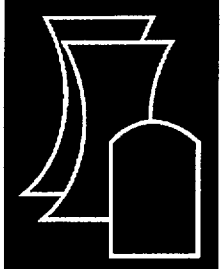
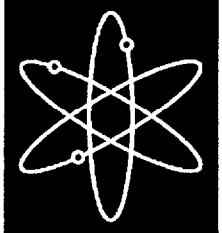
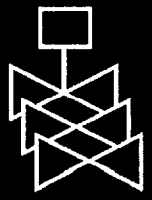
NUREG-1759







Safety Evaluation Report
Related to the License Renewal of Turkey Point Nuclear Plant, Units 3 and 4

Docket Nos. 50-250 and 50-251

Florida Power & Light Company

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, DC 20555-0001

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NUREG-1759

Safety Evaluation Report

Related to the License Renewal of
Turkey Point Nuclear Plant,
Units 3 and 4

Docket Nos. 50-250 and 50-251

Florida Power & Light Power Company

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Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ABSTRACT

This document is a safety evaluation report regarding the application to renew the operating licenses for Turkey Point Nuclear Plant, Units 3 and 4, which was filed by the Florida Power and Light Company by letter dated September 8, 2000, and received by the U.S. Nuclear Regulatory Commission (NRC) on September 11, 2000. The NRC's Office of Nuclear Reactor Regulation has reviewed the Turkey Point license renewal application for compliance with the requirements of Title 10 of the *Code of Federal Regulations*, Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," and prepared this report to document its findings.

In its submittal of September 8, 2000, the Florida Power and Light Company requested renewal of the operating license for Turkey Point, Units 3 and 4 (License Nos. DPR-31 and DRP-41, respectively), which were issued under Section 104b of the Atomic Energy Act of 1954, as amended, for a period of 20 years beyond the current license expiration dates of July 19, 2012, and April 10, 2013, respectively. Turkey Point Units 3 and 4 are located in Miami-Dade County east of Florida City, Florida. Each unit consists of a Westinghouse pressurized-water reactor nuclear steam supply system designed to produce a core thermal power of 2,300 megawatts or approximately 693 net megawatts electric.

The NRC's project manager for the Turkey Point license renewal is Rajender Auluck. Dr. Auluck may be contacted by calling 301-415-1025 or by writing to the License Renewal and Environmental Impacts, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

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CONTENTS

1. INTRODUCTION AND GENERAL DISCUSSION

1.1 Introduction

This document is a safety evaluation report (SER) on the application to renew the operating licenses for Turkey Point Nuclear Plant, Units 3 and 4, filed by Florida Power and Light Company (hereafter referred to as FPL or the applicant).

By letter dated September 8, 2000, FPL submitted its application to the U.S. Nuclear Regulatory Commission (NRC) for renewal of the operating licenses for Turkey Point Units 3 and 4 for an additional 20 years. The NRC received the application on September 11, 2000. The NRC staff reviewed the Turkey Point license renewal application (LRA) for compliance with the requirements of Title 10 of the *Code of Federal Regulations*, Part 54 (10 CFR Part 54), "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," and prepared this report to document its findings. The NRC's license renewal project manager for Turkey Point Units 3 and 4 is Rajender Auluck. Dr. Auluck may be contacted by calling 301-415-1025 or by writing to the License Renewal and Environmental Impacts Program, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

In its application, the applicant requested renewal of the operating licenses issued under Section 104b of the Atomic Energy Act of 1954, as amended, for Turkey Point Units 3 and 4 (License Nos. DPR-31 and DPR-41, respectively) for a period of 20 years beyond the current license expiration dates of July 19, 2012, and April 10, 2013, respectively. Turkey Point Units 3 and 4 are located in Miami-Dade County east of Florida City, Florida. Each unit consists of a Westinghouse pressurized-water reactor nuclear steam supply system designed to produce a core thermal power output of 2,300 megawatts or approximately 693 net megawatts electric. Details concerning the plant and the site are found in the updated final safety analysis report (UFSAR) for Turkey Point Units 3 and 4.

The license renewal process proceeds along two tracks: a technical review of safety issues and an environmental review. The requirements for these two reviews are stated in NRC regulations 10 CFR Parts 54 and 51, respectively. The safety review is based on FPL's application for license renewal and on the applicant's answers to requests for additional information (RAIs) from the NRC staff. In meetings and docketed correspondence, FPL has also supplemented its answers to the RAIs. The public can review the LRA, and all pertinent information and material, including the UFSAR, at the NRC Public Document Room, 11555 Rockville Pike, Rockville, MD 20852-2738. In addition, the Turkey Point, Units 3 and 4 LRA and significant information and material related to the license renewal review are available on the NRC's Website at www.nrc.gov.

This SER summarizes the findings of the staff's safety review of the Turkey Point Units 3 and 4 LRA and describes the technical details considered in evaluating the safety aspects of its proposed operation for an additional 20 years beyond the term of the current operating license. The staff reviewed the LRA in accordance with the NRC regulations and the guidance presented in the NRC draft "Standard Review Plan (SRP) for the Review of License Renewal Applications for Nuclear Power Plants," dated August 2000. The draft SRP was finalized and issued as NUREG-1800 in July 2001.

Chapters 2 through 4 of the SER address the staff's review and evaluation of license renewal issues that have been considered during the review of the application. Chapter 5 is reserved for the report of the Advisory Committee on Reactor Safeguards (ACRS). The conclusions of this report are in Chapter 6.

Appendix A is a chronology of NRC's and the applicant's principal correspondence related to the review of the application. Appendix B is a bibliography of the documents used during the review. Appendix C is a list of abbreviations used in the report. The NRC staff's principal reviewers for this project are listed in Appendix D.

In accordance with 10 CFR Part 51, the staff prepared a draft plant-specific supplement to the generic environmental impact statement (GEIS) that discusses the environmental considerations related to renewing the licenses for Turkey Point Units 3 and 4. The draft and final plant-specific supplement to the GEIS was issued separately from this report. Specifically, a draft and final Supplement 5 to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding Turkey Point Units 3 and 4," dated June 12, 2001, were issued in June 2001 and January 2002, respectively.

1.2 License Renewal Background

Pursuant to the Atomic Energy Act of 1954, as amended, and NRC regulations, licenses for commercial power reactors to operate are issued for 40 years. These licenses can be renewed for up to 20 additional years. The original 40-year license term was selected on the basis of economic and antitrust considerations, not by technical limitations. However, some individual plant and equipment designs may have been engineered on the basis of an expected 40-year service life.

In 1982, the NRC anticipated interest in license renewal and held a workshop on nuclear power plant aging. That led the NRC to establish a comprehensive program plan for nuclear plant aging research (NPAR). On the basis of the results of that research, a technical review group concluded that many aging phenomena are readily manageable and do not involve technical issues that would preclude extending the life of nuclear power plants.

In 1986, the NRC published a request for comment on a policy statement that would address major policy, technical, and procedural issues related to life extension for nuclear power plants.

In 1991, the NRC published the license renewal rule in 10 CFR Part 54. The NRC participated in an industry-sponsored demonstration program to apply the rule to pilot plants and develop experience to establish implementation guidance. To establish a scope of review for license renewal, the rule defined age-related degradation unique to license renewal. However, during the demonstration program, the NRC found that many aging mechanisms occur and are managed during the period of the initial license. In addition, the NRC found that the scope of the review did not allow sufficient credit for existing programs, particularly for the implementation of the maintenance rule, which also manages plant aging phenomena.

As a result, in 1995, the NRC amended the license renewal rule. The amended 10 CFR Part 54 established a regulatory process that is expected to be simpler, more stable, and more predictable than the previous license renewal rule. In particular, 10 CFR Part 54 was clarified to focus on managing the adverse effects of aging rather than on identifying all aging mechanisms. The rule changes were intended to ensure that important systems, structures, and components (SSCs) will continue to perform their intended function in the period of extended operation. In addition, the integrated plant assessment (IPA) process was clarified and simplified to be consistent with the revised focus on passive, long-lived structures and components (SCs).

In parallel with these efforts, the NRC pursued a separate rulemaking effort to amend 10 CFR Part 51 to focus the scope of the review of environmental impacts of license renewal, and fulfill, in part, the NRC's responsibilities under the National Environmental Policy Act of 1969 (NEPA).

1.2.1 Safety Reviews

License renewal requirements for power reactors are based on two key principles:

(1) The regulatory process is adequate to ensure that the licensing bases of all currently operating plants provides and maintains an acceptable level of safety, with the possible exception of the detrimental effects of aging on the functionality of certain SSCs during the period of extended operation, and possibly a few other issues related to safety only during the period of extended operation.

(2) The plant-specific licensing basis must be maintained during the renewal term in the same manner, and to the same extent as during the original licensing term.

In implementing these two principles, the rule, in 10 CFR 54.4, defines the scope of license renewal as including those plant SSCs (a) that are safety-related, (b) whose failure could affect safety-related functions, and (c) that are relied on to demonstrate compliance with the Commission's regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout.

Pursuant to 10 CFR 54.21(a), each applicant must review all SSCs that are within the scope of the rule to identify SCs that are subject to an aging management review (AMR). SCs that are subject to an AMR are those that perform an intended function without moving parts, or without a change in configuration or properties, and that are not subject to replacement based on a qualified life or specified time period. As required by 10 CFR 54.21(a), each applicant must demonstrate that the effects of aging will be managed in such a way that the intended function or functions of the SCs that are within the scope of license renewal will be maintained, consistent with the current licensing basis, for the period of extended operation.

Active equipment, however, is considered to be adequately monitored and maintained by existing programs. In other words, the detrimental effects of aging that may occur for active equipment are more readily detectable and will be identified and corrected through routine surveillance, performance indicators, and maintenance. The surveillance and maintenance programs and activities for active equipment, as well as other aspects of maintaining the plant

design and licensing basis, are required to continue throughout the period of extended operation.

Pursuant to 10 CFR 54.21(b), each applicant is required to submit each year following the LRA and at least three months before the scheduled completion of the NRC's review of the application an amendment to the LRA that identifies any changes to the CLB for its facilities that materially affect the contents of the LRA, including the FSAR supplement.

Another requirement for license renewal is the identification and updating of time-limited aging analyses (TLAAs). During the design phase for a plant, certain assumptions are made about the initial operating term of the plant, and these assumptions are incorporated into design calculations for several of the plant's SSCs. Thus, pursuant to 10 CFR 54.21(c)(1), these calculations must be shown to be valid for the period of extended operation or must be projected to the end of the period of extended operation, or the applicant must demonstrate that the effects of aging on these SSCs will be adequately managed for the period of extended operation. Pursuant to 10 CFR 54.21(c)(2), each application must provide a list of exemptions granted pursuant to 10 CFR 50.12 and are in effect that are based on the TLAAs as defined in 10 CFR 54.3. Pursuant to 10 CFR 54.21(c)(2), each application must also provide an evaluation that justifies the continuation of these exemptions for the period of extended operation.

Pursuant to 10 CFR 54.21(d), each application is required to include a supplement to the FSAR. This supplement must contain a summary description of the programs and activities for managing the effects of aging.

In July 2001, the NRC issued Regulatory Guide (RG) 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating License; NUREG-1800, "Standard Review Plan for the Review of License Renewal Application for Nuclear Power Plants" (SRP-LR); and NUREG-1801, "Generic Aging Lessons Learned (GALL) Report." These documents describe methods acceptable to the NRC staff for implementing the license renewal rule, as well as techniques used by the NRC staff in evaluating applications for license renewals. The draft versions of these documents were issued in the *Federal Register* for public comment on August 31, 2000 (64 FR 53047). The staff assessment of public comments is being issued as NUREG-1739, "Analysis of Public Comments on the improved License Renewal Guidance Documents." The regulatory guide endorsed an implementation guideline prepared by the Nuclear Energy Institute (NEI) as an acceptable method of implementing the license renewal rule. The NEI guideline is NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54–The License Renewal Rule," issued in March 1996. The staff used the regulatory guide, along with the SRP, to review this application and to assess topical reports involved in license renewal as submitted by industry groups.

1.2.2 Environmental Reviews

In December 1996, the staff revised the environmental protection regulations in 10 CFR Part 51 to facilitate environmental reviews for license renewal. The staff prepared a "Generic Environmental Impact Statement (GEIS) for License Renewal of Nuclear Plants," NUREG-1437, Revision 1, in which it examined the possible environmental impacts associated with renewing licenses of nuclear power plants. For certain types of environmental impacts, the

GEIS establishes generic findings that are applicable to all nuclear power plants. These generic findings are identified as Category 1 issues in 10 CFR Part 51, Subpart A, Appendix B.

Pursuant to 10 CFR 51.53(c)(3)(i), an applicant for license renewal may incorporate these generic findings in its environmental report. Analyses of environmental impacts of renewal of this license that must be evaluated on a plant-specific basis are identified as Category 2 issues in 10 CFR Part 51, Subpart A, Appendix B. Such analyses must be included in an environmental report in accordance with 10 CFR 51.53(c)(3)(ii).

In accordance with NEPA and the requirements of 10 CFR Part 51, the NRC performs a plant-specific review of the environmental impacts of license renewal, including whether there is new and significant information not considered in the GEIS. A public meeting was held on December 6, 2000, near Turkey Point, Units 3 and 4 as part of the NRC's scoping process to identify environmental issues specific to the plant. The results of the environmental review process and a preliminary recommendation on the license renewal action were documented in NRC's draft plant-specific Supplement 5 to the GEIS, issued on June 12, 2001.

On July 17, 2001 (during the 75-day comment period for the draft plant-specific supplement to the GEIS), another public meeting was held near the site. At this meeting, the staff described the environmental review process and answered questions from members of the public to assist them in formulating any comments they might have regarding the review. The final Supplement 5 to the GEIS was issued in January 2002.

Supplement 5 presents the NRC's final environmental analysis associated with renewal of the Turkey Point Units 3 and 4 operating licenses for an additional 20 years that considers and weighs the environmental effects, and alternatives available for avoiding adverse environmental effects.

On the basis of (1) the analysis and findings in the "Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants," NUREG-1437; (2) the Environmental Report submitted by the applicant; (3) consultation with other Federal, State, and local agencies; (4) its own independent review; and (5) its consideration of public comments received during the scoping period, the staff made a recommendation in Supplement 5 to NUREG-1437 that the Commission determine that the adverse environmental impacts are not so great that preserving the option of license renewal for energy planning would be unreasonable.

1.3 Summary of Principal Review Matters

The requirements for renewing operating licenses for nuclear power plants are described in 10 CFR Part 54. The staff performed its technical review of the Turkey Point Units 3 and 4 application for license renewal in accordance with Commission guidance and the requirements of 10 CFR 54.4, 54.19, 54.21, 54.22, 54.23, and 54.25. The standards for renewing a license are contained in 10 CFR 54.29.

In 10 CFR 54.19(a), the Commission requires a license renewal applicant to submit general information. FPL submitted this general information in an Enclosure to its September 8, 2000, letter regarding the application for a renewed operating license for the Turkey Point Units 3 and 4. The staff reviewed that enclosure and found that the applicant submitted the information required by 10 CFR 54.19(a).

In 10 CFR 54.19(b), the Commission requires that LRAs include "conforming changes to the standard indemnity agreement, 10 CFR 140.92, Appendix B, to account for the expiration term of the proposed renewed license." The applicant states the following in its renewal application regarding this issue:

> "The current indemnity agreement for Turkey Point, Units 3 and 4 states in Article VII that the agreement shall terminate at the time of expiration of that license specified in Item 3 of the Attachment to the agreement, which is the last to expire. Item 3 of the Attachment to the indemnity agreement, as revised by Amendment No. 5, lists four license numbers. FPL requested that conforming changes be made to Article VII of the indemnity agreement, and/or Item 3 of the Attachment to that agreement, specifying the extension of agreement until the expiration dates of the renewed FPL operating licenses as set forth in this Application. Thus, license number DPR-31 would be extended to expire at midnight, July 19, 2032, and DPR-41 would be extended to expire at midnight April 10, 2033. In addition, should the license number be changed upon issuance of the renewed licenses, FPL requests that conforming changes be made to Item 3 of the Attachment, and any other section of the indemnity agreement as appropriate."

The staff will use the original license number for the renewed license. Therefore, there is no need to make conforming changes to the indemnity agreement, and the requirements of 10 CFR 54.19(b) have been met.

In 10 CFR 54.21, the Commission requires that each application for a renewed license for a nuclear facility must contain (a) an integrated plant assessment (IPA), (b) current licensing basis changes during NRC review of the application, (c) an evaluation of time-limited aging analyses (TLAAs), and (d) a final safety analysis report (FSAR) supplement. On September 8, 2000, the applicant submitted the information required by 10 CFR 54.21(a) and (c) in the Enclosure of its LRA. Enclosure is titled "Application for Renewed Operating Licenses, Turkey Point Units 3 and 4." The applicant submitted the information required by 10 CFR 54.21(b) on October 22, 2001. The applicant submitted the information to address the licensee renewal requirements of 10 CFR 54.21(d) on November 1, 2001.

In 10 CFR 54.22, the Commission states requirements regarding technical specifications. The applicant did not request any changes to the plant technical specification in its LRA.

The staff evaluated the technical information required by 10 CFR 54.21 and 54.22 in accordance with the NRC's regulations and the guidance provided in the initial draft SRP. The staff's evaluation of this information is documented in Chapters 2, 3, and 4 of this SER.

The staff's evaluation of the environmental information required by 10 CFR 54.23 is documented in the draft plant-specific supplement to the GEIS (NUREG-1437, Supplement 5), that state the considerations related to renewing the licenses for Turkey Point Units 3 and 4.

1.3.1 Westinghouse Topical Reports

Turkey Point actively participated in a Westinghouse Owners Group (WOG) effort that developed a series of generic technical reports whose purpose was to demonstrate that the aging effects for Reactor Coolant System components are adequately managed for the period

of extended operation. The following generic technical reports, applicable to Westinghouse Reactor Coolant Systems, have been submitted to the NRC for approval by Westinghouse:

- WCAP-14575, "License Renewal Evaluation: Aging Management Evaluation of Class 1 Piping and Associated Pressure Boundary Components." Final NRC Safety Evaluation dated November 8, 2000, has been issued.

- WCAP-14574, "License Renewal Evaluation: Aging Management Evaluation for Pressurizers." Final NRC Safety Evaluation dated October 26, 2000, has been issued.

- WCAP-14577, "License Renewal Evaluation: Aging Management for Reactor Internals." Final NRC Safety Evaluation dated February 10, 2001, has been issued.

- WCAP-14422, "License Renewal Evaluation: Aging Management for Reactor Coolant System Supports." Final NRC Safety Evaluation dated November 17, 2000, has been issued.

The safety evaluations of the topical reports are intended to be standalone documents. An applicant incorporating the topical reports by reference into its LRA must ensure that the conditions of approval stated in the safety evaluations are met. These reports were not incorporated by reference in the Turkey Point LRA because, as of September 1, 2000 (at the time of preparation of the LRA), none had received a final safety evaluation. However, the LRA addresses the applicability of these reports to the associated components at Turkey Point. The staff's evaluation of how the topical reports as applied to Turkey Point Units 3 and 4 is found in Section 3.2 of this SER.

1.4 Resolution of Open Items and Confirmatory Items

Open Item 2.1.2-1 The staff has reviewed and disagrees with the applicant's scoping criteria for seismic II over I (II/I) piping systems. The staff's position is that the seismic II/I piping systems whose failure could prevent safety-related systems and structures from accomplishing their intended functions should be within the scope of license renewal in accordance with the scoping requirements 10 CFR 54.4(a)(2). For these Seismic II/I Piping systems, the applicant should perform an AMR to determine if there are any plausible aging effects, and identify appropriate aging management programs. The applicant needs to clarify the scope of its seismic II/I piping systems (i.e., whether it includes non-safety-related piping systems that are connected to safety-related piping systems as well as non-safety-related piping systems that are not connected to safety-related piping systems). The applicant also needs to address the criteria used to postulate breaks and cracks in non-safety-related piping systems that are within the seismic II/I scope, if it wishes to take credit for protection of safety-related systems.
The applicant must demonstrate that plant mitigative features which are provided to protect safety-related SSCs from a failure of non-safety-related piping systems are within the scope of license renewal.

In response to this concern, the applicant, by letter dated November 1, 2001, provided additional information that addressed the staff's concern regarding Seismic II/I piping systems. The applicant's review brought additional non-safety-related piping segments into the scope of license renewal. On the basis of the additional information provided by the applicant, the staff concludes that all SSCs that meet the 54.4(a)(2) scoping criterion, have been included within

the scope of license renewal. In this letter, the applicant also provided information regarding the management of aging effects associated with those additional non-safety-related piping segments that were brought into the scope of license renewal. The applicant is using the chemistry control program and the flow-accelerated corrosion program to manage the effects of aging. The staff agrees that these programs are the applicable programs for managing loss of material since both of these programs follow Electric Power Research Institute (EPRI) Guidelines that have been endorsed by the staff for this use. The staff finds this resolution to the open item 2.1.2-1 acceptable.

Open Item 3.9.12-1 The reactor vessel head Alloy 600 penetration inspection program (RVHPIP) is designed to manage cracking in the Alloy 600 (VHPs) of the Turkey Point Units. In Section 3.2.12 of the LRA, the applicant did not specify whether it would continue to be a participant in the NEI program for managing primary water stress corrosion cracking (PWSCC) in Alloy 600 reactor vessel head penetrations (VHPs) of U.S. pressurized water reactor (PWR) designed facilities, and whether the applicant would continue to use this program as the basis for evaluating the Alloy 600 VHPs in the Turkey Point nuclear units during the proposed extended operating terms for the units. The scope of the RVHPIP described in Section 3.2.12 of Appendix B of the LRA needs to be updated to reflect that the applicant will continue to implement program for monitoring and controlling cracking in U.S. VHP nozzles during the period of extended operating term. This includes updating the RVHPIP to reflect the information and relative rankings for the Turkey Point units in Topical Report MRP-44 to make it consistent with NEI's current integrated program for evaluating Alloy 600 VHPs in U.S. PWRs.

By letter dated November 1, 2001, the applicant stated that it will continue to be a participant in the industry programs for managing PWSCC in Alloy 600 reactor VHP nozzles of U.S. pressurized water reactors during the period of extended operation. As part of the response to the NRC Bulletin 2001-01, dated September 4, 2001, the applicant stated that, the work performed under the EPRI Material Reliability Program (MRP) and the Nuclear Energy Institute (NEI) is an integral part of the Turkey Point RVHPIP. This bulletin response provides the Turkey Point Unit 3 and 4 rankings utilizing the latest industry PWSCC susceptibility model, in addition to updating reactor VHP inspection commitments. As the industry gains experience, ranking models will continue to be refined and thus, Turkey Point's RVHPIP will be updated to reflect the new information and relative rankings for Turkey Point Units 3 and 4 in the Topical Reports MRP-44 and MRP-48, accordingly. The staff finds this resolution to the open item 3.9.12-1 acceptable.

Open Item 4.3-1 In Section 4.3 of the LRA, the applicant indicates that a generic evaluation of underclad cracks had been extended to 60 years using fracture mechanics evaluations based on a representative set of design transients with the occurrences extrapolated to cover 60 years of service.

The applicant further stated that the number of design cycles and transients assumed in the WCAP-15338 analysis bounds the Turkey Point Units 3 and 4 design transients identified in UFSAR Table 4.1-8 and provided in Appendix A to the LRA. Therefore, the conclusions in the WCAP are applicable to Turkey Point reactor vessels. The Westinghouse Owners Group (WOG) has submitted for staff review topical report WCAP-15338, "A Review of Cracking Associated with Weld Deposited Cladding in Operating PWR Plants (MUHP-6110)." This report describes the fracture mechanics analysis that evaluates the impact of 60 years of operation on reactor vessel underclad crack growth and reactor vessel integrity. This report is under staff

review. If as a result of this review, plant specific requirements are identified, the applicant will need to meet those plant specific requirements.

In the letter dated November 1, 2001, the applicant referred to the NRC letter of October 15, 2001, accepting topical report WCAP-15338. The SER identified two applicant action items. Applicant action item (1) requires applicants with a 3-loop reactor pressure vessel (RPV) to indicate whether the number of design cycles and transients assumed in the WCAP-15338 analysis bounds the number of cycles for 60 years of operation of its RPV. In response to the staff's RAI 4.3.2-1, the applicant identified that WCAP-15338 is applicable and bounding for Turkey Point Units 3 and 4 and, as such, has addressed this applicant action item. Applicant action item (2) requires that those applicants for license renewal referencing the WCAP-15338 report for the RPV components ensure that the evaluation of the TLAA is summarily described in the FSAR supplement. The TLAA summary is provided in Subsection 16.3.2.2 (page A-47) of Appendix A to the Turkey Point LRA, and as such has addressed this applicant action item. The staff finds this resolution to the open item 4.3-1 acceptable.

Open Item 3.8.4-1

(a) The staff requests that the applicant provide the specific acceptance criteria for the one-time field-erected tanks internal inspection. The acceptance criteria should clearly state the threshold at which additional inspections, beyond the one-time inspection, will be implemented. The staff requests this information so that we can determine whether the acceptance criteria support the detection and evaluation of the aging effect "loss of material" such that the intended functions will be maintained throughout the period of extended operation.

(b) As part of the RAI 3.8.4-3, the applicant was asked to describe any provisions for additional volumetric or surface examinations in the event that the scheduled one-time visual examination reveals extensive loss of material. In response, the applicant stated that the lighting and resolution requirements necessary to accomplish the internal tank inspections have not yet been established but the inspection requirements will be documented in the implementing procedure. The program requirements will need to be resolved as part of this review. This is part of open item 3.8.4-1.

(c) As part of RAI 3.8.4-1, the staff requested that the applicant justify a one-time inspection program rather than periodic inspections for each of the tanks. In response, the applicant stated that the condensate storage tanks (CSTs), the refueling water storage tanks (RWSTs), and demineralized water storage tank (DWST) are not currently inspected on a periodic basis. The Unit 4 CST was internally inspected and recoated in 1983. The Unit 3 CST was internally inspected, several $^{1}/_{16}$-inch pits were weld repaired, and the tank was recoated in 1991. The need for recoating activities was attributed to operational practices and the original coatings being inadequate for the application, and both have been corrected. The applicant further stated that a review of plant specific operating experience revealed no other incidences of internal degradation for these tanks. Resolution of the uncertainty as to whether RWSTs and DWST are included in this statement is part of open item 3.8.4-1.

By letter dated November 1, 2001, the applicant provided additional information regarding specific acceptance criteria for the one-time field erected tanks internal

inspection, provisions for additional volumetric or surface examinations in the event that the scheduled one-time visual examination reveals extensive loss of material, and justification for the one-time inspection program rather than periodic inspections for each of the tanks. The applicant stated that the design corrosion allowance will be used as an acceptance criteria, and the lighting and resolution requirements will be the same as those required for a VT-3 inspection described in IWA-2210 of ASME Section XI. If corrosion is observed, appropriate corrective actions will be implemented. The staff finds this resolution of the open item 3.8.4-1 acceptable.

Confirmatory Item 3.0-1 The staff reviewed the applicant's summary descriptions of the aging management programs (AMPs), and the evaluations of the time-limited aging analyses (TLAAs) provided by the applicant in Appendix A, Updated Final "Safety Analysis Report Supplement," of the LRA, to ensure that they are consistent with the requirements of 10 CFR 54.21(d). The staff identified several areas where the resolution of the open item or a commitment by the applicant needs to be included to meet the intent of 10 CFR 54.21(d). The additional information involved the following:

- FSAR Item 3.1.2-1 The applicant has established and implemented a Quality Assurance Program to provide assurance that corrective actions, administrative controls, and confirmation process apply to all aging management programs credited for license renewal. The FPL Quality Assurance Program, described in the FPL Topical Quality Assurance Report, is in compliance with the requirements of 10 CFR 50, Appendix B.

  In the letter dated November 1, 2001, the applicant stated that the FSAR Supplement Section 16.0 has been revised to include the FPL Quality Assurance Program. The staff finds this response to the confirmatory item acceptable. The staff's evaluation of FPL's QA program is contained in Section 3.1.2 of this SER.

- FSAR Item 3.7-1 In response to the staff's RAI 3.7.1-1, the applicant has proposed an aging management program for non-equipment qualification (EQ) cables, connections, and electrical/instrumentation and control (I&C) penetration in the containments.

  By letter dated November 1, 2001, the applicant stated that the FSAR Supplement Section 16.0 has been revised to include a new section 16.1.8. This provides a summary description of the program related to non-EQ cables, connections, and electrical /I&C penetrations. The staff finds this summary description acceptable.

- FSAR Item 4.2-1 Staff evaluation in Section 4.2.2 of the SER concludes that the summary description for the RCS TLAAs described in the LRA, Appendix A, are acceptable and meets the requirements of 10 CFR 54.21(d). However, as discussed, the applicant must apply the chemistry factor ratio adjustment described in Regulatory Guide (RG) 1.99, Rev. 2, Position 2.1, to the surveillance data when submitting the 48 Effective Full Power Years (EFPY) Pressure-Temperature (P-T) limits curves for review and approval. This adjustment is necessary to ensure an accurate assessment of the data.

  In the letter dated November 1, 2001, the applicant stated that the FSAR Supplement, Subsection 16.3.1.3 has been revised to address items identified in the NRC Safety

Evaluation for Turkey Point Technical Specification Amendments 208/202, issued October 30, 2000. Specifically, this change will ensure that chemistry factor for the reactor pressure vessel weld, as discussed in RG 1.99, Revision 2, Position 2.1, is considered in submittal of the 48 EFPY Pressure-Temperature curves. Also, this subsection has been revised to ensure that reactor vessel circumferential weld (heat number 72442) is tracked and considered in future submittals. The staff finds this response to the confirmatory item acceptable.

- FSAR Item 4.3-1

  (a) In response to RAI 4.3.5-2, the applicant committed to perform additional evaluation of the surge line. The applicant committed to either (1) further refinement of the fatigue analysis to lower the CUFs to below 1.0, or (2) repair of the affected locations, or (3) replacement of the affected locations, or (4) management of the effects of fatigue by an inspection program that has been reviewed and approved by the NRC.

  (b) In response to RAI 4.3.5-1, the applicant performed an evaluation of the RPV outlet nozzle and the RPV shell core support pads using the projected number of transient cycles. The applicant committed to either (1) modify the Turkey Point FMP to limit transient accumulations to those used in the above evaluations, (2) perform a more refined evaluation for the RPV outlet nozzle and RPV shell at the core support pads to show acceptable CUF values for 60 years, or (3) track CUF values, in addition to cycle counts, to ensure CUF values remain acceptable.

  (c) In its response to RAI 4.3.1-4, the applicant used the actual projected number of transient cycles for the spray nozzle evaluation. The applicant committed to either (1) modify the Turkey Point FMP to limit transient accumulations to the values used in the spray nozzle evaluation, (2) perform a more refined evaluation for the spray nozzle to show an acceptable CUF for 60 years, or (3) track CUF values, in addition to cycle counts, to ensure that CUF values remain acceptable.

  By letter dated November 1, 2001, the applicant stated that the FSAR Supplement Subsection 16.3.2.5 has been revised to include the options identified in the evaluations for the pressurizer surge lines, reactor pressure vessel outlets nozzles and the reactor vessel shell at the core support pads, and for the pressurizer spray nozzles. These are identified in subsections a, b, and c above. Additional details are provided in Section 4.3 of this SER. The staff finds this response to this confirmatory item acceptable.

- FSAR Item 3.8.4-1 The applicant's summary description for the field erected tanks internal inspection program is provided in Section 16.1.4 of Appendix A to the LRA, and provides an overview of the one-time inspection as described in Section 3.1.4 of Appendix B to the LRA. The FSAR supplement should be modified to reflect the applicant's response to the Open Item 3.8.4-1.

  By letter dated November 1, 2001, the applicant provided the information in response to the open item 3.8.4-1. The applicants response to this open item was acceptable. Further review of Section 16.1.6 of Appendix A to the LRA indicates that no changes are necessary and the summary program is acceptable.

- FSAR Item 3.9.2-1 A staff evaluation of applicant's Boraflex surveillance program is provided in Section 3.9-2 of this SER. The staff requests this applicant to update its UFSAR Supplement to include a description of Boraflex and the enhancements to the related maintenance programs.

  In the letter dated November 1, 2001, the applicant stated that changes to Chapter 14 were already incorporated in Revision 17 of the UFSAR, dated April 16, 2001. Section 16.2.2 of Chapter 16 has been revised to include a description of Boraflex and its enhancements to the related maintenance programs. The staff finds the revisions acceptable.

Confirmatory Item 4.4.2-1 In response to the staff's concern regarding the wear cycle aging effect on motors, the applicant stated that the wear cycling is normally not the limiting factor in the qualified life of the equipment and is not discussed in the qualification package. The applicant further stated that a motor should be able to withstand 35000 to 50000 starts according to Volume 6 of the EPRI Power Plant Electrical Reference Series (page 6-46). Thus, the wear cycle aging effect is considered insignificant for these motors. The applicant committed to revise the EQ documentation packages for Westinghouse and Joy motors to include a reference to Volume 6 of the EPRI Power Plant Electrical Reference Series (page 6-46).

