



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

JAN 10 1986

Mr. David A. Ward, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: STAFF RESPONSE TO ACRS QUESTIONS ON THE OCTOBER 2, 1985
EVENT AT RANCHO SECO

Dear Mr. Ward:

The staff gave presentations on a number of recent operating reactor events to the Reactor Operations Subcommittee on November 4, 1985. One of the events discussed was the October 2, 1985 overcooling event at the Rancho Seco nuclear power plant. Following this meeting, one of the subcommittee members submitted a number of questions to the staff concerning procedures and design. The staff discussed this event again at the January 7, 1986 meeting of the Reactor Operations Subcommittee and at the January 9, 1986 full-committee meeting. The enclosure to this letter provides answers to the questions resulting from the previous meeting.

The two main issues appear to be the fact that Rancho Seco does not have main steam isolation valves (MSIV's) and whether or not the operators should have stopped the reactor coolant pumps (RCP's) to decrease the reactor coolant system cooldown rate. As discussed in the enclosure, six operating plants designed by three different NSSS vendors do not include MSIV's in their design. These designs were judged to meet the agency's regulations at the time they were licensed. The enclosure also discusses in detail the post-TMI evaluations regarding the philosophy of manually or automatically tripping RCP's under various upset or accident conditions. It is our conclusion that the operators acted properly by not tripping the pumps.

Sincerely,

A handwritten signature in dark ink, appearing to read "H. R. Denton".

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosure:
As Stated

Central Files

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Answers to Questions from J. C. Ebersole

1. Q. When the reactor trips, do the reactor coolant pumps trip?

A. There are no designs where reactor coolant pumps (RCP's) automatically trip when the reactor trips. Whether or not reactor operators should manually trip RCP's under various post-reactor trip scenarios has been an issue under debate ever since the 1979 TMI-2 accident. To address this issue for B&W reactors, the B&W Owners Group submitted to the staff a report entitled "Analytical Justification for the Treatment of RC Pumps Following Accident Conditions" in February 1984 (B&W Document No. 77-1149091-00). This report was in response to TMI Action Plan Item II.K.3.5 and the staff's Generic Letter No. 83-10. The staff has evaluated this report and has prepared a Safety Evaluation which will be sent to all B&W licensees via a generic letter in January 1986. The B&W Owners Group Report states the following conclusions:

- . All four RCP's should be tripped (only) upon indication of a small break LOCA when a loss of subcooling margin is indicated. (The Rancho Seco Emergency Operating Procedures require tripping the RCP's within two minutes after receiving indication that subcooling margin has been lost).
- . A loss of subcooling margin will occur for those small break LOCA's where a pump trip is required to show compliance with 10 CFR 50.46.
- . Times in excess of 10 minutes are available following loss of subcooling margin before RCP's must be manually tripped.
- . Adequate subcooling margin is maintained for single SGTR events as long as abnormal Transient Operating Guidelines (ATOG) are followed (ensuring forced circulation throughout the event).
- . Judicious determination of the subcooling margin setpoint assures that RCP's need not be unnecessarily tripped for more likely non-LOCA events such as mild overcooling events.
- . A spectrum of overcooling events was considered. Only failure of the main turbine bypass valve resulted in a subcooling margin less than 30°F, and then only for about one minute until the reactor coolant system is repressurized by high pressure injection.

The staff's Safety Evaluation concludes that the B&W Owners Group has developed an acceptable criterion for tripping the RCP's during small-break LOCA's which minimizes RCP trips for SGTR and non-LOCA events. The Safety Evaluation will be provided to the ACRS upon issuance.

2. Q. I didn't mean "automatically" but at discretion of the operator (with due regard to time available to stop maximum hypothetical cooldown). Maybe he doesn't have enough time? Surely he must recognize the need to stop pumps to decouple primary loop from secondary side (or does he?)

A. With the advent of symptom-oriented emergency operating procedures (ATOG for B&W plants) and with the staff acceptance of the RCP trip criteria proposed by the B&W Owners Group (discussed under question No. 1 above), it would have been inappropriate for the operator to have tripped any RCP's during the October 2 event at Rancho Seco. The cooldown during this event occurred over a 30-minute period and would be considered a mild overcooling event in comparison with a stuck turbine bypass valve. Although it is desirable to avoid overcooling events, it is also desirable to maintain forced circulation flow through the core should one occur.

3. Q. How would they handle a large stuck bypass as a case in point (a fairly likely event)? How do the plants with no main steam isolation valves stop cooldown transients?

A. In the Rancho Seco design, manual isolation valves have been provided in each of the turbine bypass lines which can be shut in the event of malfunction of the pneumatically operated bypass control valves. The turbine stop valves in the main steam supply system and the steam lines up to and including these valves are of seismic Category I design. In the unlikely event of an unisolable main steam line rupture, the affected steam generator would continue producing steam (and cooling the reactor coolant system) until dryout occurs.

4. Q. How many other plants have no main steam isolation valves (including B&W, CE and Westinghouse)?

A. The following plants do not have main steam isolation valves:

<u>Babcock and Wilcox</u>	<u>CE</u>	<u>Westinghouse</u>
Rancho Seco	Maine Yankee	San Onofre 1
Oconee 1, 2 and 3		

At the time that the CP safety evaluations of these plants were made by the staff (which preceded issuance of both the General Design Criteria and the Standard Review Plan), considerable discussion was held among various sectors of the staff regarding the acceptability of not having main steam isolation valves. A decision was made that the turbine stop valves could be used as the containment isolation valves as long as the piping up to those valves was upgraded to ASME Code Class 2 and that piping, as well as the valves, was qualified seismic Category I. The staff has not been made aware of adequate justification to reverse that decision by backfitting additional isolation valves at those plants.