

April 19, 2002

The Honorable Richard A. Meserve  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Dear Chairman Meserve:

**SUBJECT: REPORT ON THE SAFETY ASPECTS OF THE LICENSE RENEWAL  
APPLICATION FOR THE TURKEY POINT NUCLEAR PLANT, UNITS 3 AND 4**

During the 491<sup>st</sup> meeting of the Advisory Committee on Reactor Safeguards, April 11-12, 2002, we completed our review of Florida Power and Light Company's (FPL's) license renewal application for the Turkey Point Nuclear Plant, Units 3 and 4, and the NRC staff's final safety evaluation report (SER) on the application. Our review included a plant visit and two meetings of our Plant License Renewal Subcommittee, one of which was conducted on March 13, 2002, in Florida City, Florida. During our review, we had the benefit of discussions with representatives of the NRC staff and FPL. In addition, we discussed written comments on Turkey Point from a member of the public. Our subcommittee also heard oral statements from a member of the public during the meeting in Florida City. We had the benefit of the documents referenced.

### **Recommendation and Conclusion**

1. The FPL application for renewal of the operating licenses for Turkey Point, Units 3 and 4, should be approved.
2. The programs instituted to manage aging-related degradation are appropriate and provide reasonable assurance that Turkey Point, Units 3 and 4, can be operated in accordance with their licensing bases for the period of extended operation without undue risk to the health and safety of the public.

### **Background and Discussion**

This report fulfills the requirement of 10 CFR 54.25 that the ACRS review and report on license renewal applications. FPL requested renewal of the operating licenses for Turkey Point, Units 3 and 4, for a period of 20 years beyond the current license terms, which expire on July 19, 2012 (Unit 3), and April 10, 2013 (Unit 4). The final SER documents the results of the staff's review of information submitted by FPL, including commitments that were necessary to resolve open items identified by the staff in the draft SER. The staff reviewed the completeness of the identification of structures, systems, and components (SSCs) subject to aging management

review; the integrated plant assessment process; the applicant's identification of the possible aging mechanisms associated with passive, long-lived components; and the adequacy of the aging management programs. The staff also conducted four site inspections to verify the adequacy of the implementation of the methodology described in the application.

We met with the applicant and the staff on September 25 and October 5, 2001, to review the draft SER. We did not identify any new issues to be addressed by the staff and applicant other than the four open items already identified by the staff. The number of open items was small because the applicant implemented lessons learned from the previous license renewal applications and followed the guidance in Nuclear Energy Institute (NEI) Report 95-10, "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule." This approach facilitated the review process.

The process implemented by the applicant to identify SSCs that are within the scope of license renewal has been effective. During our review we questioned why certain SSCs were not included in scope, and in all cases the applicant provided appropriate justification for the exclusion. Among these SSCs were the startup transformers that connect the plant to the offsite power source, which typically provides the alternate AC power source during a station blackout (SBO) event. The applicant argued that Turkey Point does not rely on restoration of offsite power to recover from an SBO event. Instead, it relies on the installed capability to cross-connect the emergency diesel generators (EDGs) from one unit to the other. During an SBO event, each of the four EDGs on site is capable of carrying all essential loads of both units. Sufficient diesel fuel is maintained on site to provide the required long-term alternate power source. During our visit to the site, the applicant used the plant simulator to demonstrate its ability to cross-connect the EDGs from the control room. This capability was used during Hurricane Andrew. On this basis, we concur with the applicant that the EDGs provide an effective alternate power source during an SBO event. Subsequently, the staff has determined, however, that components connecting the units to the offsite power source, including the startup transformers, are needed to fulfil the requirements of the SBO Rule. Therefore, they are part of the licensing basis and must be included in the scope of license renewal. The applicant has agreed to meet this requirement.

The applicant has performed a comprehensive aging management review of SSCs that are within the scope of license renewal. The applicant identified aging effects using many data sources, including previously submitted license renewal applications, Babcock & Wilcox license renewal generic information, industry operating experience, Turkey Point operating experience, the draft Generic Aging Lessons Learned report, and Westinghouse Owners Group (WOG) topical reports. As the first Westinghouse-designed reactor being considered for license renewal, Turkey Point participated in a WOG program that developed a series of generic topical reports to demonstrate that the aging effects of reactor coolant system components could be adequately managed throughout the period of extended operation. The WOG submitted four topical reports for NRC staff review and approval. The topical reports contain generic license renewal evaluations of pressurizers (WCAP-14574), Class 1 piping and associated pressure boundary components (WCAP-14575), reactor internals (WCAP-14577), and reactor coolant system supports (WCAP-14422).