The applicant has revised the EQ documentation packages for the Westinghouse and Joy motors to include a reference to the EPRI Power Plant Electrical Reference Series. The staff reviewed the revised documentation packages during the aging management review inspection at Turkey Point in August and September 2001. The staff concluded that the revisions to the documentation packages were acceptable.

2. STRUCTURES AND COMPONENTS SUBJECT TO AN AGING MANAGEMENT REVIEW

2.1 Scoping and Screening Methodology

This section describes the staff's evaluation of Section 2.1, "Scoping and Screening Methodology," of the LRA. The process used by the applicant to implement the requirements of 10 CFR 54.4(a) and (b) is summarized by the following steps and described in detail in Sections 2.2 through 2.5 of the Turkey Point LRA:

- Plant-Level Scoping: (a) scope systems and structures at the plant level that meet the criteria of 10 CFR 54.4, and (b) identify intended functions of plant-level systems and structures that are within the scope of the LRA.

- Component Scoping and Screening: (a) identify all mechanical, electrical, and structural components (collectively abbreviated as components) used to perform the intended functions of the plant-level systems and structures that are within the scope, and (b) screen each component function to determine whether it meets any of the scoping criteria specified in 10 CFR 54.4(a).

10 CFR 54.21, "Contents of Application — Technical Information," requires, in part, that each application for license renewal must contain an integrated plant assessment (IPA) that identifies and lists those structures, systems, and components (SSCs) satisfying the scoping criteria in 10 CFR 54.4(a)(1), (a)(2), and (a)(3) that are subject to an aging management review (AMR). 10 CFR 54.4, "Scope," defines the criteria for inclusion of SSCs within the scope of 10 CFR Part 54.

As provided in 10 CFR 54.4(a)(1), design-basis events for license renewal are applied as defined in 10 CFR 50.49(b)(1), consistent with the applicant's current licensing basis (CLB). Section 54.4(b) provides that "the intended functions that these structures, systems, and components must be shown to fulfill in 10 CFR 54.21 are those functions that are the bases for including them within the scope of license renewal as specified in paragraphs (a)(1) — (3)" of 10 CFR 54.4.

The list of functions evaluated encompasses all plant systems and structures within scope. The functions did not necessarily follow traditional system boundaries, in that the functions included structures and components (SCs), irrespective of traditional system nomenclature, that perform or support the identified function. To arrive at the component level, the applicant identifies all components that are used to perform the intended functions of the plant-level systems and structures that are within the scope of license renewal. Each component function was reviewed to determine whether it met any of the scoping criteria specified in 10 CFR 54.4(a)(1)-(3). The components whose function met any scoping criteria were then reviewed based on 10 CFR 54.21 screening requirements.

LRA Section 2.1.2, "Component/Structural Component Scoping and Screening," describes the process for identifying the components that are subject to an AMR for mechanical systems, civil structures, electrical, and instrumentation and control (I&C) systems.

2.1.1 Summary of Technical Information in the Application

2.1.1.1 Plant-Level Scoping

In LRA Section 2.1, "Scoping and Screening Methodology," the applicant described the process used to implement the scoping requirements specified in 10 CFR 54.21(a)(2). As used in the LRA, scoping is the process of identifying systems and structures that meet the scoping criteria of 10 CFR 54.4(a)(1) — (3), including the identification of intended functions as defined by 10 CFR 54.4(b) — those functions that are related to meeting one or more of the scoping criteria of 10 CFR 54.4(a)(1) — (3). The applicant's scoping criteria as applied to plant SSCs are:

- safety-related SSCs, including those responsible for reactor coolant pressure boundary integrity (10 CFR 54.4(a)(1)(i)), safe reactor shutdown and maintenance (10 CFR 54.4(a)(1)(ii)), and accident consequences prevention or mitigation (10 CFR 54.4(a)(1)(iii))

- non-safety-related SSCs whose failure could prevent satisfactory accomplishment of any of the functions associated with safety-related items (10 CFR 54.4(a)(2))

- compliance with fire protection regulations (10 CFR 50.48 and 10 CFR 54.4(a)(3))

- compliance with environmental qualification regulations for electrical equipment (10 CFR 50.49) and (10 CFR 54.4(a)(3))

- compliance with pressurized thermal shock regulations (10 CFR 50.61 and 10 CFR 54.4(a)(3))

- compliance with anticipated transients without scram regulations (10 CFR 50.62 and 10 CFR 54.4(a)(3))

- compliance with station blackout regulations (10 CFR 50.63) and 10 CFR 54.4(a)(3))

Plant-Level Scoping Information Sources

In developing the scoping and screening methodology for the LRA, FPL considered the requirements of 10 CFR Part 54, the Statements of Consideration, and the guidance provided by the Nuclear Energy Institute (NEI) in document NEI 95-10, "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule," Revision 1 (January 2000). In addition, the applicant considered NRC staff correspondence with other applicants and with NEI in developing its methodology.

The applicant performed a comprehensive review of design documents in order to create a list of plant-level SSCs. The applicant included information sources such as the Turkey Point Updated Final Safety Analysis Report (UFSAR), Technical Specifications, design-basis documents (18 systems), component database, and piping and instrumentation drawings (P&IDs).

Plant-Level Safety-Related Systems and Structures Scoping

In 10 CFR 54.4(a)(1)(i) — (iii), the NRC describes the safety-related scoping criteria for determining SSCs that are within the scope of license renewal. The applicant reviewed each system and structure function in the plant listing of scoping results (LRA Tables 2.2-1, 2.2-2, and 2.2-3) with respect to these requirements by addressing the following questions:

- Is the system or structure identified as safety-related because it is relied upon during and following design-basis events to ensure the integrity of the reactor coolant pressure boundary?

- Is the system or structure identified as safety-related because it is relied upon during and following design-basis events to ensure the capability to shut down the reactor and maintain it in a safe shutdown condition?

- Is the system or structure identified as safety-related because it is relied upon during and following design-basis events to ensure the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in 10 CFR 100.11?

The applicant used its UFSAR, Technical Specifications, licensing correspondence, design-basis documents, component database, and design drawings to answer these questions. The applicant developed engineering documents to provide system-related design information. Also, the applicant used its UFSAR, Technical Specifications, and design-basis documents to provide function-related information. The applicant identified the plant's design-basis accidents in UFSAR Chapter 14. In addition, the applicant has described design-basis events related to natural phenomena and external events in Chapter 2 and Chapter 5 of its UFSAR. If the answer to one or more of the three questions was "YES," the corresponding system or structure was determined to be within the scope of license renewal and the intended function was specified as required by 10 CFR 54.4(b).

Plant-Level Non-Safety-Related Systems and Structures Scoping

In 10 CFR 54.4(a)(2), the NRC requires that "all non-safety-related SSCs whose failure could prevent satisfactory accomplishment of any of the functions identified in paragraphs (a)(1)(i), (ii), or (iii)" of § 54.4 are within the scope of license renewal. The applicant reviewed each system and structure in the plant listing of scoping results with respect to this requirement by addressing the following question:

- Can failure of the non-safety-related system or structure prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1)(i)(ii), or (iii)?

If the answer was "YES," the corresponding system or structure was determined to be within the scope of license renewal and the intended function was specified as required by 10 CFR 54.4(b). The applicant used the UFSAR, Technical Specifications, licensing correspondence, design-basis documents, component database, pipe stress analyses, and design drawings to answer these questions. The applicant relied on the component database and design drawings to provide system-related design information. The applicant determined the function-related information from its UFSAR, Technical Specifications, pipe stress analyses,

and the design-basis documents. The applicant identified the basis for its design-basis events in Chapter 14 of the UFSAR and natural phenomena and external events in Chapters 2 and 5 of the UFSAR.

There are two categories of non-safety-related SSCs that are within the scope of license renewal for Turkey Point, Units 3 and 4:

- non-safety-related SSCs that functionally support the operation of safety-related SSCs
- non-safety-related SSCs whose failure could cause an interaction with safety-related SSCs and potentially result in the failure of the safety-related SSCs to perform their intended safety function(s)

Non-safety-related SSCs that functionally support the operation of safety-related SSCs are classified as "Quality-Related" in the Turkey Point component database. Some of the systems in this category are non-safety-related ventilation systems and non-safety-related piping segments which include both the pipes and their supports which in combination provide structural support. These components are within the scope of license renewal. For most of the potential interactions, failure of the non-safety-related system or structure is assumed to occur and design features are provided to accommodate the failure by the applicant. Examples include internal flooding (protective design features: sump pumps and drainage), and internal missiles (protective design features: buildings, missile barriers, and enclosures). However, the applicant did not consider a non-safety-related piping segment that does not support a safety-related piping segment to be within the scope of license renewal. The applicant maintained that "seismic II over I" piping segments do not perform an intended function defined by 10 CFR 54.4(a)(2) and, therefore, the piping segments are not within the scope of license renewal.

Non-Safety-Related SSCs Flooding Interaction

The applicant describes the plant's internal flooding protection from postulated failures of non-safety-related piping in UFSAR, Chapter 5, Appendix 5F. The applicant reviewed the susceptibility of safety-related systems to flooding from failure of non-Category I (seismic) systems. The NRC staff concluded in a safety evaluation report dated September 4, 1979, that a sufficient level of protection from flooding for equipment important to safety was provided. The applicant maintains design features (i.e., curbing, platforms, sumps, and sump pumps) to mitigate the effects of flooding. These design features are within the scope of license renewal and identified in LRA Table 3.4.7, "Waste Disposal." Also, the applicant identified flooding design features in LRA Tables 3.6-2 through 3.6-20. However, the applicant did not include the non-safety-related piping segments within the scope of license renewal.

Non-Safety-Related SSCs Spray, Jet Impingement, and Pipe Whip Interaction

The applicant describes the plant's spray, jet impingement, and pipe whip protection from postulated failures of non-safety-related piping in UFSAR, Chapter 5, Section 4, "Pipe Whip Restraints." The applicant maintains design features (i.e., pipe whip restraints and internal

barriers) to mitigate the effects of spray, jet impingement, and pipe whip. These design features are within the scope of license renewal and identified in LRA Table 3.6.2 through 3.6-20. However, the applicant did not include the non-safety-related piping segments within the scope of license renewal.

Non-Safety-Related SSCs Seismic Interaction

Systems or structures whose failure during a seismic event could cause the subsequent failure of a safety-related system or structure is commonly referred to as "seismic II over I" interaction. The applicant uses an area-based approach for seismic scoping. The area-based approach identifies the major SSCs of the plant within a specific area (i.e., a specific room, a floor of a building, or even all inside areas of an entire building) which contains both safety-related and non-safety-related systems and structures. Those SSCs are then further evaluated to determine potential interactions between those safety-related and non-safety-related SSCs. Component and structural component level scoping performed as part of the screening process then establishes the specific non-safety-related seismic interaction structural/component types located within these structures for inclusion in the license renewal scope. The steps in the "seismic II over I" process are as follows:

- Identify all major structures of the plant containing safety-related and non-safety-related SSCs.
- Perform component-level and structural component-level scoping.
- Establish the specific non-safety-related seismic interaction component and structural component types.

The applicant concluded that non-safety-related piping segments must be supported in a manner to prevent them from falling on safety-related components. Therefore, the applicant includes within the scope of license renewal the pipe supports that preclude non-safety-related piping from falling on safety-related components. However, the applicant did not include the non-safety-related piping segments within the scope of license renewal.

Systems and Structures Relied Upon to Demonstrate Compliance With Certain NRC Regulations

The applicant reviewed NRC safety evaluation reports (SERs) and related docketed correspondence associated with all five regulations identified in 10 CFR 54.4(a)(3). The applicant used this review to identify the set of system and structure functions credited with satisfying the requirements associated with those regulations from the complete set of system and structure functions established by the process described in LRA Section 2.1.1. The five regulations are as follows:

- 10 CFR 50.48, "Fire protection."
- 10 CFR 50.49, "Environmental qualification of electric equipment important to safety for nuclear power plants."

- 10 CFR 50.61, "Fracture toughness requirements for protection against pressurized thermal shock events."

- 10 CFR 50.62, "Requirements for reduction of risk from anticipated transients without scram (ATWS) events for light-water-cooled nuclear power plants."

- 10 CFR 50.63, "Loss of all alternating current power."

Each system and structure was reviewed with respect to these regulations by addressing the following question for each:

- Is the system or structure relied upon in safety analyses or plant evaluations to demonstrate compliance with the one of these regulations?

The applicant used the UFSAR, licensing correspondence, design-basis documents, component databases, design drawings, Safe Shutdown Analysis, and the Essential Equipment List to identify the systems that are relied upon to comply with the Fire Protection Rule (10 CFR 50.48). In the Safe Shutdown Analysis, Section III.G.1, equipment required for safe shutdown, including the associated power and control cables, and equipment that could adversely affect safe shutdown if spuriously actuated by fire-induced faults, has been identified for every fire area in the plant. The applicant has defined in the Essential Equipment List the minimum equipment necessary to bring the plant to cold shutdown. Also, the applicant describes all power generation and distribution equipment (e.g., diesel generators, batteries, switchgear, motor control centers, power panels) that is required for the operation of the essential equipment. The applicant has listed equipment that could adversely affect safe shutdown if spuriously actuated by a fire-induced electrical fault in the Essential Equipment List. The non-safety-related SSCs that are relied on for fire protection carry an augmented quality classification (Quality Related). The applicant included the fire protection SSCs as part of the FPL Quality Assurance Program and described this equipment in Appendix 9.6A of the UFSAR. In accordance with 10 CFR 54.4(a)(3), the applicant has placed within the scope of license renewal the SSCs that are relied upon for fire protection. Also, the applicant has placed within the scope of license renewal the equipment that, although not required for safe shutdown, could adversely affect safe shutdown if spuriously actuated by a fire-induced electrical fault.

The applicant identified the systems relied upon to comply with the environmental qualification rule (10 CFR 50.49) by reviewing the UFSAR, Technical Specifications, licensing correspondence, design-basis documents, and the Environmental Qualification List. In the Environmental Qualification List, the applicant included the equipment required to withstand environmental conditions that may occur during or following a design-basis event per 10 CFR 50.49. The applicant listed in UFSAR Appendix 8A.3 the criteria for determining which equipment requires environmental qualifications. The applicant placed within the scope of license renewal per 10 CFR 54.4(a)(3), the SSCs that are relied upon and/or specifically committed to for environmental qualification.

The applicant placed the reactor vessel within the scope of license renewal as the only component relied upon for protection against pressurized thermal shock. The applicant has calculated the maximum nil ductility reference temperature (RT_{PTS}) for the lower shell, intermediate shell and circumferential weld of the reactor vessel as shown in LRA, Section 4.2.1, "Pressurized Thermal Shock." The applicant calculated the RT_{PTS} values for both Turkey

Point reactor vessels at the end of the period of extended operation (48 effective full power years). The calculated RT_{PTS} values are less than the 10 CFR 50.61(b)(2) screening criteria. Therefore, the applicant has not performed additional modifications to equipment or systems to prevent potential failure of the reactor vessel. Since no new or modified SSCs were used for protection against pressurized thermal shock, the applicant placed the reactor vessel within the scope of license renewal as the only component relied upon for protection against pressurized thermal shock.

For the remaining questions, regarding station blackout and ATWS regulations, if the answer to any of the questions was "YES," then the corresponding system or structure was brought into scope and the functions were identified as an intended function per 10 CFR 54.4(b).

2.1.1.2 Component-Level Scoping and Screening

For each SC within the scope of Part 54, the applicant must demonstrate that the effects of aging will be adequately managed so that the intended function(s) will be maintained in a manner that is consistent with the CLB throughout the period of extended operation. The process described in LRA Sections 2.1.1.2, 2.1.1.3, and 2.1.1.4 was used to identify the Turkey Point "intended functions" for license renewal. 10 CFR 54.21(a) requires that each application must contain an IPA. For those SSCs determined to be in scope per 10 CFR 54.4, the IPA must identify and list those SCs that are subject to an AMR. The IPA process employed by the applicant required an initial review of those functions within the scope of license renewal, as determined by the process described in LRA Sections 2.1.1.2, 2.1.1.3, and 2.1.1.4, to define intended function evaluation boundaries. The intended function evaluation boundaries were then used to assist in the identification of the SCs that are subject to an AMR.

LRA Section 2.1.2 defines a component scoping and screening process whereby FPL identified and listed the SCs which met the criteria of 10 CFR 54.21(a)(1)(i) and (ii) and, therefore, require an AMR. Use of the term "passive" within the LRA is intended to be identical to criterion (i). That is, SCs that perform an intended function without moving parts or without a change in configuration or properties are characterized by the applicant as "passive." Likewise, as set forth in criterion (ii), SCs that are not subject to replacement based on a qualified life or specified time period are characterized by the applicant as "long-lived."

The component scoping and screening processes for SSCs at Turkey Point are categorized into three engineering disciplines, which are identified as: (1) mechanical, (2) civil/structural, and (3) electrical/I&C. The process for each discipline is described in LRA Sections 2.1.2.1, 2.1.2.2, and 2.1.2.3. The applicant's component scoping and screening approach for mechanical systems and civil structures in the area of consumables is consistent with the NRC staff's guidance provided in a March 10, 2000, letter to NEI on consumables. A bounding approach as described in NEI 95-10 is used for screening electrical and I&C systems. This approach completes component-level scoping after screening has been performed.

Mechanical System Scoping and Screening

The applicant performed component scoping and screening of the mechanical systems for Turkey Point in six steps:

(1) Based on a review of design drawings and the system component list from the component database, SCs that are included within the system were identified.

(2) Based on the plant-level scoping results, the pressure boundary associated with license renewal system intended functions was mapped onto the system's flow diagrams.

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

(4) Component intended functions for in-scope SCs were identified. Not all of the components for in-scope systems have in-scope intended functions. Consequently, not all components within an in-scope system are within the scope of license renewal.

(5) The in-scope SCs that perform an intended function without moving parts or without a change in configuration or properties were identified.

(6) The passive, in-scope SCs that are not subject to replacement based on a qualified life or specified time period were identified as requiring an AMR.

Civil Structures Screening

The applicant performed component scoping and screening of the civil structures for Turkey Point in six steps:

(1) Based on a review of design drawings, the structure component list from the component database, and plant walkdowns, systems and components that are included within the structure were identified (i.e., walls, supports, cable trays, electrical enclosures, and instrument panels).

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

(3) Design features and associated systems and components that prevent potential seismic interactions for in-scope structures housing both safety-related and non-safety-related systems were identified.

(4) Component intended functions for in-scope systems and components were identified. Not all of the components for in-scope systems and structures have in-scope intended functions. Consequently, not all components are in the scope of license renewal.

(5) The in-scope systems and components that perform an intended function without moving parts or without a change in configuration or properties were identified.

(6) The passive, in-scope systems and components that are not subject to replacement based on a qualified life or specified time period were identified as requiring an AMR.

Electrical and I&C Systems Screening

The applicant performed component scoping/screening of the electrical and I&C systems for Turkey Point in five steps:

(1) Electrical and I&C component commodity groups associated with electrical, I&C, and mechanical systems within the scope of license renewal were identified.

(2) A description and function for each of the electrical and I&C component commodity groups were identified.

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

(4) For the passive electrical and I&C component commodity groups, component commodity groups that are not subject to replacement based on a qualified life or specified time period were identified as requiring an AMR.

(5) Certain passive, long-lived electrical and I&C component commodity groups that do not support license renewal system intended functions were identified as not requiring an AMR.

2.1.2 Staff Evaluation

The staff reviewed the methodology used by the applicant to identify SSCs at Turkey Point that meet the scoping criteria of 10 CFR 54.4, and to identify SCs that meet the screening criteria of 10 CFR 54.21(a)(1) and (2). The staff used Section 2.1, "Scoping and Screening Methodology," of the SRP to perform the scoping and screening review.

2.1.2.1 Turkey Point LRA Scoping and Screening Procedures Review Results

On November 13—16, 2000, the staff conducted an audit to determine whether the scoping and screening methodology described by the applicant in its LRA for Turkey Point was implemented consistent with the requirements of 10 CFR Part 54, and the Turkey Point LRA. The audit took place on site at the FPL offices in Florida City, Florida. The audit consisted of a review of the scoping and screening methodology implementing procedures used by the applicant to identify the SSCs within scope of the 10 CFR Part 54 and to designate the SCs that are subject to an AMR for the period of extended operation. The results of the audit were documented in an audit report dated April 25, 2001.

During this audit, the staff reviewed the LRA-related scoping and screening methodology. Supporting documents explain in detail the methods used for scoping and screening SSCs to determine which items are within the scope of license renewal. Also, the staff reviewed the screening process of the items within scope to determine if the SSCs are subject to an AMR. The staff observed that the scoping and screening process was conducted as described in the LRA.

The applicant developed ENG-QI 5.3 and ENG-QI 5.4 based on the NEI 95-10, Rev. 1, and Westinghouse Owners Group (WOG) "Generic License Renewal Guideline for Identifying Systems and Structures Within the Scope of 10 CFR Part 54, Revision 0," (February 1996). ENG-QI 5.3 provides guidance for identifying and documenting the systems and structures at FPL's nuclear plants that are within the scope of license renewal. As part of the scoping process, system and structure intended functions are also identified. First, the applicant identified all systems and structures at Turkey Point. Next, the applicant conducted evaluations to determine which plant systems and structures meet each criterion of 10 CFR 54.4. An alternate "area" scoping method is used for some non-safety-related structures or systems that could cause failures of safety-related structures or systems. The applicant chose an area-based approach to scoping because the seismic interaction design feature is dependent upon the location of the non-safety-related system or structure in relation to the location of safety-related SSCs. The area-based approach identifies the major SSCs of the plant within a specific area (i.e., a specific room, a floor of a building, or even all inside areas of an entire building) which contains both safety-related and non-safety-related systems and structures. Those SSCs are then further evaluated to determine potential interactions between those safety-related and non-safety-related SSCs. Component and structural component level scoping performed as part of the screening process then establishes the specific non-safety-related seismic interaction structural/component types located within these structures for inclusion in the license renewal scope.

The audit team reviewed the following implementation procedures and technical products:

- Nuclear Engineering Quality Instruction, ENG-QI 5.3, Revision 2, dated March 29, 1999, "License Renewal System/Structure Scoping," provides guidance for identifying and documenting the systems and structures that are within the scope of license renewal. As part of the scoping process, system and structure intended functions are also identified.

- ENG-QI 5.4, Revision 2, dated March 29, 1999, "License Renewal Screening," provides guidance for the screening of systems and structures that are within the scope of license renewal to identify those SCs that require aging management reviews. The systems and structures within the scope of license renewal rule are determined using ENG-QI 5.3.

- ENG-QI 5.5, Revision 4, dated April 21, 2000, "License Renewal Aging Management Review," provides guidance for performing AMRs as required by 10 CFR Part 54. In most cases, identification of all components and structures that require an AMR are identified in accordance with ENG-QI 5.4.

- ENG-QI 5.6, Revision 4, dated February 24, 2000, "License Renewal Time Limited Aging Analysis," provides guidance for the identification and evaluation of time-limited aging analyses (TLAAs) and associated exemptions as required in 10 CFR Part 54. TLAAs capture certain plant-specific aging analyses that are explicitly based on the current operating term of the plant.

- PTN-ENG-LRSP-99-0063, Rev 2, dated October 30, 2000, "License Renewal System/Structure Scoping Report," identifies the systems and structures at Turkey Point, Units 3 and 4, that are within the scope of license renewal as defined in 10 CFR 54.4. This includes a complete listing of both systems and structures.

- PTN-ENG-LRSC-99-0037, Revision 3, dated November 27, 2000, "License Renewal Screening Results Summary Report — Structures and Structural Components," identifies those structures and structural components outside containment at Turkey Point, Units 3 and 4, that require AMR. The structures and structural components are identified in PTN-ENG-LRSP-99-0063 in accordance with the process of ENG-QI 5.3 as within the scope of license renewal. This document also includes a list of the seismic interaction screening results for the non-nuclear safety-related structural component types that represent a potential seismic interaction.

- PTN-ENG-LRSC-99-0049, Revision 3, dated August 15, 2000, "License Renewal Screening Results Summary Report — Containment Structure and Internal Structural Components," identifies those structural components of the Turkey Point Unit 3 and 4 containment structure that require an AMR. The containment structures are identified in PTN-ENG-LRSP-99-0063 in accordance with the process of ENG-QI 5.3 as being within the scope of license renewal.

The audit team determined that these procedures, in combination with the team's review of a sample of scoping/screening products and team discussions with the applicant personnel who developed these products, provided adequate evidence that the scoping and screening process was conducted in accordance with the requirements of 10 CFR 54.4, "Scope," and 10 CFR 54.21, "Contents of Application — Technical Information."

The audit team compared the Turkey Point Maintenance Rule scoping information to the LRA scoping information because of the overlap in scoping criteria. The team did not find any inconsistencies between the two information sources. All systems that were listed as safety-related for the purposes of the Maintenance Rule were listed as safety-related for the purpose of license renewal. The SSCs related to accidental liquid release and accidental gas release were not included within the scope of license renewal. These SSCs were not included within the scope of license renewal because they were not necessary to prevent or mitigate releases comparable to 10 CFR Part 100 limits and therefore, do not meet any of the safety-related criteria of 10 CFR 54.4(a)(1). These SSCs were also evaluated for inclusion within the scope of license renewal based on 10 CFR 54.4(a)(2) and (a)(3).

The team noted that the applicant needed to make a minor administrative update to these procedures to reflect the current 10 CFR 54.4, language that became effective on January 24, 2000. The current language accounts for licensees that have revised their accident source term. The applicant has not revised its accident source term for Turkey Point; therefore, the current 10 CFR 54.4 language does not impact the LRA. However, an update will ensure that the applicant is quoting the current and correct 10 CFR 54.4 rule language. This issue was addressed in item 2.1-1 of the staff's request for additional information (RAI) dated February 2, 2001. The applicant's response dated March 22, 2001, resolved this issue by updating the procedure language to reflect the current 10 CFR 54.4, language that became effective on January 24, 2000.

The team also determined that the applicant did not include within the scope of license renewal all non-safety-related SSCs whose failure could prevent satisfactory accomplishment of any of the functions identified as safety-related. Specifically, the applicant did not include non-safety-related piping segments with the potential of interaction with safety-related components in accordance with the requirements of 10CFR54.4(a)(2). The basis for the staff's position is articulated below.

Section 54.29 of 10 CFR Part 54 (the Rule) states that a renewed license may be issued by the Commission if the Commission finds that actions have been or will be taken with respect to the matters identified in paragraphs (a)(1) and (a)(2) of this section such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB, and that any changes made to the CLB in order to comply with this paragraph are in accord with the Act and the Commission's regulations. These matters include managing the effects of aging during the period of extended operation to assure the functionality of SCs that have been identified to require review under Section 54.21(a)(1).

The Statements of Consideration (SOC) for the Rule states that the objective of a license renewal review is to determine whether the detrimental effects of aging, which could adversely affect the functionality of SSCs that the Commission determines require review for the period of extended operation, are adequately managed.

The SOC articulates the underlying philosophy of the Rule that during the extended period of operation, safety-related functions should be maintained in the same manner and to the same extent as during the current licensing term. Aging effects that could adversely impact on the ability of SSCs to maintain these safety-related functions during the extended period of operation should be evaluated.

Section 54.4(a)(2) of the Rule states that all non-safety-related SSCs whose failure could prevent satisfactory accomplishment of any of the functions identified in Section 54.4(a)(1) should be included within the scope of the Rule. The SOC provides additional guidance related to this scoping criterion. Specifically, the SOC states that "To limit this possibility for the scoping category relating to non-safety-related systems, structures, and components. . . . An applicant for license renewal should rely on the plant's CLB, actual plant-specific experience, industry-wide operating experience, as appropriate, and existing engineering evaluations to determine those non-safety-related systems, structures, and components that are the initial focus of the license renewal review. Consideration of hypothetical failures that could result from system interdependencies that are not part of to CLB and that have not been previously experienced is not required" (*Federal Register*, Volume 60, No. 88, 22467).

On the basis of the discussion above, the staff's position is that an applicant for license renewal should consider two configurations of non-safety-related piping systems that could potentially meet the 54.4(a)(2) scoping criterion. The first configuration includes non-safety-related piping systems (including piping segments and supports) which are connected to safety-related piping. These non-safety-related piping systems should be included within the scope of license renewal up to and including the first seismic support past the safety-related/non-safety-related interface. The second configuration involves non-safety-related piping systems which are not connected to safety-related piping, but have a spatial relationship such that their failure could adversely impact on the performance of an intended safety function. For this type of piping system, the applicant has two options when performing its scoping evaluation; a mitigative option or a

preventive option. With the mitigative option, the applicant must demonstrate that plant mitigative features (e.g., pipe whip restraints, jet impingement shields, spray and drip shields, seismic supports, flood barriers, etc.) are provided which protect safety-related SSCs from a failure of non-safety-related piping segments. When evaluating the failure modes of non-safety-related piping segments and the associated consequences, age-related degradation must be considered. The staff notes that pipe failure evaluations typically do not consider age-related degradation when determining pipe failure locations. Rather, pipe failure locations are normally postulated based on high stress. Industry operating experience has shown that age-related pipe failures can, and do, occur at locations other than the high-stress locations postulated in most pipe failure analyses. Therefore, to utilize the mitigative option, an applicant should demonstrate that the mitigating devices are adequate to protect safety-related SSCs from failures of non-safety-related piping segments at any location where age-related degradation is plausible. If this level of protection can be demonstrated, then only the mitigative features need to be included within the scope of license renewal, and the piping segments need not be included within the scope. However, if an applicant cannot demonstrate that the mitigative features are adequate to protect safety-related SSCs from the consequences of non-safety-related pipe failures, then the applicant should utilize the preventive option, which requires that the entire non-safety-related piping system be brought into the scope of license renewal and an AMR be performed on the components within the piping system. Finally, an applicant may determine that in order to ensure adequate protection of the safety-related SSCs, a combination of mitigative features and non-safety-related SSCs must be brought within scope. Again, it is incumbent upon the applicant to provide adequate justification for the approach taken with respect to scoping of non-safety-related SSCs in accordance with the Rule.

A subset of non-safety-related piping systems that meet the 54.4(a)(2) criterion is seismic II over I (seismic II/I) piping. Seismic II/ I denotes non-seismic Category II SSCs interacting with seismic Category I SSCs as described in Position C.2 of Regulatory Guide 1.29, "Seismic Design Classification." The SOC specifically includes seismic II/I as a subset of the 54.4(a)(2) scoping requirement. In addition, Section 2.1.III.B of the Standard Review Plan for License Renewal (September 1997) states that "The reviewer verifies that the so-called 'seismic II over I' systems, structures, and components consistent with the plant's CLB are identified by the applicant's proposed screening methodology."

With respect to the treatment of non-safety-related piping at Turkey Point, by letter dated February 2, 2001, the staff issued a request for additional information related to seismic II/I SSCs. RAI 2.1.2-1 asked the applicant to clarify the scope of its seismic II over I piping systems (i.e., whether it includes non-safety-related piping systems that are connected to safety related piping systems as well as non-safety-related piping systems that are not connected to safety-related piping systems). The applicant was also asked to address the criteria used to postulate breaks and cracks in non-safety-related piping systems in order to determine if plant mitigative features, which are provided to protect safety-related SSCs from a failure of non-safety-related piping systems, were adequate and included within the scope of license renewal. The applicant provided additional information in letters dated March 22, 2001, and May 3, 2001. However, the additional information was insufficient for the staff to determine the acceptability of not including certain non-safety-related piping segments within the scope of license renewal.

During subsequent discussions with the staff, the applicant clarified that for the protection of safety-related SSCs, seismic II/I piping segments are seismically supported. These seismic supports are within the scope of license renewal. The applicant further clarified that design features (e.g., jet impingement shielding and pipe whip restraints) credited for mitigating the consequences of seismic II/I piping failures are also included within the scope of license renewal. However, the applicant also stated that it does not consider the seismically-supported seismic II/I piping segments to be within the scope of license renewal and no aging management programs are applied to those seismic II/I piping segments. The applicant believes that since the seismic II/I piping is seismically supported, consideration of its failure is hypothetical.

The staff did not agree with the applicant's scoping criteria for non-safety-related piping systems. The staff's concern is that seismic II/I piping, though seismically supported, would be subjected to the same plausible aging effects as safety-related piping. For example, depending on piping material, geometrical configuration, operating condition such as water chemistry, temperature, flow velocity, and external environment, erosion and corrosion may be plausible aging effects for some seismic II/I piping. Those effects, if not properly managed, could result in age-related failures and adversely impact the safety functions of safety-related SSCs.

By letter dated November 1, 2001, the applicant provided additional information to supplement the March 22, 2001, and May 3, 2001 responses. The applicant reiterated those SSCs, including mitigative design features, included within the scope of license renewal as a result of their initial evaluation. These included:

(1) Non-safety-related piping segments and supports at safety-related/non-safety-related functional boundaries which extend beyond the system pressure boundary valve to ensure the integrity of the safety-related/non-safety-related functional system pressure boundary (LRA Tables 3.6-2 through 3.6-20).

(2) Piping/component supports for non-safety-related mechanical systems with the potential of "Seismic II over I" interaction with safety-related components (LRA Tables 3.6-1 through 3.6-20).

