste solid and liquid system components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).

*2.3.3.14 Reactor Building Closed Cooling Water System*

2.3.3.14.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.14, the applicant described the reactor building closed cooling water (RBC) system. The RBC system is a treated water system designed to remove heat from the

reactor auxiliary systems' equipment. The RBC system consists of a closed cooling water loop containing two pumps and three heat exchangers in parallel, and the associated piping, valves and instrumentation. The system temperature is maintained by heat rejection from the RBC system heat exchangers to the service and seal water system. The RBC system is monitored continuously for radioactivity by a process radiation monitor. An increase in the radiation level would indicate leakage of contaminated water into the RBC system. Leakage may also be indicated by a level change in the RBC system surge tank with no associated reactor power change, equipment change or makeup water addition. Any potential leakage from the reactor auxiliary systems' equipment listed below is to the RBC system closed-loop where it is confined or isolated.

The RBC system contains safety-related components that are relied upon to remain functional during and following design-basis events. The failure of nonsafety-related SSCs in the RBC system could potentially prevent the satisfactory accomplishment of a safety-related function. In addition, the RBC system performs functions that support EQ.

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

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

- fasteners/bolting
- flexible connections
- flow element
- gauges (flow, level and sight)
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- tanks
- thermowells
- valve bodies

2.3.3.14.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.14 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

On the basis of its review, the staff found that the applicant has identified those portions of the

reactor building closed cooling water system that meet the scoping requirements of 10 CFR 54.4(a) and has included them within the scope of license renewal in LRA Section 2.3.3.14. The applicant has also included reactor building closed cooling water system components that are subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff did not identify any omissions.

2.3.3.14.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the reactor building closed cooling water system. Therefore, the staff concludes that the applicant has adequately identified the reactor building closed cooling water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the reactor building closed cooling water components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).

*2.3.3.15 Reactor Water Cleanup System*

2.3.3.15.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.15, the applicant described the reactor water cleanup (RWC) system. The RWC system is a filtering and ion exchange system that maintains water purity in the reactor and recirculation lines during all modes of plant operation. This minimizes changes in the core heat transfer characteristics by reducing the deposition of impurities on fuel surfaces by reducing the amount of water-borne impurities in the reactor primary system. It also reduces sources of beta and gamma radiation by removing corrosion products, fission products, and impurities in the reactor primary system. The RWC system provides for primary containment isolation and is also isolated on initiation of the SLC system. The RWC system provides for continuous purification of a portion of the REC system flow with a minimum of heat loss and water loss from the cycle.

The RWC system contains safety-related components that are relied upon to remain functional during and following design-basis events. The failure of nonsafety-related SSCs in the RWC system could potentially prevent the satisfactory accomplishment of a safety-related function. In addition, the RWC system performs functions that support EQ and ATWS.

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

In LRA Table 2.3.3-15, the applicant identified the following RWC system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- flow element
- heat exchangers
- manifolds
- piping and fittings

- pump casings
- restricting orifices
- thermowells
- valve bodies

2.3.3.15.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.15 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

In reviewing LRA Section 2.3.3.15, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results. Therefore, the staff issued a request for additional information (RAI) concerning the specific issues to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4 (a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAIs and the applicant's related responses.

RAI 2.3.3.15-1

LR drawing LR-36254 at location C-8 contains two references (line REW3-4" EBD from reactor recirculation loop B and line REW31-2"-ED from reactor vessel drain) to LR drawing LR-36243 at location C-5. However, LR drawing LR-36243 only show one reference (line REW31-2"-ED which is also capped) to drawing LR-36254. The applicant was asked to clarify this discrepancy and confirm which portions of the piping are within the scope of LR and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a), respectively, or justify their exclusion.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.3.15-1 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

2.3.3.15.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the reactor water cleanup system. Therefore, the staff concludes that the applicant has adequately identified the reactor

