Florida Power & Light Company, 9760 SW 344 St., Fla City, FL 33035

L-2001-19
FEB 08 2001

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Response to Request for Additional Information for the Review of the Turkey Point Units 3 and 4 License Renewal Application

By letter dated January 10, 2001, the NRC requested additional information regarding the Turkey Point Units 3 and 4 License Renewal Application (LRA). Attachment 1 to this letter contains the responses to the Requests for Additional Information (RAIs) associated with Subsection 2.3.4 and Section 3.5, Steam and Power Conversion Systems of the LRA.

Should you have any further questions, please contact E. A. Thompson at (305)246-6921.

Very truly yours,

R. J. Hovey
Vice President - Turkey Point

RJH/EAT/hlo

Attachment

A084

cc: U.S. Nuclear Regulatory Commission, Washington, D.C.

Chief, License Renewal and Standardization Branch
Project Manager - Turkey Point License Renewal
Project Manager - Turkey Point

U.S. Nuclear Regulatory Commission, Region II

Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

Other

Mr. Robert Butterworth
Attorney General
Department of Legal Affairs
The Capitol
Tallahassee, FL 32399-1050

Mr. William A. Passetti, Chief
Department of Health
Bureau of Radiation Control
2020 Capital Circle, SE, Bin #C21
Tallahassee, FL 32399-1741

Mr. Joe Meyers, Director
Division of Emergency Management
2555 Shumard Oak Drive
Tallahassee, FL 32399-2100

County Manager
Miami-Dade County
111 NW 1 Street 29th Floor
Miami, FL 33128

Mr. Douglas J. Walters
Nuclear Energy Institute
1776 I Street NW
Suite 400
Washington, D.C. 20006

Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251

Response to Request for Additional Information for the Review of the Turkey Point, Units 3 and 4, License Renewal Application

STATE OF FLORIDA)
) ss.
COUNTY OF MIAMI-DADE)

R. J. Hovey being first duly sworn, deposes and says:

That he is Vice President - Turkey Point of Florida Power and Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information and belief, and that he is authorized to execute the document on behalf of said Licensee.

R. J. Hovey

Subscribed and sworn to before me this 9th day of February, 2001.

Cheryl A. Stevenson

Name of Notary Public (Type or Print)

CHERYL A. STEVENSON
NOTARY PUBLIC - STATE OF FLORIDA
COMMISSION # CC929676
EXPIRES 6/19/2004
BONDED THRU ASA 1-800-NOTARY

R. J. Hovey is personally known to me.

ATTACHMENT 1
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION DATED JANUARY 10, 2001 FOR THE REVIEW OF THE TURKEY POINT UNITS 3 AND 4, LICENSE RENEWAL APPLICATION

SUBSECTION 2.3.4 STEAM AND POWER CONVERSION SYSTEMS

RAI 2.3.4-1:

UFSAR Section 10.2.2 states that the MSIVs are maintained closed by the instrument air system. On Unit 3, a safety related nitrogen supply subsystem functions as a backup to the instrument air system. On Unit 4, safety related air accumulators are provided to perform this backup function. In Table 3.5-1 of the LRA, Unit 4 MSIV instrument air accumulator tanks are listed as subject to AMR.

Why are the Unit 3 MSIV instrument air supply components treated differently from Unit 4 for an AMR? Explain (a) why the air reserve tanks (3T252 - 3T256 in drawing No. 3-MS-03) and the associated piping in Unit 3 are not identified as within the scope of license renewal and (b) why the nitrogen bottles for Unit 3 are not included in Table 3.5-1 as being subject to an AMR. These air reserve tanks are relied upon to maintain the safety function of the instrument air system, and the nitrogen bottles are passive and long lived.