(3) Non-safety-related conduit, cable trays, supports, and other structural components with the potential of "Seismic II over I" interaction with safety-related components (LRA Tables 3.6-1 through 3.6-20).

(4) Design features required to accommodate the effects of flooding such as curbing, platforms, sumps, and sump pumps (LRA Tables 3.6-1 through 3.6-20, and Table 3.4-7).

(5) Design features required to accommodate the effects of spray, jet impingement, and pipe whip such as pipe whip restraints and internal barriers (LRA Tables 3.6-1 through 3.6-20).

The applicant further addressed the staff's concerns regarding the potential for age-related degradation of non-safety-related piping segments which could affect safety-related SSCs by performing a supplemental review to establish what additional non-safety-related piping should be included in the scope of license renewal. This supplemental review consisted of:

(1) Identifying non-safety-related piping systems containing fluid and/or steam for each of the major structures of the plant containing both safety-related and non-safety-related components.

(2) Determining if the identified non-safety-related piping was in the scope of license renewal to address the other scoping criteria of 10 CFR 54.4(a). If they were, no additional evaluation of this piping was required since an AMR has already been performed and appropriate aging management programs (AMPs) identified to ensure intended functions are maintained.

(3) All remaining non-safety-related piping from the completion of Steps 1 and 2 above was then assumed to fail anywhere along its length.

(4) Based on the assumed failures from Step 3, and a review of design drawings and plant walk downs, the effects of pipe whip, jet impingement, physical contact (piping falling such that it physically contacts safety-related equipment), spray, and/or leakage were evaluated to determine if these interactions could potentially impact safety-related functions. Specifically, the effects of pipe whip, jet impingement, and physical contact were considered for all non-safety-related high energy piping, and the effects of spray and leakage were considered for all other non-safety-related piping. If the effects of these interactions were determined to impact safety-related functions, the non-safety-related piping and its associated components were identified as within the scope of license renewal. If there was no impact on safety-related functions as a result of the effects of these assumed failures, the piping was determined not to meet the scoping criteria of 10 CFR 54.4(a)(2), and thus not within the scope of license renewal. If the piping and associated components were determined to be within the scope of license renewal, an AMR evaluation was performed on these components based on AMRs performed on components of the same material exposed to the same internal and external environments.

As a result of this supplemental review the applicant brought additional non-safety-related piping segments into the scope of license renewal, provided the results of the associated AMRs, and provided a summary of the programs and activities that will be used to manage aging in these piping systems. The staff's review of the applicant's aging management of components in these piping systems is provided in Section 3.4.16.4 of this SER. On the basis of the additional information provided by the applicant, the staff concludes that the applicant has provided sufficient information to demonstrate that all SSCs that meet the 54.4(a)(2) scoping criterion, have been identified as being within the scope of license renewal. Open Item 2.1.2-1 is closed.

2.1.2.2 Review of 10 CFR 50.12 Turkey Point Exemptions and Commission Orders

The audit team reviewed the history of 10 CFR 50.12 Turkey Point exemptions to identify any potential SSCs within the scope of license renewal not identified by the applicant's scoping methodology. The staff reviewed several exemptions and their associated correspondence. Of these, the staff noted the exemptions that were currently in effect, age-related, and time-limited, and verified that affected systems were included within the scope of license renewal.

The staff reviewed several Commission Orders. All the SSCs referenced in each of the Commission Orders were identified and compared to the list of SSCs included within the scope of license renewal. All SSCs identified in the Commission Orders were included within the scope of license renewal, providing further evidence that the applicant's scoping methodology was effective in identifying the SSCs within the scope of license renewal.

2.1.2.3 Review of Design-Basis Documents

The applicant used several information sources for the scoping and screening process which included the UFSAR, Technical Specifications, licensing correspondence, component database, design drawings, emergency operating procedures, and design-basis documents (DBDs). The applicant developed DBDs that apply to both Turkey Point units and represent the culmination of an extensive design-basis reconstitution effort. After the NRC performed a safety system functional inspection on the applicant's auxiliary feedwater system in 1985, DBDs were prepared for a total of 18 support and accident mitigation systems, as well as selected licensing issues and UFSAR Chapter 14, "Safety Analyses." These DBDs explain the requirements behind the design rather than describing the design itself. These DBDs complement other upper tier documents such as the UFSAR and Technical Specification Bases. Each of the support and accident mitigation system volumes (except the reactor protection system) contains two major documents — a system-level design-basis document and a component design requirements document. The applicant uses these DBDs to determine the design-basis in its plant change modification (PCM) process, safety evaluations, operability evaluations, or any other situation which requires an understanding of fundamental design intent. The audit team reviewed a sample of the DBDs and determined that appropriate SSCs from the DBDs were included within the scope of license renewal.

2.1.3 Conclusion

The staff's review of the information presented in Section 2.1 of the LRA, the supporting information in the Turkey Point FSAR, the information provided during the scoping and screening audit and inspection, and the applicant's responses to the staff's RAIs, as discussed above, formed the basis of the staff's safety determination. The staff verified that the applicant's scoping and screening methodology, including their supplemental 10 CFR 54.4(a)(2) review which brought additional non-safety-related piping segments and associated components into the scope of license renewal, was consistent with the requirements of the Rule and the staff's position on the treatment of non safety-related SSCs. The staff concludes that there is reasonable assurance that the scoping and screening methodology used by the applicant to identify SSCs within the scope of the rule and SCs that are subject to an AMR, is consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21.

2.2 Plant-Level Scoping Results

The supporting statements of consideration (SOCs) for the License Renewal Rule (60 FR 22478) indicate that an applicant has the flexibility to determine the set of SSCs for which an AMR is performed, provided that the set of SSCs encompasses the SSCs for which the Commission has determined that an AMR is required. Accordingly, the staff focused its review on verifying that the implementation of the applicant's methodology, as discussed in Section 2.1 of this SER, did not result in the omission of SCs that are subject to an AMR in accordance with 10 CFR 54.21(a)(1). Therefore, the staff performed the following two-step evaluation:

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

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

The staff reviewed the results of the scoping and screening effort to determine if there is reasonable assurance that the applicant identified and listed those SCs that are subject to an AMR in accordance with the requirements stated in 10 CFR 54.21(a)(1).

2.2.1 Summary of Technical Information in the Application

In Sections 2.3 through 2.5 of the LRA, the applicant describes the SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 54.21(a)(1), respectively. Based on the applicant's license renewal scoping and screening process as described in Section 2.2 of this SER, mechanical systems that are within the scope of license renewal are presented in Section 2.3 of the LRA. Structures that support or provide shelter/protection for the operation of the mechanical and electrical/I&C systems are presented in section 2.4 of the LRA. Electrical systems and I&C systems that support the operation of

both safety- and non-safety-related systems and structures are presented in Section 2.5 of the LRA. Components that are associated with the specific systems and structures, including the bulk commodity items that are common to various systems and structures, are presented in Sections 3.2 through 3.6 of the LRA. In other words, the applicant took a systems/structures approach in identifying (1) all of the SCs and commodities within the mechanical and I&C systems that are subject to AMR, and (2) all of the structural components and commodities that comprise the structures that are subject to an AMR.

The staff evaluated components and commodities associated with all systems and structures in Sections 2.3 through 2.5 and Sections 3.2 through 3.6 in the LRA. The staff used the Turkey Point UFSAR in performing its review. Pursuant to 10 CFR 50.34(b)(2), the UFSAR contains "[a] description and analysis of the SSCs of the facility, with emphasis upon performance requirements, the bases, with technical justification thereof, upon which such requirements have been established, and the evaluations required to show that safety functions will be accomplished." The UFSAR is required to be updated periodically pursuant to 10 CFR 50.71(e). Thus, the UFSAR contains updated plant-specific licensing-basis information regarding the SSCs and their functions.

The staff reviewed Sections 2.3 through 2.5 and Sections 3.2 through 3.6 of the LRA to determine if there is reasonable assurance that the applicant appropriately identified and listed, respectively, those SCs that are subject to an AMR to meet the requirements as stated in 10 CFR 54.21(a)(1).

2.2.2 Staff Evaluation

In LRA Section 2.1, the applicant describes its methodology for identifying the SCs that are within the scope of license renewal and subject to an AMR. This IPA methodology typically consists of a review of all plant SSCs to determine those that are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4. From those plant SSCs that are within the scope of license renewal, an applicant will identify and list those SCs that perform their intended function(s) without moving parts, or without a change in configuration or properties, and that are not replaced based on a qualified life or specified time period. The staff reviewed the scoping and screening methodology, and provided its evaluation in Section 2.1 of this SER. The applicant documented the implementation of that methodology in Sections 2.3 through 2.5 of the LRA.

To ensure that the scoping and screening methodology described in Section 2.1 of the LRA was properly implemented and identified the SCs that are subject to an AMR, the staff performed an additional review. To do so, the staff sampled the contents of the UFSAR based on the listing of systems and structures on Tables 2.2-1 and 2.2-2 of the LRA to identify whether there are systems or structures that may have intended functions in accordance with the scoping requirements of 10 CFR 54.4 but were not included by the applicant as being within the scope of license renewal. The staff selected some of the mechanical systems (i.e., the

auxiliary steam system, the circulating water cooling system, the new fuel storage area ventilation system, the condensate system, and the radwaste building ventilation system) and structures (i.e., the radwaste building and the new fuel storage and handling vault). The staff agreed with the applicant's omission of these systems and structures from the scope of license renewal on the basis that the systems and structures did not meet one or more of the license renewal scoping criteria in 10 CFR 54.4 and, therefore, are not subject to AMR in accordance with 10 CFR 54.21(a)(1).

2.2.3 Conclusions

The NRC staff reviewed the information submitted by the applicant in the LRA, as well as information in the Turkey Point UFSAR, and did not identify any SSCs that have intended functions and were not already evaluated in the LRA. Therefore, the staff has reasonable assurance that the applicant has appropriately identified the SSCs that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1), respectively. The NRC staff's detailed review of the SCs that are subject to an AMR is provided in Sections 2.3 through 2.5 of this SER.

2.3 System Scoping and Screening Results - Mechanical Systems

2.3.1 Reactor Coolant Systems (RCS)

In Section 2.3.1, "Reactor Coolant Systems," of the LRA, the applicant describes the SSCs of the RCS that are subject to an AMR for license renewal.

As described in the LRA, the RCS consists of the systems and components designed to contain and support the nuclear fuel, contain the reactor coolant, and transfer the heat produced in the reactor to the steam and power conversion systems for the production of electricity.

Unless noted otherwise, the RCSs for Turkey Point, Units 3 and 4, are the same, with no components common to both units. The following components are included in the RCS:

- reactor coolant piping
- regenerative and excess letdown heat exchangers
- pressurizers
- reactor vessels
- reactor vessel internals
- reactor coolant pumps
- steam generators

The license renewal flow diagrams listed in Table 2.3-1 of the LRA show the evaluation boundaries for the portions of RCS that are within the scope of license renewal.

RCS components subject to an AMR include the reactor vessel and control rod drive mechanism pressure boundary, pressurizers, steam generators, reactor vessel internals, reactor coolant pumps (pressure boundary only), reactor coolant piping, valves (pressure boundary only), and fittings. The regenerative and excess letdown heat exchangers that are part of the chemical and volume control system are also addressed in this subsection because they form a part of the RCS pressure boundary.

Class 1, as used in this LRA, means the Safety Class 1 definition per American Nuclear Society (ANS) Standard N46.2.

The design code for reactor coolant piping is the 1955 Edition of American National Standards Institute (ANSI) B31.1 with the exception of the pressurizer surge lines that were analyzed to the 1986 Edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III, Subsection NB. Class 1 piping starts at, and includes, the circumferential welds joining the piping to the Class 1 components, and typically ends at the second normally closed valve from the RCS or the ⅜-inch flow restrictor in the piping.

The regenerative heat exchangers were designed and fabricated in accordance with the requirements of Tubular Exchanger Manufacturers Association (TEMA) Class R and the ASME Boiler and Pressure Vessel Code, Section III, Class C. The excess letdown heat exchangers were designed and fabricated in accordance with the requirements of TEMA Class R, the ASME Boiler and Pressure Vessel Code, Section III, Class C (tube side), and the ASME Boiler and Pressure Vessel Code, Section VIII (shell side).

The pressurizers were designed and fabricated in accordance with the requirements of the 1965 Edition of the ASME Boiler and Pressure Vessel Code.

The reactor vessels were manufactured by Babcock & Wilcox Co. in accordance with the design and fabrication requirements of the 1965 Edition of the ASME Boiler and Pressure Vessel Code, Section III, through the Summer 1966 Addenda.

The reactor vessel internals were designed prior to the issuance of ASME Boiler and Pressure Vessel Code, Section III, Subsection NG, using internal Westinghouse design criteria that effectively evolved to become the original NG criteria. The reactor vessel internals were designed using the allowable stress levels of the 1965 Edition of the ASME Boiler and Pressure Vessel Code, Section III, Article 4, through the Summer 1966 Addenda.

The reactor coolant pump casings, main flanges, and main flange bolts were analyzed in accordance with the ASME Boiler and Pressure Vessel Code, Section III, Article 4.

The original steam generator components were designed and analyzed to the 1965 Edition of the ASME Boiler and Pressure Vessel Code, Section III, through Summer 1965 Addenda. The replacement steam generator components were constructed in accordance with the 1974 Edition of the ASME Boiler and Pressure Vessel Code, Section III, through Summer 1976 Addenda.

A component list of the RCS components subject to an AMR and the component intended functions are provided in Table 3.2-1 of the LRA. The AMR for the RCS is discussed in Section 3.2 of the LRA.

2.3.1.1 Westinghouse Owners Group Generic Technical Reports

2.3.1.1.1 Summary of Technical Information in the Application

The applicant actively participated in a WOG effort that developed a series of generic technical reports (WCAPs) intended to demonstrate that the aging effects for RCS components will be adequately managed throughout the period of extended operation. The following WCAPs, which are applicable to Westinghouse RCSs, were submitted to the NRC for approval by Westinghouse:

- WCAP-14575, "License Renewal Evaluation: Aging Management Evaluation for Class 1 Piping and Associated Pressure Boundary Components"
- WCAP-14574, "License Renewal Evaluation: Aging Management Evaluation for Pressurizers"
- WCAP-14577, "License Renewal Evaluation: Aging Management for Reactor Internals"
- WCAP-14422, "License Renewal Evaluation: Aging Management for Reactor Coolant System Supports" (RCS supports are discussed in Section 2.4.1, "Containments," of the LRA)

NRC-approved generic technical reports may be incorporated by reference in the LRA pursuant to 10 CFR 54.17(e) provided the conditions of approval contained in the safety evaluation of the specific report are met. These reports were not incorporated by reference in the Turkey Point LRA because, as of September 1, 2000 (at the time the LRA was prepared), none had received a final safety evaluation. However, the LRA addresses the applicability of these reports to the associated components at Turkey Point. The staff verified the applicability of the reports to Turkey Point, and requested that the applicant provide additional information and/or clarifications for some of the SCs described in the LRA. It should also be noted that the staff has since issued final safety evaluations on these generic topical reports, and they are discussed in more detail below.

The applicant used the following process to establish the applicability of the WCAPs to the components:

(1) Comparison of the component intended functions for the RCS components under review: The Turkey Point-specific component screening review first identifies the component intended functions and then compares these functions to those identified in the generic technical reports. Differences are noted and justification for the variances provided.

(2) Identification of the items that are subject to AMR: Turkey Point drawings and pertinent design and field change data are reviewed. The process establishes the full extent to which plant identified scope matches the scope identified in the generic technical reports. For those components that require an AMR, a comparison of the component material and environment is considered in determining the extent to which the plant scope is bounded by the generic technical report. Areas not bounded are noted and evaluated.

(3) Identification of the applicable aging effects: An independent assessment of the applicable aging effects is performed by reviewing plant operating environment, operating stresses, and plant-specific operating experience. This assessment reveals potential aging effects not identified in the generic technical reports. Aging effects for items that are determined to be subject to an AMR but were not identified in the generic technical reports are evaluated.

(4) Review of open items and applicant action items: Open items and applicant action items are addressed if available prior to August 1, 2000.

It should be noted that items 1, 2, and 4 are addressed in Section 2.3.1, "Reactor Coolant System," and Section 2.4.1, "Containments," of the LRA. Item 3 is addressed in Section 3.2, "AMR Results — RCS," and Section 3.6, "AMR Results — Structures and Structural Components," of the LRA.

2.3.1.1.2 Staff Evaluation

The staff reviewed this section of the LRA, the relevant sections of the WCAPs on license renewal as discussed earlier, and the staff safety evaluation of these reports to determine whether there is reasonable assurance that the RCS components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This was accomplished as described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed portions of the Turkey Point UFSAR for the RCS and associated pressure boundary components and compared the information in the UFSAR with the information in the LRA and the WCAPs to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed SCs that were identified as not being within the scope of license renewal and verified that no SCs were inappropriately omitted from consideration as being within the scope of license renewal.

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

2.3.1.1.3 Conclusion

On the basis of its review of the information presented in Section 2.3.1 of the LRA, related WCAPs, and the supporting information in the Turkey Point UFSAR, the staff did not find any omissions by the applicant. Therefore, the staff concludes that there is reasonable assurance that the applicant has adequately identified those portions of the RCS and its associated (supporting) SCs that fall within the scope of license renewal and are subject to an AMR, in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.1.2 Reactor Coolant Piping

2.3.1.2.1 Summary of Technical Information in the Application

Reactor coolant piping consists of piping (including fittings, branch connections, safe ends, thermal sleeves, flow restrictors, and thermowells), pressure retaining parts of valves, and bolted closures and connections. Reactor coolant piping is presented in two parts:

- Class 1 piping
- Non-Class 1 piping

Class 1 Piping: Class 1 piping includes the main coolant piping; pressurizer surge, spray, safety, and relief lines; vents, drains, and instrumentation lines; and Class 1 portions of ancillary systems attached to the RCS. Ancillary systems attached to the RCS include residual heat removal (RHR), safety injection, nuclear steam supply system sampling, and chemical and volume control.

The NRC issued a draft safety evaluation on WCAP-14575, "License Renewal Evaluation: Aging Management Evaluation for Class 1 Piping and Associated Pressure Boundary Components," on February 10, 2000.

The applicant reviewed the current design and operation of the reactor coolant piping using the process described earlier, and confirmed that the Turkey Point Class 1 piping is bounded by the description of Class 1 piping contained in WCAP-14575 with regard to design criteria and features, materials of construction, fabrication techniques, installed configuration, modes of operation, and environments/exposures. The component intended functions for Class 1 piping include the intended functions identified in WCAP-14575. In addition to the functions identified in WCAP-14575, Turkey Point has identified an additional function for flow-restricting orifices and reducers. These orifices and reducers provide throttling to limit the maximum flow through a postulated break in an attached non-Class I line to a value within the makeup capability of the chemical and volume control system. The applicant has identified this additional function and an aging management program (AMP) for it in response to open item No. 1 from Section 4.2 of WCAP-14575 draft safety evaluation by the staff, as shown in Table 2.3-3 of the LRA. Subsequent to the submittal of the Turkey Point LRA, the final evaluation for WCAP-14575 was issued by letter dated November 8, 2000.

Non-Class 1 Piping: Non-Class 1 piping is not within the scope of WCAP-14575. However, several non-Class 1 components are within the scope of license renewal. The component intended function of these in-scope non-Class 1 components is maintaining pressure boundary integrity. The following non-Class 1 reactor coolant components require an AMR:

- instrumentation tubing and fittings downstream of flow restrictors
- inner reactor vessel flange O-ring leak detection line tubing, fittings, and valves (pressure boundary only)
- reactor vessel head vent piping, fittings, and valves (pressure boundary only) downstream of the restricting orifices

- instrument air/nitrogen supply piping, tubing, fittings, accumulators, and valves (pressure boundary only) for the power-operated relief valves

- reactor coolant pump motor upper bearing oil heat exchanger and lower bearing oil cooling coil (the heat exchanger and cooling coil form a portion of the component cooling water (CCW) pressure boundary)

2.3.1.2.2 Staff Evaluation

The staff reviewed this section of the LRA, the relevant sections of the WCAP-14575 as discussed earlier in Section 2.3.1.1.1, and the staff safety evaluation of the report to determine whether there is reasonable assurance that the reactor coolant piping components and supporting structures within the scope of license renewal, and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This was accomplished as described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed portions of the UFSAR for Turkey Point for the reactor coolant piping and associated pressure boundary components and compared the information in the UFSAR with the information in the LRA and the WCAP to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed SCs that were identified as not being within the scope of license renewal and verified that no SCs were inappropriately omitted from consideration as being within the scope of license renewal.

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

The staff held meetings with the applicant in order to obtain clarification and/or to better understand the applicant's position on some of the issues. A meeting was held on January 4, 2001, in which the staff inquired as to whether Turkey Point had any non-Class 1 flow-restricting orifices, holes, or penetrations which are relied upon to limit reactor coolant leakage or mass flow rate to less than the plant's normal makeup system capacity. Consistent with the LRA supplemental boundary drawings, the applicant affirmed that there are no such non-Class 1 reactor coolant piping components at Turkey Point and therefore they were not listed in the LRA. This was documented in a February 14, 2001, meeting summary.

2.3.1.2.3 Conclusions

On the basis of the staff's review of the information presented in Section 2.3.1 of the LRA, related WCAPs, the supporting information in the Turkey Point UFSAR, and the applicant's responses to the staff's requests for additional information and/or clarifications as discussed in the section above, the staff did not find any omissions by the applicant. Therefore, the staff concludes that there is reasonable assurance that the applicant has adequately identified those portions of the reactor coolant piping and its associated (supporting) SCs that fall within the scope of license renewal and are subject to an AMR in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.1.3 Regenerative and Excess Letdown Heat Exchangers

2.3.1.3.1 Summary of Technical Information in the Application

The regenerative and excess letdown heat exchangers are a part of the chemical and volume control system. They are addressed in this subsection, however, because they are within the RCS pressure boundary.

The regenerative heat exchangers are of a multiple-shell and U-tube design, each consisting of three heat exchangers interconnected in series by piping and mounted on a common support frame. The heat exchangers are designed to recover heat from the letdown stream by heating the charging stream, thus minimizing reactivity effects due to injection of cold water and minimizing thermal stress on the charging line penetrations in the reactor coolant loop piping. The letdown stream flows through the shell of the heat exchangers, and the charging stream flows through the tubes.

The excess letdown heat exchangers are of the U-tube design. Their function is to cool reactor coolant letdown flow equivalent to that portion of the nominal seal injection flow that enters the RCS through the labyrinth of the reactor coolant pump seals. They may be used when the normal letdown path is temporarily out of service or for supplementing the maximum letdown during heatup. The letdown flow passes through the tubes four times, while CCW system flow makes a single pass through the shells.

The component intended functions of the regenerative and excess letdown heat exchangers are to maintain pressure boundary integrity and transfer heat.

2.3.1.3.2 Staff Evaluation

The staff reviewed this section of the LRA, the relevant sections of the WCAPs on license renewal as discussed earlier in Section 2.3.1.1.1, and the staff safety evaluations of these reports to determine whether there is reasonable assurance that the regenerative and excess letdown heat exchangers components and supporting structures within the scope of license renewal, and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This was accomplished as described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed portions of the Turkey Point UFSAR for the regenerative and excess letdown heat exchangers and associated pressure boundary components and compared the information in the UFSAR with the information in the LRA and the WCAPs to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed SCs that were identified as not being within the scope of license renewal and verified that no SCs were inappropriately omitted from consideration as being within the scope of license renewal.

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

2.3.1.3.3 Conclusions

On the basis of its review of the information presented in Section 2.3.1 of the LRA, related WCAPs, and the supporting information in the Turkey Point UFSAR, the staff did not find any omissions by the applicant. Therefore, the staff concludes that there is reasonable assurance that the applicant has adequately identified those portions of the regenerative and excess letdown heat exchangers and their associated (supporting) SCs that fall within the scope of license renewal and are subject to an AMR, in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.1.4 Pressurizers

2.3.1.4.1 Summary of Technical Information in the Application

The pressurizers are vertical cylindrical vessels containing electric heaters in the lower heads and water spray nozzles in the upper heads. Since sources of heat in the RCS are interconnected by piping with no intervening isolation valves, relief protection for the RCS is provided on the pressurizers. Overpressure protection consists of three code safety valves and two power-operated relief valves on each pressurizer. Piping attached to the pressurizer is Class 1 up to and including the second isolation valve (with the exception of the pressurizer code safety valves).

A draft safety evaluation for WCAP-14574, "License Renewal Evaluation: Aging Management Evaluation for Pressurizers," was issued on August 7, 2000. Subsequent to the submittal of the Turkey Point LRA, the final safety evaluation for WCAP-14574 was issued by letter dated October 26, 2000. The applicant reviewed the current design and operation of the pressurizers using the process described earlier, and has confirmed that the Turkey Point pressurizers are bounded by the description contained in WCAP-14574. The component intended functions for the pressurizers are consistent with the intended functions identified in WCAP-14574.

2.3.1.4.2 Staff Evaluation

The staff reviewed this section of the LRA, the relevant sections of WCAP-14574 as discussed earlier in Section 2.3.1.1.1, and the staff safety evaluation of this report to determine whether there is reasonable assurance that the pressurizer components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This was accomplished as described below.

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

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

After completing the initial review, by letter dated February 2, 2001, the staff issued an RAI regarding the pressurizers, and the applicant submitted responses to those RAIs, as discussed below.

The LRA stated that the Turkey Point pressurizers are bounded by the description contained in generic report WCAP-14574, "License Renewal Evaluation: Aging Management Evaluation for Pressurizers." WCAP-14574 determined that the pressurizer manway pad gasket seating surface requires aging management. However, the staff noted that the subject component was not identified in the LRA (Table 3.2-1) as requiring aging management. In RAI 2.3.1-1, the staff, therefore, requested the applicant to include the subject component at Turkey Point as within scope and to submit an AMP for it. In addition, the staff requested the applicant to verify whether the component is covered under the Boric Acid Wastage Surveillance Program to ensure that these pressure boundary components do not fail prematurely due to accelerated corrosion. In a response dated March 22, 2001, the applicant explained that at Turkey Point the pressurizer manway pad gasket seating surfaces are considered part of the pressurizer vessel upper heads, and therefore were not addressed as separate components, as it was done in the generic report. The applicant clarified that the subject components are included within scope in LRA Table 3.2-1 (pages 3.2-63 and 3.2-65) in the component/commodity group identified as "upper heads, lower heads." The applicant further confirmed that loss of material from the pressurizer upper heads, lower heads, and upper head manway covers is managed by the Boric Acid Wastage Surveillance Program as listed in the LRA, Table 3.2-1 (pages 3.2-65 and 3.2-66).

In addition to issuing the RAIs discussed above, the staff held meetings with the applicant in order to obtain clarification and/or to better understand the applicant's position on some of the issues. A meeting was held on January 4, 2001, in which the staff pointed out that Table 3.2-1 on page 3.2-64 of the LRA indicates that pressurizer instrument nozzle thermowells are within the scope of license renewal. However, it was not clear whether this includes the instrument nozzle itself, and particularly, its welded portion. Both intergranular and transgranular type stress corrosion cracking has been detected in the instrument nozzles of other Westinghouse PWRs. The applicant verified that the instrument nozzles including the welded material are included within the scope of license renewal. The item in question, "instrument nozzle thermowells" was two separate items, the nozzle and theromwells. This was documented in the February 14, 2001, meeting summary.

2.3.1.4.3 Conclusions

On the basis of its review of the information presented in Section 2.3.1 of the LRA, related WCAPs, the supporting information in the Turkey Point UFSAR, and the applicant's responses to the staff's requests for additional information and/or clarifications as discussed in the section above, the staff did not find any omissions by the applicant. Therefore, the staff concludes that there is reasonable assurance that the applicant has adequately identified those portions of the pressurizer and its associated (supporting) SCs that fall within the scope of license renewal and are subject to an AMR, in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.1.5 Reactor Vessels

2.3.1.5.1 Summary of Technical Information in the Application

The reactor vessels consist of cylindrical vessel shells, lower vessel heads, closure heads, nozzles, interior attachments, and associated pressure-retaining bolting. The vessels are fabricated of low alloy steel with austenitic stainless steel cladding on internal surfaces exposed to the reactor coolant fluid. Coolant flow for each reactor vessel enters through three inlet nozzles in a plane just below the vessel flange and above the core. The coolant flows downward through the annular space between the vessel wall and the core barrel into a plenum at the bottom of the vessel, where it reverses direction, passes up through the core into the upper plenum, and then flows out of the vessel through three exit nozzles located on the same plane as the inlet nozzles. The component intended functions of the reactor vessels include maintaining pressure boundary integrity and providing structural support.

Control rod drive mechanism housings are attached to flanged nozzles, which penetrate the closure heads. The active portions of the control rod drive mechanisms do not require an AMR per 10 CFR 54.21(a)(1)(i). The part-length control rod drive mechanisms, although they remain installed, are not being used at Turkey Point. Note that two of the part-length control rod drive mechanism housings on each reactor vessel have been modified for the installation of the reactor vessel level indication system. The control rod drive mechanism housings are threaded and seal-welded to the reactor vessel head penetrations. The component intended function of the control rod drive mechanism housings is to maintain pressure boundary integrity.

Bottom-mounted instrumentation penetrates the reactor vessel lower head domes. The 50 bottom head instrumentation tubes and attached bottom-mounted guide tubes, flux thimble tubes, and seal table for each reactor vessel provide the capability of monitoring core flux distribution. The component intended function of the bottom-mounted instrumentation is to maintain pressure boundary integrity.

2.3.1.5.2 Staff Evaluation

The staff reviewed Section 2.3.1.5 of the LRA to determine whether there is reasonable assurance that the reactor vessel components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This was accomplished as described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed portions of the Turkey Point UFSAR for the reactor vessel and associated pressure boundary components and compared the information in the UFSAR with the information in the LRA to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed SCs that were identified as not being within the scope of license renewal and verified that no SCs were inappropriately omitted from consideration as being within the scope of license renewal.

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

2.3.1.5.3 Conclusions

On the basis of its review of the information presented in Section 2.3.1 of the LRA and the supporting information in the Turkey Point UFSAR, the staff did not find any omissions by the applicant. Therefore, the staff concludes that there is reasonable assurance that the applicant has adequately identified those portions of the reactor vessels and their associated (supporting) SCs that fall within the scope of license renewal and are subject to an AMR, in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.1.6 Reactor Vessel Internals

2.3.1.6.1 Summary of Technical Information in the Application

The reactor vessel internals are designed to support, align, and guide the core components and to support and guide incore instrumentation. The reactor vessel internals consist of two basic assemblies for each reactor vessel. Specifically, these include an upper internals assembly that is removed during each refueling operation to obtain access to the reactor core, and a lower internals assembly that can be removed, if desired, following a complete core unload.

Each lower internals assembly is supported in the vessel by resting on a ledge below the vessel-head mating surface and is closely guided at the bottom by radial support/clevis assemblies. Each upper internals assembly is clamped at this same ledge by the reactor vessel head. The bottom of the upper internals assembly is closely guided by the core barrel alignment pins of the lower internals assembly.

The lower internals comprise the core barrel, thermal shield, core baffle assembly, lower core plate, intermediate diffuser plate, bottom support casting, and supporting structures. The upper internals assembly (upper core support structure) is a rigid member composed of the top support plate and deep beam section, support columns, control rod guide tube assemblies, and the upper core plate. Upon installation of the upper internals assembly installation, the last three parts are physically located inside the core barrel. The component intended functions of the reactor vessel internals are core support, coolant distribution, guidance and support of instrumentation and control rods, and vessel shielding.

At the time the LRA was prepared, a draft safety evaluation for WCAP-14577, "License Renewal Evaluation: Aging Management for Reactor Internals," had not yet been issued. Subsequent to the submittal of the Turkey Point LRA, the final safety evaluation for WCAP-14577 was issued by letter dated February 10, 2001. The applicant reviewed the current design and operation of the reactor vessel internals using the process described earlier, and has confirmed that the Turkey Point reactor vessel internals are bounded by the description contained in WCAP-14577. The component intended functions for the reactor vessel internals are consistent with the intended functions identified in WCAP-14577.

2.3.1.6.2 Staff Evaluation

The staff reviewed Section 2.3.1.6 of the LRA, the relevant sections of the WCAP-14577 as discussed earlier in Section 2.3.1.1.1, and the staff safety evaluations of these reports to determine whether there is reasonable assurance that the reactor vessel internals components and supporting structures within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This was accomplished as described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed portions of the Turkey Point UFSAR for the reactor vessel internals and associated pressure boundary components and compared the information in the UFSAR with the information in the LRA and the WCAP to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed SCs that were identified as not being within the scope of license renewal and verified that no SCs were inappropriately omitted from consideration as being within the scope of license renewal.

