

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
Browns Ferry - Units 1, 2, and 3

DOCKET NUMBER (2)

0 5 0 0 0 2 5 1 9 1 OF 0 2

TITLE (4)

Underdesigned RHRSW/EECW Pump Air and Vacuum Relief Valves

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 1 0	
0 2	1 3	8 4	8 4	0 1 3	0 0	0 3	0 2	8 4	Browns Ferry - Unit 3	0 5 0 0 0 2 1 9 6	

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50. (Check one or more of the following) (11)

OPERATING MODE (9)	20.402(b)	20.406(c)	50.73(a)(2)(iv)	73.71(b)
N	20.406(a)(1)(i)	50.36(e)(1)	X 50.73(a)(2)(v)	73.71(c)
POWER LEVEL (10)	20.406(a)(1)(ii)	50.36(e)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)
1 1 0 1 0	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
Jimmy B. Walker
TELEPHONE NUMBER
AREA CODE
2 1 0 1 5 7 1 2 1 9 1 - 1 0 1 8 1 6 1 5

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)
YES (If yes, complete EXPECTED SUBMISSION DATE) ☒ NO ☐
EXPECTED SUBMISSION DATE (15)
MONTH DAY YEAR

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

The EECW/RHRSW air and vacuum release valves were evaluated by TVA's Division of Engineering Design during the approval of design change request to add surge check valves to the air and vacuum valves. The air and vacuum release valves were found to be underrated for their service application. The operating units were removed from service.

An orifice plate with a 1.770-inch diameter hole was installed under the air and vacuum release valves to restrict the amount of water that could be released into the RHRSW/EECW pump room through the 4-inch valves should they crack during pump starts. The installation of the orifice would prevent a significant decrease of system flow. Also, pump room doors are being maintained to preclude possibility of flooding. The system will remain in this configuration until new valves with the proper design pressure rating can be purchased and installed.

8403090253 840302
PDR ADOCK 05000259
S PDR

TENNESSEE VALLEY AUTHORITY

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

March 2, 1984

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

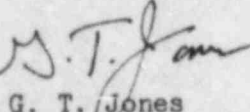
Dear Sir:

TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT UNIT 1 - DOCKET
NO. 50-259 - FACILITY OPERATING LICENSE DPR-33 - REPORTABLE OCCURRENCE
REPORT BFRO-50-259/84013

The enclosed report provides details concerning underdesigned RHRSW/EEDW
pump air and vacuum relief valves. This report is submitted in accordance
with 10 CFR 50.73 (a)(2)(v).

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
171 Marietta Street, Suite 2900
Atlanta, GA 30303

NRC Inspector, Browns Ferry Nuclear Plant

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES 8/31/85

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

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

Unit 1 was operating at 96.6 percent power; unit 2 was operating at 95.4 percent power; and unit 3 was in a refueling outage. Units 1 and 2 were the only units directly affected, even though the system involved is common, since unit 3 was in a refueling outage.

On February 13, 1984, the emergency equipment cooling water/residual heat removal service water (EECW/RHRSW) (BI) air and vacuum release valves (V) (0-23-587, -501, -505, -590, -521, -525, -541, -545, -593, -560, -564, and -596) were identified by TVA's Division of Engineering Design to be underrated for their applications during initial pump start surge pressure. The operating units (1 and 2) were removed from service on February 14, 1984, until an orifice could be designed, tested, and installed adjacent to, and upstream of, the air/vacuum release valves. The orifices (OR) were designed with a 1.770-inch diameter hole which would reduce the amount of water released in an RHRSW/EECW room should the valve body or the 4-inch valve fail to seat as well as prevent any significant decrease in system flow. (Failure to seat, with resultant flooding, has occurred several times in the past.)

The event occurred due to a misapplication of this type air and vacuum release valve in the original design. These type valves have been in service for more than ten years and no body failures have occurred.

The EECW/RHRSW is a dual system, with twelve pumps capable of two different services. Four pumps supply EECW, four pumps supply RHRSW, and four pumps can supply either. There are two EECW headers (north and south) with four automatic starting RHRSW pumps on each header. Each header alone can handle the flows to all components and all components can be serviced from either or both headers. Two RHRSW pumps can supply the full flow requirements of all essential EECW loads for any abnormal or postaccident situation. There are four RHRSW headers with one RHRSW pump normally assigned. Each header can supply sufficient post-LOCA heat removal capacity for any unit. Since no valve bodies have failed during the last ten years and because of the separation of the RHRSW/EECW pump into four different rooms, with three pumps per room, we conclude that if a design basis accident had occurred, the system would have met its design safety function.

An orifice plate was designed by Engineering Design, installed under the valves, tested and shown to restrict the amount of water that would be released in the pump rooms should a valve body failure occur, as well as maintain system pressure and flow rate requirements. In addition, the EECW/RHRSW doors are being maintained in a position to preclude possibility of room flooding should a valve fail. The system will remain in this configuration until new valves are purchased and installed, which is a permanent fix to the problem. Units 1 and 2 were returned to service on February 23, 1984.

Responsible Section - ED

Previous Similar Events - None