

il 23, 1998

Mr. T. F. Plunkett
Président - Nuclear Division
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: FOLLOWUP REQUEST FOR ADDITIONAL INFORMATION - GENERIC LETTER 92-08,
"THERMO-LAG 330-1 FIRE BARRIERS," TURKEY POINT PLANT, UNITS 3 AND 4,
ST. LUCIE PLANT, UNITS 1 AND 2 (TAC NO. M82809)

Dear Mr. Plunkett:

By letters dated December 19, 1996, and March 7, 1997, Florida Power and Light Company submitted responses to the U.S. Nuclear Regulatory Commission (NRC) staff's requests for additional information dated November 6, 1996, and January 29, 1997, related to Generic Letter 92-08, "Thermo-Lag 330-1 Fire Barriers," for St. Lucie Plant (SLP), Units 1 and 2, and Turkey Point Plant (TPP), Units 3 and 4, respectively.

The NRC staff, in conjunction with its contractor, Sandia National Laboratories, has reviewed your submittals, and has identified several issues, as outlined in the enclosure, that require clarification before we can complete our review. Please provide your responses to these issues that relate to the ampacity derating factor determinations for SLP and TPP within 60 days from your receipt of this letter.

If you have any questions regarding this matter, please contact William C. Gleaves at (301) 415-1479 for SLP, or Kahtan N. Jabbour at (301) 415-1496 for TPP.

Sincerely,

Frederick J. ^{/s/}Hebdon, Director
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-335, 50-389
50-259, 50-251

Enclosure: Request for Additional Information

cc w/encl: See next page

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J. Zwolinski (A) Turkey Point r/f

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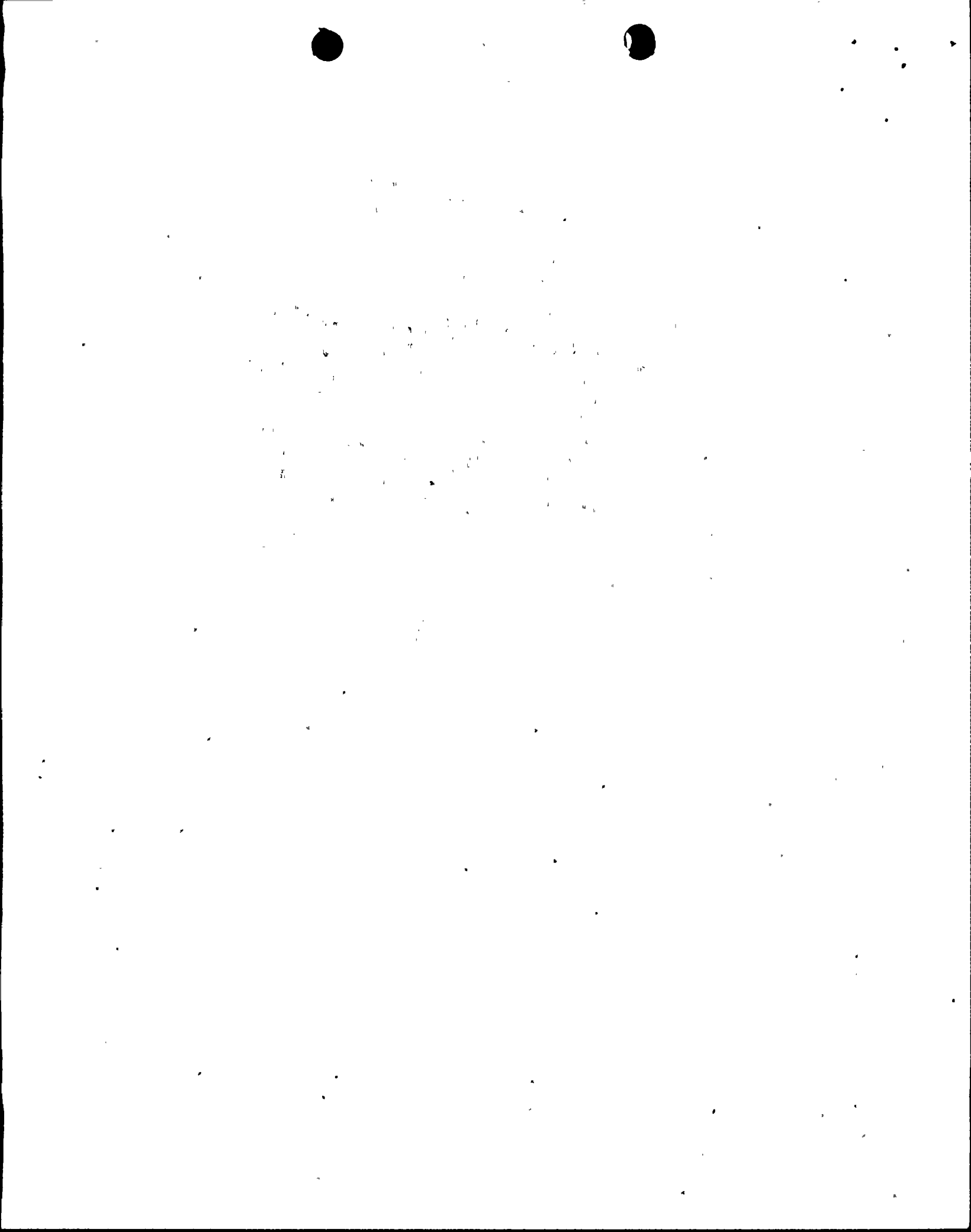
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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