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

2.3.1.6.3 Conclusions

On the basis of its review of the information presented in Section 2.3.1 of the LRA, related WCAPs, and the supporting information in the Turkey Point UFSAR, the staff did not find any omissions by the applicant. Therefore, the staff concludes that there is reasonable assurance that the applicant has adequately identified those portions of the reactor vessel internals and their associated (supporting) SCs that fall within the scope of license renewal and are subject to an AMR, in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.1.7 Reactor Coolant Pumps

2.3.1.7.1 Summary of Technical Information in the Application

Each of the three reactor coolant loops for Turkey Point, Units 3 and 4, contains a vertically mounted, single-stage centrifugal reactor coolant pump that employs a controlled leakage seal assembly. The reactor coolant pumps provide the motive force for circulating the reactor coolant through the reactor core, piping, and steam generators. The reactor coolant pumps used at Turkey Point are Westinghouse Model 93. The component intended function of the reactor coolant pumps is to maintain pressure boundary integrity. The components that support this function include the casing, cover, pressure-retaining bolting, and integral thermal barrier heat exchanger. The reactor coolant pump seals are not subject to an AMR for the following reasons:

- Seal leakoff is closely monitored in the control room, and a high leakoff flow is alarmed as an abnormal condition requiring corrective action.

- The reactor coolant pump seal package and its constituent parts are routinely inspected and parts are replaced, as required based on condition, for each reactor coolant pump.

- Plant operating experience has demonstrated the effectiveness of these activities.

The above clarification for excluding reactor coolant pump seals from an AMR was provided in the LRA in response to the open item No. 1 from Section 4.2 of the WCAP-14575 draft safety evaluation by the staff, as shown in Table 2.3-3 of the LRA.

The portions of the reactor coolant pump rotating elements that are located above the pump coupling, including the electric motor and the flywheel, are not subject to an AMR in accordance with 10 CFR 54.21(a)(1)(i). (Note that the applicant performed a time-limited aging analysis (TLAA) for the extended period of operation for the flywheel, as required by 10 CFR 54.21(c), and the results are discussed in Section 4.3.3 of the LRA.)

The reactor coolant pumps are within the scope of WCAP-14575, "License Renewal Evaluation: Aging Management Evaluation for Class 1 Piping and Associated Pressure Boundary Components." The applicant reviewed the current design and operation of the reactor coolant pumps using the process described earlier, and confirmed that the reactor coolant pumps are bounded by the description contained in WCAP-14575 with regard to design criteria and features, materials of construction, fabrication techniques, installed configuration, modes of operation, and environments/exposures. The component intended function for the reactor coolant pumps is also consistent with the intended function identified in WCAP-14575.

2.3.1.7.2 Staff Evaluation

The staff reviewed Section 2.3.1.7 of the LRA, the relevant sections of WCAP-14575 as discussed earlier, and the staff safety evaluations of these reports to determine whether there is reasonable assurance that the reactor coolant pumps components and supporting structures within the scope of license renewal, and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1). This was accomplished as described below.

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed portions of the Turkey Point UFSAR for the reactor coolant pumps and associated pressure boundary components and compared the information in the UFSAR with the information in the LRA and the WCAP to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed SCs that were identified as not being within the scope of license renewal and verified that no SCs were inappropriately omitted from consideration as being within the scope of license renewal.

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

2.3.1.7.3 Conclusions

On the basis of its review of the information presented in Section 2.3.1 of the LRA, related WCAP, and the supporting information in the Turkey Point UFSAR, the staff did not find any omissions by the applicant. Therefore, the staff concludes that there is reasonable assurance that the applicant has adequately identified those portions of the reactor coolant pumps and their associated (supporting) SCs that fall within the scope of license renewal and are subject to an AMR, in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.1.8 Steam Generators (SGs)

2.3.1.8.1 Summary of Technical Information in the Application

There are three steam generators installed in each unit. One steam generator is installed in each reactor coolant loop. Each steam generator is a vertical shell and tube heat exchanger, which transfers heat from a single-phase fluid at high temperature and pressure (the reactor coolant) in the tube side to a two-phase (steam-water) mixture at lower temperature and pressure in the shell side.

The reactor coolant enters and exits the tube side of each steam generator through nozzles located in the lower hemispherical head. The RCS fluid flows through inverted U-tubes connected to the tube sheet. The lower head is divided into inlet and outlet chambers by a vertical partition plate extending from the lower head to the tube sheet. The steam-water mixture is generated on the secondary, or shell, side, and flows upward through moisture separators and dryers to the outlet nozzle at the top of the vessel, providing essentially dry, saturated steam. Manways are provided to permit access to both sides of the lower head and to the U-tubes and moisture-separating equipment on the shell side of the steam generators.

The component intended functions of the steam generators include pressure boundary integrity, heat transfer, flow distribution, structural support, and throttling.

2.3.1.8.2 Staff Evaluation

The staff reviewed Section 2.3.1.8 of the LRA to determine whether there is reasonable assurance that the steam generator components and supporting structures that are within the scope of license renewal and subject to AMR have been identified in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). This was accomplished as described below.

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

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

After completing the initial review, by letter dated February 2, 2001, the staff issued an RAI regarding the steam generators, and the applicant submitted responses dated March 22, 2001, to those RAIs, as discussed below.

The staff noted that the LRA (Table 3.2-1) did not identify the SG primary and secondary side manway gasket seating surfaces as within the scope of license renewal. The staff requested the applicant in RAI 2.3.1-2 to justify exclusion of these components or to submit an AMP for these components. The staff also requested that the applicant verify whether the primary side manway gasket seating surface is covered under the Boric Acid Wastage Surveillance Program to ensure that these pressure boundary components do not fail prematurely due to an accelerated rate of corrosion. The applicant responded by explaining that the SG primary side manway gasket seating surfaces are considered part of the steam generator channel heads, and are therefore included in LRA Table 3.2-1 (page 3.2-88), as the component/commodity group identified "channel heads, primary manways, primary inlet and outlet nozzles." The applicant also verified that loss of material from the channel heads and primary manways is

managed by the Boric Acid Wastage Surveillance Program as listed in Table 3.2-1 (page 3.2-88). The applicant further stated that the SG secondary side manway gasket seating surfaces are considered part of the steam generator shells, and are therefore included within the scope of license renewal in LRA Table 3.2-1 (page 3.2-88) in the component/commodity group identified as, "upper and lower shells, elliptical heads, transition cones, feedwater nozzles, steam outlet nozzles." The applicant also clarified that loss of mechanical closure integrity of secondary mechanical closures is managed by the ASME Section XI, Subsection IWB, IWC, and IWD Inservice Inspection Program, as listed in Table 3.2-1 (page 3.2-89).

In addition to the RAIs discussed above, the staff held meetings with the applicant in order to obtain clarification and/or to better understand the applicant's position on some of the issues. A meeting was held on January 4, 2001, in which the staff noted that the LRA (Table 3.2-1) identified SG primary manways and their bolting to be within the scope of license renewal; however, only the boltings for mechanical closures in the secondary side of the SG were included within the scope of license renewal. The staff requested the applicant to justify why the secondary side manways were not identified when these are also part of the pressure boundary. The applicant clarified that Table 3.2-1 includes a line item for secondary closures, and those secondary closures include all of the secondary manways, as well as other smaller closures. This was documented in a February 14, 2001, meeting summary.

2.3.1.8.3 Conclusions

On the basis of its review of the information presented in Section 2.3.1 of the LRA, the supporting information in the Turkey Point UFSAR, and the applicant's responses to the staff's request for additional information and/or clarifications as discussed in the section above, the staff did not find any omissions by the applicant. Therefore, the staff concludes that there is reasonable assurance that the applicant has adequately identified those portions of the steam generators and their associated (supporting) SCs that fall within the scope of license renewal and are subject to an AMR, in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.2 Engineered Safety Features (ESF) Systems

In Section 2.3.2, "Engineered Safety Features Systems," of the LRA, the applicant described the SSCs of the ESF systems that are subject to an AMR for license renewal.

As described in the LRA, ESF systems consist of systems and components designed to function under accident conditions to minimize the severity of an accident or to mitigate the consequences of an accident. In the event of a loss-of-coolant accident, the ESF systems provide emergency coolant to ensure structural integrity of the core, to maintain the integrity of the containment, and to reduce the concentration of fission products expelled to the containment building atmosphere. Unless noted otherwise, the ESF systems for Turkey Point, Units 3 and 4, are the same.

The following systems are included in this subsection of the LRA:

- emergency containment cooling system
- containment spray
- containment isolation
- safety injection

- RHR
- emergency containment filtration
- containment post-accident monitoring and control

2.3.2.1 Emergency Containment Cooling

In Section 2.3.2.1, "Emergency Containment Cooling," of the LRA, the applicant described the emergency containment cooling and the components therein that are within the scope of license renewal. The applicant also identified which of the in-scope components are subject to an AMR. The design of the emergency containment cooling is further described in Section 6.3 of the Turkey Point UFSAR.

2.3.2.1.1 Technical Information in the Application

The safety function of the emergency containment cooling is to remove sufficient heat to maintain the containment below its structural design pressure and temperature during a loss-of-coolant accident or main steam line break. The emergency containment fan cooling units continue to remove heat after the design-basis accident and reduce containment pressure to atmospheric. Heat removed from the containment is transferred to the CCW system. The components of the emergency containment cooling within the scope of license renewal and subject to AMR consist of three fan cooling units (pressure boundary only) and associated heat exchanger coils.

The intended function of these components within the scope of license renewal is to maintain the pressure boundary integrity and heat transfer.

2.3.2.1.2 Staff Evaluation

The staff reviewed Section 2.3.2.1 of the LRA, Section 6.3 of the UFSAR, and the associated P&IDs to determine whether there is reasonable assurance that the applicant has identified the emergency containment cooling and its components within the scope of license renewal in accordance with 10 CFR 54.4(a) and properly identified the components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The applicant highlighted the portions of the emergency containment cooling on the P&IDs (as listed in Table 2.3-4 of the LRA) that are within the scope of license renewal and identified the components with their intended functions in Table 3.3-1 of the LRA. The staff reviewed the components in the table and verified them with the P&IDs. Four component commodity groups were identified in the table that require an AMR. They are the emergency containment cooler headers, emergency containment cooler tubes, emergency containment housings, and bolting.

In its submittal, the applicant also identified the license renewal interface boundaries of the emergency containment cooling. The staff reviewed the interface boundaries within the emergency containment cooling for the license renewal in addition to all the interface boundaries with other SSCs. The staff verified them with the P&IDs to ensure that there are no

other interface boundaries that were not identified by the applicant. The staff also reviewed the Turkey Point UFSAR to determine if there were any safety-related system functions that were not identified in the LRA or if there were any SCs that might have been omitted from consideration as being within the scope of license renewal. Based on this review, the staff found that the applicant has properly defined the interface boundaries within the scope of license renewal.

On the basis of the above review, the staff did not find any omissions in the applicant's scoping of the components and their interface boundaries that require an AMR. The applicant has properly highlighted all portions of the emergency containment cooling in the P&IDs and identified the component commodity groups in Table 3.3-1 of the LRA. Therefore, the staff has reasonable assurance that the applicant has identified the components of the emergency containment cooling that fall within the scope of license renewal and subject to an AMR.

2.3.2.1.3 Conclusion

On the basis of its review of the information provided in Section 2.3.2.1 of the LRA, and Section 6.3 of the UFSAR, the staff found no omissions by the applicant. Therefore, the staff concludes that there should be reasonable assurance that the applicant has adequately identified those portions of the emergency containment cooling that fall within the scope of license renewal and subject to an AMR, in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

2.3.2.2 Containment Spray System

In Section 2.3.2.2, "Containment Spray," of the LRA, the applicant described the containment spray system and the component therein that are within the scope of license renewal. The applicant also identified which of those in-scope components are subject to an AMR. The design of the containment spray system is described in Section 6.4 of the Turkey Point UFSAR.

2.3.2.2.1 Technical Information in the Application

The safety function of the containment spray system is to remove sufficient heat to maintain the containment below its design pressure and temperature during a loss-of-coolant accident or main steam line break. The containment spray system is composed of two motor-driven pumps, each discharging to two spray lateral headers located near the top of the containment structure. The system also utilizes the RHR pumps and heat exchangers for the long-term recirculation phase of containment spray (Section 2.3.2.5). Additionally, the containment spray system provides a source of water for emergency containment filtration spray (Section 2.3.2.6). The components of the containment spray system within the scope of license renewal and subject to AMR consist of two redundant trains of two pumps, two containment spray headers, and the supporting equipment (lube oil coolers and seal water cyclone separators), piping and valves.

The intended functions of these components within the scope of license renewal are to maintain the containment spray system pressure boundary integrity, spray, throttling, filtration, and heat transfer.

2.3.2.2.2 Staff Evaluation

The staff reviewed Section 2.3.2.2 of the LRA, Section 6.4 of the UFSAR, and the associated P&IDs to determine whether there is reasonable assurance that the applicant has identified the containment spray and its components within the scope of license renewal in accordance with 10 CFR 54.4(a) and properly identified the components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The applicant highlighted the portions of the containment spray on the P&IDs (as listed in Table 2.3-4 of the LRA) that are within the scope of license renewal and identified the components with their intended functions in Table 3.3-2 of the LRA. The staff reviewed the components in the table and verified them with the P&IDs. They are the pumps and valves (pressure boundary only), heat exchangers, cyclone separators, piping, tubing, fittings, orifices, bolting, and spray nozzles. In Table 3.3-2, cyclone separators were included for internal environmental aging effects and were omitted from the list for external environmental aging effects. The staff's request for additional information dated February 22, 2001, raised a concern regarding why the cyclone separators were not listed for external aging effects in Table 3.3-2 as part of safety-related components that are subject to an AMR. The applicant responded by a letter dated March 22, 2001, that these were categorized as a component type "filter" for the purpose of conducting an aging management review. Table 3.3-2 of the LRA has been supplemental by the RAI response to list cyclone separators as separate item for managing external aging effects. The staff finds this acceptable.

In its submittal, the applicant also identified a number of license renewal interface boundaries within the containment spray. The staff verified these boundaries with the P&IDs to ensure that there are no other interface boundaries that were not identified by the applicant. The staff also reviewed the Turkey Point UFSAR to determine if there were any safety-related system functions that were not identified in the LRA or if there were any SCs that might have been omitted from consideration as being within the scope of license renewal. Based on this review, the staff found that the applicant has properly defined the interface boundaries within the scope of license renewal.

In a meeting held on January 4, 2001, the staff pointed out that the LRA stated that there are two lateral spray headers located near the top of the containment structure spray water (supplied by the RHR system) to limit containment pressure following a loss-of-coolant accident. These components, however, were not listed in Table 3.3-2 of the LRA. The staff, therefore, requested the applicant to verify whether these headers are within the scope of license renewal and are subject to aging management requirements. The applicant clarified that the line item in Table 3.3-2 of the LRA, piping/fittings downstream of motor-operated valves, 3/4-880A and -880B as confirmed by drawings 3-CS-01 and 4-CS-01, includes the subject components, which are therefore within scope.

On the basis of the above review, the staff did not find any other omissions in the applicant's scoping of the components and their interface boundaries that require an AMR. The applicant has properly highlighted all portions of the containment spray in the P&IDs and identified the component commodity groups in Table 3.3-2 of the LRA. Therefore, the staff has reasonable assurance that the applicant has identified the components of the containment spray system that fall within the scope of license renewal and subject to an AMR.

2.3.2.2.3 Conclusion

On the basis of its review of Section 2.3.2.2 of the LRA, and 6.4 of the UFSAR, the staff found no omissions by the applicant. Therefore, the staff concludes that there should be reasonable assurance that the applicant has adequately identified those portions of the containment spray that fall within the scope of license renewal and subject to an AMR, in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) respectively.

2.3.2.3 Containment Isolation

In Section 2.3.2.3, "Containment Isolation," of the LRA, the applicant described the containment isolation and the components therein that are within the scope of license renewal. The applicant also identified which of those in-scope components are subject to an AMR. The design of the containment isolation system is described in Section 6.6 of the Turkey Point UFSAR.

2.3.2.3.1 Technical Information in the Application

The safety function of the containment isolation is to provide closure to or integrity of containment penetrations to prevent leakage of uncontrolled or unmonitored radioactive materials to the environment. The applicant stated in Section 2.3.2.3 of the LRA that the portions of the containment isolation system within the scope of license renewal are the penetration mechanical components that are not covered by other sections of the LRA. These include the penetrations for the breathing air system, nitrogen and hydrogen system, and containment purge system. The components of the containment isolation (breathing air, nitrogen and hydrogen, and containment purge) that are within the scope of license renewal and subject to an AMR include valves (pressure boundary only), piping, tubing, fittings, and debris screens (containment purge).

The intended functions of these components within the scope of license renewal are to maintain the system pressure boundary integrity and filtration.

2.3.2.3.2 Staff Evaluation

The staff reviewed Section 2.3.2.3 of the LRA, Section 6.6 of the UFSAR to determine whether there is reasonable assurance that the applicant has identified the containment isolation system (breathing air, nitrogen and hydrogen, and containment purge) and its components that are subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The applicant highlighted the portions of the containment isolation on the P&IDs (as listed in Table 2.3-4 of the LRA) that are within the scope of license renewal and identified the components with their intended functions in Table 3.3-3 of the LRA. The staff reviewed the components in the table and verified them with the P&IDs. The four component commodity groups were identified in the table that require an AMR. They are the valves, piping/fittings, tubing/fittings, debris screen, and bolting.

In its submittal, the applicant also identified the license renewal interface boundaries of the containment isolation system. The staff verified them with the P&IDs to ensure that there are no other interface boundaries that were not identified by the applicant. The staff also reviewed the Turkey Point UFSAR to determine if there were any safety-related system functions that were not identified in the LRA or if there were any SCs that might have been omitted from consideration as being within the scope of license renewal. Based on this review, the staff found that the applicant has properly defined the interface boundaries within the scope of license renewal.

On the basis of the above review, the staff did not find any omissions in the applicant's scoping of the components and their interface boundaries by the applicant that require an AMR. The applicant has properly highlighted all portions of the containment isolation in the P&IDs and identified the component commodity groups in Table 3.3-3 of the LRA. Therefore, the staff has reasonable assurance that the applicant has identified the components of the containment isolation system that fall within the scope of license renewal and are subject to an AMR.

2.3.2.3.3 Conclusion

On the basis of its review of Section 2.3.2.3 of the LRA, and Section 6.6 of the UFSAR, the staff found no omissions by the applicant. Therefore, the staff concludes that there should be reasonable assurance that the applicant has adequately identified those portions of the containment isolation that fall within the scope of license renewal and subject to an AMR, in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1) respectively.

2.3.2.4 Safety Injection

2.3.2.4.1 Summary of Technical Information in the Application

The safety injection system, which includes the safety injection accumulators, provides emergency core cooling and reactivity control during and following design-basis accidents.

The flow diagrams listed in Table 2.3-4 of the LRA show the evaluation boundaries for the portions of the safety injection system that are within the scope of license renewal. Insulation is not within the scope of license renewal for the safety injection system because the system does not contain boric acid solutions at concentrations that require heat tracing, tank heaters, and/or insulation to prevent precipitation.

The safety injection system is within the scope of license renewal because it contains the following types of SSCs:

- SSCs that are safety-related and are relied upon to remain functional during and following design-basis events
- non-safety-related SSCs whose failure could prevent satisfactory accomplishment of the safety-related functions
- SSCs that are a part of the Environmental Qualification Program

- SSCs that are relied on during certain postulated fire and station blackout events

The intended functions for safety injection components subject to an AMR include pressure boundary integrity, heat transfer, and throttling. A complete list of safety injection components requiring an AMR and the component intended functions is provided in Table 3.3-4 of the LRA. These include refueling water storage tanks, accumulators, safety injection pumps and valves (pressure boundary only), pump thrust bearing coolers, pump shaft seal heat exchanger tubes, pump shaft seal heat exchanger tube shields, pump shaft seal heat exchanger shells and covers, piping/fittings, tubing/fittings, flow elements, orifices, and bolting. The AMR for the safety injection system is discussed in Section 3.3 of the LRA.

2.3.2.4.2 Staff Evaluation

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

As part of the evaluation, the staff determined whether the applicant had properly identified the SSCs within the scope of license renewal and subject to an AMR, pursuant to 10 CFR 54.4(a) and 10 CFR 54.21(a)(1). The staff reviewed portions of the updated final safety analysis report (the UFSAR for Turkey Point) for the ESF and associated pressure boundary components and compared the information in the UFSAR with the information in the LRA to identify those portions that the LRA did not identify as being within the scope of license renewal and subject to an AMR. The staff then reviewed SCs that were identified as not being within the scope of license renewal.

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

The staff held meetings with the applicant in order to obtain clarification and/or to better understand the applicant's position regarding some of the SSCs within the ESF systems. Such a meeting was held on January 4, 2001, in which some of the items that were discussed are presented below and documented in a February 14, 2001, meeting summary.

Tables 3.3-4 and 3.3-5 of the LRA did not identify sump screens and/or vortex breakers that may be used in pump suction lines to protect the pumps from debris and/or cavitation following a loss-of-coolant accident as being within the scope of license renewal and requiring aging management. At the meeting the staff requested that the applicant verify that if the plant is equipped with such passive components, they are within scope. The applicant stated that the sump screens at Turkey Point, as shown in drawings 3-RHR-01 and 4-RHR-01, have been included within the scope of license renewal. Furthermore, consistent with the boundary drawings, as confirmed by the applicant during the meeting, the facility does not have any vortex breakers.

In addition, Tables 3.3-4 and 3.3-5 of the LRA did not identify screens and/or vortex breakers that may be used in pump suction lines inside the tanks from which emergency core cooling system (ECCS) water is drawn in order to protect the pumps from debris and/or cavitation as within the scope of license renewal and requiring aging management. The staff requested the applicant to identify those tanks and to submit an AMR for the screens and/or vortex breakers. Furthermore, consistent with the boundary drawings, as confirmed by the applicant during the meeting, the facility does not have any vortex breakers or screens in pump suction lines inside tanks.

2.3.2.4.3 Conclusions

On the basis of its review of the information presented in Section 2.3.2 of the LRA, the supporting information in the Turkey Point UFSAR, and the applicant's responses to the staff's requests for additional information and/or clarifications as discussed in the section above, the staff did not find any omissions by the applicant. Therefore, the staff concludes that there is reasonable assurance that the applicant has adequately identified those portions of the safety injection system and its associated (supporting) SCs that fall within the scope of license renewal and are subject to an AMR, in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.2.5 Residual Heat Removal

2.3.2.5.1 Summary of Technical Information in the Application

The RHR system delivers borated water to the reactor coolant systems during the injection phase of a design-basis accident. Following a loss-of-coolant accident, the RHR system cools and recirculates water that is collected in the containment recirculation sumps, and returns it to the reactor coolant, containment spray, and safety injection systems to maintain reactor core and containment cooling. In addition, during normal plant operations, the RHR system removes residual and sensible heat from the core during plant shutdown, cooldown, and refueling operations.

The flow diagrams listed in Table 2.3-4 of the LRA show the evaluation boundaries for the portions of the RHR system that are within the scope of license renewal.

The RHR system is within the scope of license renewal because it contains the following types of SSCs:

- SSCs that are safety-related and are relied upon to remain functional during and following design-basis events
- non-safety-related SSCs whose failure could prevent satisfactory accomplishment of the safety-related functions
- SSCs that are a part of the Environmental Qualification Program
- SSCs that are relied on during certain postulated fire events

The intended functions for RHR components subject to an AMR include pressure boundary integrity, heat transfer, and throttling. A complete list of RHR components requiring an AMR and the component intended functions is provided in Table 3.3-5 of the LRA. These include RHR pumps and valves (pressure boundary only), heat exchanger shells and baffles, heat exchanger tubes, heat exchanger tube sheets, pump seal water heat exchanger shells, covers and baffles, pump seal water heat exchanger tubes, piping/fittings, tubing/fittings, thermowells, flow-elements, orifices, check valve 3-753A, and bolting. The AMR for the RHR system is discussed in Section 3.3 of the LRA.

2.3.2.5.2 Staff Evaluation

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

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

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

2.3.2.5.3 Conclusions

On the basis its review of the information presented in Section 2.3.2 of the LRA, the supporting information in the Turkey Point UFSAR, and the applicant's responses to the staff's requests for additional information and/or clarifications as discussed in the section above, the staff did not find any omissions by the applicant. Therefore, the staff concludes that there is reasonable assurance that the applicant has adequately identified those portions of the RHR system and its associated (supporting) SCs that fall within the scope of license renewal and are subject to an AMR, in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.2.6 Emergency Containment Filtration

In Section 2.3.2.6, "Emergency Containment Filtration," of the LRA, the applicant described the emergency containment filtration and the component therein that are within the scope of license renewal. The applicant also identified which of those in-scope components are subject to an AMR. The design of the emergency containment filtration is described in Section 6.3 of the Turkey Point UFSAR.

2.3.2.6.1 Technical Information in the Application

The safety function of the emergency containment filtration is to reduce iodine concentration in the containment atmosphere, following a loss-of-coolant accident with failed fuel, to levels ensuring that the offsite dose will not exceed the guidelines of 10 CFR Part 100 at the site boundary and to assist in limiting the dose to the control room operators to less than the limits prescribed by 10 CFR Part 50, Appendix A, General Design Criterion 19. Emergency containment filtration consists of three filter units, each containing a moisture separator, a high-efficiency particulate filter bank, an impregnated charcoal filter bank, and a fan. The components of the emergency containment filtration within the scope of license renewal and subject to AMR consist of three filter units and valves (pressure boundary only), piping, tubing, fittings, and spray nozzles. Also, included within the scope are license renewal components that carry water from the containment spray to the emergency containment filtration for filter spray. The intended function of these components within the scope of license renewal is to maintain the pressure boundary integrity and spray.

2.3.2.6.2 Staff Evaluation

The staff reviewed Section 2.3.2.6 of the LRA, Section 6.3 of the UFSAR, and the associated P&IDs to determine whether there is reasonable assurance that the applicant has identified the emergency containment filtration and its components within the scope of license renewal in accordance with 10 CFR 54.4(a) and properly identified the components subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The applicant highlighted the portions of the emergency containment filtration on the P&IDs (as listed in Table 2.3-4 of the LRA) that are within the scope of license renewal and identified the components with their intended functions in Table 3.3-6 of the LRA. The staff reviewed the components in the table and verified them with the P&IDs. The four component commodity groups were identified in the table that require an AMR. They are the emergency containment filter housings, emergency containment filter floodjet spray nozzles, piping/fittings, valves, tubing/fittings, and stainless bolting.

In its submittal, the applicant also identified the license renewal interface boundaries of the emergency containment filtration. The staff reviewed the interface boundaries within the emergency containment filtration for the license renewal in addition to all the interface boundaries with other SSCs. The staff verified them with the P&IDs to ensure that there are no other interface boundaries that were not identified by the applicant. The staff also reviewed the Turkey Point UFSAR to determine if there were any safety-related system functions that were not identified in the LRA or if there were any SCs that might have been omitted from consideration as being within the scope of license renewal. Based on this review, the staff found that the applicant has properly defined the interface boundaries within the scope of license renewal.

On the basis of the above review, the staff did not find any omissions in the applicant's scoping of the components and their interface boundaries that require an AMR. The applicant has properly highlighted all portions of the emergency containment filtration in the P&IDs and identified the component commodity groups in Table 3.3-6 of the LRA. Therefore, the staff has reasonable assurance that the applicant has identified the components of the emergency containment filtration that fall within the scope of license renewal and subject to an AMR.

2.3.2.6.3 Conclusion

On the basis of its review, the staff found no omissions by the applicant. Therefore, the staff concludes that, there should be reasonable assurance that the applicant has adequately identified those portions of the emergency containment filtration that fall within the scope of license renewal and subject to an AMR, in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

2.3.2.7 Containment Post-Accident Monitoring and Control

In LRA Section 2.3.2.7, "Containment Post-Accident Monitoring and Control," the applicant describes the components of the containment post-accident monitoring and control system that are within the scope of license renewal and subject to an AMR. This system is further described in various sections of the Turkey Point UFSAR, as noted below.

2.3.2.7.1 Summary of Technical Information in the Application

Containment post-accident monitoring and control includes the following subsystems:

- post-accident hydrogen monitoring
- containment pressure monitoring
- post-accident sampling
- post-accident hydrogen control
- containment air particulate and gas monitoring

The LRA addresses the mechanical SCs that are required to support the system intended functions of these subsystems. The screening results for electrical/I&C SCs are provided in Section 2.5 of the LRA. The applicant states that two subsystems of the containment post-accident monitoring and control system, namely the containment water level monitoring and containment high range radiation monitoring subsystems, do not contain mechanical SCs that are required to support the intended functions of these subsystems. Therefore, SCs associated with the containment water level monitoring and containment high range radiation monitoring subsystems are addressed in Section 2.5.

Post-accident hydrogen monitoring provides indication of the hydrogen gas concentration in the containment atmosphere following a loss-of-coolant accident. The mechanical portions of post-accident hydrogen monitoring provide a flow path from the containment to the hydrogen monitors and then back to containment. Post-accident hydrogen monitoring is described in UFSAR Section 9.14.

Containment pressure monitoring consists of redundant containment pressure signals that are provided to isolate the containment and initiate several reactor safeguard actions. The mechanical portions of containment pressure monitoring provide sensing lines from the containment to the containment pressure monitors. Containment pressure monitoring is described in UFSAR Section 7.5.

The applicant states that the only mechanical portion of post-accident sampling that is within the scope of license renewal is the sample cooler because it forms a part of the CCW pressure boundary. The CCW system is described in UFSAR Section 9.3.

Post-accident hydrogen control provides the means for achieving and maintaining containment post accident hydrogen control. Post-accident hydrogen control is described in UFSAR Section 9.12.

Containment air particulate and gas monitoring measures radioactivity in the containment air. The mechanical portions of containment air particulate and gas monitoring provide a flow path from the containment to the monitors and then back to the containment. Containment air particulate and gas monitoring is described in UFSAR Section 11.2.3.

The applicant describes its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.1, "Plant-Level Scoping," of the LRA. The applicant states that the containment post-accident monitoring and control system is within the scope of license renewal because it contains the following types of SCs:

- SCs that are safety-related and are relied upon to remain functional during and following design-basis events
- SCs that are non-safety-related whose failure could prevent satisfactory accomplishment of the safety-related functions
- SCs that are a part of the Environmental Qualification Program
- SCs that are relied on during station blackout

The intended functions for containment post-accident monitoring and control components subject to an AMR include pressure boundary integrity and throttling.

On the basis of the methodology described above, the applicant identified portions of the containment post-accident monitoring and control system that are evaluated within the scope of the LRA and are shown on the flow diagrams listed in Table 2.3-4 of the LRA. Using the methodology described in LRA Section 2.1.2, as specified in 10 CFR 54.21(a)(1), the applicant lists the mechanical component groupings that are subject to an AMR and identifies their intended functions in Table 3.3-7 of the LRA. The applicant identifies pumps and valves (pressure boundary only), orifices, HEPA and charcoal filter housings, PASS cooler shells, covers, coils, bolting, piping, tubing, and fittings as the component groups that are subject to an AMR.

2.3.2.7.2 Staff Evaluation

The staff reviewed Section 2.3.2.7 of the LRA to determine if the applicant has adequately identified the SCs of the containment post-accident monitoring and control system that are within the scope of license renewal and are subject to an AMR in accordance with 10 CFR 54.4(a), and 10 CFR 54.21(a)(1), respectively. The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.2.7 of the LRA and in the Turkey Point UFSAR to identify any SCs of the containment post-accident monitoring and control system that may have been omitted from the scope of license renewal that meet the scoping criteria in 10 CFR 54.4. The SCs of the containment post-accident monitoring and control system that meet the license renewal scoping criteria are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.2.7 of the LRA.

The applicant identified and listed the SCs subject to AMR for the containment post-accident monitoring and control system in Table 3.3-7 of the LRA using the screening methodology described in Section 2.1.2 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff subsequently performed a review of the implementation of the methodology for the containment post-accident monitoring and control system by sampling the SCs that were identified as being within the scope of license renewal but not subject to AMR to verify that these SCs performed the intended functions with moving parts or with a change in configuration or properties, or are subject to replacement based on qualified life or specified time period.

In the LRA, Table 2.3-4, the applicant lists four detailed flow diagrams, 0-PAMC-01, 0-PAMC-02, 3-PAMC-01, and 4-PAMC-01, of the containment post-accident monitoring and control system. The applicant also identifies the mechanical components subject to AMR and their intended functions in Table 3.3-7 of the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that were included within the scope of license renewal. The applicant highlighted those components, which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and descriptions in the UFSAR to ensure that they were representative of the containment post-accident monitoring and control system. The staff also sampled portions of the flow diagrams that were not highlighted to ensure these components did not perform any of the functions as defined in 10 CFR 54.4(b).

2.3.2.7.3 Conclusions

The staff reviewed the information submitted by the applicant in the LRA and information in the Turkey Point UFSAR. On the basis of the review described above, the staff has reasonable assurance that the applicant has adequately identified those portions of the containment post-accident monitoring and control system that are within the scope of license renewal and subject to an AMR, in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3 Auxiliary Systems

2.3.3.1 Intake Cooling Water

In the LRA, Section 2.3.3.1, "Intake Cooling Water," the applicant describes the components that are within the scope of license renewal and subject to an AMR. This system is further described in Section 9.6.2 of the Turkey Point Units 3 and 4 UFSAR.