FPL RESPONSE:

As described in the UFSAR Section 10.2.2(b) (page 10.2-1), the safety related source of compressed gas for MSIV operation on Unit 3 is a high-pressure nitrogen bottle system. Normal operation relies on non-safety related portions of Instrument Air. The Unit 3 instrument air reserve tanks for the MSIV are not safety related (as shown in drawing No. 3-MS-03) and are not relied upon to maintain the safety functions of the instrument air system or the MSIVs on Unit 3. The Unit 3 instrument air reserve tanks do not perform or support any license renewal system intended functions that satisfy the scoping criteria of 10 CFR 54.4. Therefore, the license renewal (LR) boundaries are established at the safety/non-safety boundary.

Nitrogen bottles, although passive, are not considered long-lived components and are replaced as required. Normally one bottle is in service and a second bottle is available as a backup. Administrative controls provide for periodic monitoring and

replacement as necessary to ensure the license renewal system intended functions of the Unit 3 MSIVs are maintained. Since the nitrogen bottles are not long lived, they are not subject to an aging management review per 10 CFR 54.21(a)(1)(ii).

RAI 2.3.4-2:

In drawing No. 0-FW-02 of the LRA, the demineralized water storage tank, T61, is identified as within the scope of license renewal and subject to an AMR. The intended function for the tank is the pressure boundary. 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. Since these valves are normally opened, a failure of downstream piping of these valves may affect the pressure boundary of the tank.

Provide the basis for your determination of the evaluation boundary, which ended at these opened valves but not further downstream of the flow paths at the same pressure boundary. Address the compliance of 10 CFR 54.4(a)(2) as applied to this case.

FPL RESPONSE:

The Demineralized Water Storage Tank (DWST) provides the source of water for the non-safety related Standby Steam Generator Feedwater (SSGF). Note that the Unit 3 and Unit 4 Condensate Storage Tanks are the safety-related source of makeup water for safety related Auxiliary Feedwater (AFW), as shown on drawing 0-AFW-02. The DWST is in the scope of license renewal because it is relied upon to demonstrate compliance with the Commission's regulations for fire protection (10 CFR 50.48) for the highly unlikely event of a fire in the AFW pump area that disables Auxiliary Feedwater, concurrent with a loss of normal feedwater. License renewal boundaries associated with piping attached to the DWST (other than that associated with the SSGF pumps) have been established at the first valve from the tank even if the valve is normally open. This is acceptable because of the following:

(1) The DWST must have a minimum volume of water per Technical Specification 3.7.1.6. Pursuant to Surveillance Requirement 4.7.1.6.1, this minimum water volume is 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. The low level and low-low level alarms are set at 320,000 and 160,000 gallons, respectively. These alarms are well above the Technical Specification minimum level requirement and, if annunciated would prompt operator actions to investigate. Because the tank volume is a Technical Specification requirement, any conditions associated with connected systems (not in scope), that result in loss of inventory,

are promptly addressed by plant personnel by isolating affected, non-essential lines connected to the tank.

(2) Less than one third of the DWST capacity is required to be maintained by Technical Specification 3.7.1.6; therefore, a large inventory margin exists to support normal plant operation.

(3) Finally, the license renewal system intended function for the DWST is required only for a postulated fire in the AFW pump area. Turkey Point is not required to assume hypothetical failures of piping concurrent with postulated fires per 10 CFR 50.48, 10 CFR 50 Appendix R and Turkey Point's current licensing basis (UFSAR Appendix 9.6A, Table 2.4, "Appendix A to BTP 9.5-1 Guidelines", page 9.6A-16).

RAI 2.3.4-3:

Drawing Nos. 3-FW-04 and 4-FW-04 are related to the steam generator blowdown system, which is identified as within the scope of license renewal. The evaluation boundary for piping between the containment isolation valves and containment boundary ended at several normally opened valves, SGML-3-011, SGML-3-031, SGML-3-049, SGML-4-011, SGML-4-031, and SGML-4-049. Since these valves are normally opened, a failure of downstream piping of these valves may affect the containment isolation.

Provide the basis for your determination of the evaluation boundary, which ended at these opened valves but not further downstream of the flow paths at the same pressure boundary. Address the compliance of 10 CFR 54.4(a)(2) as applied to this case.

