June 21, 1985

Docket No. 50-335

Mr. J. W. Williams, Jr.
Vice President
Nuclear Energy Department
Florida Power & Light Company
P. O. Box 14000
Juno Beach, Florida 33408

Dear Mr. Williams:

SUBJECT: TMI ACTION ITEM II.D.1, RELIEF AND SAFETY VALVE TEST REQUIREMENTS

The staff has completed its review of your responses dealing with TMI Action Item II.D.1. As a result of that review, additional information is required. The information needed is identified in the enclosure to this letter.

It is requested that you provide your response within 30 days, or a date that you can meet within 15 days of receipt of this letter.

If you have any questions, contact the project manager, D. Sells (301) 492-9735. This review is being conducted under NRC TAC No. 44617.

This request for additional information affects fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Original signed by

Edward J. Butcher, Acting Chief
Operating Reactors Branch No. 3
Division of Licensing

Enclosure:
Request for
Additional Information

cc w/enclosure:
See next page

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cc:
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REQUEST FOR ADDITIONAL INFORMATION

TMI ACTION NUREG-0737 (II.D.1)

FOR

ST. LUCIE, UNIT 1

DOCKET NO.: 50-335

JUNE 1985

SAFETY EVALUATION QUESTIONS
TMI ACTION NUREG-0737 II.D.1
FOR ST. LUCIE 1

Questions related to the selection of transients and valve inlet conditions:

1. The Combustion Engineering Report on operability of PORVs in CE Plants indicated that the limiting inlet fluid conditions during low temperature pressurization transients are a water discharge event. The CE Inlet Fluid Conditions Report stated that the pressurizer water solid condition and resulting PORV liquid discharge case was chosen for the cold overpressurization event since it gave the most severe pressurization transients. The report further states that a steam bubble can also exist in the pressurizer during low temperature operation whereby the PORV could lift on steam. No low pressure steam tests were performed by EPRI on the Dresser PORV. Provide verification that the St. Lucie 1 PORVs will operate satisfactorily on low pressure steam. Also, since the submittal does not identify the PORV set points for either normal operation or low temperature overpressure protection, please provide this information.

Questions related to valve operability:

2. NUREG-0737, Item II.D.1 requires that the plant-specific PORV Control Circuitry be qualified for design-basis transients and accidents. Provide information which demonstrates that this requirement has been fulfilled.

3. The information referenced by the submittal states that bending moments imposed by the discharge piping did not impair valve operability. Thermal expansion of the pressurizer causing displacement of the piping nozzles and thermal expansion of the piping from the nozzles to the valves can contribute to the bending moment induced in the valve body. The submittal does not make clear what

loads were considered in calculating the bending moments applied to the plant safety valves and PORVs. Provide additional discussion comparing the measured moment on the tested valves to the calculated induced moments from all effects including those described above on the plant specific valves. Verify that the bending moments would have no adverse effect on the operability of the plant valves.

4. Based on information obtained on other plants, the manufacturer of the Dresser PORV recommends that a heavier spring be installed in both the main valve and the pilot valve in order to prevent leakage at lower pressures. Provide verification that this modification has been made or other information which demonstrates the valve will not excessively leak causing valve seat damage during low pressure fluid inlet conditions.

Questions on thermohydraulic analysis:

5. The submittal states that a thermal-hydraulic analysis was performed using RELAP5 and the results input into the postprocessor code CAPLOTFIII for the development of the appropriate forcing functions and time histories. Some details of the analyses were not provided. To allow for an evaluation of the methods used provide a sketch of the model and identify the valve opening times used in the analysis. The code CAPLOTFIII is a special purpose code without wide use. Provide a discussion on how this code has been verified to provide confidence that it computes correct forcing functions. Also, since the ASME Code requires derating of the safety valve to 90% of expected flow capacity, the actual flow would be expected to exceed the rated flow. Flows measured during the EPRI tests confirmed this expectation. These higher flows would produce higher piping loads; therefore, explain the method used to establish the flow rates of the safety valves and the PORVs used in the analyses.

Questions on structural analysis:

6. The submittal states that the results of the thermal-hydraulic analysis were compared with the analysis which had resulted in the present design and the conclusion was reached that the piping and supports are adequate for the calculated hydraulic loads. Since the loading is a time dependent loading at numerous locations, dynamic considerations are necessary in making the comparison. Details of the comparison were not provided. To allow an evaluation of the comparison explain how the comparison was made. If computer programs were used in the comparison identify the programs and explain how they have been verified for this application. Identify the load combinations considered and the allowable stress criteria for each combination. If the combinations and acceptance criteria differ from those recommended in the "EPRI Safety and Relief Valve Test Program Guide for Application of Valve Test Program Results" provide the rationale for the selection.