2.3.3.1.1 Summary of Technical Information in the Application

The primary function of the intake cooling water system is to remove heat from CCW and turbine plant cooling water. The intake cooling water pumps supply salt water from the plant's intake structure through two redundant piping headers to the tube side of the CCW and turbine plant cooling heat exchangers. The redundant piping header is provided with isolation valves that can be shut such that failure of one intake cooling loop does not result in immediate shutdown of the unit. Flow of salt water is subsequently routed from these heat exchangers to the plant discharge canal.

The applicant describes its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.1 of the LRA. The applicant states that the intake cooling water is within the scope of license renewal because it contains:

- SCs that are safety-related and are relied upon to remain functional during and following design-basis events
- SCs that are non-safety-related whose failure could prevent satisfactory accomplishment of the safety-related functions
- SCs that are relied on during postulated fires and station blackout events

The intended functions for intake cooling water components subject to an aging management review are pressure boundary integrity, filtration, structural integrity, structural support, and throttling.

The applicant identifies some of the components associated with the intake cooling water system that are evaluated in another section of the LRA. These components are the CCW heat exchangers (Section 2.3.3.2).

On the basis of its methodology described above, the applicant identified portions of the intake water system that are evaluated within the scope of the LRA and are shown on the flow diagrams listed in Table 2.3-5 of the LRA. Using the methodology described in LRA Section 2.1.2, as specified in 10 CFR 54.21(a)(1), the applicant lists the mechanical component commodity groupings that are subject to an AMR and identifies their intended functions in Table 3.4.1 of the LRA. The applicant identifies the following component groups that are subject to an AMR: pumps, pump expansion joints, basket strainers (shell/internal screen), valves, piping and fittings, orifices, thermowells, chemical injection nozzles (Unit 3 only), tubing/fittings and bolting.

2.3.3.1.2 Staff Evaluation

The staff reviewed Section 2.3.3.1 of the LRA to determine if the applicant has adequately identified the SCs of the intake cooling water system that are within the scope of license renewal and are subject to an AMR in accordance with 10 CFR 54.4(a), and 10 CFR 54.21(a)(1), respectively. The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.3.1 of the LRA and the Turkey Point Units 3 and 4 UFSAR to identify any SCs of the intake cooling water system that may have been omitted from the scope of license renewal that meet the scoping criteria in 10 CFR 54.4. The SCs of the intake cooling water system that meet the license renewal scoping criteria are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.3.1 of the LRA.

The applicant identified and listed the SCs subject to an AMR for the intake cooling water system in Table 3.4-1 of the LRA using the screening methodology described in Section 2.1.2 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff subsequently performed a review of the implementation of the methodology for the intake cooling water system by sampling the SCs that were identified as being within the scope of license renewal but not subject to an AMR to verify that these SCs performed the intended functions with moving parts or with a change in configuration or properties, or are subject to replacement based on qualified life or specified time period.

In the LRA, Table 2.3-5, the applicant lists four detailed flow diagrams, 3-ICW-01, 3-ICW-02, 4-ICW-01, and 4-ICW-02 of the intake cooling water system. The applicant also identifies the mechanical components subject to an AMR and their intended functions in Table 3.4-1 of the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that were included within the scope of license renewal. The applicant highlighted those components, which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and descriptions in the UFSAR to ensure that they were representative of the intake cooling water system. The staff also sampled portions of the flow diagrams that were not highlighted to ensure these components did not perform any of the functions as defined in 10 CFR 54.4(b).

2.3.3.1.3 Conclusions

The staff reviewed the information submitted by the applicant in Section 2.3.3.1 of the LRA and Section 9.6.2 of the UFSAR. On the basis of the review described above, the staff has reasonable assurance that the applicant adequately identified those portions of the intake water cooling system that are within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.2 Component Cooling Water

In the LRA, Section 2.3.3.2, "Component Cooling Water," the applicant describes the components that are within the scope of license renewal and subject to an AMR. This system is further described in Section 9.3 of the Turkey Point Units 3 and 4 UFSAR.

2.3.3.2.1 Summary of Technical Information in the Application

The primary function of the CCW system is to remove heat from safety and non-safety-related systems and transfer heat to the intake cooling water system during normal and emergency operations. Section 9.3.2 of the Turkey Point Units 3 and 4 UFSAR lists those components for which CCW system provides the heat removal capability.

The CCW system is designed with sufficient redundancy such that a single active failure will not prevent the system from accomplishing its cooling function for safety-related equipment.

The applicant describes its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.1 of the LRA. The applicant states that the CCW is within the scope of license renewal because it contains:

- SCs that are safety related and are relied upon to remain functional during and following design-basis events
- SCs that are non-safety-related whose failure could prevent satisfactory accomplishment of the safety-related functions
- SCs that are part of the environment qualification program
- SCs that are relied on during postulated fires and station blackout events

The intended functions for CCW components subject to an aging management review are pressure boundary integrity, heat exchanger, and throttling.

The applicant indicates that other coolers and heat exchangers cooled by CCW, as indicated in Section 9.3.2 of the Turkey Point Units 3 and 4 UFSAR, are considered part of their respective systems and evaluated in other sections of the LRA.

On the basis of its methodology described above, the applicant identified portions of the CCW system that are evaluated within the scope of the LRA and are shown on the flow diagrams listed in Table 2.3-5 of the LRA. Using the methodology described in LRA Section 2.1.2 as specified in 10 CFR 54.21(a)(1) of the LRA, the applicant lists the mechanical component commodity groupings that are subject to an AMR and identifies their intended functions in Table 3.4.2 of the LRA. The applicant identifies the following component groups that are subject to an AMR: pumps and valves (pressure boundary only); piping and fittings; orifices; thermowells; bolting; rotometers; heat exchanger shells and channels, flanges, and doors; heat exchanger tubes, tube sheets, baffle plates, connection rods, spacers, nuts, and channel head overlays, tubing/fittings, filters; CCW tanks; and air reservoirs.

2.3.3.2.2 Staff Evaluation

The staff reviewed Section 2.3.3.2 of the LRA to determine if the applicant has adequately identified the SCs of the CCW system that are within the scope of license renewal and are subject to an AMR in accordance with 10 CFR 54.4(a), and 10 CFR 54.21(a)(1), respectively. The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.3.2 of the

LRA and the Turkey Point Units 3 and 4 UFSAR to identify any SCs of the CCW system that may have been omitted from the scope of license renewal that meet the scoping criteria in 10 CFR 54.4. The SCs of the CCW system that meet the license renewal scoping criteria are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.3.2 of the LRA.

The applicant identified and listed the SCs subject to AMR for the CCW system in Table 3.4-2 of the LRA using the screening methodology described in Section 2.1.2 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff subsequently performed a review of the implementation of the methodology for the CCW system by sampling the SCs that were identified as being within the scope of license renewal but not subject to AMR to verify that these SCs performed the intended functions with moving parts or with a change in configuration or properties, or are subject to replacement based on qualified life or specified time period.

In the LRA, Table 2.3-5, the applicant lists nine detailed flow diagrams, 3-CCW-01, 3-CCW-02, 3-CCW-03, 3-CCW-04, and 3-CCW-05, 4-CCW-01, 4-CCW-02, 4-CCW-03, and 4-CCW-04 of the CCW system. The applicant also identifies the mechanical components subject to AMR and their intended functions in Table 3.4-2 of the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that were included within the scope of license renewal. The applicant highlighted those components, which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and descriptions in the UFSAR to ensure that they were representative of the CCW system. The staff also sampled portions of the flow diagrams that were not highlighted to ensure these components did not perform any of the functions as defined in 10 CFR 54.4(b).

2.3.3.2.3 Conclusions

The staff reviewed the information submitted by the applicant in the LRA and information in Turkey Point Units 3 and 4 UFSAR. On the basis of the review described above, the staff has reasonable assurance that the applicant adequately identified those portions of the CCW system that are within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.3 Spent Fuel Pool Cooling

In the LRA, Section 2.3.3.3, "Spent Fuel Pool Cooling," the applicant describes the components that are within the scope of license renewal and subject to an AMR. This system is further described in Section 9.3 and Appendix 14D of the Turkey Point Units 3 and 4 UFSAR.

2.3.3.3.1 Summary and Technical Information in the Application

The primary function of the spent fuel pool (SFP) cooling system is to remove residual heat from fuel assemblies stored in the high-density racks contained in the SFP. The SFP cooling system also filters and demineralizes the water in the pool. The SFP system consists of the cooling, purification, and skimmer loops.

The SFP cooling loop consists of pumps, heat exchanger, filters, demineralizer, piping, and associated valves. The SFP pump draws water from the pool, circulates it through the heat exchanger, which transfers heat to the CCW system, and subsequently returns it to the pool.

The purification loop filters and demineralizes the pool water by circulating a portion of the flow through a filter and demineralizer. The skimmer loop removes dust and debris from the SFP water surface by taking a suction on the skimmer and circulating the water through strainers and filters.

The applicant describes its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.1 of the LRA. The applicant states that the SFP cooling system is within the scope of license renewal because it contains:

- SCs that are safety related and are relied upon to remain functional during and following design-basis events
- SCs that are non-safety-related whose failure could prevent satisfactory accomplishment of the safety-related functions
- SCs that are relied on during station-blackout events

The intended functions for the SFP cooling components subject to an aging management review are pressure boundary integrity, heat transfer, and throttling. The applicant also indicates that SFP fuel transfer tubes are discussed in Section 2.4.1.1.2 of the LRA and in Sections 6.6.2.1 and 6.6.3 of Turkey Point Units 3 and 4 UFSAR.

On the basis of its methodology described above, the applicant identified portions of the SFP cooling loop that are evaluated within the scope of the LRA and are shown on the flow diagrams listed in Table 2.3-5 of the LRA. Using the methodology described in LRA Section 2.1.2, as specified in 10 CFR 54.21(a)(1), the applicant lists the mechanical component commodity groupings that are subject to an AMR and identifies their intended functions in Tables 3.4.3, 3.6-2, and 3.6-16 of the LRA. The applicant identifies the following component groups that are subject to an AMR: SFP tube blind flanges, pool liner, penetration sleeves, and fuel transfer gate valves, pumps, valves, heat exchanger, and filters, demineralizers, orifices, piping, tubing, flow elements, and fittings.

2.3.3.3.2 Staff Evaluation

The staff reviewed Section 2.3.3.3 of the LRA to determine if the applicant has adequately identified the SCs of the SFP cooling system that are within the scope of license renewal and are subject to an AMR in accordance with 10 CFR 54.4(a), and 10 CFR 54.21(a)(1), respectively. The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.3.3 of the LRA and the Turkey Point Units 3 and 4 UFSAR to identify any SCs of the SFP cooling system that may have been omitted from the scope of license renewal that meet the scoping criteria in 10 CFR 54.4. The SCs of the SFP cooling system that meet the license renewal scoping criteria are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.3.3 of the LRA.

The applicant identified and listed the SCs subject to AMR for the SFP cooling system in Table 3.4-3 of the LRA using the screening methodology described in Section 2.1.2 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff subsequently performed a review of the implementation of the methodology for the SFP cooling system by sampling the SCs that were identified as being within the scope of license renewal but not subject to AMR to verify that these SCs performed the intended functions with moving parts or with a change in configuration or properties, or are subject to replacement based on qualified life or specified time period.

In the LRA, Table 2.3-5, the applicant lists four detailed flow diagrams, 3-SFP-01, 3-SI-01, 4SFP-01, and 4-SI-01 of the SFP cooling system. The applicant also identifies the mechanical components subject to AMR and their intended functions in Table 3.4-3 of the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that were included within the scope of license renewal. The applicant highlighted those components, which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and descriptions in the UFSAR to ensure that they were representative of the SFP cooling system. The staff also sampled portions of the flow diagrams that were not highlighted to ensure these components did not perform any of the functions as defined in 10 CFR 54.4(b).

In a letter to the applicant dated February 2, 2001, the staff requested additional information regarding an SFP vortex diffuser (passive long-lived component), which was not included in the scope of license renewal. In its response to the NRC dated March 22, 2001, the applicant confirmed that the SFP vortex diffuser was inadvertently omitted from the LRA, Table 3.4-3. The applicant provided a revised Table 3.4-3 that includes the vortex diffuser, which is subject to an AMR. The Table 3.4-3 also identifies the vortex diffuser's intended function and operating environment. The staff has reviewed additional information provided by the applicant and finds the applicant's response acceptable

2.3.3.3.3 Conclusions

The staff reviewed the information submitted by the applicant in the LRA, information in Turkey Point Units 3 and 4 UFSAR, and additional information provided by the applicant in the March 22 letter. On the basis of the review described above, the staff has reasonable assurance that the applicant identified those portions of the SFP cooling system that are within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.4 Chemical and Volume Control

In the LRA, Section 2.3.3.4, "Chemical and Volume Control," the applicant describes the components that are within the scope of license renewal and subject to an AMR. This system is further described in Section 9.2 of the Turkey Point Units 3 and 4 UFSAR.

2.3.3.4.1 Summary and Technical Information in the Application

The chemical and control volume system (CVCS) provides a means for injection of boric acid, chemical additions for corrosion control, and reactor coolant cleanup and degasification. The CVCS also adds makeup water to the reactor coolant system, processes reactor coolant letdown, and provides seal water injection to the reactor coolant pump seals.

The applicant describes its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.1 of the LRA. The applicant states that the CVCS is within the scope of license renewal because it contains:

- SCs that are safety related are relied upon to remain functional during and following design-basis events
- SCs that are non-safety-related whose failure could prevent satisfactory accomplishment of the safety-related functions
- SCs that are part of the Environmental Qualification program
- SCs that are relied on during postulated fires and station blackout events

The applicant also indicates that insulation of the CVCS is not within the scope of license renewal because the system does not contain boric acid solutions at concentration levels that require heat tracing, tank heaters, and piping insulation to prevent boric acid precipitation. The intended functions for the CVCS components subject to an aging management review are pressure boundary integrity, heat transfer, and throttling.

On the basis of its methodology described above, the applicant identified portions of the CVCS that are evaluated within the scope of the LRA and are shown on the flow diagrams listed in Table 2.3-5 of the LRA. Using the methodology described in LRA Section 2.1.2, as specified in 10 CFR 54.21(a)(1), the applicant lists the mechanical component commodity groupings that are subject to an AMR and identifies their intended functions in Tables 3.4.4 of the LRA. The applicant identifies the following component groups that are subject to an AMR: pumps, valves, heat exchangers, tanks, filters, orifices, piping, tubing, bolting, charging pump suction stabilizers and pulsation dampers, oil cooler bonnets and tubes, thermowells, flow meters, and fittings.

2.3.3.4.2 Staff Evaluation

The staff reviewed Section 2.3.3.4 of the LRA to determine if the applicant has adequately identified the SCs of the CVCS that are within the scope of license renewal and are subject to an AMR in accordance with 10 CFR 54.4(a), and 10 CFR 54.21(a)(1), respectively. The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.3.4 of the LRA and the Turkey Point Units 3 and 4 UFSAR to identify any SCs of the CVCS that may have been omitted from the scope of license renewal that meet the scoping criteria in 10 CFR 54.4. The SCs of the CVCS that meet the license renewal scoping criteria are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.3.4 of the LRA.

The applicant identified and listed the SCs subject to AMR for the CVCS in Table 3.4-4 of the LRA using the screening methodology described in Section 2.1.2 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff subsequently performed a review of the implementation of the methodology for the CVCS by sampling the SCs that were identified as being within the scope of license renewal but not subject to AMR to verify that these SCs performed the intended functions with moving parts or with a change in configuration or properties, or are subject to replacement based on qualified life or specified time period.

In the LRA, Table 2.3-5, the applicant lists eight detailed flow diagrams, 0-CVCS-01, 0-CVCS-02, 3-CVCS-01, 3-CVCS-02, 3-CVCS-03, 4-CVCS-01, 4-CVCS-02, and 4-CVCS-03 of the CVCS. The applicant also identifies the mechanical components subject to AMR and their intended functions in Table 3.4-4 of the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that were included within the scope of license renewal. The applicant highlighted those components, which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and descriptions in the UFSAR to ensure that they were representative of the CVCS. The staff also sampled portions of the flow diagrams that were not highlighted to ensure these components did not perform any of the functions as defined in 10 CFR 54.4(b).

In a letter to the applicant dated February 2, 2001, the staff requested additional information regarding the LRA boundary of the relief and drain lines of the CVCS holdup tanks that normally end at a valve or a component to provide the system isolation function. In its response to the NRC dated March 22, 2001, the applicant states that the CVCS holdup tanks serve as collection points for water from the reactor coolant system to meet the requirement of 10 CFR Part 50, Appendix R, for safe shutdown. The boundary depicted on drawing 0-CVCS-02 illustrates the required flowpath from the reactor coolant system to the CVCS holdup tanks. The inventory inside these tanks, however, is not required to perform or support any license renewal system intended functions and therefore, does not satisfy the 10 CFR 54.4 criteria. The associated relief and drain lines and valves do not perform or support any license renewal system intended functions that satisfy the CFR 54.4 criteria. The applicant concludes that these lines are not within the scope of license renewal and therefore do not have to be extended to the nearest valve or component that provides the system isolation function. The staff has reviewed the additional information provided by the applicant and finds the applicant's response acceptable.

2.3.3.4.3 Conclusions

The staff reviewed the information submitted by the applicant in the LRA, information in Turkey Point Units 3 and 4 UFSAR, and additional information provided by the applicant in the March 22, 2001, letter. On the basis of the review described above, the staff has reasonable assurance that the applicant identified those portions of the CVCS that are within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.5 Primary Water Makeup

In the LRA, Section 2.3.3.5, "Primary Water Makeup," the applicant describes the components that are within the scope of license renewal and subject to an AMR. This system is further described in Section 9.6.2 of the Turkey Point Units 3 and 4 UFSAR.

2.3.3.5.1 Summary and Technical Information in the Application

The primary function of the primary water makeup is to supply unborated, demineralized, and deaerated water to the reactor coolant system during plant normal operating conditions. There are two primary water makeup pumps per unit. These pumps take suction from the primary water storage tank and inject water into the reactor coolant system via the CVCS charging line. The applicant describes its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.1 of the LRA. The applicant states that the CVCS is within the scope of license renewal because it contains:

- SCs that are relied on during postulated fires and station blackout events
- SCs that are safety related and are relied upon to remain functional during and following design-basis events
- SCs that are non-safety-related whose failure could prevent satisfactory accomplishment of the safety-related functions

The intended function for primary water makeup components subject to an aging management review is pressure boundary integrity.

On the basis of its methodology described above, the applicant identified portions of the primary water makeup system that are evaluated within the scope of the LRA and are shown on the flow diagrams listed in Table 2.3-5 of the LRA. Using the methodology described in LRA Section 2.1.2, as specified in 10 CFR 54.21(a)(1), the applicant lists the mechanical component commodity groupings that are subject to an AMR and identifies their intended functions in Tables 3.4.5 of the LRA. The applicant identifies the following component groups that are subject to an AMR: valves, piping, tubing, bolting, and fittings.

2.3.3.5.2 Staff Evaluation

The staff reviewed Section 2.3.3.5 of the LRA to determine if the applicant has adequately identified the SCs of the primary water makeup system that are within the scope of license renewal and are subject to an AMR in accordance with 10 CFR 54.4(a), and 10 CFR 54.21(a)(1), respectively. The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.3.5 of the LRA and the Turkey Point Units 3 and 4 UFSAR to identify any SCs of the primary water makeup system that may have been omitted from the scope of license renewal that meet the scoping criteria in 10 CFR 54.4. The SCs of the primary water makeup system that meet the license renewal scoping criteria are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.3.5 of the LRA.

The applicant identified and listed the SCs subject to AMR for the primary water makeup system in Table 3.4-5 of the LRA using the screening methodology described in Section 2.1.2 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff subsequently performed a review of the implementation of the methodology for the primary water makeup system by sampling the SCs that were identified as being within the scope of license renewal but not subject to AMR to verify that these SCs performed the intended functions with moving parts or with a change in configuration or properties, or are subject to replacement based on qualified life or specified time period.

In the LRA, Table 2.3-5, the applicant lists six detailed flow diagrams, 3-PW-01, 3-RCS-03, 3-CVCS-01, 4-PW-01, 4-RCS-03, and 4-CVCS-01 of the primary water makeup system. The applicant also identifies the mechanical components subject to AMR and their intended functions in Table 3.4-5 of the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that were included within the scope of license renewal. The applicant highlighted those components, which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and descriptions in the UFSAR to ensure that they were representative of the primary water makeup system. The staff also sampled portions of the flow diagrams that were not highlighted to ensure these components did not perform any of the functions as defined in 10 CFR 54.4(b).

2.3.3.5.3 Conclusions

The staff reviewed the information submitted by the applicant in the LRA and information in the Turkey Point Units 3 and 4 UFSAR. On the basis of the review described above, the staff has reasonable assurance that the applicant adequately identified those portions of the primary water makeup system that are within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.6 Sample Systems

In the LRA, Section 2.3.3.6, "Sample Systems," the applicant describes the components of the sample systems that are within the scope of license renewal and subject to an AMR. These systems are further described in Section 9.4 of the Turkey Point Units 3 and 4 UFSAR.

2.3.3.6.1 Summary of Technical Information in the Application

The sample systems consist of two subsystems: Sample System — Nuclear Steam Supply System and Sample System — Secondary. Both subsystems are designed to operate manually, on an intermittent basis. Samples can be obtained under conditions ranging from full power to cold shutdown.

The Sample System — Nuclear Steam Supply System permits remote sampling of fluids of the primary plant systems. The subsystem is used to evaluate fluid chemistry in the RCS, ECCS, and CVCS.

The Sample System — Secondary permits remote sampling of fluids of the secondary systems. The subsystem is used to evaluate fluid chemistry in the feedwater, condensate/condenser hotwell, steam generator blowdown, main steam, and heater drain systems.

The applicant describes its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.1 of the LRA. The applicant states that the sample systems are in the scope of license renewal because they contain:

- SCs that are safety-related and are relied upon to remain functional during and following design-basis events
- SCs that are non-safety-related whose failure could prevent satisfactory accomplishment of the safety-related functions
- SCs that are a part of the Environmental Qualification Program
- SCs that are relied on during postulated fires, anticipated transients without scram, and station blackout events

The intended functions for sample systems components subject to an aging management review include pressure boundary integrity and throttling.

On the basis of its methodology described above, the applicant identified portions of the sample systems that are evaluated within the scope of the LRA and are shown on the flow diagrams listed in Table 2.3-5 of the LRA. Using the methodology described in LRA Section 2.1.2, "Component/Structural Component Scoping and Screening," as specified in 10 CFR 54.21(a)(1), the applicant lists the mechanical component groupings that are subject to an AMR and identifies their intended functions in Table 3.4-6 of the LRA. The applicant identifies the following component groups that are subject to an AMR: valves and coolers (pressure boundary only), piping, tubing, fittings, and bolting.

2.3.3.6.2 Staff Evaluation

The staff reviewed Section 2.3.3.6 of the LRA to determine if the applicant has adequately identified the SCs of the sample systems that are within the scope of license renewal and are subject to an AMR in accordance with 10 CFR 54.4(a), and 10 CFR 54.21(a)(1), respectively. The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.3.6 of the LRA and in the Turkey Point Units 3 and 4 UFSAR to identify any SCs of the sample systems that may have been omitted from the scope of license renewal that meet the scoping criteria in 10 CFR 54.4. The SCs of the sample systems that meet the license renewal scoping criteria are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.3.6 of the LRA.

The applicant identified and listed the SCs subject to AMR for the sample systems in Table 3.4-6 of the LRA using the screening methodology described in Section 2.1.2 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff subsequently performed a review of the implementation of the methodology for the sample systems by sampling the SCs that were identified as being

within the scope of license renewal but not subject to AMR to verify that these SCs performed the intended functions with moving parts or with a change in configuration or properties, or are subject to replacement based on qualified life or specified time period.

In the LRA, Table 2.3-5, the applicant lists 20 detailed flow diagrams of the sample systems. The applicant also identifies the mechanical components subject to AMR and their intended functions in Table 3.4-6 of the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that were included within the scope of license renewal. The applicant highlighted those components, which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and descriptions in the UFSAR to ensure that they were representative of the sample systems. The staff also sampled portions of the flow diagrams that were not highlighted to ensure these components did not perform any of the functions as defined in 10 CFR 54.4(b).

2.3.3.6.3 Conclusions

The staff reviewed the information submitted by the applicant in the LRA and information in the Turkey Point Units 3 and 4 UFSAR. On the basis of the review described above, the staff has reasonable assurance that the applicant adequately identified those portions of the sample systems that are within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.7 Waste Disposal

In the LRA, Section 2.3.3.7, "Waste Disposal," the applicant describes the components of the waste disposal system that are within the scope of license renewal and subject to an AMR. This system is further described in Section 11.1 of the Turkey Point Units 3 and 4 UFSAR.

2.3.3.7.1 Summary of Technical Information in the Application

The waste disposal system collects and processes potentially radioactive reactor plant wastes prior to release or removal from the plant site. The system is common to Units 3 and 4 except for the components associated with each containment. Waste disposal consists of three subsystems: liquid, solid, and gaseous waste disposal systems.

The applicant describes its methodology for identifying the mechanical components within the scope of license renewal in Section 2.1.1 of the LRA. The applicant states that the waste disposal system is in the scope of license renewal because it contains:

- SCs that are safety-related and are relied upon to remain functional during and following design-basis events
- SCs that are non-safety-related whose failure could prevent satisfactory accomplishment of the safety-related functions
- SCs that are a part of the Environmental Qualification Program
- SCs that are relied on during postulated fires and station blackout events

The intended function for waste disposal components subject to an aging management review is pressure boundary integrity.

On the basis of its methodology described above, the applicant identified portions of the waste disposal system that are evaluated within the scope of the LRA and are shown on the flow diagrams listed in Table 2.3-5 of the LRA. Using the methodology described in LRA Section 2.1.2 as specified in 10 CFR 54.21(a)(1), the applicant lists the mechanical component groupings that are subject to an AMR and identifies their intended functions in Table 3.4-7 of the LRA. The applicant identifies the following component groups that are subject to an AMR: pumps, valves, and heat exchangers (pressure boundary only), piping, tubing, and fittings.

2.3.3.7.2 Staff Evaluation

The staff reviewed Section 2.3.3.7 of the LRA to determine if the applicant has adequately identified the SCs of the waste disposal system that are within the scope of license renewal and are subject to an AMR in accordance with 10 CFR 54.4(a), and 10 CFR 54.21(a)(1), respectively. The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.3.7 of the LRA and in the Turkey Point Units 3 and 4 UFSAR to identify any SCs of the waste disposal system that may have been omitted from the scope of license renewal that meet the scoping criteria in 10 CFR 54.4. The SCs of the waste disposal system that meet the license renewal scoping criteria are included within the scope of license renewal and are identified as such by the applicant in Section 2.3.3.7 of the LRA.

The applicant identified and listed the SCs subject to AMR for the waste disposal system in Table 3.4-7 of the LRA using the screening methodology described in Section 2.1.2 of the LRA. The staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The staff subsequently performed a review of the implementation of the methodology for the waste disposal system by sampling the SCs that were identified as being within the scope of license renewal but not subject to AMR to verify that these SCs performed the intended functions with moving parts or with a change in configuration or properties, or are subject to replacement based on qualified life or specified time period.

In the LRA, Table 2.3-5, the applicant lists six detailed flow diagrams, 0-WD-01, 0-WD-02, 3-WD-01, 3-RCS-02, 4-WD-01, and 4-RCS-02, of the waste disposal system. The applicant also identifies the mechanical components subject to AMR and their intended functions in Table 3.4-7 of the LRA. The detailed flow diagrams were highlighted to identify those portions of the system that were included within the scope of license renewal. The applicant highlighted those components, which it believes perform at least one of the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and descriptions in the UFSAR to ensure that they were representative of the waste disposal system. The staff also sampled portions of the flow diagrams that were not highlighted to ensure these components did not perform any of the functions as defined in 10 CFR 54.4(b).

2.3.3.7.3 Conclusions

The staff reviewed the information submitted by the applicant in the LRA and information in the Turkey Point Units 3 and 4 UFSAR. On the basis of the review described above, the staff has reasonable assurance that the applicant adequately identified those portions of the waste disposal system that are within the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.8 Instrument Air

In Section 2.3.3.8, "Instrument Air," of the LRA, the applicant described the components of the instrument air system that are within the scope of license renewal and subject to an AMR. This system is further described in Section 9.17 of the Turkey Point UFSAR.

2.3.3.8.1 Technical Information in the Application

The function of the instrument air system is to provide a reliable supply of dry, oil-free, compressed air for pneumatic equipment operation. Instrument air provides motive power and control air to safety-related and non-safety-related components. For each unit, the instrument air system employs a motor-driven compressor as the primary source of compressed air, with a diesel-driven compressor as the backup source. Each compressor is capable of supplying sufficient air for both Unit 3 and Unit 4, and the system is normally run in a cross-tied configuration. One motor-driven compressor normally supplies both units. On a loss of pressure, the opposite motor-driven compressor will pick up the load. On a loss of power to the motor-driven compressors, either of the diesel-driven compressors can supply sufficient air for both units.

The applicant described the process for identifying the mechanical components within the scope of license renewal in LRA Section 2.1.2.1, "Mechanical Systems." The applicant states that the instrument air is in the scope of license renewal because it contains:

- SCs that are safety-related and are relied upon to remain functional during and following design-basis events
- SCs that are non-safety-related whose failure could prevent satisfactory accomplishment of the safety-related functions
- SCs that are part of the Environmental Qualification Program
- SCs that are relied on during postulated fires and station blackout events

The applicant identified the portions of the instrument air system that are within the scope of license renewal on flow diagrams listed on Table 2.3-5 of the LRA. Using the methodology described in LRA Section 2.1.2, the applicant compiled a list of mechanical component/ commodity groupings within the license renewal boundaries that are subject to an AMR and

identified their intended functions. The applicant listed these components/groups in Table 3.4-8 of the LRA. The applicant identified nine component/ commodity groups as subject to an AMR: valves (pressure boundary only), flasks/tanks, filters, strainers, heat exchangers, orifices, oil water separators, dryers, flow elements, piping, tubing, and fittings. The intended functions of these components include pressure boundary integrity, heat transfer, filtration, and throttling.

2.3.3.8.2 Staff Evaluation

The staff reviewed Section 2.3.3.8 of the LRA to determine whether there is reasonable assurance that the applicant appropriately identified the instrument air system components and supporting structures within the scope of license renewal in accordance with 10 CFR 54.4 and subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1). The staff reviewed the text and diagrams submitted by the licensee in Section 2.3.3.8 of the LRA and the Turkey Point UFSAR to identify if there were portions of the system piping and other components that the applicant did not identify as within the scope of license renewal that performed intended functions. Only those portions of the instrument air system that perform at least one intended function are included within the scope of license renewal and are identified as such by the licensee in Section 2.3.3.8 of the LRA. For scoping systems and structures, the staff focused their review on those SCs of the instrument air system that were not identified as being within the scope of license renewal to verify that they do not have any intended functions that meet the scoping requirements of 10 CFR 54.4. The staff also reviewed the UFSAR to determine if there were any additional system functions that were not identified as intended functions in the LRA and verified that those additional functions did not meet the scoping requirements of 10 CFR 54.4. As described in detail below, the staff found no omissions by the applicant. Therefore, there is reasonable assurance that the applicant adequately identified all portions of the instrument air system that fall within the scope of license renewal in accordance with 10 CFR Part 54.4.

The staff determined whether the applicant had properly identified the SCs subject to an AMR from among those identified as within scope of license renewal. The applicant identified and listed the SCs subject to an AMR for the instrument air system in Table 3.4-8 of the LRA using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented their findings in Section 2.1 of this SER. As described in more detail below, the staff performed the review by sampling SCs that were within the scope of license renewal but not subject to an AMR to verify that these SCs performed their intended functions with moving parts or a configuration change or were subject to replacement on the basis of a qualified life or specified time period (i.e., active or short-lived).

In the LRA, the applicant listed fifteen detailed flow diagrams for the instrument air system in Table 2.3-5 of the LRA and identified the mechanical components subject to an AMR and their intended functions in Table 3.4-8 of the LRA. The detailed flow diagrams were highlighted to identify those portions of the system within the scope of license renewal. The applicant highlighted those components which they believe perform at least one intended function meeting the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and descriptions in the UFSAR to ensure they were representative of the instrument air system. The staff sampled portions of the flow diagrams that were not highlighted to ensure these components did not have any intended functions defined in 10 CFR 54.4.

On the basis of this review, the staff questioned why instrument air compressor No. 4S and associated piping were not included within the scope of the license renewal application. In a letter dated January 17, 2001, the staff issued RAI 2.3.3.8-1 regarding these components in the instrument air system. In a letter dated February 16, 2001, the applicant responded to the RAI. The applicant stated that the 4S compressor has been abandoned in place and its discharge valve (4-40-775) has been administratively tagged closed pending formal abandonment. Thus, the compressor and its associated piping are isolated from the rest of the instrument air system and perform no intended function within the scope of license renewal. The staff reviewed the applicant's response to RAI 2.3.3.8-1 and found the applicant's justification acceptable.