April 23, 1998

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

SUBJECT: SECOND REQUEST FOR ADDITIONAL INFORMATION - GENERIC LETTER 92-08,
"THERMO-LAG 330-1 FIRE BARRIERS," ST. LUCIE PLANT, UNITS 1 AND 2, AND
TURKEY POINT PLANT, UNITS 3 AND 4 (TAC NO. M82809)

Dear Mr. Plunkett:

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Sincerely,

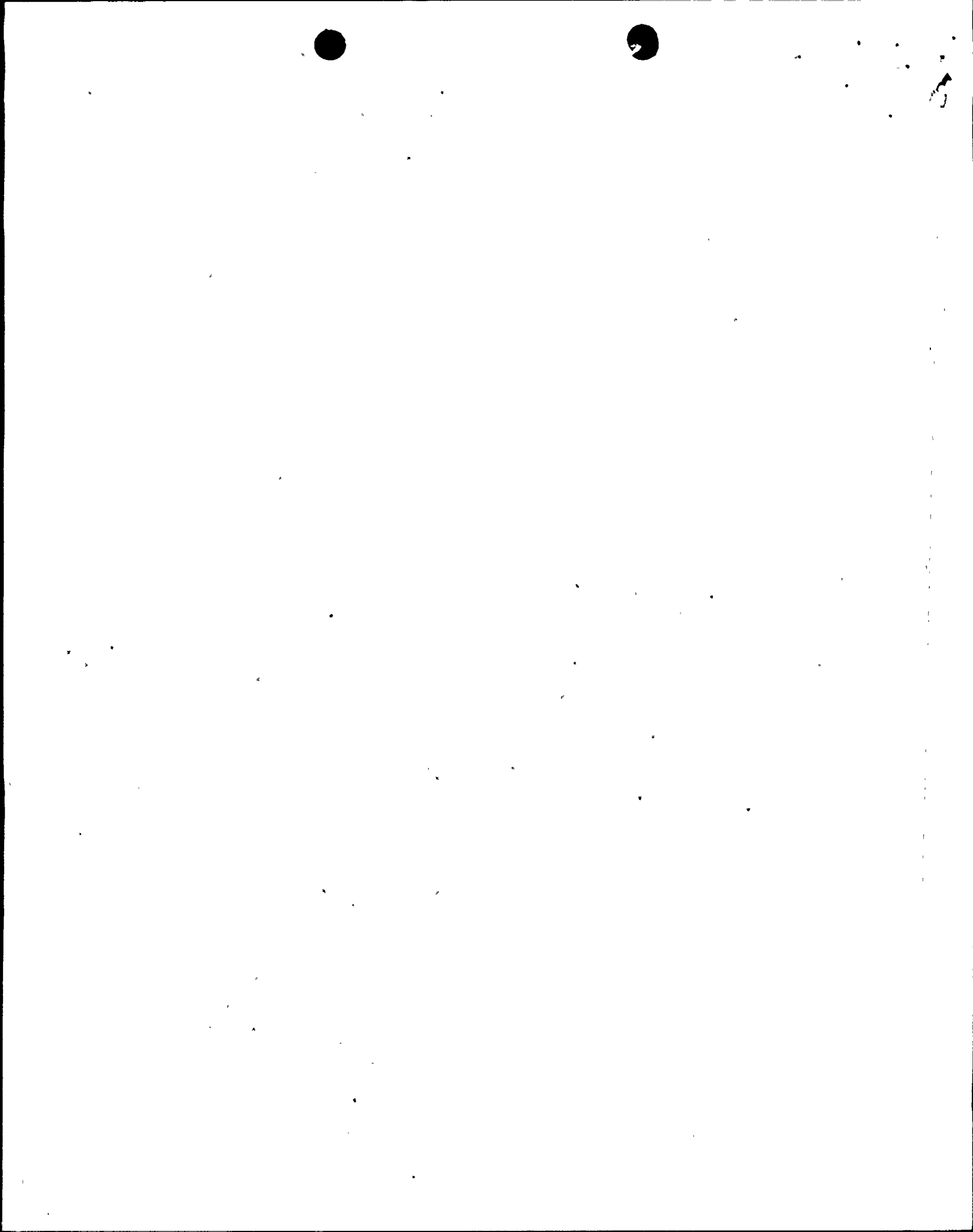
A handwritten signature in cursive script, reading "Frederick J. Hebdon".