FPL RESPONSE:

As shown on UFSAR Figures 10.2-55 and 10.2-56, valves SGWL-3-011, SGWL-4-011, SGWL-3-031, SGWL-4-031, SGWL-3-049 and SGWL-4-049 are normally locked closed. These valves are only open when Steam Generator Wet Layup is in service, during outages when the plant is in Mode 5, 6, or defueled. Accordingly, the license renewal boundary is established at normally locked closed valves, SGWL-3-011, SGWL-4-011, SGWL-3-031, SGWL-4-031, SGWL-3-049 and SGWL-4-049.

RAI 2.3.4-4:

In drawing No. 0-AFW-01, the steam turbines for AFW pumps and associated piping and valves are identified as within the scope of license renewal. The intended function is the pressure boundary for the auxiliary feedwater system. The reviewer noticed that the evaluation boundary for the piping system ended, in some cases, at the components such as open valves, flow reducers, or orifices (e.g. ST-49, ST-52, ST-46, 20-461C, 20-462C, RO-6265C, ...etc.) that are not pressure boundary. A failure of downstream piping of these components may affect the pressure boundary of the auxiliary feedwater system.

Provide the basis for your determination of the evaluation boundary, which ended at these components but not further downstream of the flow paths at the same pressure boundary, in accordance with 10 CFR 54.4(a)(2).

FPL RESPONSE:

In general, license renewal boundaries were drawn to concur with safety boundaries. Typically safety boundaries occur where a design of the system warrants a change from safety related to non-safety related or the design requirements change based on impact on the system intended functions at the point of the safety boundary change.

The restrictive orifices at the discharge of the AFW turbines were designed and sized to provide for continuous drainage from the turbine to prevent accumulation of condensate/water. The orifices are sized such that failure of the downstream piping will not impede the function of the turbine. Similarly, this system has been designed so that the amount of (steam) leakage anticipated through small diameter piping (small open valves) is insignificant and does not affect the system and component function.

Steam traps, by design, are closed valves that open to release any accumulated condensate/water. Once the condensate is removed, the steam trap (valve) automatically returns to the closed state.

Based on the above, the piping and components downstream of the orifices and steam traps do not perform or support any license renewal system intended functions that satisfy the scoping criteria of 10 CFR 54.4, and therefore are not within the scope of license renewal.

SECTION 3.5 STEAM AND POWER CONVERSION SYSTEMS

RAI 3.5-1:

Section 3.5 of the LRA lists the systems included for aging management review for license renewal. The systems included are main steam and turbine generators, feedwater and blowdown, auxiliary feedwater and condensate storage systems. Provide your rationale for not providing aging management review of extraction steam system and components in condensate transfer system, such as piping, valve and pump housings that have pressure-retaining function and are not replaced based on qualified life or specified time period.

FPL RESPONSE:

Extraction Steam (and its components), as reflected in the LRA Table 2.2-1 (page 2.2-2), is not within the scope of license renewal because it does not perform or support any of the system intended functions that satisfy any of the scoping criteria of 10 CFR 54.4. Therefore, an AMR is not required for any component of this system.

The only components of Condensate Storage within the scope of license renewal are the Unit 3 and Unit 4 Condensate Storage Tanks (CSTs) and associated piping that provide the make up water flow path for the auxiliary feedwater pumps (see drawings 3-COND-01 and 4-COND-01). The balance of Condensate Storage (condensate transfer pumps and associated piping) does not perform or support any license renewal system intended functions that satisfy the scoping criteria of 10 CFR 54.4. Therefore, an AMR is not required for any other components of this system.

RAI 3.5-2:

For components in Table 3.5-1 such as valves, tubing/fittings, filters, flex hoses, and rupture disks made of stainless steel that are exposed to internal air/gas environment, no aging management is provided. Explain why the effects of moisture and liquid pooling are not considered in air/gas environment that can contribute to aging effects of loss of material due to pitting corrosion and cracking.