2.3.3.8.3 Conclusions

On the basis of the staff's review of the information contained in Section 2.3.3.8 of the application, the February 16, 2001, response to the staff's information request, and the supporting information in the Turkey Point UFSAR, as discussed in the preceding section, the staff did not find any omissions by the applicant and, therefore, concludes that there is reasonable assurance that the applicant adequately identified those portions of the instrument air system that fall within the scope of license renewal and are subject to an AMR, in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.3.9 Normal Containment and Control Rod Drive Mechanism Cooling

In Section 2.3.3.9, "Normal Containment and Control Rod Drive Mechanism Cooling," of the LRA, the applicant described the components of these cooling systems that are within the scope of license renewal and subject to an AMR. This system is further described in Section 9.10 of the Turkey Point UFSAR.

2.3.3.9.1 Technical Information in the Application

The function of the normal containment cooling system is to provide air circulation and cooling to maintain the containment bulk ambient temperature below design limits during normal operation. The control rod drive mechanism cooling system supplements the normal containment cooling system by removing heat from the control rod drive mechanisms. Neither system is safety-related but the control rod drive mechanism cooling fans are fed from vital motor control centers and can be manually loaded onto the emergency diesel generators (EDGs) under specified conditions, and can be used to remove heat from the reactor vessel head during natural circulation conditions.

The applicant described the process for identifying the mechanical components within the scope of license renewal in LRA Section 2.1.2.1, "Mechanical Systems." The applicant states that the normal containment and control rod drive mechanism cooling is in the scope of license renewal because it contains:

- SCs that are non-safety-related whose failure could prevent satisfactory accomplishment of the safety-related functions
- SCs that are relied on during postulated fires and station blackout events

The applicant identified the portions of the normal containment cooling and control rod drive mechanism cooling systems that are within the scope of license renewal on flow diagrams listed on Table 2.3-5 of the LRA. Using the methodology described in Section 2.1.2 of the LRA, the applicant compiled a list of mechanical component/commodity groupings within the license renewal boundaries that are subject to an AMR and identified their intended functions. The applicant listed these components/groups in Table 3.4-9 of the LRA. The applicant identified seven component/commodity groups as subject to an AMR: cooler housings, cooler headers, cooler tubes, cooler fins, duct work, duct work flexible connectors, ductwork shrouds, and bolting. The intended functions of these components include system pressure boundary integrity, and heat transfer. In addition, the cooler housings provide structural support for the safety-related CCW system pressure boundary.

2.3.3.9.2 Staff Evaluation

The staff reviewed Section 2.3.3.9 of the LRA to determine whether there is reasonable assurance that the applicant appropriately identified the normal containment and control rod drive mechanism cooling system components and supporting structures within the scope of license renewal in accordance with 10 CFR 54.4 and subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff reviewed the text and diagrams submitted by the licensee in Section 2.3.3.9 of the LRA and the Turkey Point UFSAR to identify if there were portions of the system piping and other components that the applicant did not identify as within the scope of license renewal that performed intended functions. Only those portions of the normal containment cooling and control rod drive mechanism cooling systems that perform at least one intended function are included within the scope of license renewal and are identified as such by the licensee in Section 2.3.3.9 of the LRA. For scoping systems and structures, the staff focused their review on those SCs of the cooling systems that were not identified as being within the scope of license renewal to verify that they do not have any intended functions that meet the scoping requirements of 10 CFR 54.4. The staff also reviewed the UFSAR to determine if there were any additional system functions that were not identified as intended functions in the LRA and verified that those additional functions did not meet the scoping requirements of 10 CFR 54.4. As described in detail below, the staff found no omissions by the applicant. Therefore, there is reasonable assurance that the applicant adequately identified all portions of the normal containment and control rod drive mechanism cooling systems that fall within the scope of license renewal in accordance with 10 CFR Part 54.4.

The staff determined whether the applicant had properly identified the SCs subject to an AMR from among those identified as within the scope of license renewal. The applicant identified and listed the SCs subject to an AMR for the normal containment and control rod drive mechanism cooling systems in Table 3.4-9 of the LRA using the screening methodology described in Section 2.1 of the LRA. The staff evaluated the scoping and screening methodology and documented their findings in Section 2.1 of this SER. As described in more detail below, the staff performed the review by sampling SCs that were within the scope of license renewal but not subject to an AMR to verify that these SCs performed their intended functions with moving parts or a configuration change or were subject to replacement on the basis of a qualified life or specified time period (i.e., active or short-lived).

In the LRA, the applicant listed two detailed flow diagrams for the normal containment and control rod drive mechanism cooling systems on Table 2.3-5 of the LRA and identified the mechanical components subject to an AMR and their intended functions in Table 3.4-9 of the LRA. The detailed flow diagrams were highlighted to identify those portions of the system within the scope of license renewal. The applicant highlighted those components which they believe perform at least one intended function meeting the scoping requirements of 10 CFR 54.4. The staff compared the LRA flow diagrams to the system drawings and descriptions in the UFSAR to ensure they were representative of the normal containment and control rod drive mechanism cooling systems. The staff sampled portions of the flow diagrams that were not highlighted to ensure these components did not have any intended functions defined in 10 CFR 54.4.

On the basis of this review, the staff identified two components that were not included in the scope of license renewal: 1) the 1-inch stainless steel tubing from the containment cooler header to the containment air monitor, and 2) the sample lines from the control rod drive mechanism coolers to the radiation sampler/detector. During conference calls on December 21, 2000, and January 9, 2001, the staff discussed this issue with the applicant. The applicant clarified that the containment air monitor and the radiation sampler/detector do not perform any intended functions within the scope of license renewal, and neither the control rod drive cooling system nor the normal containment cooling system would be impacted by a break at these locations because the lines are small in relation to the total volume of the system. With this clarification, the staff agrees with the application description that these two components are not within the scope of license renewal.

2.3.3.9.3 Conclusions

On the basis of the staff's review of the information contained in Section 2.3.3.9 of the application, clarifications provided in the December 21, 2000, and January 9, 2001, conference calls, and the supporting information in the Turkey Point UFSAR, as discussed in the preceding section, the staff did not find any omissions by the applicant and, therefore, concludes that there is reasonable assurance that the applicant adequately identified those portions of the normal containment and control rod drive mechanism cooling systems that fall within the scope of license renewal and are subject to an AMR, in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

2.3.3.10 Auxiliary Building Ventilation

In LRA Section 2.3.3.10, "Auxiliary Building Ventilation," the applicant identified portions of the auxiliary building ventilation system (ABVS) and the components that are within the scope of license renewal and subject to an AMR. The applicant stated in Section 2.3.3.10 of the LRA that additional information for the ABVS is provided in Section 9.8.1 of the UFSAR. The system scoping is shown in ABVS evaluation boundary flow drawings 0-ABVAC-01, Rev. 0, and 0-ABVAC-02, Rev. 0, for Units 3 and 4 and listed in Table 2.3-5 of the LRA.

The applicant evaluated component supports for equipment, piping, heating, ventilation, and air conditioning (HVAC) ducts, and fan/filter intake hoods that are associated with the ABVS in Section 3.6.2 and Table 3.6-3 of the LRA. The applicant also evaluated electrical components that support the operation of the ABVS in Section 2.5 of the LRA. The staff evaluated component supports in the section on the auxiliary building structures and electrical

components in Section 2.5 of this SER. The instrument lines are individually highlighted as being within the scope of license renewal on flow diagrams 0-ABVAC-01, Rev. 0, and 0-ABVAC-02, Rev. 0. The applicant evaluated instrument line components within the ABVS in Section 2.3.3.10 of the LRA.

2.3.3.10.1 Technical Information in the Application

The auxiliary building is a reinforced concrete structure that houses safety-related SSCs. The ABVS provides adequate heat removal to ensure proper operation of safety-related equipment in the auxiliary building. The ABVS includes the electrical equipment room ventilation (EERV) system. The ABVS is common to Units 3 and 4. The system provides clean air to the operating areas of the auxiliary building and exhausts air from the equipment rooms and open areas of the auxiliary building. The ABVS is described in UFSAR Section 9.8.1.

The EERV system is the same for Turkey Point Units 3 and 4. The EERV system provides cooling for the electrical equipment room (EER) under normal and emergency conditions. During normal operations, non-safety-related chillers maintain the desired room temperature. In the event of a failure of the non-safety-related system or loss of offsite power (LOOP), safety-related air conditioners will perform the same function. The EERV is described in UFSAR Section 9.8.2.

The ABVS provides clean air to the operating areas of the auxiliary building. The system exhausts air from the equipment rooms and open areas of the auxiliary building and the Unit 4 spent fuel storage pit through a closed system. The exhaust system includes a 100 percent capacity bank of high-efficiency particulate air (HEPA) filters, and two 100 percent capacity fans discharging to the atmosphere via the plant vent. A separate fan exhausts air from the Unit 3 spent fuel area through HEPA filters to its own vent and is not connected to the ABVS. Radiation monitoring is provided to monitor gases and particles discharged from the spent fuel vents. These arrangements ensure the proper direction of air flow for removal of potential airborne radioactivity from the auxiliary building and spent fuel areas.

The ABVS provides a minimum of five air exchanges per hour for each of the rooms and open areas of the building. This assures adequate heat removal from operating equipment. Operation of this system would be interrupted by a loss of normal power supplies, as the main supply and exhaust fans are not vital to the operation of engineered safety features. These fans can be manually loaded onto the EDGs.

ABVS and EERV system components subject to an AMR include air handlers (pressure boundary only), filters, ductwork, tubing, and fittings. The intended function of ABVS and EERV system components subject to an AMR is to maintain pressure boundary integrity. The ABVS and EERV system components that require an AMR and their intended functions are listed in Table 3.4-10 of the LRA. The AMR for the ABVS and EERV systems is discussed in Section 3.4 of the LRA.

In LRA Section 2.3.3.10 and Sections 9.8.1 and 9.8.2 of the UFSAR, the applicant identified the following intended functions for the ABVS, consistent with 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(2).

Section 2.3.3.10 of the LRA -

- Provide adequate heat removal to ensure proper operation of safety-related equipment in the auxiliary building.
- Provide clean air to the operating areas of the auxiliary building and exhaust air from the equipment rooms and open areas of the auxiliary building.
- Provide cooling for the EER under normal and emergency conditions.
- Maintain the desired room temperature during normal operations (non-safety-related chillers).

Sections 9.8.1 and 9.8.2 of the UFSAR -

- Ensure adequate heat removal from equipment rooms and open areas.
- Control direction of flow of potential airborne radioactivity from areas of low activity through areas of higher activity to the common ventilation exhaust.
- Maintain a temperature-controlled environment for the safety-related equipment located within EERs.

On the basis of the intended functions identified above for the ABVS, the applicant determined that ABVS safety-related and non-safety-related components (electrical, mechanical, and instrument) are within the scope of license renewal. The applicant described its methodology for identifying the mechanical components that are subject to an AMR in Section 3.4, "Auxiliary Systems," of the LRA. The applicant uses this methodology to identify the portions of the ABVS that are within the scope of license renewal, and that are highlighted on flow diagrams listed in Table 2.3-5 of the LRA. Using the methodology described in Section 2.2.1 of the LRA, the applicant compiled a list of the mechanical component and component types that are within the scope of license renewal and subject to an AMR. The applicant provided this list in Table 3.4-10 of the LRA.

Specifically, the applicant identified the following device types as being within the scope of license renewal and subject to an AMR:

- For the internal environment: auxiliary building ventilation air handler housings (carbon steel, galvanized), auxiliary building ventilation prefilters and roughing filter housings (carbon steel, galvanized), ductwork (carbon steel, carbon steel-galvanized), pressure test point plugs (carbon steel, galvanized), tubbing and fittings (stainless steel), and flexible connectors (coated canvas)
- For the external environment: auxiliary building ventilation air handler housings (carbon steel, galvanized), auxiliary building ventilation prefilters and roughing filter housings (carbon steel, galvanized), ductwork (carbon steel, carbon steel-galvanized), pressure test point plugs (carbon steel, galvanized), tubbing and fittings (stainless steel), and flexible connectors (coated canvas), and bolting, (carbon steel)

The applicant further noted in Table 3.4-10 in the LRA that the ABVS pressure boundary function is the only applicable intended function associated with the ABVS components that are subject to an AMR.

2.3.3.10.2 Staff Evaluation

The NRC staff reviewed the above information to verify that the applicant identified the components of the ABVS that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1). The staff also reviewed the information in the UFSAR Section 9.8. After completing the initial review, the NRC staff issued an RAI by letter dated December 22, 2000, regarding the ABVS. The applicant responded to the RAI by letters dated January 19, 2001, and July 18, 2001.

In LRA, Section 2.1, "Scoping and Screening Methodology," the applicant discusses the process for identifying mechanical components that are subject to an AMR. The NRC staff evaluates the applicant's methodology in Section 2.1 of this SER, "Scoping and Screening Methodology."

In its review of the ABVS, the NRC staff reviewed the drawings listed in LRA Table 2.3-5 (which show the evaluation boundaries for the highlighted portion of the ABVS that are within the scope of license renewal) and Table 3.4-10 (which lists the mechanical components and applicable intended functions that are subject to an AMR).

The NRC staff also reviewed UFSAR Section 9.8 to determine if there were any portions of the ABVS that met the scoping criteria in 10 CFR 54.4(a), but were not identified as being within the scope of license renewal. The staff also reviewed the UFSAR to determine if there were any safety-related system functions that were not identified as intended function(s) in the LRA and to determine if there were any SCs that have intended functions that might have been omitted from the scope of SCs that are subject to an AMR. The staff also reviewed the system flow diagrams identified in Table 2.3-5 of the LRA to determine if any SCs within the evaluation boundaries were omitted from the scope of components that are subject to an AMR in accordance with 10 CFR 54.21(a)(1). The NRC staff compared the functions described in the UFSAR to those identified in the LRA. The NRC staff then determined whether the applicant had properly identified the SCs that are subject to an AMR from among those identified as being within the scope of license renewal.

The applicant identified the SCs subject to an AMR for the ABVS using the screening methodology described in Section 2.1 of the LRA and listed them in Table 3.4-10 of the LRA. The NRC staff evaluated the scoping and screening methodology and documented its findings in Section 2.1 of this SER. The NRC staff sampled the SCs listed in Table 3.4-10 of the LRA to verify that the applicant accurately identified the SCs that are subject to an AMR. The staff also sampled the SCs that the applicant identified as being within the scope of license renewal but not subject to an AMR to verify that the SCs perform their intended functions with moving parts or with a change in configuration or properties or are subject to replacement on the basis of a qualified life or specified time period.

To help ensure that those portions of the ABVS that the applicant identifies as not being within the scope of license renewal do not perform any of the functions identified in 10 CFR 54.4, the NRC staff requested additional information on the basis of the information in the UFSAR and LRA. The NRC staff noted that LRA Section 2.3.3.10 presents a summary description of the system functions, the Table 2.3-5 flow diagrams highlight the evaluation boundaries of the ABVS, and Table 3.4-10 tabulates the ABVS components that are within the scope of license renewal and subject to an AMR. The corresponding drawings for these systems in the UFSAR, however, show additional components that were not listed in Table 3.4-10 of the LRA.

The NRC staff requested specific information concerning the exclusion of the following components from the scope of license renewal and/or from an AMR:

- housings for dampers, diffusers, fans, exhausts hoods, louvers, sealant materials, and the bird screen for the plant stack.

- ductwork from the plant stack dampers MO-3419 and MO-3420, and ductwork from the containment purge, radwaste building, Unit 4 SFP, and new fuel storage area to the plant stack.

In a letter dated January 19, 2001, the applicant provided a response to RAI 2.3.3.10-1. Auxiliary building and EERV fans and dampers, including their housings, were evaluated to determine whether these components should be included in an AMR. The evaluation determined that several of these components, e.g., the auxiliary building supply and exhaust fans and their associated dampers, support license renewal system intended functions that satisfy the scoping criteria in 10 CFR 54.4 and are within the scope of license renewal. However, fans and dampers were determined to be active components and not subject to an AMR consistent with 10 CFR 54.21(a)(1)(i) and the guidance of Appendix B to NEI 95-10, Revision 2.

The staff requested clarification or justification in RAI 2.3.3.10-1 concerning the exclusion of the ABVS housing for dampers, diffusers, fans, exhaust hoods, and louvers from the scope of license renewal or an AMR in accordance with the requirements of 10 CFR 54.4(a)(1), 10 CFR 54.4(a)(2), 10 CFR 54.4(a)(3) and 10 CFR 54.21(a)(1)(i).

In a letter dated July 18, 2001, the applicant provided additional clarifying information stating that the housings for dampers and fans have been included in the AMR for the auxiliary building and EERV as part of Table 3.4-10 of the LRA. Auxiliary building penthouse louver and two exhaust hoods for the radioactive and cold chemistry laboratories and diffusers were evaluated and determined not to be within the scope of license renewal since they are not safety related and do not support any intended functions that satisfy the scoping criteria in 10 CFR 54.4.

On the basis of the additional information provided by the applicant, the NRC staff determined that it is acceptable to exclude the housings, for louvers, exhaust hoods, and diffusers from the scope of license renewal because they do not meet the scoping criteria in 10 CFR 54.4.

The applicant stated that the sealant materials within the scope of license renewal are addressed as structural components and require an aging management review as described in Subsection 3.6.2.4 (page 3.6-42) and listed in Table 3.6-3 (page 3.6-58) of the LRA. The NRC staff reviewed the applicant's response for sealant materials and found the response to be acceptable and consistent with the applicable requirements of 10 CFR 54.21 and 10 CFR 54.4. Sealant materials are within the scope of license renewal and are subject to an AMR as described in Subsection 3.6.2.4 and listed in Table 3.6-3 of the LRA.

The applicant clarified that there are no bird screens associated with the plant vent stack.

The NRC staff agrees with the applicant's clarification regarding louver and exhaust hoods and determines that it is acceptable to exclude these from the scope of license renewal because they do not meet the scoping criteria in 10 CFR 54.4.

In response to the staff's RAI, the applicant provided the following justification for the exclusion of specific exhaust ductwork from license renewal and an AMR.

As described in Subsection 2.3.3.10 (page 2.3-29) of the LRA, the license renewal system intended function of the ABVS is to provide adequate heat removal to ensure proper operation of safety-related equipment in the auxiliary building. The pressure boundary of the ventilation system in the auxiliary building is relied upon to exhaust the ventilation air out of the building. The pressure boundary of the ductwork outside the auxiliary building (exhaust ductwork from dampers MO-3419 and MO-3420 to plant stack, [@A2 and C2]) is not required to support the license renewal system intended function and therefore does not meet the scoping criteria of 10 CFR 54.4 and is not within the scope of license renewal.

The radwaste building, Unit 4 SFP, and new fuel storage area ventilation systems, including the ductwork to the plant vent stack, do not support any license renewal system intended functions that satisfy the scoping criteria of 10 CFR 54.4. Therefore, these systems (including exhaust ductwork to the plant vent stack) are not within the scope of license renewal, as shown in Table 2.2-1 (page 2.2-2) of the LRA. The only license renewal intended function for containment purge is containment isolation, as described in Subsection 2.3.2.3 (page 2.3-15) of the LRA (see drawings 3-CP-01 and 4-CP-01). Therefore, the exhaust ductwork from the outboard containment isolation valves to the plant vent stack is not within the scope of license renewal and does not require an aging management review.

The NRC staff reviewed the applicant's response for the explanation of the exclusion of the exhaust ductwork from license renewal and an AMR and agrees with the applicant's clarification.

The NRC staff reviewed information provided by the applicant in a letter dated January 19, 2001, in response to an RAI 2.3.3.10-2 regarding the exclusion of exhaust ductwork from the radwaste building, Unit 4 SFP, and new fuel storage area ventilation to the plant stack from license renewal and an AMR. The staff reviewed the evaluation boundary

drawing and compared the system and intended functions. The staff agrees with the applicant's response that the pressure boundary of the ventilation system in the auxiliary building is relied upon to exhaust the ventilation air out of the building. Therefore the pressure boundary of the exhaust ductwork outside the auxiliary building does not require an AMR because outside exhaust ductwork does not meet the scoping criteria in 10 CFR 54.4(a).

Some components that are common to many systems, including the ABVS, have been separately evaluated in the LRA together with similar components from other systems as separate commodity groups, and are evaluated by the NRC staff in other sections throughout this SER.

In Section 2.4 of the SER the staff evaluated component supports for piping, cables, and equipment, which are discussed in LRA Section 2.4, "Scoping and Screening Results - Structures." In Section 2.5 of the SER, the staff evaluated the electrical components that support the operation of the ABVS; these components are discussed in LRA Section 2.5, "Scoping and Screening Results-Electrical and Instrumentation and Controls (I&C)." The ABVS instrumentation lines are listed as "tubing" in Table 3.4-10 of the LRA.

The NRC staff reviewed the LRA, supporting information in the UFSAR, and the applicant's responses to the staff's RAI. In addition, the NRC staff sampled several components from the ABVS flow diagrams (Table 2.3-5 of the LRA) to determine whether the applicant properly identified the components that are within the scope of license renewal, and subject to an AMR. No omissions were identified.

2.3.3.10.3 Conclusion

On the basis of this review the staff has reasonable assurance that the applicant has adequately identified the ABVS components that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 54.21, respectively.

2.3.3.11 Control Building Ventilation

In LRA Section 2.3.3.11, "Control Building Ventilation," the applicant identified portions of the control building ventilation system (CBVS) and its components that are within the scope of license renewal and subject to an AMR. The applicant stated in Section 2.3.3.11 of the LRA that the CBVS is further described in Section 9.9 of the UFSAR. The system scoping is shown in CRVS evaluation boundary flow drawings 0-CBVAC-01, Rev. 0, 0-CBVAC-02, Rev. 0, and 0-CBVAC-03, Rev. 0, for Units 3 and 4 and listed in Table 2.3-5 of the LRA.

The applicant evaluated component supports for the HVAC system that is associated with the CBVS in Section 3.6.2 and Table 3.6-5 of the LRA. The applicant also evaluated electrical components that support the operation of the CBVS in Section 2.5 of the LRA. The staff evaluated component supports in the section on the control building structures and electrical components in Section 2.5 of this SER. The instrument lines are individually highlighted as being within the scope of license renewal on flow diagrams 0-CBVAC-01, Rev. 0, 0-CBVAC-02, Rev. 0, and 0-CBVAC-03, Rev. 0. The applicant evaluated instrument line components with the CBVS in Section 2.3.3.11 of the LRA.

2.3.3.11.1 Technical Information in the Application

The control building is a three-story reinforced concrete structure housing safety-related SSCs. The control building walls and roof are designed to withstand missile effects. The CBVS provides a temperature-controlled environment to ensure proper operation of equipment in the control building. The CBVS is composed of three subsystems: the control room ventilation system; the computer/cable spreading room ventilation system; and the DC equipment/inverter room ventilation system. These subsystems are common to Turkey Point Units 3 and 4.

The CBVS circulates air from the control room and offices through roughing filters to the air handling units. Conditioned air is returned and distributed throughout the control room. The control room ventilation system (CRVS) maintains the habitability of the control room following design-basis events. The control room ventilation system is described in Section 9.9.1 of the UFSAR.

The computer/cable spreading room ventilation system maintains the temperature and humidity requirements of the vital electrical equipment installed in the computer and cable spreading rooms. It also provides sufficient ventilation for intermittent occupancy by operations and maintenance personnel. The computer/cable spreading room ventilation system is described in UFASR Section 9.9.3.

The DC equipment/inverter room ventilation system provides cooling to the rooms that house the safety-related battery banks, battery chargers, inverters, and DC load centers. The DC equipment/inverter room ventilation system is described in UFASR Section 9.9.2.

The flow diagrams listed in Table 2.3-5 show the evaluation boundaries for the portions of CBVS that are within the scope of license renewal.

Control Room Ventilation System

All three HVAC units of CRVS are powered by swing power sources, each of which can be powered by the EDGs. One HVAC unit is powered by motor control center (MCC) 3D, one unit by MCC 4D, and the third unit is powered via a transfer switch which automatically transfers between MCCs 3B and 4B. This configuration precludes the loss of more than one HVAC unit for any postulated single failure. Control room equipment is designed to operate in an environment of 120 °F and 95 percent relative humidity. If two of three units were inoperative, the third would maintain the environment within these limits.

The CRVS has two emergency modes of operation: (1) one automatic, upon receipt of applicable signals associated with a potential radiological exposure; and (2) the other manually initiated. The automatically initiated mode provides pressurization using a limited quantity of outside air drawn through a charcoal filter system. Without pressurization, in-leakage in excess of radiological limits could occur. No requirement currently exists for the complete isolation provided by the manually initiated mode, since no concerns related to chemical releases have been identified for the site. Following initiation of the control room emergency mode all exhaust fans are shut off, and redundant exhaust isolation dampers in series are closed. Redundant normal air intake dampers in parallel are opened. Likewise, the recirculation air path is opened. A single air supply fan is energized to move the appropriate mixture of recirculating control room air and new outdoor air through the charcoal filter system.

Computer/Cable Spreading Room Ventilation System (CCSRVS)

This system comprises of two independent chilled water air conditioning (A/C) trains. Each train consists of a 100 percent capacity chilled package located on the control building roof and three air handling units. Two 50 percent capacity air handling units for each train are located in the computer room. One 100 percent capacity air handling unit for each train and a common duct run are located in the cable spreading room. Each train is capable of providing 100 percent cooling for both rooms during normal and emergency conditions.

The computer/cable spreading room HVAC system provides cooling and ventilation to equipment located in the Computer Room and CSR. The system is designed to maintain temperatures in the rooms below the 104 °F limit for the safety-related equipment.

During loss of offsite power (LOOP), the system is not automatically loaded on the EDG. The system is manually loaded on the EDG by administrative procedures. The temperature indicator in the control room provides indication to allow operators to load the system prior to exceeding the temperature limitations.

DC Equipment/Inverter Room Ventilation System (DCEIRVS)

The DC equipment/inverter room HVAC system provides cooling and ventilation in the control building annex. This system provides cooling to the equipment in the inverter rooms, the DC equipment rooms, and the battery rooms which comprise the annex. The HVAC system for these rooms consists of a common split A/C unit and two packaged A/C units. One packaged unit is dedicated to the north and the other to the south equipment room. The common unit can provide air to both the north and south rooms.

The system design also incorporates a supplemental cooling system consisting of portable fans and administrative controls. This supplemental cooling system will be used to enhance ventilation in the room and also to draw cooler air from adjacent rooms to maintain temperatures in a range compatible with equipment operation. When not in use, the dedicated fans are stored in seismically designed restraints in close proximity to the equipment rooms.

All of the ventilation and air conditioning equipment is capable of being powered from an EDG. The common split A/C unit is automatically loaded on the EDGs following a loss of offsite power. The north and south units are powered from vital buses and may be manually started after a loss of offsite power. Special dedicated receptacles have been provided in the rooms to power the portable fans. These fixtures are 120 VAC fed from an EDG-backed source.

This system circulates air from these rooms to air conditioning units or the air handling unit and returns cool air into the rooms. Each unit is controlled by a thermostat. These units are designed to maintain the temperature in the room below 104 °F.

In the event of a fire or failure of one of the HVAC units, the room temperature may increase. Routine surveillance of these rooms is performed to confirm that a suitable environment for the equipment is maintained. If increasing temperatures is noted, supplemental cooling can be initiated using the portable fans. The batteries have been shown to be operable at temperatures up to 110 °F and other safety-related equipment is operable at temperatures up to 135 °F (for short time periods). The supplemental cooling system, is capable of maintaining temperatures below these limits.

CBVS components subject to an AMR include air handling unit housing and valves (pressure boundary only), heat exchangers, ductwork, piping, tubing, and fittings. The intended functions of CBVS components subject to an AMR include maintaining pressure boundary integrity. CBVS components that require an AMR and their intended functions are listed in Table 3.4-11 of the LRA. The AMR for CBVS is discussed in Section 3.4 of the LRA.

In LRA Section 2.3.3.11 and Section 9.9.1 of the UFSAR, the applicant identified the following functions for the CBVS, consistent with 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(2).

Section 2.3.3.11 of the LRA -

CRVS

- Provides a temperature-controlled environment to ensure proper operation of equipment in the control building.
- Circulates air from the control room and offices through roughing filters to the air handling units.
- Maintains the habitability of the control room following design-basis events.

CCSRVS

- Maintains the temperature and humidity requirements of the vital electrical equipment installed in the computer and cable spreading rooms.
- Provides sufficient ventilation for intermittent occupancy by operations and maintenance personnel in the computer and cable spreading rooms.

DCEIRVS

- Provides cooling to the rooms that house the safety-related battery banks, battery charges, inverter, and DC load centers in the DC equipment/inverter rooms.

Section 9.9.1 of the UFSAR -

CRVS

- Provides pressurization using a limited quantity of outside air drawn through a charcoal filter system.

- Maintains a positive pressure in the control room over the cable spreading room in order to prevent smoke from a hypothesized fire in the cable spreading room from entering the control room.

CCSRVS

- Removes heat dissipated by all equipment in the computer and cable spreading rooms during normal plant operation and emergency condition.

- Provides a redundant, reliable, and independent system supplied from emergency power to maintain a temperature-controlled environment for the safety-related equipment located within the computer and cable spreading rooms.

DCEIRVS

- Provides a redundant, reliable, independent means of maintaining the room temperatures below the qualified operability temperature of the equipment located within the DC equipment/inverter room.

- Maintains the battery rooms at a temperature above that at which the battery capacity must be derated below its required capacity.

- Maintains adequate ventilation to ensure that hydrogen concentration remains below the lower limit of flammability.

- Maintains room temperature during normal plant operation below the continuous operation qualification temperature of the equipment in the room.

On the basis of the intended functions identified above for the CBVS, the applicant determined that CBVS safety-related and non-safety-related components (electrical, mechanical, and instrument) are within the scope of license renewal. The applicant described its process for identifying the mechanical components that are subject to an AMR in Section 3.4, "Auxiliary Systems," of the LRA. The applicant uses this methodology, to identify the portions of the CBVS that are within the scope of license renewal and that are highlighted on flow diagrams listed in Table 2.3-5 of the LRA. Using the methodology described in Section 2.2.1 of the LRA, the applicant compiled a list of the mechanical components and component types that are within the scope of license renewal and subject to an AMR. The applicant provided this list in Table 3.4-11 of the LRA.

Specifically, the applicant identified the following component/commodity groups as being within the scope of license renewal and subject to an AMR:

- Internal environment: cable spreading room and computer room chilled water surge tanks (carbon steel), cable spreading room and computer room chilled water pumps (carbon steel), cable spreading room and computer room chilled water boxes (carbon steel), wye strainer thermowells (carbon steel), valve piping/fitting level gauges (carbon steel), flow elements (carbon steel), flow elements (stainless steel), air separator valves tubing/fittings (stainless steel), control room ventilation air

handling unit housings (carbon steel, galvanized), control room ventilation recirculation filter housing (carbon steel, galvanized), inverter room and battery room air handling unit housing (carbon steel, galvanized), cable spreading room and computer room air handling unit housings (stainless steel), cable spreading room and computer room air handling unit headers (stainless steel), cable spreading room and computer room air handling unit tubes (copper), cable spreading room and computer room air handling unit air boxes in air handlers (carbon steel), ductwork (carbon steel, galvanized), and ductwork flexible connectors (coated canvas).

- External environment: cable spreading room and computer room chilled water surge tanks (carbon steel), cable spreading room and computer room chilled water pumps (carbon steel), cable spreading room and computer room chilled water boxes (carbon steel), wye strainers (carbon steel), valves, piping/fittings, level gauges and thermowells (carbon steel), valve piping/fitting, and thermowells (carbon steel), flow elements (carbon steel), valves and tubing/fittings (stainless steel), air separators, valve, tubing/fittings (stainless steel), flow elements (stainless steel), control room ventilation air handling unit housings (carbon steel, galvanized), control room ventilation recirculation filter housing (carbon steel, galvanized), inverter room and battery room air handling unit housing (carbon steel, galvanized), cable spreading room and computer room air handling unit housings (stainless steel), cable spreading room and computer room air handling unit headers (stainless steel), cable spreading room and computer room air handling unit tubes (copper), cable spreading room and computer room air handling unit air boxes in air handlers (carbon steel), cable spreading room and computer room air handling unit tube fins (aluminum) and ductwork (carbon steel, galvanized), ductwork flexible connectors (coated canvas), and bolting (carbon steel).

In LRA Table 3.4-11, the applicant also notes that maintaining pressure boundary, throttling, and heat transfer are the only applicable intended functions associated with the components of the CBVS that are subject to an AMR.

2.3.3.11.2 Staff Evaluation

The NRC staff reviewed the above information to verify that the applicant identified the components of the CBVS that are within the scope of license renewal and subject to an AMR, in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1). The staff also reviewed the information in UFSAR Section 9.9. After completing the initial review, the staff issued an RAI by letter dated December 22, 2000, regarding the CBVS. The applicant responded to the RAI by letter dated January 19, 2001.

In LRA Section 2.1, "Scoping and Screening Methodology," the applicant discusses the process to identify mechanical components that are subject to an AMR. The NRC staff evaluated the applicant's methodology in Section 2.1 of this SER, "Scoping and Screening Methodology."

