

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Browns Ferry - Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 2 5 9 1										PAGE (3) OF 0 3																	
TITLE (4) Inadvertent Scram																																					
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 NAMES				DOCKET NUMBER(S)						
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0 9			0 8			8 5			8 5			0 4			8			0 0			1 0			0 8			8 5							0 5 0 0 0			
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following): (11)																																			
N		20.402(b)						20.405(c)						<input checked="" type="checkbox"/> 50.73(a)(2)(iv)						73.71(b)																	
POWER LEVEL (10)		20.405(a)(1)(i)						50.38(c)(1)						50.73(a)(2)(v)						73.71(c)																	
0 10 10		20.405(a)(1)(ii)						50.38(c)(2)						50.73(a)(2)(vi)						OTHER (Specify in Abstract below and in Text, NRC Form 366A)																	
		20.405(a)(1)(iii)						50.73(a)(2)(i)						50.73(a)(2)(vii)(A)																							
		20.405(a)(1)(iv)						50.73(a)(2)(ii)						50.73(a)(2)(vii)(B)																							
		20.405(a)(1)(v)						50.73(a)(2)(iii)						50.73(a)(2)(ix)																							
LICENSEE CONTACT FOR THIS LER (12)																																					
NAME										TELEPHONE NUMBER																											
Richard C. Steele, Compliance Engineer										2 1 0 5 7 1 2 9 - 1 3 1 5 8 1 3																											
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																					
CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NRC		CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NRC																			
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)																											
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO																											

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

On September 8, 1985, an inadvertent scram occurred on unit 1 during performance of a weekly surveillance instruction (SI) on the average power monitors (APRMs). The unit was in a refueling outage with all control rods fully inserted. The inadvertent scram occurred when an APRM mode switch for the channel under test was placed in the "standby" position in accordance with the SI. The computer logs indicated that a half scram on the reactor protection system produced by the previously tested APRM channel had not reset. The SI was repeated as a test, but the failure of the RPS channel to reset could not be reproduced. To prevent similar recurrence, the SI will be revised to add explicit steps to verify that the half scram is fully reset and the scram solenoid group indicating lights are illuminated before proceeding to test the next APRM channel.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES-8-31-85

FACILITY NAME (1) Browns Ferry - Unit 1	DOCKET NUMBER (2) 0500025985	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		85	048	010	012	OF	013

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

Units 1 and 2 were in refueling outages, and unit 3 was in an extended maintenance outage.

On September 8, 1985, at 1023, an inadvertent scram signal occurred on unit 1 during performance of a weekly plant surveillance instruction (SI 4.2.C-1A) on the average power range monitors (APRMs). The affected unit had all control rods fully inserted at the time of the event.

A portion of the SI requires that individual APRM channel mode switches be moved from the "operate" position to the "standby" position. This action will generate a scram signal in one of four trip channels in the reactor protection system (RPS), thus causing a half scram. In this particular case when the operator placed the channel mode switch for the APRM channel being tested (channel "C") in the "standby" position, a full scram unexpectedly occurred. The exact sequence of the event could not be determined because the sequence of events recorder (SER) was previously out of service. The alarm printer was functional, and the printout indicated the following sequence of alarms:

- A. The previously tested APRM channel "D" was tripped.
- B. The RPS trip channel "B2" was tripped.
- C. The APRM channel "D" trip was reset.
- D. The RPS trip channel "B2" remained in the tripped state.

When the operator proceeded to test APRM channel "C" by placing the APRM channel mode switch in the "standby" position, a scram signal was generated on RPS trip channel "A2," and a full scram occurred due to the presence of trip signals on channels "A2" and "B2" of the RPS. The operator reset the scram signal and completed the SI without further incident.

A special investigation was performed to determine the cause of the problem.

1. On September 22, 1985, a special test was conducted to simulate the event. APRM channel "D" was tripped and the channel "B-D-F" bypass switch placed in the "bypass" position while the channel was still in the tripped condition. APRM channel "C" was then placed in the "standby" condition in order to simulate the event. The reset failure did not recur in any of the repeated simulations.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

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

2. On September 29, 1985, unit 1 RPS panels 9-15 and 9-17 were examined for defective relays or wiring problems. While performing SI 4.2.C-1A, arcing, an unrelated problem, was observed in panel 9-17 on the load side of the 100 amp supply breaker to RPS bus "B." The arc appeared at the breaker load-side lug which ties a No. 6 AWG cable (Vulkene insulation, type SIS) to a copper bus in the panel. The cable insulation appeared to have dried and cracked. The load-side lug on the breaker was loose and was responsible for the arcing. The lug was tightened. Measurement of the electrical load on the cable indicated that the cable was carrying approximately 60 amps. This is within the cable rating but undersized for the breaker rating (100 amps). All similar cables in panels 9-15 and 9-17 on all three units were checked and were found to be the same size; and their insulation was in good condition. The damaged cable and the breaker to which it is connected will be replaced. The cable sizing is being further evaluated by TVA design and General Electric. The arcing at the panel would not have caused the unexpected scram, and no other problems were discovered.

A similar event had previously occurred on August 25, 1985, on the same unit during performance of the same SI as reported in LER BFRO-50-259/85043. In the investigation of the August 25, 1985 event, a defective channel bypass switch was discovered and repaired. The SI (SI 4.2.C-1A) has been successfully performed four times since the September 8, 1985 event.

Both events constituted a failure in the conservative direction (scram). This surveillance test is routinely performed, and it is highly desirable to prevent spurious scrams. Therefore, to prevent similar recurrences, the SI will be revised to add explicit steps to verify that the half scram obtained in the SI is fully reset; and the scram solenoid group indicating lights are illuminated before proceeding to test the next APRM channel.

Responsible Plant Section - N/A

Previous Events - BFRO-50-259/85043

TENNESSEE VALLEY AUTHORITY

Browns Ferry Nuclear Plant
P. O. Box 2000
Decatur, Alabama 35602

October 8, 1985

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

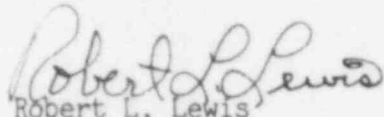
Dear Sir:

TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 1 -
DOCKET NO. 50-259 - FACILITY OPERATING LICENSE DPR-33 - REPORTABLE
OCCURRENCE REPORT BFRO-50-259/85048

The enclosed report provides details concerning an inadvertent scram.
This report is submitted in accordance with 10 CFR 50.73 (a)(2)(iv).

Very truly yours,

TENNESSEE VALLEY AUTHORITY



Robert L. Lewis
Acting Plant Manager
Browns Ferry Nuclear Plant

Enclosures

cc (Enclosures):

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NRC Resident Inspector, BFN

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