FPL RESPONSE:

The portions of the systems addressed in Table 3.5-1 (page 3.5-8) that have an internal environment of air/gas are the Main Steam and Turbine Generators, per subsection 2.3.4.1 (page 2.3-37) of the LRA. As described in the LRA, Appendix C, subsection 4.1.3 (page C-12), and section 6.3 (page C-29), where wetted conditions are determined to exist (e.g., due to condensation or moisture), the environment descriptions are amended accordingly and potential aging effects are addressed.

For the Main Steam (instrument air and nitrogen supply) components addressed in Table 3.5-1 (page 3.5-8), the internal environment is dry air/gas. Instrument Air (IA) supplies dry/filtered air downstream of the IA dryers creating a benign environment for aging effects associated with corrosion.

The MSIV instrument air supply is downstream of the IA dryers and thus, there are no aging effects requiring management for these components.

High purity Nitrogen (>99.995 % by volume) is provided to the Unit 3 MSIVs as the safety related source of compressed gas (see response to RAI 2.3.4-1). Thus, the Unit 3 MSIV Nitrogen supply components are not susceptible to aging effects.

RAI 3.5-3:

In Tables 3.5-1 and 3.5-2 for carbon steel bolting, explain why the effect of humidity in the external environment is not considered to cause aging that leads to loss of material due to general corrosion and loss of preload.

FPL RESPONSE:

Aging effects associated with bolting are described in the LRA, Appendix C, Section 5.4, (page C-21) Loss of Mechanical Closure Integrity. The only aging effect determined to require management associated with bolting is loss of mechanical closure integrity due to boric acid corrosion for components in proximity to borated water systems.

Most of the carbon steel bolting associated with Main Steam and Turbine Generator, and Feedwater and Blowdown is in a dry environment and exposed to temperatures greater than 212°F. Therefore, moisture is not present on the surfaces of piping or associated bolting, and as a result loss of material due to general corrosion does not require management. All carbon steel bolting associated with these systems is coated with a lubricant and loss of material due to general corrosion is not expected. Review of Turkey Point plant experience, which was performed as part of the AMR process, confirmed that no loss of mechanical closure integrity has occurred resulting from loss of material due to general corrosion of bolting. Review of industry experience also confirms that general corrosion of bolting has not been a major concern and therefore is not an aging effect requiring management.

RAI 3.5-4:

Table 3.5-2 lists the components subject to an aging management review for the feedwater and blowdown systems. Provide your justification for excluding aging management review of feedwater pump casing, blowdown pump casing, and blowdown heat exchanger shell that have pressure-retaining function and are not replaced based on qualified life or specified time period.

FPL RESPONSE:

The feedwater pump casings and the blowdown heat exchanger shells are not within the scope of license renewal as depicted in drawings 3-FW-01, 4-FW-01, 3-FW-04, and 4-FW-04. These components do not perform or support any license renewal system intended functions that satisfy the scoping criteria of 10 CFR 54.4. Therefore, an aging management review is not required for these components. Turkey Point does not have blowdown pumps.

RAI 3.5-5:

Provide justification for excluding flow accelerated corrosion (FAC) as an aging mechanism that can cause wall thinning in auxiliary feedwater piping components and in auxiliary feedwater pump turbine piping. The staff notes that while FAC is not in the scope of auxiliary feedwater steam piping inspection program, the scope of the FAC program includes feedwater, blowdown, main steam and turbine generators.

FPL RESPONSE:

The Turkey Point Flow Accelerated Corrosion Program is based on industry consensus standard, NSAC-202L-R2, "Recommendations for an Effective Flow Accelerated Corrosion Program". This document states in Section 4.2.2 that:

> "Some susceptible systems, or portions of systems, can be excluded from further evaluation due to their relatively low level of susceptibility. Based on both laboratory and plant experience, the following systems can be safely excluded from further evaluation:
>
> Systems with no flow, or those that operate less than 2% of plant operating time (low operating time); or single-phase systems that operate with temperature > 200°F less than 2% of the plant operating time."

