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SUBJECT: Responds to NRC 890808 ltr re violations noted in Insp Repts 50-259/89-27,50-260/89-27 & 50-296/89-27.

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Gentlemen:

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2, AND 3 - NRC INSPECTION REPORT NOS. 50-259/89-27, 50-260/89-27, AND 50-296/89-27 - RESPONSE TO NOTICE OF VIOLATION

This letter provides TVA's response to the letter from B. A. Wilson to O. D. Kingsley, Jr. dated August 8, 1989, which transmitted the subject report. The report cited TVA with a violation for failure to meet technical specification requirements for at least one operable residual heat removal loop and a violation with three examples for failure to submit a Licensee Event Report within 30 days after discovery of the event. An extension of the due date for this response to September 23, 1989 was agreed to by W. S. Little of your staff on September 8, 1989.

Enclosure 1 provides TVA's response to the two violations. A list of commitments is provided in Enclosure 2. If you have any questions, please telephone Patrick P. Carier at (205) 729-3570.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

Mark O. Medford

Mark O. Medford, Vice President
and Nuclear Technical Director

Enclosures
cc: See page 2

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U.S. Nuclear Regulatory Commission

SEP 21 1989

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ENCLOSURE 1

RESPONSE
NRC INSPECTION REPORT
NOS. 50-259/89-27, 50-260/89-27, AND 50-296/89-27
LETTER FROM B. A. WILSON TO O. D. KINGSLEY
DATED AUGUST 8, 1989

TVA admits violation A and example 3 of violation B. With respect to violation B, it should be noted that each of the three examples cited in the violation involved conditions discovered by TVA. Steps are being taken to correct the affected hardware in each instance.

TVA recognizes that there is room for interpretation when it comes to 10 CFR 50.73 reporting requirements and that we must be conservative in our reportability determinations. TVA will continue to keep NRC informed of the status of ongoing reportability determinations through regular discussions with the NRC residents.

Violation A

Technical Specification (TS) 3.5.B.9 requires that at least one RHR loop with two pumps or two loops with one pump per loop be operable when the reactor vessel pressure is atmospheric and irradiated fuel is in the reactor vessel.

Contrary to the above, during the period of June 18-22, 1989, the licensee did not meet the TS requirements for at least one operable RHR Loop. During this period, Loop II of the RHR system was inoperable due to an inoperable testable check valve while Loop I was inoperable due to maintenance.

TVA's Response

1. Admission or Denial of the Alleged Violation

   TVA admits the violation as stated.

2. Reasons for the Violation

   On June 23, 1989, following a thorough review of the events dating back to June 8, 1989, it was determined by TVA that loop II of the residual heat removal system (RHR) for Unit 2 had been inoperable for a period of time when operability was required. The primary containment, inboard, testable check valve for this loop had not been cycled within its required surveillance frequency.

   Required portions of Surveillance Instruction (SI) 2-SI-3.2.2, "Valves Cycled During Cold Shutdown," were completed on June 8, 1989, with the exception of the RHR loop II testable check valve, 2-FCV-74-68, and another minor exception. These exceptions were documented as test deficiencies in the test package. The test package was reviewed by the Shift Operations Supervisor (SOS) and the Shift Technical Advisor (STA) on June 8, 1989. No additions or entries were made to the limiting condition for operation (LCO) tracking log concerning a potential LCO condition. RHR Loop II was carried on LCO tracking as inoperable.

However, it was not an Operations requirement or practice to track individual items restraining operability of systems which were out of service for planned maintenance or modification. RHR loop I was being maintained in an operable status at that time; therefore, under the existing plant conditions, RHR loop II operability was not required.

At 0001 hours on June 18, 1989, the surveillance band plus the allowable extension for testing the loop II valve 2-FCV-74-68 expired. This technically rendered the RHR loop II testable check valve, 2-FCV-74-68, and loop II of RHR (low pressure coolant injection mode) inoperable.