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

*2.3.3.16 Service and Seal Water System*

2.3.3.16.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.16, the applicant described the service and seal water (SSW) system. The SSW system supplies screened and strained cooling water (raw water from the Mississippi River) to various non-essential plant heat loads and services during all modes of operation. The service water portion of the SSW system consists of three 50% capacity service water pumps, an auto strainer, a bypass basket strainer and associated valves, piping and instrumentation. Normally two service water pumps are in operation and one service water pump is in auto-standby. However, during cold winter months, only one service water pump is normally required. The seal water portion of the SSW system provides filtered well water (service water serves as backup to the well water) to the shaft seals for various pumps, including the service water pumps, RSW pumps, and the circulating water pumps. The seal water portion consists of two pumps, two filters, and associated valves, piping and instrumentation. The service water pumps take suction from the pump suction bay in the intake structure and discharge to the turbine building through the intake structure access tunnel. Service water is used to remove heat from various heat exchangers and coolers located in the reactor building and turbine building. The SSW system also supplies water to the sodium hypochlorite subsystem (part of the circulating water system) and the fire system jockey pump. Service water flow is returned to the river. The SSW system is normally in service during plant operation and shutdown.

The failure of nonsafety-related SSCs in the SSW system could potentially prevent the satisfactory accomplishment of a safety-related function. The SSW system also performs functions that support fire protection.

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

- provides flow restriction
- provides a pressure-retaining boundary

In LRA Table 2.3.3-16, the applicant identified the following SSW system component types that are within the scope of license renewal and subject to an AMR:

- expansion joints
- fasteners/bolting
- filters/strainers
- gauges (flow, level and sight)
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices

- thermowells
- valve bodies

2.3.3.16.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.16 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

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

2.3.3.16.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the service and seal water system. Therefore, the staff concludes that the applicant has adequately identified the service and seal water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the service and seal water system components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).

*2.3.3.18 Wells and Domestic Water System*

2.3.3.18.1 Summary of Technical Information in the Application

In LRA Section 2.3.3.18, the applicant described the wells and domestic water (WDW) system. The WDW system includes the domestic water, sanitary sewer, acid drain, storm drain, and turbine building normal drain subsystems as described below. The domestic water subsystem supplies well water to the demineralized water system, the service and seal water system, hot and/or cold water to lavatories, the laundry, showers, etc., throughout the plant's protected area. The sanitary sewer subsystem removes wastewater from lavatories, showers, sinks, etc., in the protected area, site administration building, and warehouse No. 5. It carries the wastewater to the city of Monticello sewage system. The acid drain subsystem removes water from such things as the demineralized water system area drain and heating boiler blowdown which is unfit for direct discharge to the river. Drainage from these sources is carried to the

discharge retention basin where it is treated and monitored before release to the river. The storm drain subsystem carries water from building roofs and normal surface drainage to the river. The turbine building normal drain subsystem removes water from areas in the turbine building where there is no potential for radioactive contamination and transports it to the river.

The failure of nonsafety-related SSCs in the WDW system could potentially prevent the satisfactory accomplishment of a safety-related function. The WDW system also performs functions that support fire protection.

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

In LRA Table 2.3.3-18, the applicant identified the following WDW system component types that are within the scope of license renewal and subject to an AMR:

- fasteners/bolting
- piping and fittings
- pump casings
- valve bodies

2.3.3.18.2 Staff Evaluation

The staff reviewed LRA Section 2.3.3.18 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

On the basis of its review, the staff found that the applicant has identified those portions of the wells and domestic water system that meet the scoping requirements of 10 CFR 54.4(a) and has included them within the scope of license renewal in LRA Section 2.3.3.18. The applicant has also included wells and domestic water system components that are subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff did not identify any omissions

2.3.3.18.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the wells and domestic water system. Therefore, the staff concludes that the applicant has adequately identified the wells and domestic water system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the wells and

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

### *2.3.4 Steam and Power Conversion System*

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

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

- 2.3.4.1 condensate storage system
- 2.3.4.2 condensate and feedwater system
- 2.3.4.3 main condenser system
- 2.3.4.4 main steam system
- 2.3.4.5 turbine generator system

The corresponding subsections of this SER (2.3.4.1 – 2.3.4.5, respectively) present the staff's review findings with respect to the steam and power conversion system for MNGP.

