



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

R. D. (Rick) Machon
Vice President, Browns Ferry Nuclear Plant

April 26, 1996

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20535

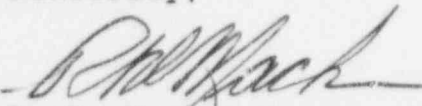
10 CFR 50.73

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 50-259/06002**

The enclosed report provides details concerning an unplanned emergency diesel generator start. The emergency diesel generator auto-started on undervoltage condition following an unexpected trip of a shutdown board supply breaker during testing. This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv) as a condition that resulted in manual or automatic actuation of an engineered safety feature.

Sincerely,



R. D. Machon

cc: See page 2

030035

9605030229 960426
PDR AICCK 03000557
S PDR

IE22%

U.S. Nuclear Regulatory Commission

Page 2

April 26, 1996

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

EXPIRES 04/30/98

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)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 20555-0001.

FACILITY NAME (1)

Browns Ferry Nuclear Plant (BFN) Unit 1

DOCKET NUMBER (2)

05000259

PAGE (3)

1 OF 5

TITLE (4)

An Emergency Diesel Generator Auto-Started Due To Undervoltage Condition As A Result of Personnel Error.

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	28	96	96	002	00	4	26	96	BFN Unit 2	05000260
									FACILITY NAME	DOCKET NUMBER
									NA	05000
OPERATING MODE (9)		N	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)		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)		X 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

Clare S. Hsieh, Compliance Engineer

TELEPHONE NUMBER (include Area Code)

(205) 729-2635

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

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

On March 28, 1996, at 1205 hours, during a functional check on the 4kV shutdown (SD) board D alternate supply breaker, Unit 1/2 emergency diesel generator (EDG) D auto-started on undervoltage condition following an unexpected trip of the 4kV SD board D normal supply breaker. A technician inadvertently actuated the alternate supply breaker's stationary auxiliary (cell) switch (52STA). This caused the normal supply breaker to open, as designed. With 4kV SD board D deenergized, EDG D auto-started and tied onto the board. The deenergized board also resulted in a reactor protection system (RPS) half-scam, a loss of power to RPS bus 2B, and isolation of primary containment isolation system group 6 (ventilation related). The root cause was personnel error. TVA's human performance evaluation of the technician revealed habit intrusion that resulted in failure to follow instruction. Specifically, the technician did not follow the testing instruction as a result of mindset created from similar tests performed prior to this event. Immediate corrective actions included restoring power to the affected board and securing the EDG. The technician involved was counselled. Additionally, as an enhancement, a caution note regarding the potential for engineered safety feature actuation associated with 52STA switch operation will be added to the appropriate testing instructions. There was a previous LER (259/ 93002) that also resulted in an EDG start from breaker cell switch actuation; however, corrective actions taken in LER 259/93002 would not have precluded this event.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Browns Ferry Unit 1	05000259	96	-- 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 this event, Unit 1 was shutdown and defueled. Unit 2 was in cold shutdown for a scheduled refueling outage. Unit 3 was operating at 100 percent power.

II. DESCRIPTION OF EVENT

A. Event:

On March 28, 1996, at 1205 hours, during functional tests on breakers associated with 4kV shutdown (SD) [EB] bus 1, Unit 1/2 emergency diesel generator (EDG) [EK] D auto-started on undervoltage condition following an unexpected trip of the 4kV SD board D normal supply breaker [BKR].

At the time of this event, a functional check was being performed in the breaker compartment for the 4kV SD board D alternate supply breaker. After racking the alternate supply breaker to DISCONNECTED position and blocking the breaker's position switch (33), a technician [utility, nonlicensed] inadvertently activated the breaker's stationary auxiliary (cell) switch (52STA). The activated switch, which interlocks the normal and alternate supply breakers to prevent paralleling power sources, resulted in a trip of the normal supply breaker, as designed. With the alternate supply breaker disconnected, the trip of the normal supply breaker deenergized 4kV SD board D. Unit 1/2 EDG D auto-started on undervoltage and tied onto the board.

The deenergized 4kV SD board D resulted in a reactor protection system (RPS) [JC] half-scam, a loss of power to RPS bus 2B, and actuation or isolation of primary containment isolation system (PCIS) [JE] logic channels powered from RPS 2B (i.e., Group 6 - Primary Containment Purge and Ventilation [JM], Reactor Zone Ventilation [VB], Refueling Zone [VA], Standby Gas Treatment [BH], and Control Room Emergency Ventilation [VI]). (Other PCIS groups were already isolated or bypassed for outage work.)

At 1222 hours, RPS 2B power was restored, and the half-scam and PCIS isolations were reset. At approximately 1237 hours, Unit 1/2 EDG D was shutdown and returned to standby readiness.

