

## 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 0 2
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TITLE (4) Movement of Control Rods Out of Sequence and Subsequent Reactor Scram
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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)
0 1	0 6	8 4	8 4	0 0 4	0 1	0 4	1 1	8 4			0 5 0 0 0
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)											
OPERATING MODE (9) N		20.402(b)			20.406(c)			<input checked="" type="checkbox"/> 50.73(a)(2)(iv)			73.71(b)
POWER LEVEL (10) 0 1 1 4		20.406(a)(1)(i)			50.36(c)(1)			<input type="checkbox"/> 50.73(a)(2)(v)			73.71(c)
		20.406(a)(1)(ii)			50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(vii)			OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.406(a)(1)(iii)			<input checked="" type="checkbox"/> 50.73(a)(2)(i)			<input type="checkbox"/> 50.73(a)(2)(viii)(A)			
		20.406(a)(1)(iv)			50.73(a)(2)(ii)			<input type="checkbox"/> 50.73(a)(2)(viii)(B)			
		20.406(a)(1)(v)			50.73(a)(2)(iii)			<input type="checkbox"/> 50.73(a)(2)(x)			

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME David L. Smith	AREA CODE 2 0 5	7 1 2 9 1 - 1 0 8 1 6 1 5	

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
<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)

While performing manual shutdown of the main turbine, control rods were being inserted to reduce power. At this point, power was 13.5 percent. When vacuum was reduced in the main condenser, the reactor mode switch was moved from "run" to "startup." This resulted in a half scram. The unit operator and nuclear engineer attempted to reduce power to clear the half scram. The nuclear engineer changed the rod pull sheet to insert selected rods from position "24" to "00." Rod Worth Minimizer (RWM) was bypassed and a second licensed operator was present to verify rod moves. To further reduce power rapidly, the rod notch override (RONOR) switch was used to insert rods to "00." Technical Specification 3.3.B.3.a was violated by usage of the RONAR switch to position rods in other than positions required by group notch logic of rod sequence control system (RSCS). At this point, the nuclear engineer reconsidered these actions and requested a manual scram, which was accomplished. Event time was less than two minutes. Both individuals were counseled as to all pertinent requirements. Immediate recurrence control was administratively prohibiting use of RONOR switch while the rod sequence control system is enforcing.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)  Browns Ferry - Unit 1	DOCKET NUMBER (2)  0 5 0 0 0 2 5 9 8 4	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		0 0 4	0 1	0 2	OF	0 2	

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

Following maintenance on the main turbine (TRB) with the reactor (RCT) operating at 13.5 percent power, the turbine was placed back on line. Due to a problem not directly related to this event, the generator (GEN) could not be tied on line. Following approximately one hour of unloaded operation, the turbine developed vibration problems. The turbine was manually tripped, and as it coasted through its critical speeds, turbine vibration exceeded 15 mils. To reduce turbine speed rapidly, condenser vacuum breakers were opened. Because of the possibility of reactor scram due to low condenser vacuum, it was decided to switch reactor mode switch from "run" to "startup" (In this mode the low vacuum scram is bypassed.) The reactor mode switch (HS) was placed in startup (causing a half scram due to high flux), control rods (RCD) were inserted (just before going to startup, rod worth minimizer (JE) was bypassed to clear a rod block and a second licensed operator was used to verify the rod worth minimizer sequence per Technical Specification 3.3.B.-3.c).

In order to reduce power still more rapidly to clear the half scram, the unit operator asked the nuclear engineer if the rod notch override switch (HS) could be used to drive each control rod to full-in rather than notching the group in. The unit operator stated it was an emergency. The nuclear engineer agreed and altered the rod insertion sheet. The operator began inserting rods about 2340. As the rods were being inserted to "00," the nuclear engineer recognized that the resultant rod positions were out of preset group notch logic and reported this to the Shift Engineer and Operations Supervisor (both licensed senior reactor operators), recommending manual scram. The unit was manually scrambled at 2342. This complied with Technical Specification 3.3.B.3.d.

The operator (licensed reactor operator) and nuclear engineer (qualified as a shift nuclear engineer) both violated Technical Specification 3.3.B.3.a and administrative controls concerning usage of the rod notch override switch. No unusual transients were encountered during the sequence of events. Because the resultant rod pattern was beyond previous analyzed conditions, General Electric Company (GE) and TVA have reviewed all related parameters. The analysis of this specific event by TVA indicated the highest rod worth for any rod which could have potentially been dropped was .27 percent delta K/K. This is much less than the 1.4 percent delta K/K calculated for the limiting 280 cal/g rod drop accident. The results of the TVA analysis was discussed with GE and it was agreed that any additional calculations by GE would be a duplication of TVA's analysis. Operating Instructions have been revised to provide adequate instruction to operators on the use of the RONOR switch. Both individuals were counseled as to all pertinent requirements.

An enforcement meeting which included discussion of this event was held in the NRC Region II office on February 24, 1984.

Responsible Plant Section - EN, OP

Previous Similar Events - None

TENNESSEE VALLEY AUTHORITY

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

April 11, 1984

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

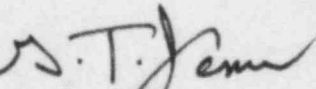
Dear Sir:

TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT UNIT 1 - DOCKET  
NO. 50-259 - FACILITY OPERATING LICENSE DPR-33 - REPORTABLE OCCURRENCE  
REPORT BFRO-50-259/84004 R1

The enclosed updated report provides details concerning movement of control  
rods out of sequence and subsequent reactor scram. This report is  
submitted in accordance with 10 CFR 50.73 (a)(2)(i) and (a) (2)(iv).

Very truly yours,

TENNESSEE VALLEY AUTHORITY



G. T. Jones  
Power Plant Superintendent  
Browns Ferry Nuclear Plant

Enclosure

cc (Enclosure):  
Regional Administrator  
U. S. Nuclear Regulatory Commission  
Office of Inspection and Enforcement  
Region II  
101 Marietta Street, Suite 2900  
Atlanta, GA 30303

NRC Inspector, Browns Ferry Nuclear Plant

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