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

Socket No.: 50-312

DEC 14 1979

Mr. J. J. Mattimoe
Assistant General Manager and
Chief Engineer
Sacramento Municipal Utility District
6201 S. Street
P. O. Box 15830
Sacramento, California 95813

Dear Mr. Mattimoe:

SUBJECT: RANCHO SECO EMERGENCY PROCEDURES FOR SMALL-BREAK LOCAs

Reference: Letter, R. B. Davis to B&W 177 Owners' Group - Technical
Subcommittee on TMI-2 Incident Related Tasks dated
November 27, 1979

During a meeting with the NRC staff on November 8, 1979, Mr. Rodriguez of your staff discussed the way he interpreted IE Bulletin 79-05C with regard to reactor coolant pump (RCP) trip for both LOCA and non-LOCA transients.

Mr. Rodriguez stated that upon seeing the symptoms of a LOCA, the operator would take certain immediate actions to regain control of reactor coolant system (RCS) pressure and pressurizer level. These actions may include the manual initiation of high pressure injection (HPI). By manually initiating HPI, prior to automatic initiation at 1600 psig, the operator would not be required to trip the RCPs even if RCS pressure dropped below the automatic actuation setpoint. Mr. Rodriguez correctly stated that IE Bulletin 79-05C reads, "Upon reactor trip and initiation of HPI caused by low reactor coolant system pressure, immediately trip all operating RCPs." He interpreted the words "... initiation of HPI caused by low reactor coolant system pressure" as meaning automatic initiation. He based his acceptability of this approach on an analysis performed by Babcock & Wilcox (B&W) which shows that for the range of breaks requiring RCP trip, the reactor coolant system pressure decreases at such a rate that the operator would not have time to take manual action prior to reaching the automatic setpoint.

Following manual initiation of HPI, the operator would monitor primary system parameters including the amount of subcooling in the hot leg. If 20°F of subcooling could not be maintained, the operators were instructed to trip the RCPs. Thus, it was believed that this overall approach would preclude tripping of the RCPs for non-LOCA transients even if the low pressure HPI actuation setpoint was reached. However, RCP trip for LOCA transients would be assured by the predicted pressure decay rate and the hot leg subcooling criteria.

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At the meeting, the staff stated that although we agreed in principle with this approach, it did not meet the intent of the bulletin. We requested that SMUD submit to the staff, for evaluation, additional information regarding this matter.

While we have not received a formal submittal from you, we have received the reference letter which was transmitted to us by B&W at your request. From our review of this letter, we cannot at this time conclude the acceptability of the Rancho Loco interpretation of Bulletin 79-05C for RCP trip criteria. This was discussed with Mr. Rodriguez on December 6, 1979. In addition, the reference letter identifies a concern with regard to manually initiating HPI because frequent actuation will add appreciability to approaching the design thermal cycles on the HPI nozzles.

In order to fully evaluate the acceptability of your approach, we would need the additional information described in the enclosure. Therefore, until we have received this information and have provided our approval, we require that your procedures comply fully with the staff requirements for B&W plants; namely that when primary pressure reaches the HPI actuation setpoint, the operators are to manually trip the reactor coolant pumps.

Sincerely,



D. F. Ross, Jr., Director
Bulletins and Orders Task Force
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc: R. Rodriguez (SMUD)
R. Gill, (B&W Owners' Group)
J. Taylor (B&W)

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HPI upon reactor trip is necessary, then a more complete explanation of why it is necessary should be provided. Moreover, you should submit your plan for ongoing stress analysis of the HPI nozzles to assure they have been designed to withstand the plant transients to which they have been exposed.

5. The staff believes that pump trip based on loss of hot leg subcooling should rely on direct measurement of hot leg subcooling, and not by indirect means, such as comparison by the operators of measured to saturation temperatures at the system pressure from steam tables. Discuss the instruments to be used by the operator to determine subcooling. Discuss how their uncertainty, the uncertainty of the coolant temperature measurement, and the measurement time constant both are accounted for in the procedures as well as how they affect available operator action time.

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Enclosure

Additional Information Needs on Rancho Seco Pump Trip Procedures

1. Submit a copy of your proposed procedures which would allow pump operation beyond ESFAS actuating on low pressure and only require manual trip on loss of subcooling margin.
2. You have stated that for small breaks in which analyses indicate pump trip is necessary, the pressure decay to the HPI low pressure actuation setpoint will occur before operator action could be taken to manually initiate HPI. Provide more detailed information on why the operators do not have enough time to take this action.

Present analyses indicate a maximum of 2 minutes to be available to the operator to trip the pumps if excessive cladding temperature are to be avoided for all small breaks. If the operators manually initiate HPI and therefore base pump trip on hot leg subcooling, how much time is available to trip the pumps once the subcooled condition no longer exists?

3. The approved B&W guidelines state that when HPI is actuated because of low pressure conditions, specific criteria must be met (e.g., 50°F subcooling) before HPI can be terminated. If the HPI is manually initiated for a small break, per your procedures, are the termination criteria still to be followed? If not, explain why?
4. In the reference to the transmittal letter, B&W expressed concern regarding the capability of the HPI nozzles to accommodate a high number of cycles of HPI injection associated with HPI being manually actuated upon reactor trip. The staff is not of the opinion that manual actuation of HPI upon reactor trip is a prudent course of action to take since the system was not specifically designed to operate in this mode. If you conclude that manual initiation of

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