

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Browns Ferry - Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 2 5 9 1 OF 0 2										PAGE (3) 1 OF 02	
TITLE (4) Failure of Fuel Pool Cooling Pump Discharge Flange																					
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)								
									Browns Ferry - Unit 2				0 5 0 0 0 2 6 0								
0 6 0 5 8 5 8 5				0 2 5		0 0 0	7 0 3 8 5		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)				20.406(c)				50.73(a)(2)(iv)				73.71(b)							
		20.406(a)(1)(i)				50.38(e)(1)				X 50.73(a)(2)(v)				73.71(c)							
		20.406(a)(1)(ii)				50.38(e)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)							
		20.406(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)											
		20.406(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)											
		20.406(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)											
LICENSEE CONTACT FOR THIS LER (12)																					
NAME Stephen B. Jones										TELEPHONE NUMBER 2 0 5 7 1 2 9 1 - 1 2 5 1 3 8											
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)				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)

During maintenance of the fuel pool cooling system, the 1A fuel pool cooling pump discharge flange cracked during torquing. The root cause of the failure was the joint design did not meet American National Standards Institute requirements. An engineering evaluation also determined the present joint configuration could not be seismically qualified. The pump casing has been replaced, and the mating pipe flange will be modified. All other fuel pool pumps will have the flanged connections inspected and modified as required. There was no affect on the health and safety of the public.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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	0 5 0 0 0 2 5 9	8 5	- 0 2 5	- 0 0	0	2	OF 0 2

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

Unit 1 and 2 were in refueling outages. Unit 3 was in cold shutdown. Unit 1 was directly affected.

During maintenance of the fuel pool cooling system (DA), the discharge flange of the 1A fuel pool pump (P) cracked during torquing. This flange was cast integral with the pump casing and was equivalent to a flat faced 250-pound flange. The piping connected to the pump had a 300-pound raised faced forged steel fitting. The two flanges were joined by American Society for Testing and Materials A193, B8F bolts. An engineering evaluation of the flange design completed on June 5, 1985, determined the flange was overstressed as a result of applying a torque based on the strength of the bolting material. The evaluation also concluded that the joint configuration could not be seismically qualified.

On June 13, 1985, an inspection of the unit 2 and unit 3 fuel pool pump discharge flanges discovered the pump discharge flanges were equivalent to a 125-pound flange, and the connecting piping had a 150-pound steel flange. An engineering evaluation of these flanges was completed on June 27, 1985, and concluded that the flanges were acceptable. However, in order to meet seismic qualifications both flanges had to be flat faced.

The root cause for the failure of the pump discharge flange was a design error in that a raised face flange was mated to a flat faced flange. This error was compounded by the required torque for the joint not being specified. The flange was overstressed when excessive torque was applied to the joint as a result of basing the torque values on bolt strength.

The failure of the pump discharge flange did not affect the safety of the public since the system was tagged for maintenance, and the redundant fuel pool pump was in service. The engineering evaluation determined that there was a potential for flange failure during a seismic event if the flange bolts were torqued almost to the point of flange failure. This would cause high leakage through the joints if the pumps continued to operate. The fuel pool cooling system is backed up by the residual heat removal system (BG) and emergency make up from the emergency equipment cooling water system.

The 1A fuel pool pump casing has been replaced. The raised face pipe flange is being machined to a flat face. The other fuel pool pumps discharge joints will be inspected and modified as required prior to startup of that unit. A design study is also underway to determine if there are other similar installations of other raised face flanges in safety systems.

Responsible Plant Section - N/A

Previous Events - None

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

July 3, 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-50-259/85025

The enclosed report provides details concerning failure of fuel pool
cooling pump discharge flange. This report is submitted in accordance
with 10 CFR 50.73(a)(2)(v).

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. R. Pittman
G. T. Jones
Plant Manager
Browns Ferry Nuclear Plant

Enclosures

cc (Enclosures):
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U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
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Atlanta, Georgia 30303

INPO Records Center
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NRC Resident Inspector, BFN