#### *2.3.4.1 Condensate Storage System*

2.3.4.1.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.1, the applicant described the condensate storage system. The condensate storage system provides a large storage capacity of reactor quality water. The normal plant uses for condensate storage water are as follows: (1) hotwell makeup and reject, (2) control rod drive supply, (3) fuel storage pool makeup, (4) demineralizer and radwaste processing, (5) filling the refueling wells, (6) miscellaneous plant flushing and decontamination services, (7) pressurizing RHR and core spray piping, and (8) normal suction supply for high pressure coolant injection and reactor core isolation cooling systems. In addition to the above, the condensate storage system provides storage for reclaimed water from the radwaste system. The suppression pool is the safety-related source of water for high pressure coolant injection.

The condensate storage system contains safety-related components that are relied upon to remain functional during and following design-basis events. The failure of nonsafety-related SSCs in the condensate storage system could potentially prevent the satisfactory accomplishment of a safety-related function. In addition, the condensate storage system performs functions that support EQ and SBO.

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

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

- fasteners/bolting
- filters/housings
- flow element
- gauges (flow, level and sight)
- heat exchangers
- instrumentation
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- thermowells
- valve bodies

2.3.4.1.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.1 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

In reviewing LRA Section 2.3.4.1, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results. Therefore, the staff issued a request for additional information (RAI) concerning the specific issues to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4 (a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAIs and the applicant's related responses.

RAI 2.3.4.1-1

The high pressure coolant Injection pump is normally lined up to the condensate storage tanks and that the suction is switched to the suppression pool when the level in either tank falls to the Technical Specification low level in either condensate storage tank (CST) or a high water level is sensed in the suppression pool. LRA Section 2.3.4.1 states that the in-scope portion of the condensate storage system consists of piping and valves, which supplies the fuel storage pool, high pressure coolant injection, reactor core isolation cooling, residual heat removal, control rod drive, condensate, feedwater, core spray, main condenser, and radwaste systems. In addition, the instrumentation associated with the automatic transfer from the condensate storage tank to the suppression pool is safety related, the components are in-scope for LR in accordance with 10 CFR 54.4(a)(1). LRA Table 2.3.4-1 shows that the intended function for all condensate storage system component groups is “pressure boundary.”

The within scope piping associated with the safety related level instrumentation for the north

and south condensate storage tanks, is shown on LR boundary drawing LR-36039 at locations B-3 and B-6. For each CST, the within the scope portion includes the portion of the CST connection piping C22-4"-HJ and C23-4"-HJ between the reactor building and the CST level instruments. The remaining portion of these lines from the reactor building to the CST is not shown as within the scope. Since failure of this out-of-scope piping would have the same effect as a pressure boundary failure of the within the scope portion, the applicant was asked to justify why the portion of lines C22-4"-HJ and C23-4"-HJ between the reactor building and the CST is not also within the scope for LR.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.4.1-1 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

2.3.4.1.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the condensate storage system. Therefore, the staff concludes that the applicant has adequately identified the condensate storage system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the condensate storage system components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).