Auxiliary Feedwater at Turkey Point is operated less than 2% of the plant operating time. As a result, loss of material due to flow accelerated corrosion is not an aging effect requiring management for Auxiliary Feedwater.

RAI 3.5-6:

The steam and power conversion systems are exposed to internal environments of treated water, lubricating oil, and air/gas; and external environments of outdoor, containment air, underground, and potential borated water leaks. The only parts of systems or components considered to be inaccessible for inspection are those that are buried or embedded/encased in concrete. In Section 3.5 of the LRA, the applicant indicated that the Standby Steam Generator Feedwater System contains sections of buried stainless steel piping, exposed to soil/fill and ground water chemicals. Discuss the aging management review for these buried piping section at Turkey Point to ensure that all aging mechanisms are adequately managed.

FPL RESPONSE:

Sections of the Standby Steam Generator Feedpumps suction and recirculation piping are buried underground as shown on drawing 0-FW-01. The underground sections of this piping are made of stainless steel and externally coated and wrapped in plastic to protect the coating against backfill damage. Although the pipe is buried, it is above the ground water table and therefore not exposed to ground water chemicals. Additionally, the area where the pipe is buried is paved or covered by a concrete slab, making it unlikely that the surface of the pipe will be exposed to a water environment. Review of Turkey Point plant experience, which was performed as part of the AMR process, confirms that no external corrosion of buried stainless steel piping at Turkey Point has occurred. The aging management review concluded that this piping is adequately protected against potential external aging mechanisms and that there are no external aging effects requiring management.

RAI 3.5-7:

Table 2.3-6, "Steam and Power Conversion Systems Evaluation Boundaries," shows that the sample systems 3-SAMP-02 and 4-SAMP-02 are within the SPCS evaluation boundary. However, these systems are not addressed either in Section 2.3.4 or in Section 3.5. Provide their aging management review and discuss their intended functions, material, environments, aging effects and aging management programs and activities.

FPL RESPONSE:

Screening of Sample Systems is addressed in LRA subsection 2.3.3.6 (page 2.3-26). The aging management review of the Sample Systems is addressed in Section 3.4, (page 3.4-1) and Table 3.4-6 (page 3.4-36).

RAI 3.5-8:

In Tables 3.5-1 and 3.5-2, the applicant relied on the Boric Acid Wastage Surveillance Program to manage the aging effects of mechanical bolting in piping connections and closures to ensure that boric acid corrosion does not lead to degradation of the pressure boundary. The Boric Acid Wastage Surveillance Program manages aging effects associated with aggressive chemical attack, provide a discussion of how this program manages aging effects associated with elevated temperatures and stress levels to prevent loss of preload in mechanical bolting.

FPL RESPONSE:

The Boric Acid Wastage Surveillance Program is not credited for managing aging effects associated with elevated temperatures and stress levels to prevent loss of pre-load in mechanical bolting.

As discussed in LRA Appendix C Subsection 5.4, (page C-21) "Loss of Mechanical Closure Integrity," the effect of loss of pre-load resulting from temperature effects and cyclic loading is external leakage of the internal fluid at a mechanical joint, not failure of the mechanical joint. With the exception of borated water leaks, there are no aging effects requiring management associated with external leakage of a mechanical joint. Loss of mechanical closure integrity resulting from borated water leaks is addressed in the LRA as discussed below. Therefore, loss of pre-load due to temperature and stress effects does not require management.

When external leakage involves borated water, the aging effect of concern is loss of carbon or low alloy steel bolting material due to aggressive chemical attack (i.e., boric acid corrosion). Therefore, the LRA addresses loss of mechanical closure integrity resulting from the external environment of "borated water leaks" and credits the Boric Acid Wastage Surveillance Program for management of this effect on carbon and low alloy steel bolting.