Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

Christopher M. (Chris) Crane
Vice President, Browns Ferry Nuclear Plant

April 11, 1997

10 CFR 50.73

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

Dear Sir:

BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2, AND 3 - DOCKET NOS. 50-259, 260, and 296 - FACILITY OPERATING LICENSE DPR-33, 52, AND 68 - LICENSEE EVENT REPORT 50-259/97002

The enclosed report provides details concerning an inadequate surveillance instruction discovered during a review associated with Generic Letter 96-01, "Testing of Safety-Related Logic Circuits." This report is submitted in accordance with 10 CFR 50.73 (a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications.

Sincerely,

M. Bajestani

FOR C. M. Crane

cc: See page 2

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IE22

150016

Enclosure
cc (Enclosure):
Mr. Mark S. Lesser, Branch Chief
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

NRC Resident Inspector
Browns Ferry Nuclear Plant
10833 Shaw Road
Athens, Alabama 35611

Mr. J. F. Williams, Project Manager
U.S. Nuclear Regulatory Commission
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852

NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Browns Ferry Nuclear Plant (BFN) Unit 1	05000259	1 OF 5

TITLE (4)

Inadequate CREVS Surveillance Instruction Identified During Generic Letter 96-01 Review

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
3	14	97	97	-- 002 --	00	4	11	97	BFN Unit 2	05000260
									FACILITY NAME: BFN Unit 3	DOCKET NUMBER: 05000296

OPERATING MODE (9)	N
POWER LEVEL (10)	000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	20.2201(b)		20.2203(a)(2)(v)	X 50.73(a)(2)(i)	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	TELEPHONE NUMBER (Include Area Code)
B. C. Morris, Licensing Project Manager	(205) 729-7909

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)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On March 14, 1997, at 1200 hours, a team performing reviews of Surveillance Instructions (SIs) in conjunction with Generic Letter 96-01, " Testing of Safety-Related Logic Circuits," determined that procedure 0-SI-4.2.G-2, "Control Room Isolation and Pressurization Functional Test" did not fully test all relay logic combinations. Specifically, there was insufficient overlap in the SI section that tested the control bay damper isolation logic for the redundant vent solenoids. The SI was promptly revised to correct the deficiency and the applicable SI section successfully completed by 2300 hours the same day. A root cause analysis has determined that the procedure was incorrectly revised in 1993.

The Generic Letter 96-01 review effort is continuing. In addition, System Engineering will conduct training on the specific circumstances which led to the deficient procedure.

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Browns Ferry Unit 1	05000259	97	-- 002	-- 00	2 of 5

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

I. PLANT CONDITIONS

At the time of the discovery of the condition, Unit 2 was at 100 percent power and Unit 3 was at 35 percent power following the completion of a refueling outage. Unit 1 was shutdown and defueled.

II. DESCRIPTION OF EVENT

A. Event

On March 14, 1997, at approximately 1200 hours Central Standard Time (CST), a team performing reviews of Surveillance Instructions (SIs) in conjunction with Generic Letter 96-01, "Testing of Safety-Related Logic Circuits," determined that procedure 0-SI-4.2.G-2, Revision 15, "Control Room Isolation and Pressurization Functional Test," did not fully test all relay logic combinations. Specifically, there was insufficient overlap in the SI section that verified control bay damper [DMP] isolation logic for the redundant air vent solenoids [SOL]. The SI was promptly revised and the applicable section successfully completed by 2300 hours on the same day of the discovery of the condition.

This SI is performed every 6 months in accordance with Technical Specification 4.2.G and is the unit common surveillance used to test the Control Room Emergency Ventilation System (CREVS) [VI] initiation logic and the control bay isolation logic for the Units 1 and 2, and the Unit 3 control bays.

This event is reportable in accordance with 10 CFR 50.73 (a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications.

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

None.

C. Dates and Approximate Times of Major Occurrences:

March 14, 1997

at 1200 hours CST - Generic Letter 96-01 review team determined 0-SI-4.2.G-2 did not fully test control bay isolation logic. Operations notified.

at 2300 hours CST - Revised SI successfully completed.

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

None.

E. **Method of Discovery:**

The deficient procedure was discovered by a review team during review of SIs and system logic drawings for Generic Letter 96-01.