*2.3.4.2 Condensate and Feedwater System*

2.3.4.2.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.2, the applicant described the condensate and feedwater (CFW) system. The CFW system supplies condensate from the main condenser to the reactor vessel at an elevated temperature and pressure. The CFW system includes the condensate demineralizer (CDM), the reactor feedwater pump seal (FWS) and zinc injection passivation (GZP) subsystems. Two motor-driven condensate pumps pump condensate through the steam jet air ejector inter-condensers and the steam packing exhauster. After leaving the steam packing exhauster, condensate passes through the full-flow condensate demineralizer subsystem to ensure a supply of high purity water to the reactor. Demineralizer effluent is then split into two parallel paths, each with three stages of low-pressure feedwater heating, to the suction of the reactor feedwater pumps. The condensate demineralizer subsystem consists of five demineralizer vessels operating in parallel and sized for full condensate flow at reactor-rated conditions. The demineralizer vessels are located in shielded cells. Wastes from an exhausted unit are transferred to the RAD system for disposal. The GZP subsystem provides a zinc oxide suspension from a continuously stirred supply tank, which is diluted with demineralized water, and fed to one of two zinc injection pumps. The diluted suspension is continuously injected into the suction of the reactor feed pump just downstream of the reactor feed pump suction valves. Small concentrations of zinc in the reactor water result in a reduction in the amount of cobalt-incorporated into the oxide film established on stainless steel piping. This reduction in cobalt-

60 incorporation provides substantial reductions in dose rates, particularly in primary containment.

The CFW system contains safety-related components that are relied upon to remain functional during and following design-basis events. The failure of nonsafety-related SSCs in the CFW system could potentially prevent the satisfactory accomplishment of a safety-related function. In addition, the CFW system performs functions that support SBO.

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

- provides flow restriction
- provides a pressure-retaining boundary

In LRA Table 2.3.4-2, the applicant identified the following CFW system component types that are within the scope of license renewal and subject to an AMR:

- expansion joints
- fasteners/bolting
- filters/strainers
- flow element
- gauges (flow, level and sight)
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- tanks
- thermowells
- valve bodies

2.3.4.2.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.2 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

In reviewing LRA Section 2.3.4.2, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results. Therefore, the staff issued a request for additional information (RAI) concerning the specific issues to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4 (a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe

the staff's RAIs and the applicant's related responses.

RAI 2.3.4.2-1

LRA Table 2.3.4-2 identifies "Pressure Boundary" as the intended function for all the within scope heat exchangers in the CFW system. LR boundary drawings LR-36034 and LR-36035 show that the shells for feedwater heaters E-11A, E-11B, E-12A and E-12B are non-safety related and are included within the scope in accordance with 10 CFR 54.4(a)(2) criteria. However, several turbine and extraction steam lines connected to the heat exchanger shell pressure boundary are not shown within the scope. These lines include:

- Lines E9-26"-HCD, E10-26"-HCD, E11-26"-HCD, and E12-26"-HCD for L.P. Heater E-11A on LR-36034 (quadrant B4).

- Lines E1-20"-HCD and E2-20"-HCD for L.I.P. Heater E-12A on LR-36034 (quadrant B4).

- Lines E13-26"-HCD, E14-26"-HCD, E15-26"-HCD, and E16-26"-HCD for L.P. Heater E-11B on LR-36035 (quadrant B-6).

- Lines E2-20"-HCD and E4-20"-HCD for L.I.P. Heater E-12B on LR-36035 (quadrant C-6).

The applicant was asked to justify why the turbine generator system piping connected to the CFW system heaters are not in scope for LR relative to the components intended function defined in LRA Table 2.3.4-2 and the scoping criteria specified in 10 CFR 54.4(a)(2).

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.4.2-1 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

RAI 2.3.4.2-2

LR boundary drawing LR-36036 at locations C-5, C-6, D-5, and D-6 identifies the shells for feedwater heaters E-11A, E-11B, E-12A and E-12B as non-safety related and within the scope for LR in accordance with 10 CFR 54.4(a)(2) criteria. However, the drawing also shows a connecting steam line to each heater shell as being out of scope with references to LR-36035 (C-5), LR-36035 (B-5), LR-36034 (B-4), and LR-36034 (C-4). The aforementioned references could not be found on the indicated LR drawings. The applicant was asked to identify the correct drawing reference and location for these references. In addition, justify the determination that the steam piping connected to the CFW system heaters are not in scope for LR relative to the components intended function defined in LRA Table 2.3.4-2 and the scoping criteria specified in 10 CFR 54.4(a)(2).

