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AUSTIN,S.W. Tennessee Valley Authority
ZERINGUE,O.J. Tennessee Valley Authority
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 93-001-00:on 930228,an unplanned actuation of ESF occurred when 3 DGs automatically fast started.Caused by inappropriate personnel action.Licensee will replace damaged CAS logic cable & will submit followup rept.W/930329 ltr.

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O. J. "Ike" Zeringue
Vice President, Browns Ferry Nuclear Plant

MAR 29 1993

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

Dear Sir:

TVA - 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 LER 50-296/93001

The enclosed report provides details concerning an unexpected auto-start of the Unit 3 diesel generators.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv).

Sincerely,

O. J. Zeringue

Enclosure
cc: See page 2

JE22

U.S. Nuclear Regulatory Commission

MAR 29 1993

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NRC Form 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

Approved OMB No. 3150-0104
Expires 4/30/92

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Browns Ferry Nuclear Plant (BFN) Unit 3	0 5 0 0 0 2 9 6	1 OF 0 5

TITLE (4) Unexpected Auto-Start of Unit 3 Diesel Generators.

EVENT DAY (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
									Browns Ferry Unit 1	0 5 0 0 0 2 5 9
0 2	2 8	9 3	9 3	0 0 1	0 0	0 3	2 9	9 3	N/A	0 5 0 0 0

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following)(11)					
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	X	50.73(a)(2)(iv)	73.71(b)	
		20.405(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)	73.71(c)	
		20.405(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)	
		20.405(a)(1)(iii)	50.73(a)(2)(i)(B)		50.73(a)(2)(viii)(A)		
		20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		
		20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (AREA CODE)
Steven W. Austin, Compliance Engineer	2 0 5 7 2 9 - 2 0 7 0

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 fifteen single-space typewritten lines) (16)

On February 28, 1993, at 1243 hours an unplanned actuation of an Engineered Safeguard Feature occurred when Emergency Diesel Generators (EDG) 3A, 3B, 3C and 3D automatically fast started, accelerated to full speed and rated voltage. The EDGs remained running and, because no undervoltage signal existed, did not tie onto their respective 4kV shutdown boards.

TVA believes the root cause of this event was an inappropriate personnel action. Specifically, the cable that connects the Unit 1 accident signal logic initiating relay to Common Accident Start (CAS) circuits in 4kV Shutdown Board 3EC was partially severed. TVA identified an area on the CAS logic cable where a sharp object struck the cable with enough force to sever one conductor and cutting into another thus, shorting the two conductors and causing the EDGs to start.

TVA will replace the damaged CAS logic cable. Furthermore, TVA will continue to investigate the cause of the inappropriate personnel action and if necessary, will submit a followup report.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Browns Ferry Unit 3	0 5 0 0 0 2 9 6	9 3	-- 0 0 1	-- 0 0	0 2 OF 0 5

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

I. PLANT CONDITIONS

Unit 2 is defueled and in the Unit 2 cycle 6 refueling outage. Units 1 and 3 were shutdown and in a defueled condition.

II. DESCRIPTION OF EVENT

A. Event:

On February 28, 1993, at 1243 hours an unplanned actuation of an Engineered Safeguard Feature (ESF) [JE] occurred when Emergency Diesel Generators (EDG) [EJ] 3A, 3B, 3C, and 3D automatically fast started and accelerated to full speed and rated voltage. The EDGs remained running and, because no undervoltage signal existed, did not tie onto their respective 4kV shutdown boards [EB].

At approximately 1255 hours, personnel (utility licensed and nonlicensed) were dispatched to each 4kV shutdown board and the Auxiliary Instrument Room to observe the state of the auto-start logic and Common Accident Start (CAS) [RLY] logic relays. No abnormalities were identified by these observations.

At 1530 hours the EDGs were shutdown returning them to standby readiness.

TVA reports this event in accordance with 10 CFR 50.73(a)(2)(iv), as an event or condition that resulted in manual or automatic actuation of an ESF, including the reactor protection system.