Additional testing was performed on loop II RHR in preparation for returning the loop to operable status. The SOS performed a review of system status including the return-to-service punchlist and outstanding surveillance instruction list prepared by the work control organization and the LCO tracking list maintained by the STA. None of these tracking/status systems made the SOS aware that the RHR loop II testable check valve surveillance had not been completed and he declared loop II of RHR operable at 1155 hours on June 18, 1989.

On June 18, 1989 at 1210 hours, loop I of RHR was intentionally made inoperable to perform planned maintenance on the loop. This made both loops of RHR inoperable and exceeded the TS requirements. On June 21, 1989, at approximately 1200 hours, the status of the RHR loop II testable check valve was questioned by plant engineers when it was identified that the check valve had not been tested. On June 21, 1989, at 2135 hours, surveillance testing was successfully completed on check valve 2-FCV-74-68. This made the check valve and loop II of RHR operable.

This event resulted from a failure to track the test deficiency (TD), associated with not testing this valve, either as a potential LCO or on any other deficiency tracking list. The root cause of the failure to track this TD was procedural inadequacy, in that procedural requirements for LCO tracking were not specifically delineated on forms that required review and the general requirements in the body of the administrative procedure did not specifically require tracking of individual items but only the inoperable systems/components.

3. Corrective Steps Which Have Been Taken and Results Achieved

The surveillance test was completed June 21, 1989. Valve 2-FCV-74-68 operated correctly when tested.

An STA signoff was added to form Plant Manager Instruction (PMI) 47, "Test Deficiencies Log," on June 28, 1989, to ensure that each potential operability item is tracked. This need had been previously determined, but the change was not in effect at the time of this incident.

Form PMI 34, "Data Cover Sheet for SI Not Performed," has been revised to require a review for potential LCO applicability and an STA signoff.

PMI 17.1, "Conduct of Testing," was revised September 1, 1989, to require that the cognizant engineer review SIs in a more timely manner and report any potential operability problems to the SOS and STA.

In response to NRC Inspection Report 50-259,260,296/89-11, Site Directors Standard Practice 7.9, "Integrated Schedule and Work Control," was revised to require that impact evaluation sheets for work performed on technical specification required equipment be provided with an SOS/designee signoff for specifying the effect of the work on operability and an STA signoff to ensure tracking.

4. Corrective Steps Which Will Be Taken to Avoid Further Violations

No further corrective steps are required to prevent recurrence of this violation.

5. Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

Violation B

10 CFR 50.73 requires that a Licensee Event Report be submitted within 30 days after the discovery of the event. Section (a)(2)(ii)(B) requires a report for any event or condition that resulted in the nuclear power plant being outside the design basis of the plant. Section (a)(2)(v) requires a report for any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) shutdown the reactor and maintain it in a safe shutdown condition; (B) remove residual heat; (3) control the release of radioactive material; or (D) mitigate the consequences of an accident.

Contrary to the above, a report was not submitted 30 days after the discovery of the event for the following three examples:

1. On September 16, 1988, the Unit 2 and on June 14, 1989, the Unit 1 fuel pool antisiphon check valves were found stuck open. This could result in draining the fuel pool with the loss of the ability to remove residual heat from the fuel stored in the pool.

2. On March 22, 1989, the licensee made a 4-hour report per 10 CFR 50.72 of an unanalyzed condition where the A, B, and C Diesel Generators could be overloaded during the first few minutes of an accident due to the single failure of the lockout relay which prevents the three motor driven fire pumps from sequentially starting during an accident condition. A voluntary LER was submitted on May 31, 1989, which stated that an additional lockout relay would be installed prior to Unit 2 startup.