F. **Operator Actions:**

None.

G. **Safety System Responses:**

None.

III. CAUSE OF THE EVENT

A. **Immediate Cause:**

The immediate cause of the condition was a deficient procedure. The SI did not fully test all logic combinations for the control bay damper isolation function.

B. **Root Cause:**

Personnel error. Revision 11 (July 1993) to 0-SI-4.2.G-2 inappropriately removed procedure steps which provided an overlapping test of the control bay damper logic. Additional detail is presented in the next section.

IV. ANALYSIS OF THE EVENT

CREVS initiation and control room damper isolation is triggered by the trip of one of two control bay ventilation radiation monitors or by a Group 6 Primary Containment Isolation System (PCIS) signal (Reactor Low Water Level, High Drywell Pressure, High Reactor/Refuel Zone Ventilation Radiation). 0-SI-4.2.G-2 uses various combinations of simulated radiation monitor and PCIS trip signals to test the system logic by verifying CREVS fan starts and damper operation, and by observing system annunciators and indicators.

The trip logic causes control bay damper isolation by energizing two solenoids, either of which is capable of venting a common air header and operating the dampers. Damper performance is verified during the radiation monitor trip testing, however, a radiation monitor trip always actuates both vent solenoids. A single PCIS test signal will actuate only one solenoid and the SI satisfactorily tested the "A"

solenoid (Flow Solenoid Valve (FSV)-31-150A) by physically observing damper operation during the division I PCIS trip logic SI section. For the division II PCIS test section, the SI verified a logic trip would provide power to the "B" solenoid valve (FSV-31-150B) by checking a system initiation indicator light in parallel with solenoid, but observation of damper movement was not required by the SI. To provide full overlap in the logic testing, it is necessary to also include a physical verification of damper operation for the "B" solenoid.

A review of past SI-4.2.G-2 revisions indicated that this procedure deficiency had originated in early 1993 following a modification to the CREVS system which included changes to the system logic.

Revision (9) of the SI (April 1993) was issued for the CREVS modification and included steps for verifying damper operation for the "B" solenoid in the PCIS section of the SI. During the first performance of Revision 9, procedure execution problems were encountered in this section related to sequencing of steps associated with a new selector switch added by the modification. A test deficiency (TD) was written to remedy the sequencing problem. The TD resolution did not require completion of the damper verification steps. Revision 11 of the SI (July 1993) subsequently incorporated comments and test deficiencies from the original SI performance and inappropriately deleted the test steps which verified damper operation for the "B" solenoid valve. The root cause evaluation determined the TD disposition was incomplete in this regard.

Regarding safety implications, two redundant vent solenoids are provided in the system design to operate the control bay dampers. The procedural deficiency could mask performance problems with the "B" solenoid valve and, thus, reduce the reliability of damper isolation function which, in turn, reduces the reliability of the CREVS system in protecting the control bay from radiation hazards for events which could result in releases to the atmosphere. A review of maintenance history showed no failures of the "B" solenoid during the time period of the existence of the procedure problem. Also, the corrected SI was successfully performed following the identification of the deficiency with no problems observed. Therefore, there are no indications that the procedure deficiency resulted in undetected equipment performance problems.

V. CORRECTIVE ACTIONS

A. Immediate Corrective Actions:

A revision to 0-SI-4.2.G-2 was promptly made and the applicable SI section successfully completed.

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

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

A Problem Event Report, BFPER970571, was written to document the condition and to track follow-up training actions and experience review activities for System Engineers relating to the circumstances which led to the deficient SI.[1] The Generic Letter 96-01 review is continuing as previously committed to NRC.

VI. ADDITIONAL INFORMATION

A. **Failed Components:**

None.

B. **Previous LERs on Similar Events:**

No previous LERs were identified associated with inadequate logic testing SIs. The Generic Letter 96-01 review is approximately 60% complete and no similar problems have been previously discovered in the review effort.

VII. COMMITMENTS

None.

Energy Industry Identification System (EIIS) system and component codes are identified in the text with brackets (e.g., [XX]).

[1] These actions are being tracked by TVA's Corrective Action Program and are not considered regulatory commitments.