



October 15, 1973

Mr. John F. O'Leary
Directorate of Licensing
Office of Regulation
U.S. Atomic Energy Commission
Washington, DC 20545



Dear Mr. O'Leary:

TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT UNIT 1 -
DOCKET NO. 50-259 - FACILITY OPERATING LICENSE DPR-33 - ABNORMAL
OCCURRENCE REPORT BFAO-7325W

The purpose of this report is to provide details concerning failure of the inner rupture diaphragm of the High Pressure Coolant Injection System on unit 1 at Browns Ferry Nuclear Plant. This condition was reported to the Region II Director of Regulatory Operations on October 5, 1973.

Description of the Incident

On October 5, 1973, during the performance of Startup Test Instruction 15, High Pressure Coolant Injection System, the HPCI system was isolated automatically by the pressure switches between the inner and outer rupture diaphragm on the turbine exhaust. Surveillance tests of redundant core cooling systems were begun immediately.

Investigation and Corrective Action

The High Pressure Coolant Injection System turbine discharge piping has an inner and outer rupture diaphragm to prevent overpressurizing the turbine casing. Pressure switches between the two diaphragms will isolate the turbine should the inner diaphragm fail or rupture.

The inner rupture diaphragm was removed and examined. It was determined from the appearance of the diaphragm that the failure of the sealing membrane in the diaphragm was caused by a vacuum inside the turbine discharge piping and casing and not overpressure. The turbine casing and discharge piping were not up to operating temperature when isolation occurred and steam in the turbine casing and discharge piping condensed at such a rate that air leakage in and around shaft seals could not take up the void created by the condensation. It is suspected that several vacuum cycles were required to cause failure.

8308240734 731015
PDR ADOCK 05000259
S PDR

Handwritten: 50259

COPY SENT REGION II

7659

• Mr. John F. O'Leary
October 15, 1973

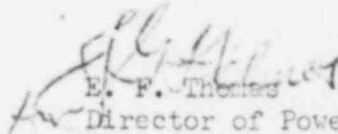
TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT UNIT 1 -
DOCKET NO. 50-259 - FACILITY OPERATING LICENSE DPR-33 - ABNORMAL
OCCURRENCE REPORT BFAO-7325W

A replacement rupture diaphragm was installed. Surveillance Instruction 4.5.E.2, HPCI Functional Test, was satisfactorily performed following diaphragm replacement and the HPCI was returned to service.

To prevent recurrence for the long term, a design investigation has been initiated to consider replacing the present rupture disc with one designed with a vacuum support. The vacuum support would prevent movement of the rupture disc membrane if it were subjected to a vacuum.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


E. F. Thomas
Director of Power Production

CC: Mr. Norman C. Moseley, Director
Region II Regulatory Operations Office, USAEC
230 Peachtree Street, NW.
Atlanta, Georgia 30303