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UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

December 31, 1986

IE INFORMATION NOTICE NO. 86-110: ANOMALOUS BEHAVIOR OF RECIRCULATION LOOP FLOW IN JET PUMP BWR PLANTS

Addressees:

All jet pump boiling-water reactor (BWR) facilities holding an operating license or a construction permit.

Purpose:

This notice is to alert addressees to the potential for anomalous behavior of recirculation loop flow in jet pump BWRs. It is suggested that recipients review the information for applicability to their facilities and consider actions, if appropriate, to preclude similar problems occurring at their facilities. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

Following an outage to replace recirculation piping in early 1985, the Pilgrim nuclear power plant experienced unexpected fluctuations in indicated recirculation loop flow.

In a report to Boston Edison, General Electric attributed this occurrence to a bistable flow pattern at the header cross in the recirculation loop discharge piping.

Following recirculation pipe replacement in August 1986, the Vermont Yankee nuclear power plant notified the resident inspector that the plant was experiencing loop flow oscillations. The phenomenon also has been observed at foreign reactors, including a BWR-3 following recirculation pipe replacement and at a new BWR-6.

The magnitude and duration of the fluctuations in flow varied not only from plant to plant but between loops at the same plant. At Pilgrim, with reactor power and flow near rated conditions, the flow in the A loop periodically increased about 2 percent for a short time and then decreased again to its former value. The observed flow changes in loop A appeared to be random but averaged approximately three events per hour with a duration that varied between a few seconds and 10 minutes. The flow change in loop B was about the same magnitude and fluctuations occurred about three times every 8 hours,