In its review of the CBVS, the NRC staff reviewed the drawings listed in LRA Table 2.3-5, which show the evaluation boundaries for the highlighted portion of the CBVS that are within the scope of license renewal. The staff also reviewed Table 3.4-11 which listed the mechanical components and applicable intended functions that are subject to an AMR.

The NRC staff also reviewed UFSAR Section 9.9, to determine if there were any portions of the CBVS that met the scoping criteria in 10 CFR 54.4(a) and that are not identified as being within the scope of license renewal. The staff also reviewed the Turkey Point UFSAR to determine if there are any safety-related system functions that are not identified as intended function(s) in the LRA, and to determine if there are any SCs that have intended function(s) that might have been omitted from the scope of SCs that are subject to an AMR. The staff also reviewed the system flow diagrams identified in Table 2.3-5 of the LRA to determine if any SCs within the evaluation boundaries were omitted from the scope of components that are subject to an AMR in accordance with 10 CFR 54.21(a)(1). The NRC staff compared the functions described in the UFSAR to those identified in the LRA. The NRC staff then determined whether the applicant had properly identified the SCs that are subject to an AMR from among those identified as being within the scope of license renewal.

The applicant identified the SCs subject to an AMR for the CBVS, using the screening methodology described in Section 2.1 of the LRA, and listed them in Table 3.4-11 of the LRA. The NRC staff evaluated the scoping and screening methodology, and documented its findings in Section 2.1 of this SER. The NRC staff sampled the SCs listed in Table 3.4-11 of the LRA to verify that the applicant accurately identified the SCs that are subject to an AMR. The staff also sampled the SCs that the applicant identified as being within the scope of license renewal but not subject to an AMR, to verify that the SCs perform their intended functions with moving parts or with a change in configuration or properties, or are subject to replacement on the basis of a qualified life or specified time period.

To help ensure that those portions of the CBVS that the applicant identified as not being within the scope of license renewal do not perform any of the scoping functions in 10 CFR 54.4, the NRC staff requested additional information on the basis of the information in the UFSAR and LRA. The NRC staff noted that LRA Section 2.3.3.11 presents a summary description of the system functions, the Table 2.3-5 flow diagrams highlight the evaluation boundaries of the CBVS, and Table 3.4-11 tabulates the CBVS components that are within the scope of license renewal and subject to an AMR. The corresponding drawings for these systems in the UFSAR, however, show additional components that were not listed in Table 3.4-11 of the LRA.

The NRC staff requested specific information concerning the exclusion of the following components from the scope of license renewal and/or from an AMR:

- housings for dampers, diffusers, fans, exhausts hoods, and louvers
- sealant materials used to maintain the main control room envelope (MCRE) at positive pressure with respect to adjacent areas in order to prevent unfiltered inleakages into the MCRE
- areas that constitute the MCRE and verification of all CRVS components which are relied on to perform the safety-related cooling and filtrations that are identified to be within the scope of license renewal and subject to an AMR
- exhaust damper D-19 associated with housing and ductwork
- exhaust fan housings and associated ductwork for the battery rooms

In a letter dated January 19, 2001, the applicant provided a response to RAI 2.3.3.11-1. The applicant stated that control building ventilation fans and dampers, including their housings, were evaluated and determined that several of these components, e.g., the control room supply fans and their associated dampers, support system intended functions that satisfy the scoping criteria of 10 CFR 54.4 and are within the scope of license renewal. However, fans and dampers were determined to be active components and not subject to an AMR consistent with 10 CFR 54.21(a)(1)(i) and the guidance of Appendix B to NEI 95-10, Revision 2.

The staff requested clarification or justification in RAI 2.3.3.11-1 concerning the exclusion of the CBVS housings for dampers, diffusers, fans, and louvers from the scope of license renewal or an AMR in accordance with the requirements of 10 CFR 54.4(a)(1), 10 CFR 54.4(a)(2), 10 CFR 54.4(a)(3), and 10 CFR 54.21(a)(1)(i).

In a letter dated July 18, 2001, the applicant provided additional clarifying information stating that the housings for dampers and fans have been included in the AMR for the CBVS as part of Table 3.4-11 of the LRA. CBVS diffusers were evaluated and determined not to be within the scope of license renewal since they are not safety related and do not support any intended functions that satisfy the scoping criteria in 10 CFR 54.4. The control building ventilation does not include any exhaust hoods or louvers.

On the basis of the additional information provided by the applicant, the NRC staff determined that it is acceptable to exclude the housings, fan louver, and diffusers from the scope of license renewal because they do not meet the scoping criteria in 10 CFR 54.4.

In addition, the applicant provided a response to RAI 2.3.3.11-3 regarding the exclusion of self-contained packaged units from license renewal and from an AMR. The applicant stated that the condensing units are self-contained packaged units and that the entire unit is replaced when necessary. Therefore, these units are considered to be active components and as such are not subject to an AMR.

On the basis of the information in the regulation, the SOC accompanying 10 CFR Part 54, and guidance provided in the SRP, the staff concludes that the housings of the self-contained packaged units contribute to the performance of the intended function of the self-contained packaged units without moving parts and without change in configuration or properties, and thus are within the scope of license renewal and subject to an AMR.

The staff requested clarification or justification in RAI 2.3.3.11-3 concerning the exclusion of the CBVS housings for the self-contained packaged units from the scope of license renewal or an AMR in accordance with the requirements of 10 CFR 54.4(a)(1), 10 CFR 54.4(a)(2), 10 CFR 54.4(a)(3), and 10 CFR 54.21(a)(1)(i).

In a letter dated January 19, 2001, the applicant provided a response to RAI 2.3.3.11-3 regarding the exclusion of filter elements from license renewal and an AMR. The applicant stated that filter elements do not require an AMR because they are replaced based on performance testing, and therefore are not considered to be long-lived in accordance with NEI 95-10, Revision 2, and in accordance with the NRC resolution of License Renewal Issue No. 98-12, "Consumables" (NRC Letter from C.I. Grimes to D.J. Walters (NEI), dated March 10, 2000).

The guidance in the March 10, 2000, letter on consumables required the applicant to identify any SCs that are excluded under 10 CFR 54.21(a)(1)(ii) based on performance or condition monitoring, and to provide a site-specific evaluation to justify the exclusion of any structure or component based on performance or condition monitoring. Based on this guidance, the staff has determined that the applicant needs to provide bases, in accordance with the requirements of 10 CFR 54.4(a)(1),10 CFR 54.4(a)(2), 10 CFR 54.4(a)(3), and 10 CFR 54.21(a)(1)(i), that justify the exclusion of these SCs from the scope of license renewal and from an AMR or include them in LRA Table 3.4-11. The staff requested clarification or justification in RAI 2.3.3.11-3 concerning the evaluation to justify the exclusion of CBVS filter elements from the scope of license renewal and subject to an AMR.

The applicant clarified that the Turkey Point Nuclear Plant Units 3 and 4, technical specification 3.4.7.5, "Control Building Emergency Ventilation System," Surveillance Requirements b, c, and d provides the performance testing requirements for the CBVS filtration unit filters.

The NRC staff reviewed technical specification 3.4.7.5, and found that surveillance requirements b, c, and d are within the NRC regulatory requirements and guidelines:

"Sealant materials are used to maintain the main control room at positive pressure with respect to adjacent areas. These sealant materials are included within the scope of license renewal as structural components and subject to an aging management review. These sealant materials are described in Subsection 3.6.2.4 and listed in Tables 3.6-5 and 3.6-12 of the LRA."

The MCRE consists of the control room, including the control room offices, rack area, kitchen, and lavatory, and the mechanical equipment room, as shown on drawing 0-CBVAC-01. Both rooms are considered part of the envelope because both are serviced and pressurized by the control room ventilation air handlers through common ductwork. The boundaries of the envelope are the floors, walls, ceilings, dampers, doors, penetration seals, and ductwork of the two rooms.

The NRC staff reviewed the applicant's response for sealant materials and MCRE components and found the response to be acceptable and consistent with the applicable requirements of 10 CFR 54.21 and 10 CFR 54.4. Also, the NRC staff reviewed the LRA, supporting information in the UFSAR, and the applicant's responses to the staff's RAI. In addition, the NRC staff sampled several components from the CRVS flow diagram (Table 2.3-5 of the LRA) to determine whether the applicant properly identified the components that are within the scope of license renewal and subject to an AMR. No omissions were identified.

In a letter dated January 19, 2001, the applicant clarified that:

"Drawings 0-CBVAC-02 and 0-CBVAC-03 are for the computer and cable spreading room HVAC and the DC equipment/inverter rooms HVAC, respectively, and do not show equipment required for control room habitability."

Exhaust damper D-19 is not required to maintain the MCRE. Automatic isolation of upstream damper D-14 provides for maintaining the MCRE, and hence the license renewal boundary is established at D-14.

As described in Section 9.9.2 of the Turkey Point UFSAR for Units 3 and 4, the DC equipment/inverter room HVAC provides cooling to the equipment in the inverter rooms, the DC equipment rooms and the battery rooms. The battery rooms roof ventilators supplement the DC equipment/inverter room HVAC to improve the ambient conditions in the battery rooms, but are not relied upon to maintain the temperatures in a range compatible with equipment operation. Therefore, the battery roof ventilators are not required to support license renewal system intended function and are not within the scope of license renewal.

The applicant also clarified in the letter dated January 19, 2001, that the diffusers installed at the supply duct outlets associated with the CBVS do not support any license renewal system intended function, therefore do not require an AMR.

The NRC staff agrees with the applicant's clarification of the above RAI response.

Some components that are common to many systems, including the CBVS, have been evaluated in the LRA as separate commodity groups with similar components from other systems, and are evaluated by the NRC staff in other sections throughout this SER.

In Section 2.4 of the SER the staff evaluated component supports for piping, cables, and equipment, which are discussed in LRA Section 2.4, "Scoping and Screening Results – Structures." In Section 2.5 of the SER, the staff evaluated the electrical components that support the operation of the CBVS; these components are discussed in LRA Section 2.5, "Scoping and Screening Results – Electrical and Instrumentation and Controls (I&C)." The CBVS instrumentation lines are listed as "tubing" in Table 3.4-11 of the LRA.

The NRC staff reviewed the LRA, supporting information in the UFSAR, and the applicant's responses to the staff's RAI. In addition, the NRC staff sampled several components from the CBVS flow diagrams (Table 2.3-5 of the LRA) to determine whether the applicant properly identified the components that are within the scope of license renewal and subject to an AMR. No omissions were identified.

2.3.3.11.3 Conclusion

On the basis of this review, the staff has reasonable assurance that the applicant has adequately identified the CBVS components that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 54.21, respectively.

2.3.3.12 Emergency Diesel Generator Building Ventilation

In LRA Section 2.3.3.12, "Emergency Diesel Generator Building Ventilation," the applicant identified portions of the EDG building ventilation system (EDGBVS) and the components that are within the scope of license renewal and subject to an AMR. The applicant stated in Section 2.3.3.12 of the LRA that additional information for the EDGBVS is provided in Section 8.2.2.1.1.3 of the UFSAR. The system scoping is shown in EDGBVS evaluation boundary flow drawing 4-EDVAC-01, Rev. 0, for Unit 4 and is listed in Table 2.3-5 of the LRA.

The applicant evaluated component supports for HVAC systems, roof hoods (Unit 4), and louvers that are associated with the EDGBVS in Section 3.6.2 and Table 3.6-10 of the LRA. The applicant also evaluated electrical components that support the operation of the EDGBVS in Section 2.5 of the LRA.

The staff evaluated component supports in the section on the EDG building structures and electrical components in Section 2.5 of this SER. The instrument lines are individually highlighted as being within the scope of license renewal on flow diagram 4-EDVAC-01, Rev. 0. The applicant evaluated instrument line components with the EDGBVS in Section 2.3.3.12 of the LRA.

2.3.3.12.1 Technical Information in the Application

The original emergency onsite AC power for Turkey Point Units 3 and 4 consisted of two EDGs. The two original EDGs are presently identified as 3A and 3B, and are housed in the Unit 3 EDG building (EDGB). In 1990 and 1991, two additional EDG units, 4A and 4B, were added to the emergency power system. The Unit 4 EDGB was designed and constructed to house the additional units.

Both the Unit 3 and Unit 4 EDGBs are reinforced concrete structures housing safety-related SSCs. The first floor of each building is divided into two bays, each bay containing one of the two engine-generator sets housed in the building. The EDGBs also house components of the EDG subsystems, such as the fuel oil, starting air, lubricating oil, combustion air, and exhaust air equipment.

The EDGBVS is required to provide cooling functions for the EDGs and associated equipment. The EDGBVS is different for Turkey Point Units 3 and 4. The EDGBVS is necessary to ensure proper operation of the EDGs and other safety-related electrical equipment.

The Unit 3 EDGBVS consists of one wall-mounted exhaust fan and associated ductwork for each EDG. The fan operates to maintain cooling in the room when its associated EDG is running.

The Unit 4 EDGBVS includes the following subsystems: EDG ventilation, diesel room ventilation, and 3D and 4D switchgear room ventilation. The Unit 4 EDGBVS is described in UFSAR Section 8.2.2.1.1.3.

The flow diagram listed in Table 2.3-5 shows the evaluation boundaries for the portions of EDGBVS that are within the scope of license renewal. Note: There is no flow diagram for the Unit 3 EDGBVS; however, all components associated with this system are in the scope of license renewal.

The ventilation system associated with the EDG control panel rooms and the 3D/4D 4.16 kV switchgear rooms is designated safety-related and meets Seismic Category I requirements.

The design of these systems meets the following performance requirements:

- Each EDG control panel room is equipped with a dedicated ventilation system with the ability to be powered by its associated EDG, and a single active failure resulting in loss of one ventilation system will not affect the performance capability of more than one EDG. For

each 4.16 kV switchgear room, a dedicated ventilation system consisting of 100 percent redundant fans (i.e., one fan connected to a train power source), is provided. Therefore, a single active failure will not result in the loss of both fans to either switchgear room.

- Failure of non-Seismic Category I equipment or components will not result in damage to essential portions of the ventilation system.
- The ventilation system is designed to maintain a suitable ambient temperature range in the areas serviced.
- The ability of the safety-related equipment to function under the worst anticipated degraded ventilation system performance is assured.
- The capability of the system to automatically actuate components not operating during normal conditions, or actuate standby components (redundant equipment) in the event of a failure or malfunction, as needed, is provided.
- The capability of the system to control airborne particulate material (dust) accumulation is provided.
- The functional capability of the ventilation system will not be adversely affected during periods of abnormally high water levels (i.e., maximum probable flood).
- The ventilation system components have sufficient physical separation or shielding to protect the system from internally or externally generated missiles.
- The system components are protected from the effects of pipe cracks and breaks in piping since there are no high- or moderate-energy lines in the Unit 4 EDGB.

EDGBVS components subject to an AMR include filters (pressure boundary only), ductwork, tubing, and fittings. The intended function for EDGBVS components subject to an AMR is to maintain pressure boundary integrity. The AMR for EDGBVS is discussed in Section 3.4 of the LRA and component intended functions are listed in Table 3.4-12 of the LRA.

In LRA Section 2.3.3.12 and Section 8.2.2.1.1.3 of the UFSAR, the applicant identified the following intended functions for the EDGBVS, consistent with 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(2).

Section 2.3.3.12 of the LRA -

- Provide cooling functions for the EDGs and associated equipment.
- Ensure proper operation of EDGs and other safety-related equipment.

Section 8.2.2.1.1.3 of the UFSAR -

- Maintain a suitable ambient temperature range in the areas serviced.

- Control airborne particulate material.

On the basis of the functions identified above for the EDGBVS, the applicant determined that all EDGBVS safety-related components (electrical, mechanical, and instrument) are within the scope of license renewal. The applicant described its methodology for identifying the mechanical components that are subject to an AMR in Section 3.4, "Auxiliary Systems," of the LRA. The applicant used this methodology to identify the portions of the EDGBVS that are within the scope of license renewal, and that are highlighted on flow diagrams listed in Table 2.3-5 of the LRA. Using the methodology described in Section 2.2.1 of the LRA, the applicant compiled a list of the mechanical component and component types that are within the scope of license renewal and subject to an AMR. The applicant provided this list in Table 3.4-12 of the LRA.

Specifically, the applicant identified the following device types for internal and external environments as being within the scope of license renewal and subject of an AMR:

- Internal environment: ductwork (carbon steel galvanized) and filter housings (carbon steel galvanized).

- External Environment: ductwork (carbon steel galvanized), filter housings (carbon steel galvanized), and bolting (carbon steel).

In LRA Table 3.4-12, the applicant also notes that maintaining pressure boundary integrity is the only applicable intended function associated with the components of the EDGBVS that are subject to an AMR.

2.3.3.12.2 Staff Evaluation

The NRC staff reviewed the above information to verify that the applicant identified the components of the EDGBVS that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 10 CFR 54.21 (a)(1). The staff also reviewed the information in UFSAR Section 8.2.2.1.1.3. After completing the initial review, the NRC staff issued an RAI by letter dated December 22, 2000, regarding the EDGBVS. The applicant responded to the RAI by letter dated January 19, 2001.

In LRA, Section 2.1, "Scoping and Screening Methodology," the applicant discussed the process for identifying mechanical components that are subject to an AMR. The NRC staff evaluated the applicant's methodology in Section 2.1 of this SER, "Scoping and Screening Methodology."

In its review of the EDGBVS, the NRC staff reviewed the drawings listed in LRA Table 2.3-5 which show the evaluation boundaries for the highlighted portions of the EDGBVS that are within the scope of license renewal, and Table 3.4-12, which listed the mechanical components and applicable intended functions that are subject to an AMR.

The NRC staff also reviewed UFSAR, Section 8.2.2.1.1.3 to determine if there were any portions of the EDGBVS that met the scoping criteria in 10 CFR 54.4(a) but were not identified as being within the scope of license renewal. The staff also reviewed the UFSAR to determine if there were any safety-related system functions that were not identified as intended function(s) in the LRA and to determine if there were any SCs that have intended function(s) that might have been omitted from the scope of SCs that are subject to an AMR. The staff also reviewed the system flow diagrams identified in Table 2.3-5 of the LRA to determine if any SCs within the evaluation boundaries were omitted from the scope of components that are subject to an AMR in accordance with 10 CFR 54.21(a)(1). The NRC staff compared the functions described in the UFSAR to those identified in the LRA. The NRC staff then determined whether the applicant had properly identified the SCs that are subject to an AMR from among those identified as being within the scope of license renewal.

The applicant identified the SCs subject to an AMR for the EDGBVS using the screening methodology described in Section 2.1of the LRA, and listed them in Table 3.4-12 of the LRA. The NRC staff evaluated the scoping and screening methodology, and documented its findings in Section 2.1 of this SER. The NRC staff sampled the SCs listed in Table 3.4-12 of the LRA to verify that the applicant accurately identified the SCs that are subject to an AMR. The staff also sampled the SCs that the applicant identified as being within the scope of license renewal, but not subject to an AMR, to verify that the SCs perform their intended functions with moving parts or with a change in configuration or properties, or are subject to replacement on the basis of a qualified life or specified time period.

To help ensure that those portions of the EDGBVS that the applicant identified as not being within the scope of license renewal do not perform any of the scoping functions in 10 CFR 54.4, the NRC staff requested additional information on the basis of the information in the UFSAR and LRA. The NRC staff noted that LRA Section 2.3.3.12 presents a summary description of the system functions, the Table 2.3-5 flow diagrams highlight the evaluation boundaries of the CBVS, and Table 3.4-12 tabulates the EDGBVS components that are within the scope of license renewal and subject to an AMR. The corresponding drawings for these systems in the UFSAR, however, show additional components that were not listed in Table 3.4-12 of the LRA.

The NRC staff requested specific information concerning the exclusion of the following components from the scope of license renewal and/or from an AMR:

- The housings for the exhaust fans, associated dampers and ductwork, and hoods for diesel generator rooms 4A and 4B and oil transfer rooms 4A and 4B.

In a letter dated January 19, 2001, the applicant provided a response to RAI 2.3.3.12-1. The applicant stated that the license renewal boundary drawings depict mechanical pressure boundaries within the scope of license renewal. The ventilation fans and associated dampers and ductwork in the diesel generator rooms (4A and 4B) and diesel oil transfer rooms (4A and 4B) are classified non-safety-related and are not relied upon to perform or support any license renewal intended function. Adequate ventilation for the diesel oil transfer rooms is provided by natural circulation. Safety-related ventilation for the 4A and 4B diesel generator rooms is provided by the diesel generator radiator fans, which are evaluated as part of the EDGs and support systems described in Subsection 2.3.3.15 (page 2.3-35) of the LRA.

The NRC staff agrees with the applicant's clarification of the EDGBVS housings for fans and housing for dampers that these components are classified as non-safety-related and are not relied upon to perform and license renewal intended functions.

The staff also requested clarification or justification in RAI 2.3.3.12.1 concerning the exclusion of the EDGBVS housings for exhaust hoods from the scope of license renewal and subject to an AMR in accordance with the requirements of 10 CFR 54.4(a)(1), 10 CFR 54.4(a)(2), 10 CFR 54.4(a)(3), and 10 CFR 54.21(a)(1)(i).

In a letter dated July 18, 2001, the applicant provided additional clarifying information stating that the exhaust hoods in diesel generator rooms (4A and 4B) and diesel oil transfer room (4A and 4B) are classified non-safety-related and are not relied upon to perform or support any license renewal systems intended functions. The NRC staff agrees with the applicant's clarification for the EDGBVS housings for exhaust hoods.

In Section 2.4 of this SER, the staff evaluated component supports for piping, cables, and equipment, which are discussed in LRA Section 2.4, "Scoping and Screening Results – Structures." In Section 2.5 of this SER, the staff evaluated the electrical components that support the operation of the EDGBVS; these components are discussed in LRA Section 2.5, "Scoping and Screening Results — Electrical and Instrumentation and Controls (I&C)." The EDGBVS instrumentation lines are listed as "tubing" in Table 3.4-12 of the LRA.

The NRC staff reviewed the LRA, supporting information in the UFSAR, and the applicant's responses to the staff's RAI. In addition, the NRC staff sampled several components from the EDGBVS flow diagrams (Table 2.3-5 of the LRA) to determine whether the applicant properly identified the components that are within the scope of license renewal and subject to an AMR. No omissions were identified.

2.3.3.12.3 Conclusion

On the basis of this review, the staff has reasonable assurance that the applicant has adequately identified the EDGBVS components that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 54.21, respectively.

2.3.3.13 Turbine Building Ventilation System

In LRA Section 2.3.3.13, "Turbine Building Ventilation," the applicant identified portions of the turbine building ventilation system (TBVS) and the components that are within the scope of license renewal and subject to an AMR. The applicant stated in Section 2.3.3.13 of the LRA that additional information for the TBVS is provided in Section 9.16 of the UFSAR. The system scoping is shown in TBVS evaluation boundary flow drawings 3-TBVAC-01, Rev. 0, 3-TBVAC-02, Rev. 0, 4-TBVAC-01, Rev. 0, and 4-TBVAC-02, Rev. 0, for Units 3 and 4, respectively. The components are listed in Table 2.3-5 of the LRA.

The applicant evaluated component supports for HVAC systems that are associated with the TBVS in Section 3.6.2 and Table 3.6-17 of the LRA. The applicant evaluated electrical components that support the operation of the TBVS in Section 2.5 of the LRA. The staff evaluates the component supports in Section 2.4.2.15 of this SER and the electrical components in Section 2.5 of this SER. The instrument lines are individually highlighted as being within the

scope of license renewal on flow diagrams 3-TBVAC-01, Rev. 0, 3-TBVAC-02, Rev. 0, 4-TBVAC-01, Rev. 0, and 4-TBVAC-02, Rev. 0. The applicant evaluated instrument line components within the TBVS in Section 2.3.3.13 of the LRA.

2.3.3.13.1 Technical Information in the Application

The turbine building is a reinforced concrete and steel structure. It is primarily an open steel frame built on a reinforced concrete mat foundation. The reinforced concrete turbine pedestals are the dominant structural features of the turbine building. The building is essentially rectangular in shape with the long north-south axis sharing the Unit 3 and 4 turbine centerline orientation. The ground floor of the turbine building is surrounded by a flood wall to protect turbine building equipment.

The TBVS provides a temperature-controlled environment to ensure proper operation of equipment in the turbine building. TBVS consists of two subsystems: the steam generator feed pump ventilation system (SGFPVS) and the load center and switchgear rooms ventilation system (LCSGRVS). The LCSGRVS is described in UFSAR Section 9.16.

The SGFPVS provides cooling to the steam generator feed pump. The subsystem is non-safety-related, performs no safety-related functions, and is not within the scope of license renewal.

The LCSGRVS provides a temperature-controlled environment for the safety-related 4160V switchgear and 480V load centers in the rooms during normal and emergency conditions.

The LCSGRVS is designed to accomplish the following:

- Remove the heat dissipated by equipment in the load center and switchgear rooms during normal plant operation and emergency conditions, maintaining room temperatures below 95 °F. However, the design limit for the equipment in the load center room is 104 °F, while the design limit for the equipment in the switchgear room is 100 °F. It should be noted that single-train operation during emergency operations (i.e., one chiller unit loop/safety injection) may require operator action to prevent exceeding the design temperatures of the equipment in load center and switchgear rooms for more than 7 days.

- Provide a redundant, reliable, and independent system supplied from emergency power to maintain a temperature-controlled environment for the safety-related equipment located within the load center and switchgear rooms.

The air conditioning system itself does not perform a safety-related function.

TBVS components subject to an AMR include pumps, valves, and air handling units (pressure boundary only); and heat exchangers, piping, tubing, and fittings. The intended functions for TBVS components subject to an AMR include pressure boundary integrity, throttling, and heat transfer. Table 3.4-13 includes the TBVS components that require an AMR. The AMR for the TBVS is discussed in Section 3.4 of the LRA.

In LRA Section 2.3.3.13, and Section 9.16 of the UFSAR, the applicant identified the following intended functions for the TBVS, consistent with 10 CFR 54.4(a)(1) and 10 CFR 54.4(a)(2).

Section 2.3.3.13 of the LRA -

- Provide a temperature-controlled environment to ensure proper operation of equipment in the turbine building.

- Provide a temperature-controlled environment for the safety-related 4160V switchgear and 480V load center located in the switchgear and load center rooms.

Section 9.16 of the UFSAR -

- Remove the heat dissipated by all equipment in the load center and switchgear room during normal plant operation and emergency conditions, maintaining room temperatures below 95 °F with an outdoor air temperature of 95 °F.

- Provide a redundant, reliable, and independent system supplied from emergency power to maintain a temperature-controlled environment for the safety-related equipment located within the load center and switchgear rooms.

On the basis of the functions identified above for the TBVS, the applicant determined that all TBVS safety-related components (electrical, mechanical, and instrument) are within the scope of license renewal. The applicant described its process for identifying the mechanical components that are subject to an AMR in Section 3.4, "Auxiliary Systems," of the LRA. The applicant uses this methodology to identify the portions of the TBVS that are within the scope of license renewal and that are highlighted on flow diagrams listed in Table 2.3-5 of the LRA. Using the methodology described in Section 2.2.1 of the LRA, the applicant compiled a list of the mechanical components and components types that are within the scope of license renewal and subject to an AMR. The applicant provided this list in Table 3.4-13 of the LRA.

Specifically, the applicant identified the following device types for internal and external environments as being within the scope of license renewal and subject of an AMR:

- Internal environment: chilled water surge tanks (carbon steel), chilled water air separators (carbon steel), chilled water pumps (carbon steel), chilled water boxes (carbon steel), valve piping/fittings (carbon steel), valve tubing/fitting level gauges (stainless steel), flexible hoses (stainless steel), wye strainers, thermowells, test wells (carbon steel), flow elements (stainless steel and carbon steel) air handling unit housings (carbon steel), air handling unit headers (carbon steel), air handling unit heat exchanger tubes (copper), air handling unit air boxes in air handlers (carbon steel).

- External environment: chilled water surge tanks (carbon steel), chilled water air separators (carbon steel), chilled water pumps (carbon steel), chilled water boxes (carbon steel), valve piping/fittings, wye strainers, thermowells, test wells (carbon steel), valves, tubing/fittings, test wells (carbon steel), valves, tubing/fittings, flexible hoses, level gauges (stainless steel), valves, tubing/fittings, flexible hoses (stainless steel), flow elements (carbon steel and stainless steel), air handling unit housings (carbon steel, galvanized and stainless steel), air handling unit headers (carbon steel), air handling unit heat exchanger tubes (copper), air handling unit air boxes (carbon steel), air handling unit heat exchanger fins (aluminum), and bolting (mechanical closures) (carbon steel).

2.3.3.13.2 Staff Evaluation

The NRC staff reviewed the above information to verify that the applicant identified the components of the TBVS that are within the scope of license renewal and subject to an AMR, in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1). The staff also reviewed the information in UFSAR Sections 9.11 and 9.16.

In LRA Section 2.1 the applicant discussed the process for identifying mechanical components that are subject to an AMR. The NRC staff evaluated the applicant's methodology in Section 2.1 of this SER, "Scoping and Screening Methodology."

In its review of the TBVS, the NRC staff reviewed the drawings listed in the LRA Table 2.3-5, which shows the evaluation boundaries for the highlighted portion of the TBVS that are within the scope of license renewal, and Table 3.4-13, which lists the mechanical components and applicable intended functions that are subject to an AMR.

In Section 2.4 of this SER the staff evaluates component supports for piping, cables, and equipment. These components are discussed in LRA Section 2.4, "Scoping and Screening Results — Structures." In Section 2.5 of this SER, the staff evaluates the electrical components that support the operation of the TBVS; these components are discussed in LRA Section 2.5, "Scoping and Screening Results — Electrical and Instrumentation and Controls (I&C)." The TBVS instrumentation lines are listed as "tubing" in Table 3.4-13 of the LRA.

The NRC staff also reviewed UFSAR Section 9.9 to determine if there were any portions of the TBVS that met the scoping criteria in 10 CFR 54.4(a) but were not identified as being within the scope of license renewal. The staff also reviewed the UFSAR to determine if there were any safety-related system functions that were not identified as intended function(s) in the LRA, and to determine if there were any SCs that have intended function(s) that might have been omitted from the scope of SCs that are subject to an AMR. The staff also reviewed the system flow diagrams identified in Table 2.3-5 of the LRA to determine if any SCs within the evaluation boundaries were omitted from the scope of components that are subject to an AMR in accordance with 10 CFR 54.21(a)(1). The NRC staff compared the functions described in the UFSAR to those identified in the LRA. The NRC staff then determined whether the applicant had properly identified the SCs that are subject to an AMR from among those identified as being within the scope of license renewal.

The NRC staff reviewed the LRA and supporting information in the UFSAR. In addition, the NRC staff sampled several components from the TBVS flow diagrams (Table 2.3-5 of the LRA) to determine whether the applicant properly identified the components that are within the scope of license renewal and subject to an AMR. No omissions were identified.

2.3.3.13.3 Conclusion

On the basis of this review, the staff has reasonable assurance that the applicant has adequately identified the TBVS components that are within the scope of license renewal and subject to an AMR in accordance with 10 CFR 54.4 and 54.21, respectively.

2.3.3.14 Fire Protection System

In LRA Table 2.2-1, "License Renewal Scoping Results for Mechanical Systems," the applicant identified fire protection (FP) as a system within the scope of license renewal in accordance with 10 CFR 54.4(a)(3) and subject to an AMR. In the LRA, Section 2.3.3.14, "Fire Protection," the applicant identifies and describes the systems and components that are within the scope of license renewal and subject to an AMR in the LRA. Table 3.4-14, "Fire Protection," of the LRA lists the FP components and provides aging management review information. The applicant describes its process for identifying the mechanical components that are within the scope of license renewal and subject to an AMR in the LRA, Section 2.1.1.4.1, "Other Scoping Pursuant to 10 CFR 54.4(a)(3), Fire Protection (FP)."

By letter dated January 24, 2001, the staff issued an RAI regarding the FP systems and components. By letter dated February 26, 2001, the applicant responded to that RAI.

2.3.3.14.1 Summary of Technical Information in the Application

In accordance with 10 CFR 54.4(a)(3), the SSCs that are relied on in safety analysis or plant evaluations to demonstrate compliance with 10 CFR 50.48, the FP Rule, are within the scope of license renewal. The FP system is relied upon to meet the requirements of 10 CFR 50.48.

10 CFR 54.4(a)(3) requires that all SSCs relied upon in safety analyses or plant evaluation to demonstrate compliance with 10 CFR 50.48, be included within the scope of license renewal. 10 CFR 50.48 requires that the applicant implement and maintain a FP program. The applicant used the Turkey Point UFSAR, licensing correspondence and design-basis documents to include the fire protection features and commitments, required for 10 CFR 50.48, in the scope of license renewal. This scoping methodology is discussed in Section 2.1.1.4.1 of the LRA.

