

July 7, 1998

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

FROM: Ledyard B. Marsh, Chief
Plant Systems Branch
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RELATED
TO THE GL 96-06 RESPONSE FOR TURKEY POINT 3 AND 4
(TAC NOS. M96878 AND M96879)

Generic Letter (GL) 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions," dated September 30, 1996, included a request for licensees to evaluate cooling water systems that serve containment air coolers to assure that they are not vulnerable to waterhammer and two-phase flow conditions. The Florida Power and Light Company (the licensee) provided its assessment of the waterhammer and two-phase flow issues for Turkey Point 3 and 4 in letters dated January 28 and March 24, 1997. In order to complete our review of the licensee's resolution of these issues, we will require additional information as discussed in the attachment. We ask that the licensee provide this information by September 30, 1998, in order to support our review schedule for GL 96-06.

Docket Nos.: 50-250
and 50-251

Attachment: As stated

CONTACT: James Tatum, SPLB/DSSA/NRR
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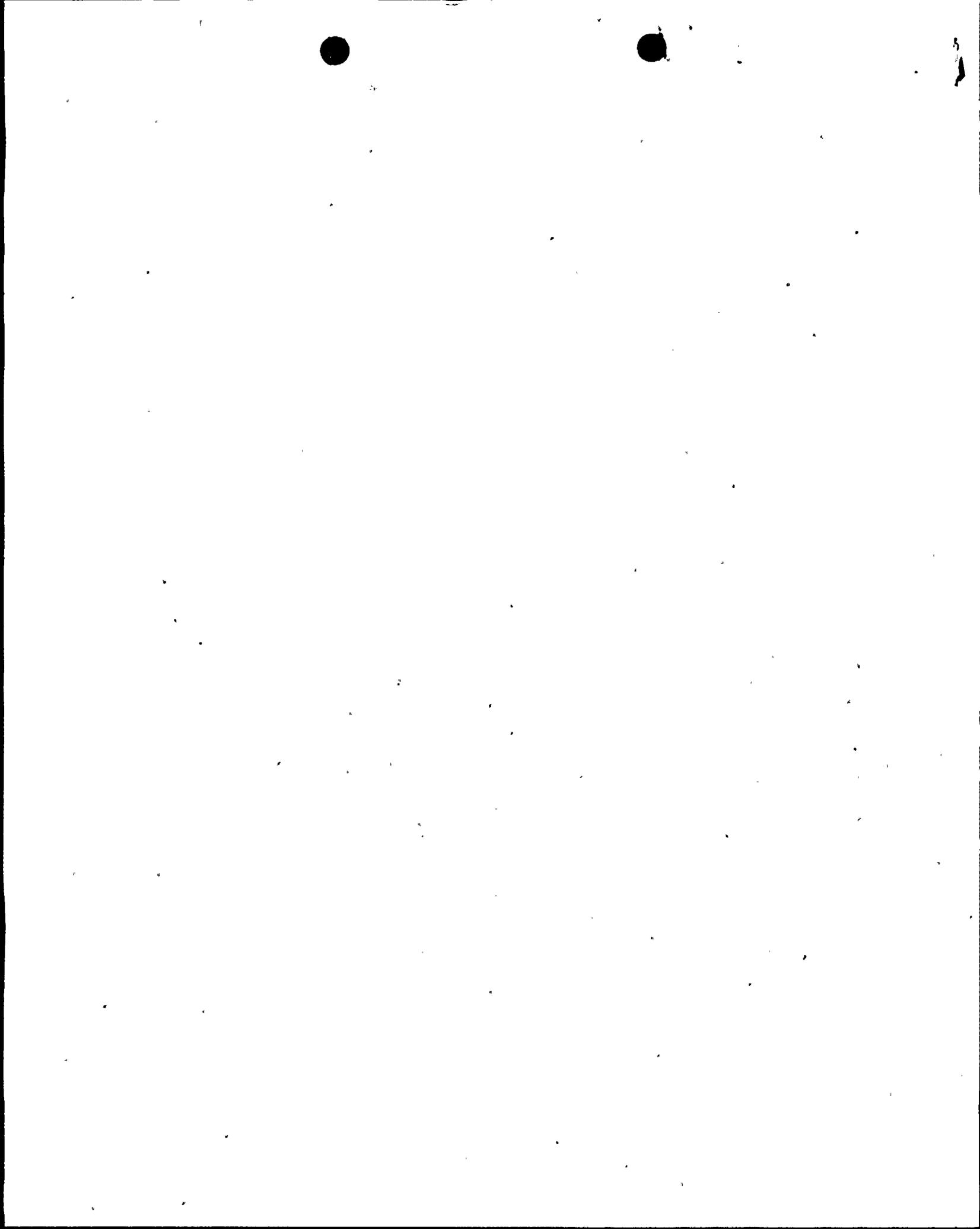
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REQUEST FOR ADDITIONAL INFORMATION FOR RESOLUTION OF
GL 96-06 ISSUES AT TURKEY POINT 3 AND 4
(TAC NOS. M96878 AND M96879)

