

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Browns Ferry - Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 2 5 9										PAGE (3) 1 OF 03																															
TITLE (4) Reevaluation of Design Criteria For Final Safety Analysis Report Section 8.6.2																																																			
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																																	
																		Browns Ferry - Unit 2																																	
																		0 5 0 0 0 2 6 0																																	
																		Browns Ferry - Unit 3																																	
																		0 5 0 0 0 2 9 6																																	
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																																																	
N		20.402(b)										20.405(c)										50.73(a)(2)(iv)										73.71(b)																			
POWER LEVEL (10)		0 1 0 1 0										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)(i)																			
												20.405(a)(1)(iii)										50.73(a)(2)(ii)										50.73(a)(2)(iii)(A)										OTHER (Specify in Abstract below and in Text, NRC Form 366A)									
												20.405(a)(1)(iv)										X 50.73(a)(2)(iv)										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																																									
D. L. Smith										AREA CODE 210 571 291-138615																																									
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																																			
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS																													
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)										MONTH	DAY	YEAR																													
X YES (If yes, complete EXPECTED SUBMISSION DATE)										NO										11	00	1815																													

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

Based on analytical calculations by TVA's Office of Engineering, the possibility exists for the 250 VDC main battery terminal voltage to drop below the Final Safety Analysis Report (FSAR) Section 8.6.2 specified final value of 210 Vdc for a short transient condition following postulated accidents. The calculated transient value is 207 Vdc.

This short transient could cause an inadvertent trip of the Staticon inverters which power the wide range torus temperature monitors and the Topaz inverters which power the high pressure coolant injection controller circuitry.

Corrective action, pending further evaluation, is to lower the undervoltage trip setting on the inverters.

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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)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Browns Ferry - Unit 1	0500025985	—	032	—	01	02	OF 03

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

Units 1 and 2 are in a refueling outage, and unit 3 is in an extended maintenance outage.

As a result of recent analytic calculations on post accident loading of the 250 V battery system, a short term transient voltage of 207 V was predicted. This is three volts less than the original minimum as specified in the Final Safety Analysis Report (FSAR). This voltage dip could initiate undervoltage detection circuitry and trip the Staticon inverters which supply power to the analog trip system (ATU) and the Topaz inverters for the high pressure cooling injection system (HPCI), and feedwater system controllers. The HPCI and reactor core isolation cooling (RCIC) governors would also see the voltage dip.

The analysis results are conservative in that an accident is assumed on one unit concurrent with loss of offsite power. Also, battery 4 is presumed out of service with its loads transferred to the three shutdown batteries. Inadvertent trip of the inverters could, however, cause a short term loss of the HPCI system and the wide range temperature instrumentation for the torus. Feedwater system loss is inherent in loss of offsite power scenarios. Browns Ferry is fully designed for safe shutdown using only low pressure injection systems. Potential loss of HPCI represents a loss of a redundant high pressure system.

As corrective action, the undervoltage sensor setpoints for the Staticon ATU inverters and the existing Topaz HPCI and feedwater inverters will be lowered, thus providing assurance that the transient voltage conditions will not result in operation of the detectors. The Topaz inverters are scheduled to be changed to a different type. The setpoints for the Staticon and Topaz inverters will be lowered or the Topaz inverter replacements installed and their undervoltage detection circuitry evaluated and set appropriately for each of units 1, 2, and 3 prior to the restart of each unit. Also, the operating voltage for the HPCI and RCIC governor controls will be evaluated prior to the restart of unit 3 from its current maintenance outage to ensure that the lower voltage does not affect operability.

Regarding the affect of the calculated voltage transient on the governor controls, we have continued our evaluation. The vendor specification on the required turbine control voltage is 240 plus or minus 10 percent VDC (low of 216 V). This appears to conflict with the FSAR quoted minimum source value of 210 VDC. The voltage of interest is, however, the input to EGM control box which should be 42 VDC. The voltage to the EGM box is regulated by a Zener diode network so the actual available voltage is not linearly proportional to source voltage changes. For instance, vendor qualification tests on 120 VDC systems indicate that a 20 percent source voltage drop yields only a 6 percent drop at the input to the EGM control box. In this case, there would be no problem in meeting required voltages. A special test will be performed to confirm that voltage available at the EGM control box is satisfactory.

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0 5 0 0 0 2 5 9 8 5 - 0 3 2 - 0 1 0 3 OF 0 3

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

These new calculations are conservative and follow-up analysis is being pursued. This may alleviate the necessity for the undervoltage setpoint changes. A follow-up report will be submitted if significant changes occur as a result of the analysis. In the meanwhile, the corrective action described above will be implemented. We do not believe Part 21 is involved in that these calculations are specific to changes in the Browns Ferry battery loading assumptions.

Responsible Plant Section - N/A

Previous Events - None

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

August 27, 1985

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

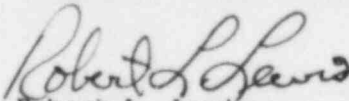
Dear Sir:

TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 1 -  
DOCKET NO. 50-259 - FACILITY OPERATING LICENSE DPR-33 - REPORTABLE  
OCCURRENCE REPORT BFRO-50-259/85032 R1

The enclosed report provides details concerning the reevaluation of  
design criteria for Final Safety Analysis Report, Section 8.6.2. This  
report is submitted in accordance with 10 CFR 50.73(a)(2)(ii).

Very truly yours,

TENNESSEE VALLEY AUTHORITY



Robert L. Lewis  
Acting Plant Manager  
Browns Ferry Nuclear Plant

Enclosures

cc (Enclosures):

Regional Administrator  
U.S. Nuclear Regulatory Commission  
Office of Inspection and Enforcement  
Region II  
101 Marietta Street, Suite 2900  
Atlanta, Georgia 30303

INPO Records Center  
Suite 1500  
1100 Circle 75 Parkway  
Atlanta, Georgia 30339

NRC Resident Inspector, BFN

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