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WASHINGTON, DC 20515

June 27, 1985

The Honorable Nunzio J. Palladino  
Chairman  
Nuclear Regulatory Commission  
1717 H Street, NW  
Washington, D. C. 20555

Dear Mr. Chairman:

The Subcommittee's recent briefing on the June 9, 1985 loss of feedwater at Davis-Besse has heightened my concern about this incident and about the failure of the Nuclear Regulatory Commission (NRC) to require needed improvements at the plant in both management and hardware.

As I stated in my June 17, 1985 letter, I believe that NRC must determine the extent to which it is responsible for allowing Davis-Besse to suffer such a close call. I would like to be informed of what internal investigation will be undertaken and request a copy of your final report as soon as it is completed. Any investigation should examine NRC's responses to the history of management deficiencies at the plant and the known deficiencies in the auxiliary feedwater system. In my view, this investigation would be enhanced were it headed by an individual outside of NRC who will be recognized as independent.

The Subcommittee's own investigation is ongoing. I continue to expect your response to the questions contained in my June 17, 1985 letter by the deadline that has been established. Attached are some additional questions which should be answered within ten working days or no later than July 12, 1985.

I would like to take this opportunity to express my support for those actions that I understand the Commission has taken to date, including initiating the Task Force investigation and the Confirmation of Action Letter issued by Region III. These appear to be prudent first steps. I encourage you to proceed vigorously and expeditiously.

The Subcommittee is interested in what steps the NRC will require prior to authorizing a restart of Davis-Besse. With regard to each of the following six action areas, please advise the Subcommittee of whether the Commission will allow a restart before each is completed. To the extent that one or more of these measures are not deemed necessary, then please provide a detailed explanation of the technical basis for continued operation pending completion of that item:

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CORRESPONDENCE PDR

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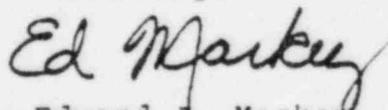
1. Determination of the cause of each failure during the incident, the root cause(s) of the incident and compliance with any corrective actions;
2. Implementation of short-term management improvements prior to restart and contracting for a third party audit of plant management to be complete within six months;
3. Installation of a third train or at least a third pump in the auxiliary feedwater system that is automatic, safety grade and assures compliance of the system with the General Design Criteria and Standard Review Plan;
4. Determination of what emergency procedures should be used during such an incident and compliance with any corrective actions;
5. Determination of whether the licensee submitted complete and accurate information to the NRC during and following the incident and if not, determine why and take any corrective action necessary;
6. Accomplishment of each of the above in a safe and effective manner that does not pose any new safety problem.

Obviously, your response to these questions should be provided to the Subcommittee prior to the actual restart of Davis-Besse.

Additionally, please report to the Subcommittee on the generic implications of the Davis-Besse incident and any corrective actions deemed necessary. In this context, I would appreciate additional information regarding an April 17, 1984 NRC Staff memorandum that appears to indicate that no Babcock & Wilcox reactor auxiliary feedwater system fully complies with NRC regulations and standards (see question #1 below).

In advance, thank you for your prompt response to the attached questions.

Sincerely,



Edward J. Markey  
Chairman

EJM:mw

Attachment

## Questions for the Nuclear Regulatory Commission

1. According to an April 17, 1984 memorandum from L. S. Rubenstein, Assistant Director for Core and Plant Systems to Gus C. Lainas, Assistant Director for Licensing, no Babcock & Wilcox (B&W) reactor meets the reliability criteria of the Standard Review Plant Section 10.4.9. Each of the B&W plants was cited for also failing to meet one or more General Design Criteria.
  - a. Why are these plants allowed to operate if they fail to comply with the General Design Criteria and Standard Review Plan?
  - b. Were exemptions or amendments granted for each plant, and if so on what basis?
  - c. In terms of the probability of a loss of main feedwater, loss of auxiliary feedwater or the likelihood of loss of feedwater leading to a severe core damage accident, how do B&W reactors compare to other designs?
2. Given the repeated recommendations for upgrading the auxiliary feedwater system at Davis-Besse to include a third diverse drive auxiliary feedwater pump, on what basis has this recommendation not yet been implemented? Specifically, does the Commission believe that it is acceptable that the NRC has been unable to resolve this issue for six years?
3. According to a September 28, 1984 memorandum from Harold R. Denton, Director of the Office of Nuclear Reactor Regulation to William J. Dircks, Executive Director for Operations, the NUREG-0667 recommendation for a diverse drive auxiliary feedwater pump at Davis-Besse was never implemented because the Auxiliary Systems Branch determined that it was not necessary. Please provide any such analysis or recommendation by the Auxiliary Systems Branch and all related documents. Additionally, please reconcile this statement with a March 12, 1985 memorandum from Olan D. Parr, Chief of the Auxiliary Systems Branch to John F. Stolz, Chief of the Operating Reactors Branch No. 4, that states: "We are delighted that the licensee [has decided to add] this third, motor driven pump."
4. According to a January 16, 1984 memorandum for Ashok C. Thadani, Chief of the Reliability & Risk Assessment Branch to Olan Parr, Chief of the Auxiliary Systems Branch, the average probability of a core meltdown initiated by a loss of main feedwater is approximately 1 in 2,000 per reactor year ( $5.4 \times 10^{-4}$ ). Given current plant configurations, is the Commission aware of any single accident sequence at any plant that poses

as high a probability of resulting in core damage?

