NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Browns Ferry - Unit 1	0 5 0 0 0 2 5 9	1 OF 0 2

TITLE (4)

During Data Bank Review, K_f Found to be in Error

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	3 0	8 4	8 4	— 0 0 9	— 0 0	0 2	1 7	8 4		0 5 0 0 0
										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 8 2	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	X 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)	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
David L. Smith	AREA CODE 2 0 5 — 7 2 9 - 0 8 6 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
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

In this event, the factor K_f used in calculations of Critical Power Ratio (CPR) by by the process computer was found to be in error by approximately 2.5 percent at recirculation flows of approximately 75 percent. This is the maximum possible error. The K_f used in calculations of CPR by the computer was last verified to be correct on December 20, 1983. A review of the data from December 20, 1983 to January 30, 1984 showed the highest core maximum fraction of critical power (CMFCP) to be less than 0.90. The CMFCP is defined as the limiting CPR divided by the calculated CPR. A 2.5 percent error would make the highest CMFCP less than 0.92. This is well below the allowable limit of 1.0.

This event was caused by loading a core dump which was generated prior to correcting K_f. Inadequate procedures allowed the wrong computer tape to be used to reinitialize the process computer, thus overlaying the correct K_f with a previous fuel cycle K_f. Since this event, a plant instruction delineating reinitializing the process computer will be issued within 45 days.

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

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

While unit 1 was operating at 82 percent, unit 2 at 92 percent, and unit 3 in a refueling outage, only unit 1 was affected by this event. A databank review conducted by Tennessee Valley Authority, Nuclear Central Office, Core Methods Section discovered that the K_f breakpoint as defined by Figure 3.5.2 of the technical specifications was set at 0.75. This corresponds to FLOWMAX = 102.5 percent. The scoop-tube setpoint calibration was such that FLOWMAX = 107 percent. This resulted in a nonconservative error, up to approximately 2.5 percent, in the process computer (ID) evaluation of critical power ratio limits (per Technical Specification 3.5.K), at less than 80 percent core flow. A review of thermal limits calculations for the period K_f in error was conducted. It was verified core maximum fraction of critical power did not exceed 0.90 during this period. This would result in a maximum core maximum fraction of critical power of 0.92 if operating near 75 percent core flow. The error would be much less at lower flows and no error above 80 percent flow. This leaves at least an 8 percent margin to the limiting value of 1.0. A comparison between the core dump for January 31, 1984 and the beginning of cycle core dump was made. This verified that all other NSSS process computer constants are correct at this time.

This event was caused by loading a core dump which was generated prior to correcting K_f. K_f was in error on the initial core dump which had been generated prior to starting the current cycle. This was corrected during the performance of Refueling Test Instruction 13, "Open Vessel Plateau" and signed off in the Master Refuel Test Instruction. During the performance of Refueling Test Instruction 13 at the heat up to 55 percent power plateau, computer problems were encountered that required loading a core dump to correct. The only tape available was the beginning of cycle core dump. When the tape was loaded, it inadvertently overlayed the corrected K_f.

This problem was caused by a lack of administrative controls governing reinitializing the process computer. Due to procedure inadequacy, the plant (with flow less than 80 percent and the most limiting power distribution) could have been operated outside its design basis if simultaneously the most limiting transit for this reload had occurred. This could have resulted in exceeding MCPR safety limit.

To prevent recurrence, a plant instruction delineating reinitializing the process computer will be issued within 45 days.

Responsible Section - EN

Previous Similar Events - None

TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

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

February 17, 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-50-259/84009

The enclosed report provides details concerning process computer K_f factor being in error for period of December 20, 1983 through January 30, 1984. This report is submitted in accordance with 10 CFR 50.73 (a)(2)(V).

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. R. Calhoun

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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