In addition to the UFSAR, licensing correspondence and design-basis documents, the two primary information sources reviewed by the applicant for scoping were the Turkey Point's Safe Shutdown Analysis and Essential Equipment List. The Safe Shutdown Analysis was reviewed to ensure that all the equipment required for safe shutdown, including power and control cables, and equipment that could adversely affect safe shutdown if spuriously actuated by fire-induced faults, had been identified. The Essential Equipment List defines the minimum equipment necessary to bring the plant to cold shutdown and contains all power generation and distribution equipment (e.g., diesel generators, batteries, switchgear, motor control centers, power panels) that are required for the operation of the safe shutdown equipment. Also, the Essential Equipment List includes equipment that could adversely affect safe shutdown if spuriously actuated by a fire-induced fault. The LRA notes that no equipment in storage is credited for safe shutdown.

The purpose of the FP system is to protect plant equipment in the event of a fire, help to ensure safe plant shutdown, and minimize the risk of a radioactive release to the environment. On the basis of the methodology described above, the applicant identifies the highlighted portions of the flow diagrams, License Renewal Boundary Drawings: 0-FP-01 to 0-FP-10, 3-RCS-02 and 3-RCS-03, as the boundaries of the portions of the FP system that are included within the scope of license renewal.

In the LRA, Section 2.3.3.14, the applicant identifies the following FP system components that are within the scope of license renewal and subject to an AMR:

- fire water supply, including sprinklers
- Halon suppression
- fire dampers
- reactor coolant pump (RCP) oil collection
- alternate shutdown
- safe shutdown
- fire detection and protection

The intended function of the FP mechanical components, identified by the applicant are, pressure boundary integrity, heat transfer, filtration, throttling, fire spread prevention and spray. In the LRA, Table 3.4-14, the applicant lists the mechanical components and their respective intended functions.

2.3.3.14.2 Staff Evaluation

The Commission's regulations in 10 CFR 54.21(a)(1), state that for those SSCs within the scope of this part, as delineated in 10 CFR 54.4, the applicant must identify and list those SCs subject to an AMR. The staff reviewed Section 2.3.3.14 of the LRA, as supplemented by additional information dated February 26, 2001, to determine whether there was reasonable assurance that the applicant has appropriately identified the components and supporting systems that serve FP-intended functions. This review also identified which components and supporting systems are within the scope of license renewal in accordance with 10 CFR 54.4, and subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

In the LRA, Section 2.3.3.14, the applicant describes the fire protection systems, and identifies the following criteria for including a component in the LRA:

- SCs that are safety-related and are relied upon to remain functional during and following design-basis events

- SCs that are non-safety-related whose failure could prevent satisfactory accomplishment of the safety-related functions

- SCs that are relied on during postulated fires

In the LRA, Table 2.3-5, "Auxiliary Systems Evaluation Boundaries," the applicant provides a list of scoping drawings, consisting of the flow diagrams for the fire protection systems that are within the scope of license renewal. The applicant submitted a highlighted set of these drawings with the LRA to show the portions of this system that are within the scope of license renewal. From the components highlighted in these drawings, the applicant submitted lists of the mechanical component groups that are subject to an AMR in the LRA, Table 3.4-14.

The components which constitute alternate shutdown and safe shutdown, in accordance with 10 CFR Part 50, Appendix R, were screened with their respective systems, and therefore are not addressed in this section of the SER.

The staff sampled portions of the applicant's UFSAR, Appendix 9.6A, "Fire Protection Program Report," which contains plant commitments and safety evaluations which form the basis of the FP program at Turkey Point. The staff then compared a sample of the FP systems and components identified within the UFSAR to the FP system flow diagrams to verify that required components were identified within the evaluation boundaries of the flow diagram and were not excluded from the scope of license renewal. The staff also compared SSCs identified in NRC approved SERs, which document the applicant's compliance to the provisions of Appendix A to Branch Technical Position (BTP) APCSB 9.5-1, "Fire Protection for Nuclear Power Plants," to the FP system flow diagrams to verify if portions of the FP system were inadvertently excluded from within the scope of license renewal.

In Appendix 9.6A of the UFSAR, the applicant states that it meets 10 CFR Part 50, Appendix A, General Design Criteria 3, "Fire Protection," using the guidelines contained in Appendix A to BTP 9.5-1. Since Turkey Point was licensed prior to 1979, Section III.G, III.J, and III.L of Appendix R also apply. The applicant primarily used the UFSAR as the primary information source during the scoping process for FP SSCs. The UFSAR contains the analysis to demonstrate compliance with Appendix R and with Appendix A to BTP 9.5-1.

The applicant's fire protection systems are primarily non-safety-related SSCs, which carry an augmented quality classification (Quality Related) and are included in the FPL Quality Assurance Program.

SSCs included within scope of license renewal are, fire water system including sprinklers, Halon fire suppression system, fire dampers, RCP oil collection, alternate shutdown, safe shutdown, and fire detection and protection. The following subset of the above components are subject to an aging management review: raw water tanks, pumps and valves (pressure boundary only), tanks, heat exchangers, hose stations, flame arrestors, sprinklers, strainers, orifices, piping, tubing and fittings. The complete list of fire protection components subject to an aging management review are included in the application Table 3.4-14.

The staff reviewed the above information to verify that the applicant identified the components of the fire protection systems that are within the scope of license renewal and subject to an AMR, in accordance with 10 CFR 54.4 and 54.21(a)(1).

In a letter dated January 24, 2001, the staff requested additional information regarding the exclusion from the LRA of some FP components required to demonstrate compliance with 10 CFR 50.48.

The staff asked the applicant in a letter dated January 24, 2001, to clarify why fire hydrants were not included in the fire protection portion of the LRA. In the letter dated, February 24, 2001, the applicant responded that for aging management review purposes, fire hydrants were categorized as valves, piping/fittings, and are included in the LRA, Table 3.4-14. Therefore, since the applicant treats fire hydrants as valves, piping/fittings, and subjects them to an AMR as appropriate, the staff finds this response acceptable.

The staff asked the applicant in a letter dated January 24, 2001, to identify the applicable programs which will manage the aging of fire extinguishers, fire hoses, and air packs. The applicant responded in letter dated February 26, 2001, that the following standards are utilized as the basis and guidance for inspection and replacement of fire extinguishers, fire hoses, and air

packs: NFPA 10, "Portable Fire Extinguishers," NFPA 14, "Standpipe and Hose Systems," and ANSI Z88.2, "Practices for Respiratory Protection." Additionally, the Nuclear Electric Insurance Limited (NEIL), Property Loss Prevention Standard, Appendix R of 10 CFR Part 50, and various NUREG reports and NRC Regulatory Guide are utilized for guidance. The staff found the applicant's response, i.e., replacing the above SSCs on the basis of condition, consistent with the staff's letter on consumables, and therefore, acceptable.

The staff asked the applicant to include fire dampers within the scope of license renewal and include components which are not active in the AMR. The applicant responded that the fire dampers were included in license renewal, but were considered active components and not subject to AMR. The fire damper housings (frame) and fusible link were reported by the applicant as being part of an active component. Therefore, since the applicant treats the entire fire damper including the housing and fusible links as active components, the staff finds this response acceptable.

Halon tanks and other related appurtenances were not included in the LRA. An RAI was sent January 24, 2001, and the applicant responded in a letter dated February 26, 2001, that portions of the Halon system had been inadvertently omitted and should be included in the LRA. The applicant stated that additional SSCs, specifically, Halon cylinders, flexible hoses, and Halon nozzles, have been added to Table 3.4-14. Other Halon suppression components were identified that require aging management reviews, they are, valves, pipes and fittings.

Two SSCs, transformer gravel pits and metal drip shields, were identified during a sampling review of the SERs dated May 5, 1999, and October 8, 1998, which were listed in the fire protection license condition as part of the fire protection program. These two SSCs were therefore part of the FP program for Turkey Point, but these SSCs are not included in the LRA. This concern was transmitted to the applicant in the RAI dated January 24, 2001, and the applicant responded that these SSCs were inadvertently omitted from the LRA tables. The staff was concerned that the scoping performed for the application was not complete, and this was investigated during the onsite inspection. Specifically, a question was asked during the scoping inspection performed May 21 to 25, 2001, regarding if there were additional fire protection plant modifications which were not included in the UFSAR and therefore not included in the LRA. The licensee developed a table of Plant Change Modification Packages, which shows that Plant Change Modification Packages which required UFSAR update had been included in the UFSAR and were included in the LRA. The few outliers that were identified were reportedly resolved by the RAIs. The applicant identified no other SSCs that were inadvertently omitted from the LRA.

Gravel pits around the main and start-up transformers were not included in the LRA. In the RAI response dated February 26, 2001, the applicant reported that this was an inadvertent omission. Per the applicant's response, gravel pits have been added to Table 3.6-20.

Sheet metal drip shields are credited in an SER as providing a fire protection function. These drip shields were not included in the LRA. An RAI was sent January 24, 2001, and the applicant responded in a letter dated February 26, 2001, that the metal drip shields were inadvertently omitted from the LRA. Per the applicant's response, sheet metal drip shields have been added to Table 3.6-17.

The pump casing for the jockey pump was not included in the LRA. An RAI was sent on January 24, 2001, and the applicant responded on February 26, 2001, that the jockey pump was omitted from the LRA. Per the applicant's response, jockey pump casing has been added to Table 3.4-14.

The fire hose racks, which are typically used to store fire hoses, were not listed in Table 3.4-14, as being subject to AMR. An RAI was sent to the applicant in the letter dated January 24, 2001. The applicant responded in the RAI response dated February 26, 2001, that the fire hose racks were included as components, the valves were included as component type, "Valve" in Table 3.4-14, and the racks are included as component type, "Non-safety-related supports," "Carbon steel," in Table 3.6-3. Therefore, since the fire hose racks are included as separate components in the AMR, the staff finds this response acceptable.

The fire barriers which enclose the Cable Spreading Room are not specifically addressed in the LRA. These barriers ensure that Halon concentration is maintained in order that Halon may perform its fire suppression function. The applicant was asked if these barriers were considered in the AMR, in a letter dated January 24, 2001. The applicant responded to the RAI in letter dated February 26, 2001, that the reinforced concrete beams, columns, walls, floors/slabs, and fire doors are within the scope of license renewal and are included in the LRA, Tables 3.6-5 and 3.6-12. Therefore, since the fire barriers are included in the LRA, the staff finds this response acceptable.

After the staff determined which components were within the scope of license renewal, the staff determined whether the applicant properly identified the components subject to an AMR from among those identified as being within the scope of licence renewal. The staff reviewed selected components that the applicant identified as being within the scope of license renewal to verify that the applicant had identified these components as subject to an AMR if they perform intended functions without moving parts or without a change in configuration or properties, and are not subject to replacement on the basis of a qualified life or specified time period. The staff did not identify any other omissions of passive and long-lived components with fire protection intended functions.

2.3.3.14.3 Conclusion

On the basis of its review of the contents in the LRA and response to RAIs, the staff concludes that there is reasonable assurance that the applicant has appropriately identified the portions of the FP system piping and components that are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4. In addition, the staff concludes that there is reasonable assurance that the applicant has appropriately identified the components for the FP system that are subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

2.3.3.15 Emergency Diesel Generators and Support Systems

In the LRA, Section 2.3.3.15, the applicant described the components of the EDGs and their support systems that are within the scope of license renewal and subject to an AMR. The design of the EDG is described in UFSAR Section 8.2.2.1.1.1 and the EDG support systems are described in UFSAR Section 9.15. The staff reviewed the UFSAR and the LRA to determine whether the applicant has adequately demonstrated that the requirements of 10 CFR Part 54 have been met.

2.3.3.15.1 Technical Information in the Application

The EDGs provide AC power to the onsite electrical distribution system to assure that the reactor can be shut down in a safe and orderly manner when offsite power is unavailable. The EDG support systems needed to ensure that the EDGs can perform their function are:

- air intake and exhaust
- air start
- fuel oil
- cooling water
- lube oil

The applicant described the process for identifying the EDG support system structural components within the scope of license renewal in LRA Section 2.1.2. Using the methodology described in Section 2.1.2, the applicant compiled a list of structural component/commodity groupings within the license renewal boundaries that are subject to an AMR, and identified their intended functions. The applicant listed the EDG support system components/groups in Table 3.4-15 of the LRA. The table listed the structural components of each support system individually.

The air intake/exhaust system provides combustion air to the diesel engines and includes six components that perform an intended function: (1) exhaust piping, fittings, and silencers; (2) air filter assemblies; (3) expansion joints; (4) flexible couplings; (5) tubing/fittings; and (6) bolting (mechanical closures). The intended function of these components is to provide the pressure boundary for the EDG air intake and exhaust. The air filter assemblies also provide filtration of the intake air to protect the diesel engines from contaminants.

The air start system provides the motive force to start the diesel engines and includes seven components that perform an intended function: (1) air start accumulators; (2) air start motors; (3) air start system lubricators, (4) valves, piping/fittings, tubing/fittings, and governor bypasses; (5) filters; (6) flexible hose; and (7) bolting (mechanical closures). The intended function of these components is to provide the pressure boundary for the air start system. The filters also provide filtration to prevent contaminants from entering the diesel engines.

The fuel oil system provides the diesel fuel oil to the EDG diesel engines and includes eleven components that perform an intended function: (1) Unit 3 diesel oil storage tank; (2) Unit 4 diesel oil storage tanks; (3) EDG fuel oil pumps, (4) diesel oil day tanks; (5) diesel oil skid tanks; (6) carbon steel valves, piping/fittings, and sight glasses; (7) stainless steel valves piping/fittings, tubing/fittings, flexible hose, filters, and sight glasses; (8) copper tubing/fittings; (9) filters; (10) flame arresters; and (11) bolting (mechanical closures). The intended function of these

components is to provide the pressure boundary for the EDG fuel oil system. The filters also provide filtration to prevent contaminants from entering the diesel engines. The flame arresters also prevent the spread of fire.

The cooling water system provides cooling to the diesel engines to prevent overheating and includes eleven components that perform an intended function: (1) cooling water expansion tanks; (2) cooling water pumps; (3) cooling water immersion heaters; (4) radiator water boxes; (5) radiator tubes; (6) carbon steel valves, piping/fittings, and tubing/fittings; (7) stainless steel tubing/fittings and flexible hoses; (8) orifices; (9) copper alloy valves and sight glasses; (10) flexible rubber hoses; and (11) bolting (mechanical closure). The intended function of these components is to provide the pressure boundary for the EDG cooling water system. The radiator tubes also provide heat transfer. The orifices provide throttling.

The lube oil system provides lubricating oil to the diesel engine and includes nine components that perform an intended function: (1) lube oil pumps; (2) carbon steel heat exchanger shells; (3) brass heat exchanger tubing; (4) cast iron heat exchanger channel heads; (5) carbon steel valves, piping/fittings, flexible hoses and sight glasses; (6) filters; (7) stainless steel tubing/fittings; (8) orifices, and (9) bolting (mechanical closure). The intended function of these components is to provide the pressure boundary for the EDG lube oil system. The radiator tubes also provide heat transfer. The filters also provide filtration to prevent contaminants from entering the system. The orifices provide throttling.

Turkey Point Units 3 and 4 were originally designed with just two EDGs (now labeled 3A and 3B) that were shared between the two units. In 1990-1991, two more EDGs were installed as an upgrade to the emergency AC power system and labeled 4A and 4B, so that each unit now has two EDGs. As a result of the upgrade, the Unit 4 EDG systems which were built to the latest standards, contain some enhancements over the Unit 3 EDGs.

The combustion air intake and exhaust systems are similar for both Units. Each EDG has an independent system consisting of air intake duct work and exhaust piping fitted with silencers. Each Unit 3 EDG has an independent air start system. Each system consists of a motor-driven compressor, after cooler, air dryer, and two sets of two air receiver tanks that supply four air start motors. The receiver tanks can provide four unsuccessful start attempts (2 seconds each) and one successful start without a recharge. The Unit 4 air start system is similar to the Unit 3 system, with the added feature of a diesel-driven compressor as a back up to the motor-driven compressor.

The Unit 3 fuel oil system consists of a free-standing steel fuel oil storage tank, two fuel oil transfer pumps located near the storage tank, two day tanks inside the Unit 3 EDG building, and skid mounted tanks for EDG 3A and 3B. The Unit 4 fuel oil system consists of two independent systems for EDG 4A and 4B. Each system consists of an underground steel-lined concrete fuel oil storage tank (located below the Unit 4 EDG building), a fuel oil transfer pump, and a day tank that supplies fuel oil to the diesel engine.

Each Unit 3 EDG has its own independent self-contained forced circulation cooling water loop to remove heat from the intake air turbocharger after cooler, the engine water jackets, and lube oil system and transfers the heat to the radiator. Each loop consists of two gear-driven centrifugal pumps to circulate the water, an electric immersion heater to provide warming to the engine and lube oil in the standby condition, an expansion tank to allow expansion and contraction of the

water in the loop as the loop temperature changes, an air-cooled radiator, and two belt-driven cooling fans to circulate air over the radiator. The Unit 4 EDG cooling loops are similar to the Unit 3 cooling loop described above, with the exception that there are three motor-driven cooling fans to circulate air over the radiator in each loop.

Each Unit 3 EDG has its own lubrication system that consists of four subsystems: the scavenging oil system, main lube oil system, piston cooling system, and the soak back oil system. The scavenging oil system uses an engine-driven pump to force oil through the oil filter and the lube oil cooler. The main lube oil system supplies oil to most of the moving parts of the engine via the engine-driven main pressure pump. The piston cooling system uses an engine-driven pump to provide lubricating oil to each piston. The soak back system keeps the engine warm during standby conditions and uses a motor-driven pump to supply lube oil to the turbocharger bearing and to circulate oil through the main lube oil filter and lube oil cooler when the engine is down. The Unit 4 EDG lubrication system is similar to Unit 3 with the exception that the soak back oil system employs separate ac motor-driven pumps for the turbocharger and the circulation of oil through the main filter and lube oil cooler. In addition, each of these pumps has a back up dc motor-driven pump to ensure that oil is circulated through the turbocharger, the filter, and lube oil cooler when the engine is in a standby condition.

2.3.3.15.2 Staff Evaluation

The staff reviewed Section 2.3.3.15 of the LRA and the Turkey Point UFSAR to determine whether there is reasonable assurance that the applicant appropriately identified the EDG support system components within the scope of license renewal in accordance with 10 CFR 54.4 and subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

The staff reviewed the text and diagrams submitted by the applicant in Section 2.3.3.15 of the LRA and the Turkey Point UFSAR to identify if there were portions of the EDG support systems that the applicant did not identify as within the scope of license renewal that perform intended functions. Only those portions of the EDG support systems that perform at least one intended function are included within the scope of license renewal and are identified as such by the licensee in Section 2.3.3.15 of the LRA. For scoping systems and structures, the staff focused their review on those SCs of the EDG support systems that were not identified as being within the scope of license renewal to verify that they do not have any intended functions that meet the scoping requirements of 10 CFR 54.4. The staff also reviewed the UFSAR to determine if there were any additional system functions that were not identified as intended functions in the LRA and verified that those additional functions did not meet the scoping requirements of 10 CFR 54.4. As described in detail below, the staff questioned the omission of the alternate fuel oil fill lines for the Unit 3 EDG from the scope of license renewal. The Unit 4 EDGs are not affected because their underground storage tanks are missile-protected. Thus, the Unit 4 EDGs are assured of adequate fuel oil for 7 days of operation.

In a letter dated January 17, 2001, the staff requested additional information concerning the ability to supply the Unit 3 EDG with fuel oil following a design-basis tornado. UFSAR Appendix 5-E states that several safety-related components associated with the Unit 3 EDG are not protected from missiles, including the outdoor fuel oil storage tank and associated valves, as well as both diesel fuel transfer pumps and associated piping. If this equipment is damaged, the UFSAR states that the fuel oil day tanks contain sufficient inventory to allow operation of the Unit 3 EDGs until either a mobile fuel oil tank could supply additional fuel oil, or a cross-tie from the Unit 4

storage tanks could be implemented. However, the drawings submitted with the LRA (3-EDG-03 and 3-EDG-04), indicate that the alternate truck fill lines located at the diesel oil storage tank (3T36) and the individual day tanks (3T23A and 3T23B), and the Unit 4 cross-tie piping are not safety-related, and are not included within the scope of license renewal. The staff requested that the applicant provide the basis for omitting the equipment needed to provide a 7-day supply to the Unit 3 EDGs in case of missile damage to the safety-related components.

The applicant responded to the RAI in a letter dated February 16, 2001. The alternate fill connections located at the individual day tanks (3T23A and 3T23B), described in UFSAR 9.15.1.2.1.3, can be used to fill the Unit 3 day tanks from a mobile tank unit in the unlikely event that the normal path is unavailable. These alternate fill connections at the day tanks meet the missile protection criteria of the UFSAR. As a result, these components were included in the scope of license renewal. The boundary drawings, 3-EDG-03 and 3-EDG-04, should show the diesel oil day tank alternate fill lines, including valves 3-70-245, -246, and -247 for EDG 3A, and 3-70-248, -249, and -250 for EDG 3B, and their associated piping and fittings as being in the scope of license renewal. Additional capability to supply fuel oil from an alternate truck fill line located at the Unit 3 diesel oil storage tank (3T36) and the Unit 4 cross-tie provide flexibility and redundancy, and may be used during normal plant operation. However, these alternate pathways are not missile-protected, and therefore not included within the scope of license renewal because they do not perform or support any intended functions within the scope of 10 CFR 50.54.4.

The staff agrees that the diesel oil day tank alternate fill line components described above have been included in the scope of license renewal. Based on the components identified in LRA Table 3.4-15, there is reasonable assurance that the applicant adequately identified all portions of the EDG support systems that fall within the scope of license renewal in accordance with 10 CFR Part 54.4.

On the basis of this review, the staff found that the applicant properly identified the EDG building structural components subject to an AMR. The applicant's response to RAI 2.4.2.8-1 indicated that the valves, piping, and fittings associated with both of the Unit 3 EDG day tank alternate fill lines are included in the AMR for Section 3.4 of the LRA, "Emergency Diesel Generators and Support Systems."

2.3.3.15.3 Conclusion

On the basis of the review of Section 2.3.3.15 of the LRA, and Sections 8.2.2.1.1.1 and 9.15 of UFSAR, described above, the NRC staff has determined that there is reasonable assurance that the applicant adequately identified those portions of the EDG support systems that fall within the scope of license renewal and are subject to an AMR, in accordance with 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

2.3.4 Steam and Power Conversion Systems

Turkey Point steam and power conversion systems are designed to remove heat from the reactor coolant system and convert the heat to the plant's electric output. In the LRA, Section 2.3.4, "Steam and Power Conversion System," the applicant describes these systems, and identifies the

components from these systems that are within the scope of license renewal and subject to an AMR. The applicant describes its process for identifying the mechanical components within the scope of license renewal and subject to an AMR in the LRA, Section 2.1 "Scoping and Screening Methodology."

2.3.4.1 Summary of Technical Information in the Application

In the LRA, Section 2.3.4, the applicant describes the steam and power conversion systems and identifies the following subsystems that are within the scope of license renewal:

- main steam and turbine generators
- feedwater and blowdown
- auxiliary feedwater and condensate storage

In the LRA, Table 2.3-6, the applicant provides a list of scoping drawings, consisting of the flow diagrams for the above three subsystems that are within the scope of license renewal. The applicant provided a highlighted set of these drawings with the LRA, to show the portions of these systems that are within the scope of license renewal. From the components highlighted in these drawings, the applicant provided lists of the component groups that are subject to an AMR in the LRA, Table 3.5-1 through Table 3.5-3 for the main steam and turbine generators, feedwater and blowdown, auxiliary feedwater and condensate storage, respectively.

In the LRA Section 2.3.4.1, the applicant describes that the main steam system provides the principal heat sink for the reactor coolant system protecting the reactor coolant system and the steam generators from overpressurization, provides isolation of the steam generators during a postulated steam line break, and provides steam supply to the auxiliary feedwater pump turbines. Turbine generators convert the steam input from main steam system to the plant electrical output, provide first-stage pressure input to the reactor protection system, and provide isolation under certain postulated steam line break scenarios. The main steam system and turbine generators are described in UFSAR Section 10.2.2.

The applicant has determined that the components of main steam system and turbine generators subject to an aging management review include the following: valves (pressure boundary only), steam traps, flow elements, piping, tubing and fittings, bolting (mechanical closures). The intended functions for these components are pressure boundary integrity and throttling. The components of main steam system and turbine generators that are subject to an AMR along with the intended functions of these components are listed in Table 3.5-1 of the LRA.

In the LRA Section 2.3.4.2, the applicant describes that the feedwater and blowdown system provides sufficient water flow to the steam generators to maintain an adequate heat sink for the reactor coolant system, provide feedwater and blowdown isolation following a postulated loss-of-coolant accident or steam line break event, and assist in maintaining steam generator water chemistry. The feedwater and blowdown system consists of main feedwater; steam generator blowdown; and standby steam generator feedwater. The main feedwater system supplies pre-heated, high-pressure feedwater to the steam generators. The feedwater flow rate is controlled by the steam generator level control system which determines the desired feedwater flow by comparing the feed flow, steam flow, and steam generator level. The main feedwater system is described in UFSAR Section 10.2.2. The steam generator blowdown system assists in maintaining required steam generator chemistry by providing a means for removal of foreign

matter that concentrates in the evaporator section of the steam generator. The steam generator blowdown system is fed by three independent blowdown lines (one per steam generator), which tie to a common blowdown flask. The steam generator blowdown is continuously monitored for radioactivity during plant operation. The steam generator blowdown system is described in UFSAR Section 10.2.4.3.

Standby steam generator feedwater supplies steam generator feedwater during normal startup, shutdown, and hot standby conditions. Standby steam generator feedwater delivers sufficient feedwater to maintain one unit at hot standby while providing makeup for maximum blowdown. The standby steam generator feedwater pumps take suction from the demineralized water storage tank and discharge to a common header upstream of the feedwater regulating valves. Standby steam generator feedwater is described in UFSAR Section 9.11.

The applicant has determined that the components of feedwater and blowdown components subject to an aging management review include the demineralized water storage tank, pumps and valves (pressure boundary only), orifices, piping, tubing, and fittings. The intended functions for these components are pressure boundary integrity and throttling. The components of the feedwater and blowdown system that require an AMR along with the intended functions of these components are listed in Table 3.5-2 of the LRA.

In the LRA, Section 2.3.4.3, the applicant describes that the auxiliary feedwater system supplies feedwater to the steam generators when normal feedwater sources are not available, provides for auxiliary feedwater steam and feedwater isolation during a postulated steam generator tube rupture event, and provides for auxiliary feedwater isolation to the faulted steam generator and limits feedwater flow to the steam generators to limit positive reactivity insertion during a postulated steam line break event. The auxiliary feedwater system is a shared system between Turkey Point Units 3 and 4. The auxiliary feedwater system contains three steam turbine driven pumps. The pumps can be supplied steam from the steam generators in either unit. The pumps take suction from either condensate storage tank and discharge to one of two redundant headers. Each header can supply each steam generator. The auxiliary feedwater system is normally maintained in standby with one pump aligned to one discharge header and two pumps aligned to the other header. Upon initiation, all three pumps start to supply the affected steam generator with feedwater. The auxiliary feedwater system is described in UFSAR Section 9.11.

The condensate storage system stores water for use by auxiliary feedwater to support safe shutdown of the plant. Condensate storage consists of a condensate storage tank on each unit with piping that feeds all three auxiliary feedwater pumps. The tank outlet piping is cross-connected between the units so that either tank can supply the water required by auxiliary feedwater. Condensate storage is described in UFSAR Section 9.11.3.

The applicant has determined that the components of auxiliary feedwater and condensate storage components subject to an aging management review include: condensate storage tanks, pumps and valves (pressure boundary only), coolers, orifices, piping, tubing, and fittings. The intended functions for these components are pressure boundary integrity, heat transfer, and throttling. The components of the auxiliary feedwater and condensate storage system that require an AMR and the intended functions of these components are listed in Table 3.5-3 of the LRA.

2.3.4.2 Staff Evaluation

The staff reviewed the above information to verify that the applicant identified the components of the steam and power conversion systems that are within the scope of license renewal and subject to an AMR, in accordance with 10 CFR 54.4 and 10 CFR 54.21(a)(1).

The applicant identified and listed the components subject to an AMR for the steam and power conversion systems in Table 3.5-1 through Table 3.5-3 of the LRA using the screening methodology described in Sections 2.1 of the LRA. The screening methodology is evaluated by the staff in Section 2.1 of this SER.

The staff reviewed the applicable sections of Turkey Point UFSAR to determine if there were any system functions, not identified as intended function in accordance with 10 CFR 54.4. The staff then reviewed the following system drawings to verify that the applicant identified all the components within the scope of license renewal in accordance with 10 CFR 54.4:

Main Steam and Turbine Generators:

> Drawing Nos.: 3-MS-01, 3-MS-02, 3-MS-03, 3-SAMP-02, 3-TG-01, 4-MS-01, 4-MS-02, 4-MS-03, 4-SAMP-02, 4-TG-01;

Feedwater and Blowdown:

> Drawing Nos.: 0-FW-01, 0-FW-02, 3-FW-01, 3-FW-02, 3-FW-03, 3-FW-04, 4-FW-01, 4-FW-02, 4-FW-03, 4-FW-04; and

Auxiliary Feedwater and Condensate Storage:

> Drawing Nos.: 0-AFW-01, 0-AFW-02, 3-AFW-01, 3-AFW-02, 3-AFW-03, 3-COND-01, 4-AFW-01, 4-AFW-02, 4-AFW-03, 4-COND-01.

Further, the staff verified the accuracy of the system drawings, and completeness of LRA Table 3.5-1 through Table 3.5-3 by sampling the components adjacent to, but outside the highlighted portion of the system to verify that all the components within the scope of the license renewal were included in the applicant's evaluation. In addition, the staff sampled the components that are within the scope of license renewal, to verify that all of the components that meet the requirements of 10 CFR 54.21(a)(1) were subject to an AMR.

As a result of this review, the staff held a meeting with the applicant on January 4, 2001, and subsequently requested additional information in a letter to the applicant dated January 10, 2001. The applicant responded the staff's RAI in a letter to the NRC dated, February 8, 2001.

In RAI 2.3.4-1, the staff asked the applicant to explain why the air reserve tanks and associated piping for the main steam isolation valve (MSIV) instrument air of Unit 3 are not within the scope of license renewal and the nitrogen bottles for the MSIV instrument air of Unit 3 are not subject to an AMR. Performing the same function for the MSIV, the instrument accumulator tanks for Unit 4 are subject to an AMR. The applicant responded that the MSIV instrument air system for Unit 3 is designed differently from that for Unit 4. The instrument accumulator tanks for Unit 4 provide

safety-related air for Unit 4 MSIVs. For Unit 3, the air reserve tanks are used for normal operation only, and do not perform any intended function identified in 10 CFR 54.4. Therefore, these air reserve tanks are not within the scope of license renewal. The safety related source of compressed gas for MSIV operation in Unit 3 is a high-pressure nitrogen bottle system. These nitrogen bottles in Unit 3 are not considered long-lived components and are replaced as required. Administrative controls provide for periodic monitoring and replacement as necessary to ensure the license renewal system intended function of the Unit 3 MSIVs are maintained. Therefore, these nitrogen bottles are not subject to an AMR according to 10 CFR 54.21 (a)(1)(ii). The staff finds the response acceptable.

In RAI 2.3.4-2, the staff requested the licensee to justify its determination of the evaluation boundary around the demineralized water storage tank (DWST), which is identified as within the scope of license renewal. Specifically, the evaluation boundary for the tank and associated piping ended at several normally opened valves, such as DWDS-3-021, DWDS-020, DWDS-4-021, DWDS-064, DWDS-017, CDPL-4-029, and CDPL-3-029. It was not clear that a failure of the downstream non-safety-grade piping of these opened valves did not prevent the DWST from satisfactory performing its intended function as required by 10 CFR 54.4 (a)(2).

The licensee responded that the DWST provides the source of water for the non-safety-related standby steam generator feedwater. The DWST is in the scope of license renewal only because it provides water for fire protection for a postulated fire in the AFW pump area. The applicant established the license renewal boundaries associated with piping attached to the DWST at the first valve from the tank even if the valve is normally open. The applicant indicated that regardless of the condition of the piping downstream of the first valve, there will be sufficient water inventory available in the DWST for the intended function of fire protection because of the following reasons:

- Plant Technical Specification 3.7.1.6 requires a minimum water volume of DWST. Surveillance Requirement 4.7.1.6.1 requires this minimum water volume be verified at least once per 24 hours. The level of this tank is also communicated during shift turnover as part of the shift relief checklist. The DWST has low and low-low level alarm set points that annunciate in the control room. These alarms are well above the TS minimum level requirement. Because the tank volume is a TS requirement, any conditions associated with the downstream piping (not in scope), that result in loss of inventory, will be addressed by plant personnel by isolating the affected, non-essential lines connected to the tank.

- Less than one-third of the DWST capacity is required to be maintained by TS 3.7.1.6; therefore, a large inventory margin exists.

- The license renewal system intended function for the DWST is required only for a postulated fire in the AFW pump area. In the current licensing basis of Turkey Point (UFSAR Appendix 9.6A), it is not required to postulate a failure of piping concurrent with a postulated fire per 10 CFR 50.48, 10 CFR Part 50, Appendix R.

Based on the applicant's justification, the staff finds its determination of DWST scoping boundary acceptable.