

January 17, 2001

Mr. Thomas F. Plunkett
President - Nuclear Division
Florida Power & Light Company
P. O. Box 14000
Juno Beach, FL 33408-0420

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
TURKEY POINT, UNITS 3 AND 4, LICENSE RENEWAL APPLICATION

Dear Mr. Plunkett:

By letter dated September 8, 2000, Florida Power and Light (FPL), submitted for the Nuclear Regulatory Commission's (NRC) review an application pursuant to 10 CFR Part 54, to renew the operating license for Turkey Point Nuclear Plant, Units 3 and 4. The NRC staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete its safety review. Specifically, the enclosed questions relate to Sections 4.4 and Appendix B, Section 3.2.6, "Environmental Qualification"; and Section 3.7, "Electrical and Instrumentation and Controls."

Please provide a schedule by letter, electronic mail, or telephonically for the submittal of your responses within 30 days of the receipt of this letter. Additionally, the staff would be willing to meet with FPL prior to the submittal of the responses to provide clarifications of the staff's requests for additional information.

Sincerely,

/RA/

Rajender Auluck, Senior Project Manager
License Renewal and Standardization Branch
Division of Regulatory Improvement Program
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

Enclosure: Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION
TURKEY POINT, UNITS 3 AND 4

Section 4.4

Environmental Qualification

RAI 4.4.1-1: In the LRA Section 4.4.1, you have stated that the wear cycle aging effect is only applicable to ASCO solenoid valves for Turkey Point. Provide justification why wear cycle aging effect is not applicable to motors (i.e., Joy motors, Westinghouse motors, MOV actuators, etc.), limit switches, and electric connectors.

RAI 4.4.1-2: The LRA does not address whether there have been any major plant modifications or events at Turkey Point, Units 3 and 4 of sufficient duration to have changed the temperature and radiation values that were used in the underlying assumptions in the EQ calculations, and whether the conservatism in the EQ equipment qualification analyses are sufficient to absorb environmental changes occurring due to plant modification and events. Also, the LRA does not address the controls used to monitor changes in plant environmental conditions to periodically validate the environmental data used in analyses.

Please provide additional information on the following:

- a) whether there have been any major plant modifications or events at Turkey Point of sufficient duration to have changed the temperature and radiation values that were used in the underlying assumptions in the EQ calculations,
- b) whether the conservatism in the EQ equipment qualification analyses are sufficient to absorb environmental changes occurring due to plant modification and events, and
- c) the specific controls used to monitor changes in plant environmental conditions to periodically validate the environmental data used in analyses.

RAI 4.4.1 -3: In Section 4.4.1 of the LRA, the applicant stated that for conservatism, a temperature rise of 10°C was added to maximum operating temperature for continuous duty power cables to account for ohmic heating. Provide basis for a temperature rise of 10°C.

Appendix B, Section 3.2.6

Environmental Qualification

RAI Appendix B-3.2.6-1: In Section 3.2.6 of Appendix B, under Operating Experience and Demonstration, the applicant stated that the program provides assurance that the environments to which installed devices are exposed will not exceed the qualified lives associated with the devices. This is accomplished through effective monitoring of key parameters (temperature, radiation) at established frequencies with well-defined acceptance criteria.

Please provide a summary description of how the key parameters (temperature and radiation) were monitored, including the instrumentation and procedures used to obtain the temperature and radiation data, measurement locations, the frequency of the measurements and the plant status during measurements. In the discussion, please address the measures taken to ensure that the temperature and radiation data obtained are representative of the service environment in which the equipment being evaluated are installed.

Enclosure

RAI Appendix B-3.2.6-2: In Section 3.2.6, under Acceptance Criteria, you have stated that the program requires replacement, refurbishment, or requalification prior to exceeding the life limit (qualified life) of each installed device.

Please provide additional information on what procedures and controls will be used to ensure that the qualification status of the equipment is preserved when replacement and refurbishment are used.

Section 3.7

Electrical and Instrumentation and Controls

RAI 3.7.1-1: In Sections 3.7.1.1.3, 3.7.1.1.4, and 3.7.1.1.5 of the LRA evaluate the aging effects applicable for electrical components that can be expected to occur due to: (1) moisture-produced water trees, (2) radiation, and (3) heat, depending on environmental conditions. Further, the LRA states that water trees occur when the insulating materials are exposed to long term continuous electrical stress and moisture. These trees eventually result in breakdown of the dielectric materials and ultimate failure. However, the LRA concludes that because Turkey Point uses lead sheath cable to prevent effects of moisture on the cables, there are no requirement for aging management program for medium voltage cable and connections. The LRA also concludes that because the maximum operating doses to insulation material will not exceed the moderate damage dose and because the maximum operating temperature of insulation material will not exceed the maximum temperature for 60 year life, no aging management are required for heat or radiation effects.

Most electrical cables in nuclear power plant are located in dry environments. However, some cables may be exposed to condensation and wetting in inaccessible locations, such as conduits, cables trenches, cable troughs, duct banks, underground vaults or direct buried installations. When energized cable not specifically designed for submergence is exposed to these conditions, water treeing or a decrease in dielectric strength of the conductor insulation can occur. This can potentially lead to electrical failure. The radiation levels most equipment experience during normal service have little degrading effect on most insulation materials. Design-basis calculations or evaluation determine or bound the expected radiation doses for all plant areas. These evaluations usually account for additional doses seen in these areas during to infrequent operations. However, some localized areas may experience higher than expected radiation condition. Typical areas prone to elevated radiation levels include areas near primary reactor-coolant system piping or the reactor-pressure vessel, areas near waste processing systems and equipment, and areas subject to radiation streaming. The most common adverse localized equipment environments are those created by elevated temperature. Elevated temperature can cause equipment to age prematurely, particularly equipment containing organic materials and lubricants. The effects of elevated temperature can be quite dramatic.

Therefore, for non-EQ cables, connections (connectors, splices, and terminal blocks), and electrical/I&C penetration insulation within the scope of license renewal located in the turbine building, intake structure, main steam and feedwater platforms, yard structures, containment, the diesel generator building, and the auxiliary building, provide a description of the following:

- An aging management program for accessible and inaccessible electrical cables, connections, and electrical/I&C penetration insulation exposed to an adverse localized environmental caused by heat or radiation.

- An aging management program for accessible and inaccessible electrical cables used in instrumentation circuits that are sensitive to reduction in conductor insulation resistance exposed to an adverse localized environment caused by heat or radiation.
- An aging management program for accessible and inaccessible medium-voltage (2kV to 15kV) cables (e.g., installed in conduit or directly buried) exposed to an adverse localized environmental caused by moisture-produced water trees and voltage stress.

Florida Power & Light Company

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