





Additional Cause Description and Corrective Action

Subsequent to the discovery of the missing orifices, a program was initiated to verify that orifices in other systems were properly installed. The orifices in the following locations were included in the program. Installation was determined by either visual examination or flow measurement.

1. RCS hot and cold leg RTD bypass loop manifolds.
2. Standpipe outlet lines for normal No. 2 RCP seal leakage.
3. No. 1 RCP seal bypass lines.
4. SI recirculation lines to RWST.
5. CSP recirculation lines to RWST.
6. SGFW pump discharge valve bypass.
7. Between BA pumps and BA tanks.

The investigation revealed that the orifices in the recirculation lines from the 4A and 4B Containment Spray pumps to the Refueling Water Storage Tank (RWST) had not been installed.

The omission of the recirculation orifices would not have impeded the containment spray system capability of limiting the containment pressure below its design pressure. The proper recirculation orifices were procured and installed prior to restarting the unit.

