Docket
50-331

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

July 16, 1979

[redacted]

ALL BOILING WATER REACTOR LICENSEES
(Except Big Rock Point and Humboldt Bay)

Gentlemen:

In December 1977, we sent letters to the majority of licensees who operate Boiling Water Reactors (BWR) regarding the relief and safety-relief valves that are installed in the reactor coolant system and/or the automatic depressurization system. The letters requested licensees to propose Technical Specification changes to incorporate additional Surveillance Requirements for these valves. Model Technical Specifications were included for guidance in preparing plant specific requirements. The principal feature of the new requirements was a variable frequency test schedule for operability testing of relief and safety-relief valves.

Some licensees objected to this feature on the basis that increased testing of the Target Rock safety-relief valves could significantly degrade valve reliability because such testing could aggravate pilot valve leakage thereby increasing the likelihood of future malfunctions. This objection was not voiced by all licensees and was not shared by the NRC staff at the time. However, we did believe that further consideration of this view, within the context of overall reactor safety, was warranted.

We have since made an independent study of BWR pressure relief system failures. The results of the study have been published in NUREG-0462, "Technical Report on Operating Experience with BWR Pressure Relief Systems", dated July 1978. A copy is enclosed for your convenience. Based on the findings of this report and further information obtained from General Electric, in our meeting of March 30, 1979, we have concluded that implementation of a requirement for increased surveillance testing would not be the most effective way of assuring safety-relief valve reliability.

Consequently, unless you supply information to the contrary, we do not plan to act on any proposed Technical Specification changes you may have submitted in response to our December 1977 request. However, due to the potential effects of safety-relief valve malfunctions, the NRC staff continues to believe that licensees should make all reasonable efforts to increase the reliability of these valves and to reduce the frequency of inadvertant actuation and subsequent failure to reseat properly. This general matter is further discussed in the NUREG-0560 staff report concerning the Three Mile Island Unit 2 accident, wherein the pressurizer power operated relief valve failed to close during a feedwater transient and resulted in a small break LOCA. Staff review of other operating events indicates a significant frequency of such valve failures leading to small break LOCA events. Accordingly, reliability goals are currently being developed by the staff for safety and relief valves which are part of the reactor coolant pressure boundary, consistent with the recommendations of NUREG-0560.

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General Electric has made recommendations to licensees that we believe would substantially reduce the likelihood of future failures of BWR safety-relief valves. General Electric's recommendations consist of a short term and a long term program. Basically, the short term program consists of an intensified maintenance program and minor modifications to the valve assembly which will enable the simmer margin of the valve to be increased to about 120 psi. General Electric has provided operating data that indicate the malfunction of valves having a simmer margin of about 100 psi is appreciably less than those with smaller simmer margins. The long term program consists of replacing the original three stage pilot operated actuator with a redesigned two stage pilot operated actuator. It is our understanding that the newly designed actuator has, by tests, demonstrated improved reliability due to the elimination of the bellows and its reduced sensitivity to pilot valve leakage.

The NRC plans to continue to monitor the performance of safety/relief valves, and the status and effectiveness of actions to improve their reliability over the long term. To apprise us of the current situation at your plant(s), as well as your plans for future actions, we request that you provide responses to the items identified in the enclosure within 60 days. If your plant design does not utilize Target Rock safety/relief valves, so indicate within 60 days; and disregard the enclosure.

If you have any questions, or care to discuss this matter, please contact us.

This request for generic information was approved by GAO under clearance number B-180225 (S79014); this clearance expires June 30, 1980.

Sincerely,

Brian K. Grimes, Acting Assistant Director
for Systems Engineering
Division of Operating Reactors

Enclosures:
1. Request for Information
2. NUREG-0462, dated July 1978.

ENCLOSURE

REQUEST FOR INFORMATION

TARGET ROCK SAFETY/RELIEF VALVES

1. What is the status of each of the Target Rock safety/relief valves at your plant(s); i.e.:

   a. Are they in their original design configuration?

   b. What is the existing simmer margin?

   c. What modifications have you implemented to improve reliability?

   d. On what date were these modifications made?

2. What maintenance and testing do you routinely perform on these valves and how often is it performed?

3. What additional modifications and/or maintenance do you plan to implement in the future?

4. On what date will the modification(s) and/or maintenance in item 3 be implemented?

cc:

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