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.4.2-2

and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

2.3.4.2.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the condensate and feedwater system. Therefore, the staff concludes that the applicant has adequately identified the condensate and feedwater system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the condensate and feedwater system components that are subject to an AMR, as required by 10 CFR 54.21(a)(1).

*2.3.4.3 Main Condenser System*

2.3.4.3.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.3, the applicant described the main condenser (CDR) system. The CDR system provides a heat sink for the steam cycle, removes non-condensable gases, and serves as a central collection point for system drains. The system is nonsafety-related, but is credited for post-accident plate out and holdup of radioactive iodine in the LOCA and control rod drop accident (CRDA) analyses per USAR Section 14.7.2.4.1 and Section 14.7.1.6, respectively. Also included in the nonsafety affecting safety (NSAS) function is the automatic closure of mechanical vacuum pump (MVP) suction valves that isolate the condenser lines to the MVP on primary containment isolation system (PCIS) Division 1 logic which includes detection of high activity in the main steam lines. The CDR system consists principally of the main condenser, which condenses steam exhausted from the turbine and turbine bypass system (TGS system). The main condenser is a twin shell, dual pressure surface condenser. Each of the two low-pressure turbines exhausts into a condenser shell. Condenser structural integrity is continuously demonstrated during normal operation when the condenser is required to maintain vacuum. Following a design basis accident, when the condenser is required to perform its intended function, the MSIVs will be closed and vacuum will be lost. The condenser will not be required to perform a pressure boundary function because atmospheric conditions will exist inside the condenser.

The failure of nonsafety-related SSCs in the CDR system could potentially prevent the satisfactory accomplishment of a safety-related function.

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

- provides removal and holdup for fission products
- provides a pressure-retaining boundary

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

- condenser complex
- expansion joints
- fasteners/bolting
- filters/strainers
- gauges (flow, level and sight)
- heat exchangers
- LP turbine hood
- piping and fittings
- pump casings
- tanks
- thermowells
- valve bodies

2.3.4.3.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.3 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

In reviewing LRA Section 2.3.4.3, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's plant-level scoping results. Therefore, the staff issued requests for additional information (RAIs), concerning each specific issue, to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4. The following paragraphs describe the staff's RAIs and the applicant's related responses.

RAI 2.3.4.3-1

LR drawing LR-36035-2 at location B-2 pipe section line number OG6-8"-HC at separator T-72 and downstream piping is not within the scope of LR. All other piping and components within the apparent plant area are within the scope of LR. Failure of this unisolable section of pipe could have an effect on the LR intended pressure boundary function for the CDR system. The applicant was requested to justify why these sections of unisolable piping and components were left out of scope.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.4.3-1 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

RAI 2.3.4.3-2

LR drawing LR-54817-4 at location A-7 is not listed in LRA section 2.3.4.3 as an LR drawing for the CDR system. The applicant was requested to clarify why LR-54817-4 is not included in LRA section 2.3.4.3 as an LR drawing for the CDR system.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.4.3-2 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

2.3.4.3.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the main condenser system. Therefore, the staff concludes that the applicant has adequately identified the main condenser system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the main condenser system components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).

*2.3.4.4 Main Steam System*

2.3.4.4.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.4, the applicant described the main steam (MST) system. The MST system transports steam produced in the reactor to the main turbine for the production of electricity. This steam is supplied to the high pressure section of the turbine. Steam leaving the high pressure turbine is divided, the bulk of it passing through moisture separators prior to admission to the low pressure sections. A portion of the steam is extracted and is condensed as it is cascaded through feedwater heaters en route to the main condenser. Normally, the turbine uses all the steam being generated by the reactor. However, automatic pressure-controlled bypass valves are supplied, which can discharge excess steam directly to the condenser. The MST system also supplies steam to the high pressure coolant injection and reactor core isolation cooling turbines. The MST system includes an in-line flow restrictor for each of the four main steam lines. These flow restrictors minimize water losses and protect the fuel barrier prior to MSIV closure for steam line ruptures outside of primary containment. Drains are provided to remove condensate from the steam lines. The majority of the components for the MST system are located in the turbine building and reactor building steam chase, with additional piping and valves located in the primary containment. The majority of the system components are made of stainless steel and carbon steel although some cast austenitic stainless steel (CASS) and copper alloy material is used.