The applicant did not incorporate these reports by reference in the Turkey Point license renewal application because the staff had not approved these reports at the time the application was submitted to the NRC. These reports were subsequently approved by the staff. In its application, the applicant addresses the applicability of these reports to Turkey Point SSCs to facilitate the staff review. We have reviewed these topical reports and found that, when supplemented by the Turkey Point plant-specific responses to the staff's open issues on the topical reports, they effectively support the Turkey Point license renewal application.

Appendix B of the application describes the 16 existing programs and the 7 new programs that FPL has implemented to manage aging effects during the period of extended operation. The resolution of staff questions and SER open items has resulted in additional commitments, including a program to deal with the adverse localized effects of heat on medium and low-voltage nonenvironmentally qualified (EQ) cables, connections, and electrical/instrumentation and control penetrations in containment, as well as an expanded number of piping segments to be managed to address the potential interaction of Class II piping with safety systems.

Unlike previous applicants, FPL has not proposed an aging management program for non-EQ medium-voltage cables that are exposed to significant moisture. The applicant stated that these cables are designed with lead sheath to prevent failure from moisture ingress. The applicant presented information, including significant industry operating experience, that indicates that this type of jacket provides an impermeable barrier. Based on this information, we agree with the applicant and the staff that no aging management program is needed for non-EQ medium-voltage cables that are subjected to significant moisture.

The Turkey Point application identifies cracking of the control rod drive mechanism (CRDM) penetration nozzles as an aging effect to be managed. Appendix B of the application describes the aging management program, "Reactor Vessel Head Alloy 600 Penetration Inspection Program (RVHPIP)," instituted to deal with this aging degradation mechanism. This program identifies primary water stress corrosion cracking (PWSCC) of Alloy 600 nozzles as the aging effect of concern and ties programmatic elements, such as the frequency of inspections, to the results of plant-specific and sister plant inspection findings. In response to an SER open item, the applicant has committed to continue its participation in the Electric Power Research Institute (EPRI) and NEI programs for managing PWSCC in Alloy 600 reactor vessel head penetration nozzles during the period of extended operation, and has made the NEI program and EPRI Materials Reliability Program (MRP) an integral part of the RVHPIP. This ensures that, as the industry gains more experience with this degradation mechanism, the applicant will update the RVHPIP to reflect the new information. Over the past 6 months, the applicant has performed inspections of upper heads of both units. No leakage of the CRDM penetration nozzles was identified.

A member of the public provided us with written comments expressing his concerns with the continued operation of Turkey Point. His concerns included potential voids in containment walls, the ability of Turkey Point to withstand Category 5 hurricanes, and the vulnerability of the site to external threats. Some of these concerns were echoed by another member of the public during the Subcommittee meeting on March 13, 2002 in Florida City. Based on information provided by the staff and the applicant during our meeting, we conclude that the issue of voids in containment walls has been appropriately resolved at Turkey Point. With regard to concerns

about storm surges, the Individual Plant Examination of External Events for Turkey Point identifies such surges as small contributors to total risk. However, the staff should document its position on this issue. The staff is generically addressing concerns with external threats.

The staff has performed a comprehensive review of the FPL application. The applicant and the staff have identified plausible aging effects associated with passive, long-lived components. Adequate programs have been established to manage the effects of aging so that Turkey Point, Units 3 and 4, can be operated in accordance with their current licensing bases for the period of extended operation, without undue risk to the health and safety of the public.

Sincerely,

**/RA/**

George E. Apostolakis  
Chairman

References:

1. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the License Renewal of Turkey Point Nuclear Plant, Units 3 and 4," February 2002.
2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the License Renewal of Turkey Point Nuclear Plant, Units 3 and 4," September 2001.
3. Nuclear Energy Institute Report 95-10, Revision 1, "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," January 2000.
4. Westinghouse Owners Group Topical Report, WCAP-14574, "License Renewal Evaluation: Aging Management Evaluation for Pressurizers," July 1996.
5. Westinghouse Owners Group Topical Report, WCAP-14575, "License Renewal Evaluation: Aging Management Evaluation for Class 1 Piping and Associated Boundary Components," August 1996.
6. Westinghouse Owners Group Topical Report, WCAP-14577, Revision 1, "License Renewal Evaluation: Aging Management for Reactor Internals," dated October 9, 2000.
7. Westinghouse Owners Group Topical Report, WCAP-14422, Revision 2, "License Renewal Evaluation: Aging Management for Reactor Coolant System Supports," February 1997.
8. Letter dated February 16, 2002, from Mark P. Oncavage, a public citizen, to Noel Dudley, Senior Staff Engineer, ACRS, transmitting safety concerns regarding the continued operation of Turkey Point through the license renewal period.
9. U. S. Nuclear Regulatory Commission, NUREG-1742, "Perspectives Gained from the Individual Plant Examination of External Events (IPEEE) Program," draft report for public comment, April 2001.