5. Toledo Edison has finally decided to upgrade the auxiliary feedwater system by installing a third diverse drive auxiliary feedwater pump at Davis-Besse. Please provide the following information:
  - a. Will the modification constitute a new train of auxiliary feedwater or just a new pump? What other options are possible? Please state the relative advantages and disadvantages of all options.
  - b. How will the new pump feed water to the steam generators and will it be fitted with valves and piping to provide water in more than one manner?
  - c. Will the new system and pump be safety grade?
  - d. Will the new system be designed to function during a loss of offsite power event and if so, how?
  - e. Will the new system be automatic or manually initiated?
6. During the Subcommittee's June 21, 1985 briefing, Harold Denton, Director of the Office of Nuclear Reactor Regulation, stated that the performance of the feedwater systems at Davis-Besse was worse than that projected by probabilistic risk assessments (PRA). What is the reason for this discrepancy and what generic implications does this have for the degree of confidence ascribed to PRA?
7. At the beginning of the Davis-Besse incident on June 9, 1985, how many operators and which ones were in the control room? During the incident how many operators were outside the control room or stationed post, what were their titles, why did they leave the control room or stationed post, and specifically what actions were actually accomplished outside of the control room. In light of those actions that needed to be taken from outside the control room, is Davis-Besse meeting General Design Criterion 19 which states:

"A control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions...."
8. According to the NRC Staff, feed and bleed procedures for emergency cooling were initiated during the Davis-Besse incident. Numerous NRC memoranda state that feed and bleed emergency cooling is not capable of averting core damage at Davis-Besse. Why then are feed and bleed procedures part of the NRC approved emergency operating procedures for this plant? In responding to this question please state whether such a procedure would lengthen the time before core

uncovering and damage (and if so by how much) and whether undertaking such an effort is desirable given other priorities facing the operators.

9. Given the demonstrated likelihood of a total loss of feedwater at B&W reactors, why does the NRC consider this type of incident to be beyond the design basis? What is the technical basis for considering a potential failure or accident sequence as a design basis event?
10. List every regulation, requirement, recommendation, General Design Criteria, Standard Review Plan item, Branch Technical Position, Confirmatory Action Letter item, licensing commitment, TMI Action Plan item, NUREG-0667 recommendation, or any other item that Davis-Besse was not in full and complete compliance with on June 9, 1985.
11. According to a June 19, 1985 memorandum from C. J. Heltemes Jr., Director of the Office of Analysis and Evaluation of Operational Data, to William J. Dircks, Executive Director for Operations, the Safety Parameter Display System (SPDS) was inoperable at time of the Davis-Besse incident. The SPDS system was to be installed at Davis-Besse in accordance with the TMI Action Plan in order to provide reactor operators with minimum information which defines the safety parameters of the plant. Please state: (a) when this system was to have been operational according to the TMI Action Plan; (b) when it became operational at Davis-Besse; (c) why this system was inoperable during the Davis-Besse incident; and (d) will it be operable prior to restart?
12. List separately those plants that do not have auxiliary feedwater systems that are fully safety grade, those that have only two auxiliary feedwater pumps and those that have auxiliary feedwater pumps powered only by one source.
13. What, if any, plants are not in full compliance with the TMI Action Plan items relating to auxiliary feedwater systems?
14. Provide the current status of implementation of all recommendations of NUREG-0667 at each plant to which they are applicable.
15. After concerns were raised by Commissioner Gilinsky and then Region III in 1983, Toledo Edison pledged to take steps to improve its regulatory performance and management. According to the NRC Staff, these measures were ineffective. Why didn't the NRC take action to require effective improvements and has the NRC determined why those actions that were taken were not effective? Additionally, what measures does the Commission plan to take now to assure regulatory and management improvements and how will they differ from those taken over the past two years?

16. Should cost-benefit analysis be used to decide whether to require a safety improvement that would bring a nuclear reactor into compliance with NRC regulations?
17. What is the role of cost-benefit analysis in deciding whether to require a safety improvement at a nuclear reactor. Your response should answer the following questions: (a) how and what uncertainties are factored into any such analyses; (b) what costs are considered in any such analysis; (c) what costs are not considered in any such analysis; (d) what benefits are considered in any such analysis; and, (e) what benefits are not considered in any such analysis?
18. Should cost-benefit analysis be used to decide whether to require Davis-Besse to install a third auxiliary feedwater pump when it does not meet the Standard Review Plan reliability criterion and when no other U.S. reactor has the same design vulnerability of only two steam driven pumps?
19. Does the Committee to Review Generic Requirements and the Executive Director for Operations have any authority over the decisions and judgements of the Director of Nuclear Reactor Regulation to require safety improvements at nuclear reactors?
20. Please provide the following information:
  - a. An estimate of how much would it have cost Toledo Edison to have installed, in 1980, the pump that is now planned to be installed in 1986? How much will the pump and its installation cost in 1986?
  - b. How much did Toledo Edison pay for the reliability analysis by EDS Nuclear Inc.?
  - c. How much did NRC pay for the Brookhaven study which evaluated the EDS reliability analysis?
  - d. An estimate of how much Toledo Edison has expended since 1979 on improvements to the auxiliary feedwater system that were used to justify not installing a third auxiliary feedwater pump?
  - e. An estimate of the cost and staff hours expended by the NRC since 1980 to evaluate whether Davis-Besse should install a third auxiliary feedwater pump.
  - f. What has the June 9, 1985 incident cost Toledo Edison up till now? Please include an estimate of replacement power costs per day.