The MST system contains safety-related components that are relied upon to remain functional during and following design-basis events. The failure of nonsafety-related SSCs in the MST system could potentially prevent the satisfactory accomplishment of a safety-related function.

In addition, the MST system performs functions that support fire protection and EQ.

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

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

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

- fasteners/bolting
- filters/strainers
- flow element
- manifolds
- piping and fittings
- restricting orifices
- thermowells
- valve bodies

2.3.4.4.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.4 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

In reviewing LRA Section 2.3.4.4, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's plant-level scoping results. Therefore, the staff issued requests for additional information (RAIs), concerning each specific issue, to determine whether the applicant properly applied the scoping criteria of 10 CFR 54.4. The following paragraphs describe the staff's RAIs and the applicant's related responses.

RAI 2.3.4.4-1

LR boundary drawing LR-36035-2 at locations D-7 and B-7 indicate pipe line numbers D109-1"-EF and D108-1"-EF (steam supply lines to Air Ejectors E-2B and E-2A) are not within the scope of LR. The Monticello LRA Table 2.3.4-4 states that piping, fittings and valves are in scope with intended pressure boundary function. Failure of this section of pipe could have an effect on the LR intended pressure boundary function for the main steam system piping. The applicant was requested to justify why these sections of unisolable piping and components are not within the scope for LR.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.4.4-1 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

2.3.4.4.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the main steam system. Therefore, the staff concludes that the applicant has adequately identified the main steam system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the main steam system components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).

*2.3.4.5 Turbine Generator System*

2.3.4.5.1 Summary of Technical Information in the Application

In LRA Section 2.3.4.5, the applicant described the turbine generator system. The turbine generator system includes the turbine generator unit and the required subsystems: the steam sealing, turbine lube oil, hydrogen cooling, hydrogen seal oil, and the stator cooling subsystems. The function of the turbine is to convert the thermodynamic energy of the steam from the nuclear reactor into mechanical energy that drives the generator. The generator in turn converts that energy to an electrical output to the power grid. The turbine consists of one single flow high-pressure section with two double-flow low-pressure sections of the non-reheat design on a single shaft. The generator consists of three major parts: the rotor, stator and exciter. The rotor is turned by the turbine shaft and is the source of the moving magnetic field. The stator consists of windings which form a conductive path for the current induced by the rotating magnetic field of the rotor. The exciter is a separate and smaller generator driven by the turbine to provide power for the main generator rotor magnetic field. The steam sealing subsystem prevents steam leakage past the turbine shaft seals into the turbine building and limits air in-leakage to the turbine casings. The turbine generator shaft is supported by 10 journal bearings. All bearing oil is supplied by the turbine lube oil subsystem, which also provides high-pressure oil to the hydraulic turbine control mechanisms. The hydrogen gas of the hydrogen cooling subsystem is contained within the generator casing. The hydrogen cooling subsystem is designed to reduce the heat generated from windage resistance and provide a good heat transfer medium for generator cooling. The hydrogen seal oil subsystem supplies vacuum treated oil between the rotor shaft and the generator end housing hydrogen seals to prevent hydrogen from escaping into the turbine building. The stator cooling subsystem removes heat from the generator stator by circulating low conductivity water through the hollow metal bars forming the stator windings. The subsystem also supplies cooling water to the generator exciter rectifier banks. The Stator Cooling subsystem consists of a storage tank feeding two parallel pumps, two heat exchangers, a filter, and connecting piping with the generator stator.

The failure of nonsafety-related SSCs in the turbine generator system could potentially prevent the satisfactory accomplishment of a safety-related function.