Frederick J. Hebdon, Director
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-335, 50-389
50-259, 50-251

Enclosure: Request for Additional Information

cc w/attachment: See next page



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**ST. LUCIE PLANT
TURKEY POINT PLANT**

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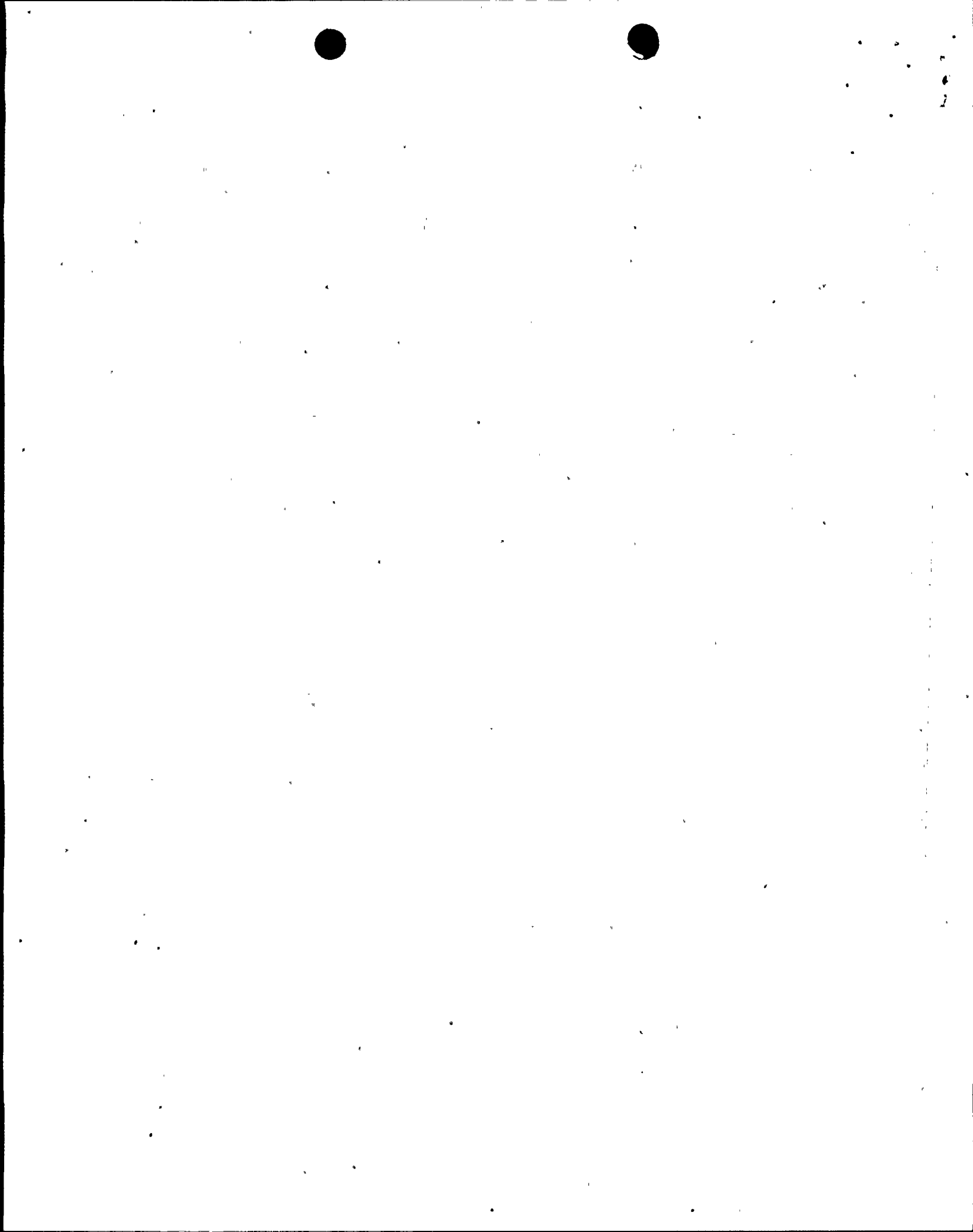
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SECOND REQUEST FOR ADDITIONAL INFORMATION REGARDING
GENERIC LETTER 92-08,
"THERMO-LAG 330-1 FIRE BARRIERS"
ST. LUCIE PLANT, UNITS 1 AND 2
TURKEY POINT PLANT, UNITS 3 AND 4
(TAC NO. M82809)