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

None.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Browns Ferry Unit 3	0 5 0 0 0 2 9 6	9 3	— 0 0 1	— 0 0	0 3 OF 0 5

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

C. Dates and Approximate Times of Major Occurrences:

February 28, 1993 at 1243 CST	Emergency Diesel Generators 3A, 3B, 3C, and 3D fast started.
February 28, 1993 at 1530 CST	Emergency Diesel Generators 3A, 3B, 3C, and 3D were returned to standby readiness.
February 28, 1993 at 1540 CST	TVA makes a four 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:

The start of the EDGs was identified by Unit 3 Main Control Room operator when he received alarms indicating EDG start.

F. Operator Actions:

None.

G. Safety System Responses:

None.

III. CAUSE OF THE EVENT

A. Immediate Cause:

The immediate cause of this event was an automatic start of EDGs 3A, 3B, 3C, and 3D. The cable that connects the Unit 1 Common Accident Signal logic initiating relay to CAS circuits in 4kV Shutdown Board 3EC was partially severed between the Unit 1 Auxiliary Instrument Room and 4kV Shutdown Board 3EC. A walkdown of the cable routing identified an area on the cable where a sharp object, struck the cable with enough force to penetrate one conductor and cut into another, thus shorting the two conductors together. This produced the same effect as closing the contacts on the Unit 1 Common Accident Signal logic initiating relay causing the CASB-1 relay to close which ultimately started the EDGs.

B. Root Cause:

TVA believes the root cause of this event was an inappropriate personnel action. TVA was performing significant work activities related to the Unit 2, Cycle 6 refueling outage in Cable Spreading Room A which was where the damage to the cable was located. These activities involved conduit and cable modifications. TVA believes that it was during these activities the cable damage occurred.

C. Contributing Factors:

None.

IV. ANALYSIS OF THE EVENT

The EDGs are the standby AC power system that provide a highly reliable source of power as required for Emergency Core Cooling Systems. The EDGs ensure no single credible event can disable the core standby cooling [BM] functions or their supporting activities.

During the event, all units were defueled and secondary containment was not required. Therefore minimal equipment was required to be operable.

All safety related components operated as expected during the event. Therefore, the safety of the plant, its personnel, and the public was not compromised.

V. CORRECTIVE ACTIONS

A. Immediate Corrective Actions:

At the onset of the event, Operations and Technical Support personnel went to each 4kV shutdown board to observe the state of each EDG auto-start relays. From this observation they found that no start signal was present for any of the four EDGs. Personnel then went to the Unit 2 auxiliary instrument room to observe the relays associated with CAS start logic. No deficiencies were identified by this observation. Finally, the CAS logic circuits were checked for presence of grounds and none were identified.

After completion of the initial investigation, TVA initiated a troubleshooting work order that placed inhibiting boots on the CAS relay contact for each of the four EDGs thus preventing unnecessary starts of EDGs. Placement of the inhibiting boots on the CAS relays allows auto-start from the undervoltage and degraded voltage relays. Each EDG was then shut down returning it to standby readiness state, without further complications. Furthermore, utilizing the same work order, TVA installed a brush recorder to monitor the EDG start circuits for possible spurious actuation signals.

B. Corrective Actions to Prevent Recurrence:

1. TVA will replace the damaged CAS logic cable.

2. TVA will continue to investigate the cause of the inappropriate personnel action and if necessary, will supplement this report.

VI. ADDITIONAL INFORMATION

A. Failed Components:

None.

B. Previous LERs on Similar Events:

TVA has previously issued LERs detailing unanticipated starts of the EDGs. In these reports the root cause has been attributed to personnel error, equipment malfunction, or an actual degraded voltage condition. TVA concluded that the recurrence controls established by these reports was adequate to minimize recurrence.

VII. COMMITMENTS

TVA will replace the damaged CAS logic cable. TVA intends to complete this prior to restart of Unit 1.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].