

NRC Form 366
(9-83)U.S. Nuclear Regulatory Commission
Approved OMB No. 3150-0104

LICENSEE EVENT REPORT (LER)

Expires: 8/31/85

Facility Name(1) Maine Yankee Atomic Power Company	Docket Number(2) 10 15 10 10 10 13 10 19	Page(3) 1 of 3
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Title(4) Two Plant Trips Resulting from Spurious Closure of Excess Flow Check Valves											
Event Date(5)			LER Number(6)			Report Date(7)			Other Facilities Involved(8)		
Month	Day	Year	Year	Sequential	Revision	Month	Day	Year	Facility Names	Docket Number(s)	
				Number	Number					10 15 10 10 10 11	
1	0	2	5	8	5	85	-	0	1	7	-
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									10	10	
									10	11	

This Report is Submitted Pursuant to the Requirements of 10 CFR §											
(Check one or more of the following) (11)											
Operating Mode (9)	7	20.402(b)	20.405(c)	X	50.73(a)(2)(iv)	73.71(b)					
Power Level (10)	10 12 15	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					
		20.405(a)(1)(iii)	X	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	Abstract below					
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)		and in Text, NRC					
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)		Form 366A)					

LICENSEE CONTACT FOR THIS LER (12)

NAME	Telephone Number
Stephen J. LaFlamme, Senior Nuclear Safety Engineer	Area Code
	2 0 7 8 8 2 6 3 2 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

Cause	System	Com- ponent	Manufac- turer	Reportable to NPRDS	Cause	System	Com- ponent	Manufac- turer	Reportable to NPRDS
A	S	B	EIP/D	X	9	9	9	Y	

Supplemental Report Expected (14)

(If yes, complete Expected Submission Date(15))	Expected Month	Day	Year
Yes			
No			

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

Two plant trips occurred due to two different inadvertent Main Steam Line Excess Flow Check Valve closures. The first occurred from 25 percent power at 1724 on October 25, and the second occurred from 30 percent power at 2302 on October 26. In both cases one of the two valve air piston cylinders had experienced a rupture disk failure which allowed the associated valve to fall into the steam flow. An Engineering review of the rupture disk installation instructions compared to the maintenance procedure determined that the disk mounting bolts were torqued to 55 ft-lbs as opposed to the recommended 60 ft-lbs. The instructions also specifically cautioned that undertorque could cause premature rupture. While increasing the torque to 60 ft-lbs, the bolts of one flange were found torqued only to 45 ft-lbs. The root cause was most likely personnel error in achieving the required torque, while a secondary cause was the procedural error. A procedure change will be made to prevent recurrence. The torque value required by the procedure will be increased to that recommended by the manufacturer, and QC will be required to verify the as left torque values.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Facility Name(1)	Docket Number(2)	LER Number (6)						Page(3)	
		Year	Sequential Number	Revision Number					
Maine Yankee Atomic Power Company									
	05000309	84	-017	-00				2	of 3

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

Two plant trips occurred due to the closure of Main Steam (SB) line Excess Flow Check Valves (V). The Excess Flow Check Valves (EFCV) are reverse mounted check valves which are held open by air pressure in two air piston cylinders. They are designed to close at 400 psig Steam Generator (SG) pressure in the event of a main steam line break.

The first trip occurred from 25 percent power, at 1724 on October 25, while the plant was loading at one percent per hour. The EFCV in the number one main steam line closed isolating steam flow from that generator. The Reactor Protective System (JC) tripped the plant on variable overpower due to the high delta T power signal from the other steam generators. All plant systems responded normally following the trip.

A valve inspection found one of the two valve air piston cylinders had experienced a rupture disk (RPD) failure. The rupture disks are 150 psi nominal, 4 inch diameter RB-90 disks, fitted in a bolted safety head assembly, and manufactured by BS & B Safety Systems. It could not be determined if the EFCV closure had caused failure of the rupture disk or if failure of the rupture disk had caused closure of the EFCV. Instrumentation and Controls Department personnel verified that the supply air compressors (CMP) were not overpressurizing the air system while Operations Department personnel verified proper air system valve positions. The rupture disk was then replaced by Maintenance Department personnel.

When the valve was opened to verify proper operation, the replacement rupture disk immediately failed. An Instrumentation and Controls technician was monitoring the air system pressure and observed it to be less than the normal maximum value of 127 psig. Because the air pressure was observed to be normal, and there was no steam flow through the valve to force it closed, it was concluded that the failures were caused by the rupture disks themselves. The disks had previously been replaced with qualified safety class disks; it was decided that perhaps the new disks were more apt to rupture prematurely. The Quality Assurance Department verified that the previous non-safety class version could be installed, and all six of the rupture disks were replaced with that version. The valves were tested satisfactorily and the plant was restarted.

The second trip occurred from 30 percent power, at 2302 on October 26, the plant was manually tripped by licensed operators when the number three Excess Flow Check Valve was observed to close. All plant systems again responded normally following the trip.

An inspection of the valve found that one of the rupture disks had again failed.

A Plant Engineer who was called in to investigate the failures reviewed the procedure to verify that it reflected the requirements of the disk installation instructions. The only discrepancy found was that the instructions required 60 ft-lbs of mounting bolt torque while the procedure called for 55 ft-lbs. According to the installation instructions, one installation deficiency which can cause premature rupture is undertorque of the mounting bolts. While increasing the torque of each mounting bolt to 60 ft-lbs, the bolts in one flange were discovered torqued at 45 ft-lbs.

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Facility Name(1)	Docket Number(2)	LER Number (6)						Page(3)	
		Year	Sequential Number	Revision Number					
Maine Yankee Atomic Power Company									
	050G0309	84	-017	-00				3	of 3

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

The root cause of both events is believed to be personnel error. If all of the bolts had been torqued to the value required by the procedure, then the rupture disks most likely would not have failed. The procedural error was a secondary cause. An investigation revealed that all of the rupture disk failures occurred on the air cylinder which is mounted on the north side of each valve. Due to space limitations, the rupture disk replacement is more difficult on the north side of each valve.

A procedure change will be made to correct these discrepancies. The torque value required by the procedure will be increased to that recommended by the manufacturer, and QC will be required to verify the as left torque values.



ATOMIC POWER COMPANY •

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November 22, 1985
MN-85-200

GDW-85-295

Director, Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

Reference: License No. DPR-36 (Docket 50-309)

Subject: Maine Yankee Licensee Event Report 85-017-00 - Two Plant Trips
Resulting from Spurious Closure of Excess Flow Check Valves

Gentlemen:

Please find enclosed Maine Yankee Licensee Event Report #85-017-00. This report is submitted in accordance with the requirements of 10 CFR 50.73(a)(2)(iv).

Very truly yours,

MAINE YANKEE ATOMIC POWER COMPANY

G. D. Whittier, Manager
Nuclear Engineering and Licensing

GDW:bjp

Enclosure: Three pages

cc: Mr. Edward J. Butcher, Jr.
Dr. Thomas E. Murley
Mr. Cornelius F. Holden
American Nuclear Insurers