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John T. Herron  
Vice President, Browns Ferry Nuclear Plant

July 28, 2000

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555

10 CFR 50.73

Gentlemen:

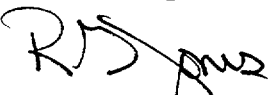
In the Matter of )  
Tennessee Valley Authority )

Docket No. 50-260

**BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 2 - DOCKET NO. 50-260 -  
FACILITY OPERATING LICENSE DPR-52 - LICENSEE EVENT REPORT (LER)  
50-260/2000-001**

The enclosed report provides details concerning a recent Unit 2 reactor startup during which the mode change requirements of Technical Specifications (TS) Surveillance Requirement 3.0.4 were not met. This report is submitted in accordance with 10 CFR 50.73 (a)(2)(i)(B) as a condition prohibited by the plant's TS.

Sincerely,



John T. Herron

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Enclosure

cc (Enclosure):

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Browns Ferry Nuclear Plant  
10833 Shaw Road  
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06/30/2001

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

**LICENSEE EVENT REPORT (LER)**

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)

Browns Ferry Nuclear Plant Unit 2

DOCKET NUMBER (2)

05000260

PAGE (3)

1 of 5

TITLE (4)

Mode Change Not Allowed by Technical Specifications SR 3.0.4 Made During Reactor Startup

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER				FACILITY NAME	DOCKET NUMBER
07	01	00	2000	001	000	07	28	00	NA	NA
OPERATING MODE (9)		2	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		000	20.2201(b)			20.2203(a)(2)(v)		X	50.73(a)(2)(i)(B)	50.73(a)(2)(viii)
			20.2203(a)(1)			20.2203(a)(3)(i)			50.73(a)(2)(ii)	50.73(a)(2)(x)
			20.2203(a)(2)(i)			20.2203(a)(3)(ii)			50.73(a)(2)(iii)	73.71
			20.2203(a)(2)(ii)			20.2203(a)(4)			50.73(a)(2)(iv)	OTHER
			20.2203(a)(2)(iii)			50.36(c)(1)			50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)	

## LICENSEE CONTACT FOR THIS LER (12)

NAME

Anthony T. Rogers, Senior Licensing Project Manager

TELEPHONE NUMBER (Include Area Code)

(256) 729-2977

## COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

## SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On July 1, 2000, during a reactor startup on Unit 2, the requirements of Technical Specifications (TS) Surveillance Requirement (SR) 3.0.4 were not fully met. Specifically, several TS instrument channel checks were not performed prior to changing from Mode 3 to Mode 2. The plant had been shutdown (in Mode 3) for approximately two days for maintenance and the subject instrument channel checks were not being performed since there was no Mode 3 applicability. Hence, the channel checks were out of their ordinary 24-hour frequency. SR 3.0.4 required the channel check SRs be performed prior to entering Mode 2. On discovery of the condition shortly after entering Mode 2, the readings were immediately obtained with no deficiencies identified.

The root cause of this event was determined to be a failure to adequately implement SR 3.0.4 requirements in training and procedures. Corrective actions to prevent recurrence include revision of applicable procedures and operator training on SR 3.0.4.

This report is submitted in accordance with 10 CFR 50.73 (a)(2)(i)(B) as a condition prohibited by the plant's TS.

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Browns Ferry Nuclear Plant - Unit 2	05000260	YEAR	SEQUENTIAL NUMBER	REVISION	2 of 5
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**I. PLANT CONDITIONS**

At the time of the event, Unit 3 was operating at 100 percent power and Unit 2 was in Mode 2, returning to power operations following a planned shutdown. Unit 1 was shutdown and defueled.

**II. DESCRIPTION OF EVENT**

**A. Event:**

Unit 2 had been shutdown at 1602 on June 29, 2000, to repair equipment leaks in primary containment. The identified leaks were subsequently repaired and preparations were made to restart Unit 2 on July 1, 2000. The portions of 2-SR-2, Instrument Checks and Observations, applicable for Mode 3 were completed at 0800 that morning. 2-GOI-100-1A, Unit Startup and Power Operation, was being used by Operations to provide the procedural steps to take the unit from Mode 3 back to power operation.

At 1300, Operations placed the Mode Switch in Startup (Mode 2). At approximately 1320, an NRC Resident Inspector questioned the Shift Manager (SM) why a particular instrument check with applicability in Mode 2 had not been completed. The SM reviewed 2-SR-2 and determined that several instrument channel checks required for Mode 2 had expired frequencies (24-hours). Therefore, SR 3.0.4 would require the channel check SRs be performed prior to entering Mode 2. These channel check SRs were promptly performed and recorded in 2-SR-2 with no deficiencies noted.

**B. Inoperable Structures, Components, or Systems that Contributed to the Event:**

None.

**C. Dates and Approximate Times of Major Occurrences:**

June 29, 2000, at 1602 hours CDT	Reactor shutdown to repair equipment leaks in primary containment.
July 1, 2000, at 1300 hours CDT	Reactor Mode Switch placed in Startup (Mode 2).
July 1, 2000, at 1320 hours CDT	NRC Resident Inspector questioned why an instrument check with applicability in Mode 2 had not been completed.
July 1, 2000, at 1400 hours CDT	Required instrument checks completed satisfactorily.