3. In May 1989, the licensee determined that all four Unit 2 RHR room coolers (2A, 2B, 2C, and 2D) and the core spray room coolers (2B and 2D) tested less than the design flow requirement of 10,000 cfm ± 10 % with a range from 8,786 to 7,415. The core spray room coolers (2A and 2C) tested less than the design flow of 12,700 at 8,328. This condition alone could have prevented the low-pressure ECCS from functioning in an accident condition. The licensee did not report this item because of an acceptable post modification test in March 1988 after motor replacement with new EQ motors. However, the cause of the flow discrepancy has not been discovered. Also, no procedure existed to periodically measure and determine if previous air flow was acceptable. The licensee was only able to obtain values greater than 9000 cfm by adjusting the variable pitch sheaves and adding into the total flow a small duct line, for the cooler motor itself, which was previously not counted.

TVA's Response

1. Admission or Denial of the Alleged Violation

TVA admits that a violation of 10 CFR 50.73 occurred for example 3. TVA does not believe that examples 1 or 2 violated 10 CFR 50.73.

Example 1 (Fuel Pool Antisiphon Check Valves)

2. Reasons for the Denial

The return lines of the BFN fuel pool cooling and cleanup system have an antisiphon check valve designed to prevent any pool inventory losses in the event of a line break. On September 16, 1988, the Unit 2 fuel pool antisiphon check valves did not fully close during a restart test as required. Making a conservative initial reporting determination that this constituted an unanalyzed condition which could have prevented the fulfillment of a safety function, TVA made a four-hour report pursuant to 10 CFR 50.72. Subsequent evaluations conducted by BFN the plant staff revealed no basis for reporting this condition.

TVA later discovered the same condition with the check valves in the Unit 1 fuel pool cooling system, which required a separate evaluation for reportability. Having previously reported the identical generic condition for Unit 2, the BFN operations staff concluded that submitting an additional report under 10 CFR 50.72 would be redundant and, therefore, unnecessary. TVA then performed an independent evaluation to determine whether a 10 CFR 50.73 report was required for the Unit 1 condition, and concluded that it did not meet the criteria for reportability.

Although the antisiphon check valve is part of the original plant design, as discussed in section 10.5.5 of the FSAR, other system features provide the basis for not considering this an unanalyzed condition which could have prevented the fulfillment of a safety function.

The system design includes seismically qualified piping and instrumentation which provides a low level alarm and isolation logic at a lower level to automatically actuate fully redundant motor operated valves at the interface of nonseismically qualified piping. Redundant check valves are provided for those interfaces which do not have motor operated valves. These features assure adequate fuel covering in the event of a line break in the nonseismically qualified interface piping.

While the failure of the check valves to operate might increase the amount of the fuel pool water lost before the leak is isolated, the circuitry would provide early operator warning. The time available in draining the large quantity of water allows for the consideration of reasonable operator actions to mitigate the problem. If operator actions are not considered, the system would automatically isolate, assuring the safety function is achieved.

TVA has corrected the check valve deficiency even though other features fulfill the safety function. This will assure minimal loss of the fuel pool water and provide conservative margin in the system design.

Example 2 (Fire Pump Lockout Relay)

2. Reasons for the Denial

As a result of the design baseline verification review, TVA submitted a 10 CFR 50.72 report concerning an unanalyzed condition in which the A, B, and C diesel generators could be overloaded due to the single failure of the fire pump lockout relay following a main steamline break. The lockout relay prevents the three motor-driven fire pumps from starting during an accident.

In making its immediate reportability determination, the scenario that TVA originally postulated involved the actuation of smoke detectors when exposed to the steam environment, which would initiate the fire pumps. Since a steamline break could reduce the vessel water inventory and actuate low pressure injection systems, the additional load of the fire pumps might result in tripping more than one diesel generator. Although there were uncertainties with this scenario, BFN conservatively made a 4-hour ENS report on March 22, 1989 based on this concern.

However, TVA's subsequent evaluation which is discussed in LER 50-259/89009 determined, based on engineering judgment, that the relay failure scenario originally postulated would trip only one diesel generator. The loss of one diesel generator during a design basis event is an analyzed condition for the plant. Therefore, TVA believes that the original concern was correctly resolved within 30 days. TVA did not file a 10 CFR 50.73 report because no violation of 10 CFR 50.73(a)(2)(ii) occurred.