1.0 BACKGROUND

By letters dated December 19, 1996, and March 7, 1997, Florida Power and Light Company (FPL or licensee) submitted responses to the U. S. Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) dated November 6, 1996, and January 29, 1997, related to Generic Letter 92-08, "Thermo-Lag 330-1 Fire Barriers," for St. Lucie Plant (SLP), Units 1 and 2, and Turkey Point Plant (TPP), Units 3 and 4, respectively.

The staff, in conjunction with its contractor, Sandia National Laboratories (SNL), has reviewed the licensee's submittals, and has identified the following issues that need to be addressed by the licensee.

2.0 ISSUES

2.1 St. Lucie Plant (SLP) Submittal

- a. For the nominal 1-hour Thermo-Lag cladded conduit fire barriers, the licensee has assumed a fire barrier ampacity derating factor (ADF) of 11% (or an ampacity correction factor (ACF) of 0.89). This value apparently derives from the Texas Utilities Electric Company (TUEC) ampacity derating tests conducted for Comanche Peak Steam Electric Station, Unit 2. Similarly, for the nominal 3-hour Thermo-Lag cladded fire barriers, the licensee has assumed an ADF of 20% (or ACF of 0.80). This value also appears to be derived from a thermal extrapolation of the TUEC 1-hour conduit ampacity derating tests. However, the maximum 11% ADF value selected by the licensee is inconsistent and nonconservative with the staff findings regarding the subject TUEC 1-hour conduit barrier tests [see Reference 1 below].

The licensee is requested either to consider more recent ampacity derating test data compiled by Florida Power Corporation (FPC) for Crystal River, Unit 3 [see Reference 2 below] or the applicable modified TUEC ADF values as stated in the subject staff Safety Evaluation [Reference 1] as the basis for 1-hour conduit ADF values. It should be noted that the referenced FPC test ADF values compare favorably with the 11% ADF value initially selected by the licensee. In the event that the licensee adopts the FPC test ADF values, the licensee should confirm that all fire barrier constructions for the applicable configurations are representative of the barrier construction used in the FPC ampacity derating tests.

- b. The staff finds that the licensee's use of the Institute of Electrical and Electronics Engineers "no sun - 2 ft/s" conduit baseline ampacity limits in its Calculation PSL-OFJE-001 is contrary to the accepted practice in nuclear power plant ampacity assessments for general indoor applications. It is recommended that: (1) baseline ampacity be assessed on the basis of the "no sun - 0 ft/s" condition, or (2) an explicit justification be provided for the assumption that all cables will be subject to continuous air flow currents of a least 2 ft/s velocity. The licensee is requested to consider the above information for further modification or correction of the subject calculation.

