

J. B. Zivitzig

Date: APR 25 1978

Serial No.: IE-ROI: 78-04

TRANSFER OF LEAD RESPONSIBILITY

TO: B. K. Grimes, Assistant Director for Engineering and Projects, NRR

SUBJECT: RANCHO SECO NON-NUCLEAR INSTRUMENTATION POWER SUPPLY AND
AUXILIARY FEEDWATER INITIATION

RESPONSIBLE ASSISTANT DIRECTOR: K. V. Seyfrit

DESCRIPTION OF ITEM REQUIRING RESOLUTION:

At Rancho Seco on March 20, 1978, an inadvertent loss of power to non-nuclear instrumentation resulted in loss of approximately two-thirds of the temperature, pressure, flow, and level signals. Although the reactor tripped properly, the operator did not have enough working instrumentation to provide the information necessary for adequate control of primary cooling system temperature and pressure. As a result, the operator pumped too much feedwater to the steam generators and overcooled the primary cooling system. Limiting conditions for operation re primary cooling system pressure and temperature reduction rate were exceeded.

Loss of power to three of seven non-nuclear instrument panels occurred while an operator was replacing an indicator lamp in an illuminated push-button control switch. The lamp was dropped causing a short to ground. The three panels receive power from two 24 volt DC power supplies connected in parallel. The short caused a circuit breaker to open in each of two 120 volt AC lines which feed the 24 volt DC power supplies. By the time the circuit breakers were closed, the primary cooling system had been subjected to a 300°F/hr. temperature transient.

When the pressure of the primary cooling system dropped to 1600 psig, a safety features actuation signal was generated. This signal causes both auxiliary feedwater pumps to automatically provide maximum flow to both steam generators. This feature of the safety features actuation system contributed to the temperature transient which the primary cooling system experienced. At some B&W reactors, e.g., Browns-Besse 1 and Crystal River 3, a safety features actuation signal does not initiate maximum flow from the auxiliary feedwater pumps.

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RECOMMENDATIONS AND PROPOSED COURSE OF ACTION:

1. For Rancho Seco, NRR will review the supply of power to non-nuclear instrumentation to determine whether design changes are necessary to reduce the loss of information which can result from loss of power.
2. If NRR concludes that design changes are necessary for the power supplies for non-nuclear instrumentation, NRR will perform a generic review of this area for other B&W units.
3. NRR will review automatic initiation of auxiliary feedwater flow when a safety features actuation signal is generated and will determine whether this feature should be retained for Rancho Seco.
4. NRR will evaluate the susceptability of B&W plants to other initiating events or failures which could cause similar significant cooldown transients and initiate such corrective action as is deemed necessary.
5. IE will provide assistance as necessary and will assure compliance with any new or revised requirements.

CONCURRENCE:

Karl V. Seyfrit
 Karl V. Seyfrit, Assistant Director, DROI, IE

4/11/78
 Date

B. K. Grimes
 B. K. Grimes, Assistant Director for Engineering & Projects, NRR

4/13/78
 Date

Enclosures:

1. Letter from SMUD to RV dated 3/31/78 re Reportable Occurrence 78-1.
2. Memorandum from Crews to Seyfrit dated 4/6/78 re Rancho Seco temperature transient.

- cc: V. Stello, NRR
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