Generic Letter (GL) 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions," dated September 30, 1996, included a request for licensees to evaluate cooling water systems that serve containment air coolers to assure that they are not vulnerable to waterhammer and two-phase flow conditions. The Florida Power and Light Company (the licensee) provided its assessment of the waterhammer and two-phase flow issues for Turkey Point 3 and 4 in letters dated January 28 and March 24, 1997. The licensee has determined that waterhammer could occur in the component cooling water system, which provides cooling water for the normal containment coolers and the emergency containment coolers. The licensee indicated that actions would be taken to preclude steam formation in the CCW system, thus eliminating the potential for waterhammer. In order to assess the licensee's resolution of these issues, the following additional information is requested:

- Notes:
1. Information that has been submitted previously may be referred to and supplemented as necessary to provide a complete response to the staff's questions.
 2. The following questions are applicable to the system configuration and analyses that are credited for resolution of the waterhammer and two-phase flow issues.
1. Provide a detailed description of the "worst case" scenarios for waterhammer and two-phase flow, taking into consideration the complete range of event possibilities, system configurations, and parameters, and describe the minimum margin to boiling that will exist. For example, all waterhammer types and water slug scenarios should be considered, as well as temperatures, pressures, flow rates, load combinations, and potential component failures.
 2. Describe in detail any testing that has been completed to confirm the analytical results, identify any shortcomings that exist, and explain how the test results assure conservatism in the analyses that have been completed.
 3. Describe and justify all assumptions and input parameters (including those used in any computer codes) that were used in the waterhammer and two-phase flow analyses. Confirm that these assumptions and input parameters are consistent with the existing design and licensing basis of the plant. Any exceptions should be explained and justified.
 4. Explain and justify all uses of "engineering judgement" that were credited in the waterhammer and two-phase flow analyses.

5. Discuss specific system operating parameters and other operating restrictions that must be maintained to assure that the waterhammer and two-phase flow analyses remain valid (e.g., surge tank level, pressures, temperatures), and explain why it would not be appropriate to establish Technical Specification requirements to acknowledge the importance of these parameters and operating restrictions. Also, describe and justify use of any non-safety related instrumentation and controls for maintaining these parameters.
6. Implementing measures to assure that waterhammer will not occur, such as establishing and maintaining system overpressure requirements, is an acceptable approach for addressing the waterhammer concern. However, all scenarios must be considered to assure that the vulnerability to waterhammer has been eliminated. Confirm that all scenarios have been considered, including those where the affected containment penetrations are not isolated (if this is a possibility), such that the measures that have been established (or will be established) are adequate to prevent the occurrence of waterhammer during (and following) all postulated accident scenarios.
7. Confirm that the waterhammer and two-phase flow analyses included a complete failure modes and effects analysis (FMEA) for all components (including electrical and pneumatic failures) that could impact performance of the cooling water system and confirm that the FMEA is documented and available for review, or explain why a complete and fully documented FMEA was not performed.
8. Determine the uncertainty in the waterhammer and two-phase flow analyses, explain how the uncertainty was determined, and how it was accounted for in the analyses to assure conservative results.
9. Provide a simplified diagram of the affected system, showing major components, active components, relative elevations, lengths of piping runs, and the location of any orifices and flow restrictions.
10. Describe in detail any plant modifications or procedure changes that have been made or are planned to be made to resolve the waterhammer and two-phase flow issues, including schedules for any changes that have not been completed.

