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.