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)
Design Deficiency - Inadequate Seismic Design of the Reactor Building Crane

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 6	2 0	8 5	8 5	0 2 7	0 0	0 7	2 2	8 5	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)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		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)(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)	X 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
	AREA CODE
P. N. Ebersole	2 0 5 — 7 2 9 - 3 7 8 8

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)

An Office of Engineering evaluation of the reactor building crane indicates that the potential loads transmitted to the crane rails during a seismic event could result in their overturning and/or sliding. The result of this condition is that the load being carried by the crane could be dropped a maximum distance of six inches.

The critical lift for the reactor building crane is the reactor vessel head from the vessel. To minimize the time during which the head is suspended near the vessel flange, interim procedural controls were established.

A modification is planned to replace the crane rail clamps with ones of a larger size. Completion of this modification will return the reactor building crane to a seismically qualified status. We expect that this modification will be done by October 31, 1985.

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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 5	— 0 2 7	— 0 0	0 2 OF 0 2

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

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

A design evaluation of the reactor building crane indicates that horizontal inertial loads from an operational basis earthquake (OBE) or safe shutdown earthquake (SSE) could potentially cause the crane rails to overturn and/or be displaced resulting in the crane dropping up to six inches on to the runway beams. The situation exists because the original designers had assumed that the reactor building crane and supporting structure were rigid in the direction perpendicular to bridge travel. In order for this drop to adversely affect plant safety, the load being carried by the crane would have to be positioned less than six inches above a critical component. Following receipt of this design evaluation, all activities involving the use of this crane were stopped pending additional evaluations.

The critical lift for the reactor building crane is the reactor vessel head due to its weight, and the fact that the vessel is open. Existing plant instructions required that during vessel disassembly the reactor head be held six inches above the vessel flange for approximately 2 hours to allow performance of a radiological survey. A probabilistic risk assessment (PRA) evaluating the likelihood of an earthquake occurring while the reactor head is being held above the vessel flange for this 2-hour period has been determined to be 0.0000004 occurrences/lift. This probability is in the range of events considered incredible. To reduce the likelihood of occurrence even further, procedural controls were implemented that would require the head to be lifted 12 inches during the performance of the required radiological surveys. This would greatly reduce the period of time that the reactor head would be within 6 inches of the vessel and would proportionally reduce the probability of a load drop. Crane operation was resumed under these administrative controls pending modification of the crane rails.

The existing rail clamps will be replaced with ones made of thicker material. This will return the crane to a full seismic qualification. This will be done by October 31, 1985.

Responsible Plant Section - N/A

Previous Events - None

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

July 22, 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-50-259/85027

The enclosed report provides details concerning inadequate seismic design of the reactor building crane. This report is submitted in accordance with 10 CFR 50.73(a)(2)(ii).

Very truly yours,

TENNESSEE VALLEY AUTHORITY

Robert L. Lewis

R. L. Lewis
Acting Plant Manager
Browns Ferry Nuclear Plant

Enclosures
cc (Enclosures):
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Office of Inspection and Enforcement
Region II
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Atlanta, Georgia 30303

NRC Resident Inspector, BFN

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