

LER 298/83-014

Event Description: Reactor Trip with High-Pressure Coolant Injection Unavailable

Date of Event: September 15, 1983

Plant: Cooper

Summary

On September 15, 1983, the high-pressure coolant injection (HPCI) system was declared inoperable due to pressurization of the suppression chamber air space while the HPCI turbine was undergoing surveillance testing. The cause of the event was traced to a vacuum breaker jammed in the open position, allowing the HPCI turbine exhaust to enter the air space of the suppression chamber. The plant was shut down, interim repairs were made to the vacuum breaker, and the HPCI system was restored to service. It was found that the vacuum breaker was damaged because it had been installed in the wrong size of pipe. Other core standby cooling systems and the reactor core isolation cooling (RCIC) system were operable at the time of the HPCI failure.

This event was modeled as a reactor trip with the HPCI system assumed to be unavailable. This approach was based on the fact that a scram occurred three days earlier. The conditional core damage probability estimated for this event is 6.2×10^{-6} . The dominant core damage sequence involves the observed transient, successful reactor trip, failure of the power conversion system, two safety relief valves failing to close, unavailability of HPCI, and automatic depressurization system (ADS) failure.