Nevertheless, consistent with its conservative reporting philosophy, TVA did submit a voluntary LER on May 31, 1989. TVA explained in that LER that it has elected to modify the circuitry.

This is a prudent measure designed to avoid future complications and eliminate the need to consider the additional diesel loading for other events which are not currently analyzed. There are no identified events for which the fire pump loading exceeds the BFN design basis.

Example 3 (Equipment Area Cooler Low Flow Condition)

2. Reason for the Violation

TVA initially identified potential equipment area cooler air flow problems on May 25, 1989, when an air flow verification test performed on the 2C RHR room cooler revealed the flow to be less than design. An investigation was initiated shortly thereafter. Flow measurements were taken on the remaining RHR and CS equipment area coolers during the next few days as they were made available for testing. Meanwhile, TVA's design organization evaluated air flow measurements obtained during the investigation and determined them to be sufficient for pump motor cooling under the current plant conditions. Therefore, BFN was not in a condition prohibited by plant technical specifications.

The investigation initially revealed that variable pitch sheaves on the motor shafts of the coolers were set close to the minimum diameter and were suspected to be responsible for the reduction in air flow. Adjustment of these sheaves on four of the six equipment area coolers brought them back to within the design flow rates, however, no evidence could be found that the sheaves had been adjusted from the last time the flows were verified (March 1988). No LER was submitted within thirty days of May 25 because at that time TVA had not determined that a strong possibility existed that the plant had previously operated at power with the degraded flow rates.

The investigation continued into all possible causes of degraded flow until it was discovered on July 12, 1989 that the grill/registers mounted at the end of each room cooler duct were partially closed, restricting air flow. No evidence currently exists of any activity during this outage which could have caused the partial closure of the grills/registers. No previous maintenance (preventative or corrective) or modification activities on the grills/registers could be identified. The condition of the grills/registers tended to indicate a long term degradation; therefore, TVA concluded that this condition could have existed during operation. Given this determination, TVA considered the problem reportable at this point, and a report was promptly made.

Because the degraded flow condition initially appeared to have occurred during this current plant outage, TVA did not do a 10CFR50.73 report within 30 days of the discovery of the low flow condition. Sufficient information was not available prior to July 12, 1989, to support the conclusion that the plant may have operated previously with the low flow condition.

3. Corrective Steps Which Have Been Taken and Results Achieved

On July 12, 1989, TVA determined that the RHR and CS equipment area coolers may have operated with degraded airflow rates during previous plant operation. TVA submitted a four-hour ENS phone report of this condition on that date at 2053 hours. Subsequently, on August 11, 1989, TVA submitted an LER (50-259/89018) which provided additional information and committed to corrective actions concerning this condition.

4. Corrective Steps Which Will Be Taken To Avoid Further Violations

For future events, BFN will advise NRC by letter within 30 days in cases where it is determined through subsequent evaluation that an LER is not required to be submitted under 10 CFR 50.73. This will serve to improve communications between BFN and NRC on those items which are conservatively made the subject of a four-hour report but are later determined not to be reportable. Please note that this is not intended to include reports made to NRC which do not require a followup 10 CFR 50.73 report, such as courtesy red phone calls, calls made to NRC when Emergency Notification System equipment is temporarily out of service, or calls made to NRC when notification is made to another government agency.

5. Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

ENCLOSURE 2

RESPONSE
NRC INSPECTION REPORT
NOS. 50-259/89-27, 50-260/89-27, AND 50-296/89-27
LETTER FROM B. A. WILSON TO O. D. KINGSLEY
DATED AUGUST 8, 1988

LIST OF COMMITMENT

VIOLATION B

For future events, BFN will advise NRC by letter within 30 days in cases where it is determined through subsequent evaluation that an LER is not required to be submitted under 10 CFR 50.73.