August 1, 2003

Mr. J. A. Stall
Senior Vice President, Nuclear and
Chief Nuclear Officer
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: ST. LUCIE PLANT, UNITS 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION REGARDING THE RESOLUTION OF GENERIC LETTER 96-06 WATERHAMMER ISSUES (TAC NOS. M96870 AND M96871)

Dear Mr. Stall:

By letter dated July 29, 2002, as supplemented by letter dated March 13, 2003, Florida Power and Light Company submitted a response to Generic Letter 96-06, *Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions*, concerning the resolution of waterhammer issues for the St. Lucie Plant, Units 1 and 2.

The U.S. Nuclear Regulatory Commission staff has reviewed your submittal and finds that a response to the enclosed request for additional information is needed before we can complete the review. This request was discussed with your staff on July 30, 2003, and Mr. George Madden agreed that a response would be provided by September 30, 2003.

If you have any questions, please feel free to contact me at (301) 415-3974.

Sincerely,

***/RA/***

Brendan T. Moroney, Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-335 and 50-389

Enclosure: As stated

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

RESOLUTION OF GENERIC LETTER 96-06 WATERHAMMER ISSUES

FLORIDA POWER AND LIGHT

SAINT LUCIE PLANT, UNITS 1 AND 2

DOCKET NOS. 50-335 AND 50-389

1. Page 2 of the March 13, 2003, submittal (the submittal) discussed benchmark testing of Component Cooling Water (CCW) system pump coastdown and recovery following restart. Provide a comparison between these tests to a postulated loss of offsite power event at St. Lucie. Provide comparisons of steam formation within the CCW piping, number of pumps starting, maximum flow rates within the system after pump restart and waterhammer produced. Also, identify the location of the test section, discussed on page 3, relative to the CCW pumps and the containment coolers.

2. Figures on page 3 of the submittal indicate that a CCW system hydraulic (HYTRAN) code predicts higher waterhammer pressures when a reduced speed of sound is used. It is the U.S. Nuclear Regulatory Commission (NRC) staff's understanding that when a reduced speed of sound is used in waterhammer calculations, lower waterhammer pressures should result. Explain this discrepancy.

3. The submittal states that the HYTRAN code was used to predict peak pressure produced in the waterhammer analysis. The NRC staff has not previously reviewed the HYTRAN code for waterhammer analysis within CCW piping. Provide either the HYTRAN code for staff review, or provide an analysis of the most severe waterhammer postulated within the CCW piping using the Electric Power Research Institute (EPRI) methodology that the staff has approved. If you choose to apply the EPRI methodology rather than submitting the HYTRAN code for staff review, provide the following information:

   a. The maximum CCW velocity following pump restart.

   b. Mass of gas in the void. Provide justification that the minimum noncondensible mass for use of the EPRI methodology will be present.

   c. Amount of cushioning credited. Reference the nomograph used to determine cushioning.

   d. Assumptions regarding pressure pulse shape.

   e. Assumptions regarding pressure pulse duration.

Enclosure

f. Transmission coefficients used to track the pressure wave through the CCW piping.

g. Pressure pulse clipping.

4. The submittal states, on page 6, that calculated results from a water heatup transient are used as input into HYTRAN. Describe the assumptions and equations used in this calculation and justify whether the methodology is conservative.

5. The submittal states, on page 7, that the peak pressure generated in the analysis is 270 psig, the piping design pressure is 150 psig, and that the Containment Fan Cooler cooling coils have a design pressure of 225 psig. Provide justification that these components will not fail under the calculated waterhammer load.

6. Provide the maximum loads calculated for the CCW piping, supports, orifices, bends, and penetrations for the worst case column closure waterhammer. Also, provide the ratios of the maximum loads within the service water system to the allowable loads.

7. Page 11 of the submittal states that the piping, pipe support, and cooler structural analysis for the design basis case was ongoing. Provide the results of the structural analysis and include a summary of the licensing basis load combinations along with the results of the stress analysis.

8. Page 11 of the submittal states that the loads and stresses are "not sensitive to void size." Explain.

9. Page 13 of the submittal establishes commitments for completing modifications that are necessary for resolving the waterhammer issue. Provide a status update for these items.

Mr. J. A. Stall
Florida Power and Light Company

ST. LUCIE PLANT

cc:
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