

TENNESSEE VALLEY AUTHORITY

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Chattanooga, Tennessee 37402-2801

November 5, 1990

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

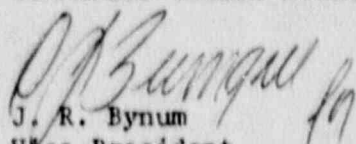
Dear Sir:

TVA - BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 2 - DOCKET NO. 50-259 - FACILITY  
OPERATING LICENSE DPR-33 - REPORTABLE OCCURRENCE REPORT BFRO-50-259/90016

The enclosed report provides details concerning an unplanned engineered safety  
feature actuation caused by a personnel error. This report is submitted in  
accordance with 10 CFR 50.73(a)(2)(iv).

Very truly yours,

TENNESSEE VALLEY AUTHORITY

  
J. R. Bynum  
Vice President  
Nuclear Operations

Enclosures

cc (Enclosures):

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Browns Ferry Unit 1 DOCKET NUMBER (2) | PAGE (3) | 0500 | 2591 | QF | 03

TITLE (4) Residual Heat Service Water Pump Auto-Start Problem  
Following an Unplanned Engineered Safeguards Feature Actuation

EVENT DAY (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER (5)		
10	04	90	016	00	10	05	90	Browns Ferry Unit 3	05000296		

OPERATING MODE (9) | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following)(11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
G. M. Morrison, Nuclear Engineer	205729-2070

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 fifteen single-space typewritten lines) (16)

On October 4, 1990 at 1945 hours, residual heat removal service water (RHRSW) pumps A3 and D1 failed to respond as expected during a performance of a 3D diesel generator run. Each diesel generator is tested once per 30 days to demonstrate availability and load carrying capability. Browns Ferry is in an extended outage and there are no requirements to maintain the diesel generator or RHRSW pumps in an operable condition. RHRSW [BI] pump A3 was aligned to start following the start of the Unit 3 diesel generator, but failed to start. The D1 RHRSW pump which was not aligned to respond to the diesel generator start signal automatically started.

The failure of the A3 RHRSW pump to start as expected has been attributed to personnel error. A wire which had been affected by a recently completed modification was found to be unterminated as a result of a personnel oversight. Troubleshooting of the D1 RHRSW pump start interlock indicated the circuit was functioning properly; consequently, the cause of this failure is undetermined.

A human performance evaluation will be performed to determine if additional corrective actions are required to prevent recurrence of the type of personnel error associated with the failure of the A3 RHRSW pump to start.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER				
Browns Ferry Unit 1	0500025990	0	16	0	0	0	2	03

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

Description of Event

On October 4, 1990 at 1945 hours, residual heat removal service water (RHRSW) pumps A3 and D1 failed to respond as expected during a performance of a 3D diesel generator run. Each diesel generator is tested once per 30 days to demonstrate availability and load carrying capability. Browns Ferry is in an extended outage and there are no requirements to maintain the diesel generator or RHRSW pumps in an operable condition. RHRSW [BI] pump A3 was aligned to start following the start of a Unit 3 diesel generator, but failed to start. The D1 RHRSW pump which was not aligned to respond to the diesel generator start signal automatically started resulting in an unplanned actuation of an engineered safety feature (ESF).

The Emergency Equipment Cooling Water (EECW) system provides cooling water to several safety systems, including the diesel generators. Eight of the twelve RHRSW pumps can be aligned to supply water to the EECW system and, if aligned and not running, these pumps will receive an auto-start signal if a diesel generator is running. During this test, as many RHRSW pumps as plant conditions allow are aligned to automatically start when the diesel generator running signal is generated in order to verify their readiness to provide cooling water to the running diesel engine. For the diesel generator involved in the incident (3D), RHRSW pumps A3, C3, B1, and D1 could have been aligned to auto-start.

All three units were shutdown and defueled at the time of the event. Unplanned actuations of the ESF systems are reportable in accordance with 10 CFR 59.73(a)(2)(iv).

Cause of the Event

The root cause of the failure of the A3 RHRSW pump to start following the start of the 3D diesel generator was personnel error. Modifications personnel failed to terminate a wire which had been replaced as part of a modification to the circuitry which controls the automatic start of the RHRSW pumps.

The root cause of the unplanned start of the D1 RHRSW pump is undetermined.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)		
		Y/E/R	NUMBER	REVISION NUMBER				
Browns Ferry Unit 1	0500025990	0	1	6	0	0	0	3 OF 3

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

Analysis of Event

System engineering and electrical maintenance personnel performed troubleshooting on the RHRSW pump starting circuitry. The unterminated wire associated with the failure of the A3 RHRSW pump to start was located by hand-tracing the wiring associated with the recently completed modification. Post-modification testing of the affected logic circuit had not yet been performed.

After extensive troubleshooting of the D1 RHRSW pump start circuit, no failure mechanism was discovered.

Both RHRSW pumps have performed as expected during the performance of subsequent diesel generator runs.

There were no safety consequences as a result of this event, since the affected equipment is not considered operable nor required to be operable for the current plant mode.

Corrective Actions

The initial corrective actions taken included placing the D1 RHRSW pump breaker in the test position to prevent further unplanned pump starts. The wiring error associated with the failure of the A3 RHRSW pump to start has been corrected.

A human performance evaluation will be performed to determine if additional corrective actions are required to prevent recurrence of the type of personnel error associated with the failure of the A3 RHRSW pump to start.

Previous Similar Events

No previous similar events involving the residual heat removal service water system have occurred.

Commitment

A human performance evaluation of the personnel error associated with the A3 RHRSW pump start failure will be completed by December 17, 1990.

Energy Industry Identification System EIIS Codes are Identified in the Text as [XX]