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TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

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January 5, 1981


Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

OFFICE OF INSPECTION AND ENFORCEMENT BULLETIN 80-24 - RII:JPO
50-259, -260, -296 - BROWNS FERRY NUCLEAR PLANT

Your letter dated November 21, 1980, to H. G. Parris transmitted IE Bulletin 80-24 for TVA action. Enclosed are the results of our investigations for the Browns Ferry Nuclear Plant. If you have any questions, please call Jim Domer at FTS 857-2014.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Subscribed and sworn to before
me this 5th day of Jan. 1981.

Bryant M. Lowery
Notary Public

My Commission Expires 1/6/82

Enclosure
cc: Office of Inspection and Enforcement (Enclosure)
U.S. Nuclear Regulatory Commission
Division of Reactor Operations Inspection
Washington, DC 20555

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ENCLOSURE

RESPONSE TO OIE BULLETIN 80-24
DATED NOVEMBER 21, 1980
BROWNS FERRY NUCLEAR PLANT
(50-259, -260, -296)

The Browns Ferry Nuclear Plant (BFN) has no open cooling water systems inside containment. At BFN units 1, 2, and 3, components inside containment which require supplemental cooling are cooled by the reactor building closed cooling water (RBCCW) system (TVA system number 70). These components inside containment (units 1, 2, and 3) are:

1. Drywell equipment sump heat exchanger

2. Reactor water recirculation pump and motor coolers (2 pump coolers and 2 motor coolers)

3. Drywell atmosphere cooling coils (10 individual cooling coils)

Paragraph 3 of "Actions to be Taken by Licensees" requires that plants with closed cooling water systems inside containment provide a summary of experiences with cooling water system leakage into containment. To comply with this request, two methods were used. The first method consisted of a search of the plant material history files for any maintenance performed on the components listed above. Maintenance that was done on the components which might involve leakage was recorded and listed for review. The second method used was to record all incidents where the unidentified leakage of coolant into containment exceeded the specified limit. BFN technical specification 3.6 states that unidentified leakage shall not exceed five gallons per minute (gal/min). Each time this limit was exceeded during the operation of units 1, 2, and 3, a Licensee Event Report (LER) was issued, the source of the leakage determined, and the situation resolved. The BFN LER's which involved leakage are listed and included for review in this report. A brief system description and the summary of maintenance history and leakage LER's are included in Attachment A for your review.

Approximately three man-weeks were expended in review and preparation of the response for the subject bulletin.

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ATTACHMENT A

The reactor building closed cooling water (RBCCW) system provides a heat sink for the following equipment within the primary containment: drywell atmosphere cooling coils (10 per unit), drywell equipment sump heat exchanger (1 per unit), and seals and bearings of the reactor recirculation pumps (two per unit). The RBCCW system recirculates demineralized water treated with sodium nitrite and sodium hydroxide. The level of water in the system is monitored by instruments attached to a surge tank. An alarm is annunciated in the control room when the level in the surge tank becomes low. Additional details concerning the RBCCW system can be found in section 10.6 of the BFN Final Safety Analysis Report.

A review of maintenance records revealed only three cases of RBCCW leakage within primary containment. In August of 1973, a piping joint on a unit 1 drywell cooler had to be resoldered. During the 1980 unit 1 refueling outage, a fatigue crack was found in a line to the recirculation pump motor bearing oil cooler. During the 1980 unit 2 refueling outage, a small leak (drip) was found on a line to the A5 drywell atmosphere cooler.

Positive displacement control rod drive hydraulic pumps are used to supply condensate to operate and cool the control rod drives (CRD). These pumps are located outside the primary containment, but system piping and valves are located within the primary containment.

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The pumps take suction from the primary cycle (condensate storage tank) and the water is discharged back into the primary cycle thus creating a closed loop.

A review of maintenance records revealed that only very minor leaks (drips) have been experienced with the CRD system components within primary containment. These minor leaks have occurred at the control drive to reactor vessel flanges. These leaks are visible during cold hydrostatic testing of the vessel and disappear when the vessel reaches rated temperature and pressure.

Leakage from the RBCCW and CRD systems inside the primary containment would accumulate in the drywell floor drain sump. This sump is designed to handle and quantitatively monitor the total leakage within the primary containment. BFN Technical Specifications Sections 3.6/4.6,respectively, limit the unidentified leakage rate to 5 gal/min and require daily quantitative determination of this leakage rate. Therefore, assuming no other sources of unidentified leakage, the leakage rate inside the primary containment from the RBCCW and/or CRD systems is limited by technical specifications to less than 5 gal/min.

A review of licensee event reports (LER) revealed that the unidentified leakage rate of 5 gal/min has been exceeded only once on each unit. Neither the RBCCW or the CRD system were responsible for causing any of these LER's. Specific details on each instance are listed below:

Unit 1 BFRO 259/7826 - Caused by a bonnet leak on FCV-68-77 (recirculation system) and a packing leak on FCV-69-1 (reactor water clean-up system)

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Unit 2 BFRO 260/7805 - Caused by a packing leak on FCV-68-33 (recirculation system)

Unit 3 BFRO 296/7819 - Caused by a partial broken weld on a 1-inch socket weld fitting on a jet pump riser instrument sensing line.