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

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

- expansion joints
- fasteners/bolting
- filters/housings
- filters/strainers
- gauges (flow, level and sight)
- heat exchangers
- manifolds
- piping and fittings
- pump casings
- restricting orifices
- steam traps
- tanks
- thermowells
- turbines
- valve bodies

2.3.4.5.2 Staff Evaluation

The staff reviewed LRA Section 2.3.4.5 and the USAR. The staff's review, using the evaluation methodology described in SER Section 2.3, was conducted in accordance with the guidance described in SRP-LR Section 2.3.

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

In reviewing LRA Section 2.3.4.5, the staff identified areas in which additional information was necessary to complete the evaluation of the applicant's scoping and screening results. Therefore, the staff issued a request for additional information (RAI) concerning the specific issues to determine whether the applicant has properly applied the scoping criteria of 10 CFR 54.4 (a) and the screening criteria of 10 CFR 54.21(a)(1). The following paragraphs describe the staff's RAIs and the applicant's related responses.

RAI 2.3.4.5-1

LR drawing LR-36034 at location B-4 shows a portion of the sensing line to PT-1217 attached

to pipe E2-20"-HCD as within the scope for LR; however, the remaining portion of the sensing line and pressure transmitter is shown as out of scope. In addition, LR drawing LR-36035 at location D-7 shows pressure transmitters PT-1222 and PT-1223 and portions of the sensing lines to these transmitters as within the scope for LR; however, the remaining portions of the sensing line to pipes E3-20"-HCD and E16-26"-HCD are shown as out of scope. LRA Section 2.3.4.5, Turbine Generator System, page 2-188 states that the LR function for turbine generator piping and gauges is maintaining a pressure boundary and the LRA, page 2-187, states that non-safety related structures and/or components of the turbine generator system that could affect safety related SSCs must maintain sufficient integrity such that the intended function of the safety related SSCs is not adversely affected. Failure of the sensing lines noted above could effect the LR intended pressure boundary function for this turbine generator piping and possibly have a negative impact of the safety related SSCs. The applicant was requested to justify why portions of the sensing lines and associated pressure transmitters are out of scope for LR.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.4.5-1 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

RAI 2.3.4.5-2

LRA Section 2.3.4.5, Turbine Generator System, page 2-188 states that the LR function for turbine generator piping is maintaining a pressure boundary and the LRA, page 2-187, states that non-safety related structures and/or components of the turbine generator system that could affect safety related SSCs must maintain sufficient integrity such that the intended function of the safety related SSCs is not adversely affected.

LR drawings LR-36034 at location B-4 and LR-36035 at location B-6, B-7 and C-7 show piping to LIP Heater 12-A&B and LP Heater 11-A & B (E9-26"-HCD, E10-26"-HCD, E11-26"-HCD, E12-26"-HCD, E1-20"-HCD, E2-20"-HCD, E14-26"-HCD, E13-26"-HCD, E15-26"-HCD, E16-26"-HCD, E4-20"-HCD, E3-20"-HCD) as out of scope for LR. However, the sensing lines to pressure transmitters attached to these pipes are shown as within the scope for LR. Failure of the above cited pipes could affect the LR intended function of pressure boundary for the turbine generator piping and possibly have a negative impact of the safety related SSCs. The applicant was requested to justify why the above cited pipes are out of scope for LR.

Applicant's Response and Staff's Evaluation

(Briefly describe the applicant's rationale/information provided in the response to RAI 2.3.4.5-2 and the staff's evaluation/conclusion. The evaluation should start uniformly, as follows.)

In its response the applicant stated that ...

2.3.4.5.3 Conclusion

During its review of the information provided in the LRA, license renewal drawings, and licensing basis information, the staff did not identify any omissions or discrepancies in the applicant's scoping and screening results for the components of the turbine generator system. Therefore, the staff concludes that the applicant has adequately identified the turbine generator system components that are within the scope of license renewal, as required by 10 CFR 54.4(a), and that the applicant has adequately identified the turbine generator system components that are subject to an AMR, as required by 10 CFR 54.21(a) (1).