



MAY 11 2001

L-2001-112  
10 CFR 54

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

By letter dated March 30, 2001 (L-2001-34), FPL provided responses to the Requests for Additional Information (RAIs) associated with Section 4.4, Environmental Qualification, Appendix B Subsection 3.2.6, Environmental Qualification Program, and Section 3.7, Electrical and Instrumentation and Controls of the LRA. Based on the review of our responses, the NRC requested additional information regarding FPL's responses to RAI B-3.2.6 related to the Environmental Qualification Program and RAI 3.7.1-1 related to the aging management review of electrical components. Accordingly, Attachment 1 to this letter contains supplemental responses to these two RAIs.

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

AD84

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  
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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:

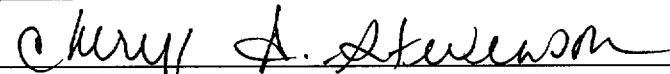
That he is Vice President - Turkey Point of Florida Power and  
Light Company, the Licensee herein;

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

11th day of May, 2001.

  
\_\_\_\_\_

**CHERYL A. STEVENSON**  
NOTARY PUBLIC - STATE OF FLORIDA  
COMMISSION # CC929876  
EXPIRES 6/19/2004  
BONDED THRU ASA 1-888-NOTARY1

\_\_\_\_\_  
Name of Notary Public (Type or Print)

R. J. Hovey is personally known to me.

**ATTACHMENT 1  
SUPPLEMENTAL RESPONSE TO  
REQUESTS FOR ADDITIONAL INFORMATION,  
B-3.2.6-1 AND 3.7.1-1  
TURKEY POINT UNITS 3 AND 4,  
LICENSE RENEWAL APPLICATION**

**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 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.

**FPL SUPPLEMENTAL RESPONSE:**

The response below supercedes the response to RAI Appendix B-3.2.6-1 transmitted in FPL letter L-2001-34 dated March 30, 2001. This response is being revised to include a discussion of the containment and auxiliary building radiation monitoring based on a request from the NRC staff. The revised response is provided below.

As indicated in the response to RAI 4.4.1-2 c) and Subsection 4.4.1, page 4.4-3 of the Turkey Point LRA, the temperature and radiation values used for service conditions in the environmental qualification analyses are the maximum design operating values for Turkey Point. Containment temperature is monitored continuously by three temperature monitors at the 58 foot elevation of the containment to meet Technical Specification 3/4.6.1.5 (120°F). These values are recorded and logged shiftly under all plant conditions by control room personnel. To ensure monitored temperatures are bounding for the service environment of EQ equipment, the monitors are located at the highest level of EQ equipment inside containment. Since the qualified life calculations take into account increases in temperature due to self-heating and are done at a continuous temperature 2°F higher

than the maximum continuous temperature allowed by the Technical Specifications, these monitors ensure that the qualified life of EQ equipment inside containment will not be exceeded.

Containment area radiation levels are monitored continuously by three radiation monitors located in various locations throughout each containment. (Note that these monitors are in addition to the safety-related high range radiation, particulate, and gas monitors.) Turkey Point UFSAR Chapter 11.2 describes the Area Radiation Monitoring System. High radiation activity from any of these areas is indicated, recorded, and alarmed in the control room. To ensure that monitored radiation levels are bounding for the service environment for EQ equipment, the high alarm setpoint of the monitors is much less than the values used for normal containment dose rates in EQ calculations.

Outside containment, the qualified life calculations are based on a continuous, maximum design temperature of 104°F. The only defined harsh temperature areas in the EQ Program outside of containment are located in outdoor areas (e.g., Main Steam Platforms). Outside containment equipment on the EQ List that is located in the Auxiliary Building is only required to be qualified for harsh radiation environments. Per Table 2.6-1 in the Turkey Point UFSAR, the actual average yearly temperature is between 74°F and 76.2°F. This 28°F (15°C) difference in temperature indicates that the qualified life based on actual average temperature is more than double the life used by the Turkey Point analyses. Additionally, the Area Radiation Monitoring System (14 monitors located throughout the Auxiliary Building that are indicated, recorded, and alarmed in the control room), operator walkdowns as part of their daily rounds, Health Physics radiation monitoring (surveys of areas in the Auxiliary Building at least monthly, and in some cases daily or weekly), and maintenance and system engineering personnel provide feedback to engineering through FPL's Corrective Action Program when changes to the plant environment or EQ equipment are encountered. As a result of the significant difference between the average temperature and the temperature used for qualified life calculations, any change in temperature that could adversely affect qualification would be readily identified. The same applies for radiation. The dose calculations assume over 10 times the fuel leakage that has ever been experienced at Turkey Point. Turkey Point plant procedures govern the frequency of surveillances, radiation surveys, and plant walkdowns. The frequencies range from shiftly to annual surveys, and these activities are performed during all modes of plant operation.

Containment temperature and radiation are logged at least daily, and all other EQ areas have operator walkdowns as part of their rounds at least daily while the plant is operating. The temperature and radiation data obtained is representative of the service conditions of EQ equipment and any change in temperature or radiation that could adversely affect qualification would be readily identified.

**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[s] 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[s] 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, 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.

**FPL SUPPLEMENTAL RESPONSE:**

In the response to RAI 3.7.1-1, transmitted in FPL letter L-2001-34 dated March 30, 2001, FPL committed to an aging management program for non-EQ cables, connections, and penetrations in the Containments at Turkey Point. The response contained a discussion of the program's ten attributes. Based on discussions with the NRC staff, additional information related to the aging management program, specifically associated with inaccessible cables, connections, or penetrations in the attribute "Corrective Actions," was requested. The response below supercedes that portion of the previous RAI response associated with "Corrective Actions."

**Corrective Actions**

Further investigation is performed through the Corrective Action Program on non-EQ cables, connections and penetrations when the acceptance criteria are not met in order to ensure that the intended functions will be maintained consistent with the current licensing basis. When an adverse localized environment is identified for a cable, connection, or penetration, a determination is made as to whether the same condition or situation is applicable to other accessible or inaccessible cables, connections, or penetrations. Corrective actions may include, but are not limited to, testing, shielding or otherwise changing the environment, relocation or replacement of the affected cable, connection, or penetration. Corrective actions implemented as part of the Corrective Action Program are performed in accordance with FPL's 10 CFR 50, Appendix B Quality Assurance Program.