ENCLOSURE



- c. The licensee, in Calculation PSL-BFJM-96-005, has assumed that inductive heat losses are not relevant to the SLP applications. However, this does ignore the fact that the TUEC tests did experience apparent problems with inductive heating that will be reflected in the test data. This introduces a considerable, but unquantifiable, level of uncertainty into these analyses.

The licensee has taken the measured test currents as reported by TUEC directly as the basis for analysis. However, in approving the TUEC test results [see Reference 1], the staff concluded that there was considerable uncertainty in the test results because of both the inductive heating problem and the fact that different physical test specimens were used for the baseline and clad tests. The licensee calculation has failed to bound this uncertainty.

As recommended in Item 2.1.a above, the licensee is requested to consider: (1) the use of the more recent ampacity derating test data obtained by FPC for Crystal River, Unit 3 [See Reference 2 below]; or (2) the applicable modified TUEC ADF values, as stated in the subject staff Safety Evaluation [Reference 1], as the basis for conduit ADF values.

2.2 Turkey Point Plant (TPP) Submittal

- a. The same issue as stated in Item 2.1.a above is also applicable for Calculation PTN-BFJM-96-005 and applicable conduit fire barriers installed at TPP.
- b. SNL made the following observations regarding the subject calculations:

Calculation PTN-BFJM-96-028

1. For the cable tray case, the licensee appears to have mistaken Tennessee Valley Authority (TVA) test Article 7.1 as a 3-hour barrier system with a nominal thickness of 1.25" when in fact TVA Test Article 7.1 involved a test of a 1-hour system of nominal 5/8" thickness. As a result, the licensee thermal model has understated the relative impact of the change in barrier thickness for the upgraded 3-hour barrier system in comparison to the tested 1-hour barrier system.
2. The licensee table cites a value of 0.75" for the assumed thickness of the 3-hour plus upgrade cable tray fire barrier system. This appears to be a simple typographical error and the calculation seems to have been performed using the correct 2" thickness.

The licensee is requested to consider the above information for further modification or correction of the subject calculation.

Calculation JPN-PTN-SEEP-96-011

1. The licensee assessment of baseline ampacity limits for cable trays were not documented in the submittal; hence, a definitive review of these values was not



possible. Based on a simple comparison of the licensee-cited values to those obtained by SNL using the ICEA P-54-440 methodology, SNL found that certain licensee-cited values appeared non-conservative. Although SNL re-analyzed each of the six licensee cable tray applications using accepted methods, and based on this re-analysis, all of the cable tray applications appear to have an adequate ampacity margin, the licensee should document their assessment of the baseline ampacity limits for cable tray applications.

2. In one particular cable tray case study (tray 4AXT10), the licensee has applied the methodology of IPCEA P-46-426 for cables in trays without maintained spacing. This methodology has been superseded by the ICEA P-54-440 methodology; hence, its use in this study appears to be inappropriate. SNL also noted that the licensee application of this method had cited open air ampacity limits for a single conductor cable when, in fact, the values for a 3-conductor cable should have been used. SNL re-analyzed the case in question using the P-54-440 method and, as a result, it appears that the subject ampacity loads are acceptable. However, the licensee should re-examine the use of the IPCEA P-46-426 methodology in this case.
3. In the assessment of conduit ampacity limits, the licensee has applied conduit conductor count correction factors that inherently credit 50% diversity without explicitly justifying that this level of diversity does in fact exist in the applicable conduits. This concern only impacts those few conduits with a conductor count of ten or more. Although SNL has re-analyzed the affected conduits, and it appears that even including the more conservative conductor count correction factor, the affected cables are operating within acceptable ampacity limits, there should be an explicit justification for the 50% diversity assumption.

The licensee is requested to consider the above information for further modification or correction of the subject calculation.



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3.0 REFERENCES

1. NRC Letter from T. Polich to C. Lance Terry, FPL, dated June 14, 1995 [w/enclosed "Safety Evaluation of Ampacity Issues Related to Thermo-Lag Fire Barriers at Comanche Peak Steam Electric Station, Unit 2 (TAC NO. 859990)"].
2. Florida Power Corporation Ampacity Derating Tests for Crystal River Unit 3 as documented in "Ampacity Test Investigation of Raceway Fire Barriers For Conduit and Cable Tray Systems," Underwriters Laboratory Report No. 95NK17030NC1973, May 7, 1996.