This event is reportable pursuant to 10 CFR 50.73(a)(2)(iv) as any event or condition that resulted in manual or automatic actuation of an engineered safety feature (ESF) [JE], including the RPS.

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

None.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
Browns Ferry Unit 1	05000259	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 of 5
		96	-- 002	-- 00	

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

C. Dates and Approximate Times of Major Occurrences:

March 28, 1996

at 1205 hours	Unit 1/2 EDG D auto-started. RPS half-scam and PCIS group 6 received.
at 1222 hours	RPS half-scam and PCIS isolations reset.
at 1237 hours	Unit 1/2 EDG D shutdown and returned to standby readiness.
at 1431 hours	TVA made a 4-hour nonemergency notification to NRC in accordance with 10 CFR 50.72(b)(2)(ii).

D. Other Systems or Secondary Functions Affected:

None.

E. Method of Discovery:

This condition was discovered when the control room Operations personnel [utility, licensed] received alarms and indicators that 4kV SD board D was deenergized and Unit 1/2 EDG D had auto-started.

F. Operator Actions:

Operations personnel responded to the event in accordance with approved procedures. The half-scam and PCIS isolations were reset. Normal power was returned to the board and the EDG secured.

G. Safety System Responses:

The plant systems responded as designed for loss of power to a shutdown board.

III. CAUSE OF THE EVENT

A. Immediate Cause:

The immediate cause was the actuation of the alternate supply breaker's 52STA switch. The actuation of the switch in the alternate supply breaker compartment gave an indication to the normal supply breaker trip logic that the alternate supply breaker had closed. As designed, the normal supply breaker opened.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Browns Ferry Unit 1	05000259	96	-- 002	-- 00	4 of 5

TEXT (If more space is required, use additional copies of NRC Form 365A) (17)

B. Root Cause:

The root cause of this event was personnel error. Human performance evaluation of the technician revealed habit intrusion that resulted in failure to follow instruction. Specifically, the technician did not follow the Specific Maintenance Instruction (SMI) in testing the 4kV supply breaker as a result of mindset (habit intrusion) created from performing similar tests prior to this event.

The technician had recently participated (within the last 5 days) in functional testing of 4kV SD boards A and B. Since each of these tests required breaker test linkages to be installed in the breaker compartments, the technician became habituated to the use of test linkages for testing breakers. Therefore, a mindset was created in that test linkages are needed for the 4kV SD board supply breaker tests. Contrary to the steps in the SMI, a test linkage was installed in the alternate supply breaker compartment. During the placement of this linkage, the technician actuated the 52STA switch.

IV. ANALYSIS OF THE EVENT

As expected, the auto-start of the EDG was the successful completion of a designed function. The normal and alternate supply breakers for the shutdown board are interlocked using the 52STA switch to prevent paralleling power sources. An EDG is primarily assigned to each 4kV shutdown board. When the shutdown board is deenergized, the associated EDG breaker closes tying the EDG to its shutdown board. In this event, all expected automatic actions took place, and plant safety systems and associated components performed as designed.

At the time of this event, Unit 2 was in a refueling outage. The shutdown bus functional check was immediately stopped, and the cause of the power loss was identified. Normal power was returned to the board without losing any shutdown cooling. Operations personnel took appropriate corrective actions to restore the plant systems to standby readiness. Therefore, the safety of the plant, its personnel, and the public was not compromised.

V. CORRECTIVE ACTIONS

A. Immediate Corrective Actions:

Functional tests on breakers associated with the shutdown bus were stopped. Operations personnel restored power to 4kV SD board D. The EDG was shutdown and placed in standby readiness. A problem evaluation report (BFPER960326) was generated to document this event.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Browns Ferry Unit 1	05000259	96 --	002 --	00	5 of 5

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

B. Corrective Actions to Prevent Recurrence:

The technician was counselled to further emphasize the need to follow instruction and to implement the five steps of 'STA²R' (i.e., Stop, Think, Ask, Act, and Review) work practices into switching and testing procedures.

As an enhancement, a caution note regarding the potential for ESF actuation associated with 52STA switch operation will be added to the appropriate SMIs.¹ The note will be added to the SMIs prior to testing of the interlocking breakers.

VI. ADDITIONAL INFORMATION

A. Failed Components:

None.

B. Previous LERs on Similar Events:

One previous LER (259/93002) resulted from actuation of a breaker cell switch. The personnel involved did not realize that breaker compartment maintenance would operate the cell switch in the breaker compartment. The corrective actions taken in LER 259/93002 involved personnel training and addition of a caution note concerning ESF actuation in the electrical preventive maintenance instructions. However, these corrective actions would not have precluded this event (LER 259/96002) since the technician involved in installing the test linkage knew 52STA switch manipulation can actuate the switch, and the training conducted in LER 259/93002 did not include the technician's group nor was the caution note added to the SMIs.

VII. COMMITMENTS

None.

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

¹ This is not a regulatory commitment.