**D. Other Systems or Secondary Functions Affected:**

None.

**E. Method of Discovery:**

An NRC Resident Inspector questioned why an instrument check with applicability in Mode 2 had not been completed prior to entering Mode 2.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**F. Operator Actions:**

The required channel checks were promptly completed.

**G. Safety System Response:**

No safety systems were required to operate.

**III. CAUSE OF THE EVENT**

**A. Immediate Cause:**

The immediate cause was failure to perform the required TS channel checks prior to entering Mode 2.

**B. Root Cause:**

The root cause was failure to adequately implement SR 3.0.4 requirements in training and procedures.

**C. Contributing Factors:**

This event demonstrated a need for improved operator knowledge in the application of SR 3.0.4 with respect to mode changes.

**IV. ANALYSIS OF THE EVENT**

2-SR-2 is the procedure used to document channel checks. During steady-state operation these checks are performed routinely on a 24-hour basis. However, during plant conditions like startup, shutdowns and outages, different instrument checks are required depending on reactor mode and on varying frequencies.

Performance of the channel check once every 24 hours ensures that a gross failure of instrumentation has not occurred. A channel check is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A channel check will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each channel calibration.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit. The frequency is based upon operating experience that demonstrates channel failure is rare.

In 2-SR-2, there are a small number of channel check SRs that are required to be performed daily in Mode 2 which are not also required to be performed in Mode 3. Though 2-SR-2 identifies the mode of applicability for the individual instruments SRs, the procedure does not specifically provide a checkpoint to verify the Mode 2 channel checks are performed prior to entering Mode 2 (if the 24-hour frequency is expired).

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**IV. ANALYSIS OF THE EVENT (continued)**

The procedure used to perform startup contains verifications for SRs needed to support startup, but did not list all SRs required to make a mode change. Hence, a reliance was placed on the operators knowledge of SR 3.0.4 to ensure that the several SRs required prior to the mode change were performed.

Event investigation showed that operator knowledge of SR 3.0.4 should be enhanced. Some operators involved with completion of 2-SR-2 during startup misinterpreted the TS requirements to mean that the instrument checks applicable in Mode 2 were only required to be documented when in Mode 2. This may in part, be associated with the condition that the subject channel check SRs typically involved checking instruments that would be reading zero or downscale in Mode 3. However, operators were knowledgeable of Limiting Conditions for Operation (LCOs) and SRs that are encountered during power operation, but were deficient in application of SR 3.0.4 which is applicable during transition of modes. To address the event causes, additional training will be provided and plant procedures will be revised to provide checks and verifications that all applicable SRs are completed prior to a mode change.

**V. ASSESSMENT OF SAFETY CONSEQUENCES**

Performance of instrument checks once every 24 hours verifies that a gross failure of instrumentation has not occurred. An instrument check typically compares the parameter indicated on one channel to a similar parameter on other channels.

SR 3.0.4 requires certain SRs be conducted prior to changing modes to verify TS equipment is operable prior to starting up. In this event, several instrument channel checks were not performed until after entering Mode 2. When the condition was recognized shortly after entering Mode 2, the SRs were performed and no instrument problems were identified. The same SRs had also been successfully performed two days previously on June 29, 2000. Therefore, all required instruments were operable and at no time was the plant operated without the required equipment.

It is concluded this event had no safety consequences or challenges to the plant and therefore did not adversely affect the safety of plant personnel or the public.

**VI. CORRECTIVE ACTIONS****A. Immediate Corrective Actions:**

The applicable channel checks were completed satisfactorily.

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**B. Corrective Action to Prevent Recurrence:**

The procedure used to control startup will be revised to include hold points to ensure channel checks for a given mode are met prior to entering that mode.<sup>1</sup>

The procedure used to document applicable channel checks will be revised to require, to the maximum extent practicable, channel checks are performed regardless of reactor mode.<sup>1</sup>

Licensed operators will be briefed and trained to ensure requirements of SR 3.0.4 are understood and refresher training for licensed operators will be conducted during forced outages.

**VII. ADDITIONAL INFORMATION**

**A. Failed Components:**

None.

**B. Previous Similar Events:**

LER 50-296/1998-005 describes two instances of not meeting the mode change requirements of TS LCO 3.0.4 during a Unit 3 reactor startup. On both occasions, the High Pressure Coolant Injection system was not operable prior to reaching the required TS mode or condition as required by LCO 3.0.4. The primary cause of this event was determined to be deficient operator knowledge on the proper application and interpretation of LCO 3.0.4. The corrective actions for the previous event were pertaining to LCO 3.0.4 and not SR 3.0.4 and therefore would not have prevented this event.

**C. Additional Information:**

None.

**D. Safety System Functional Failure:**

This event did not result in a safety system functional failure in accordance with NEI 99-02, Rev. 0.

**VIII. COMMITMENTS**

None.

<sup>1</sup>TVA does not consider this corrective action a regulatory commitment. The completion of this item will be tracked in TVA's Corrective Action Program.