

Maine Yankee

RELIABLE ELECTRICITY SINCE 1972

329 BATH ROAD • BRUNSWICK, MAINE 04011 • (207) 798-4100

December 16, 1996

MN-96-186

JRH-96-286

UNITED STATES NUCLEAR REGULATORY COMMISSION

Attention: Document Control Desk

Washington, D. C. 20555

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

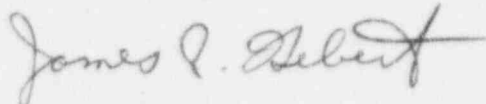
Subject: Maine Yankee Licensee Event Report 96-037, Leaking P-29C Gland Cooling Check Valve

Gentlemen:

Please find enclosed Maine Yankee Licensee Event Report 96-037 . This report is submitted in accordance with 10 CFR 50.73(a)(2)(i).

Please contact us should you have any questions regarding this matter.

Very truly yours,



James R. Hebert, Manager

Licensing & Engineering Support Department

mwf

Enclosure

c: Mr. Hubert Miller
Mr. J. T. Yerokun
Mr. D. H. Dorman
Mr. Patrick J. Dostie
Mr. Uldis Vanags

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LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION
COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO
THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING
BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33),
U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE
PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET,
WASHINGTON, DC 20503.

FACILITY NAME (1)

Maine Yankee Atomic Power Company

DOCKET NUMBER (2)

50-309

PAGE (3)

1 OF 4

TITLE (4)

Leaking P-29C Gland Cooling Check Valve

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 NAME	DOCKET NUMBER
11	14	96	96	-- 037	-- 00	12	16	96	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		7	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
POWER LEVEL (10)		90	20.2201(b)		20.2203(a)(2)(v)		<input checked="" type="checkbox"/>		50.73(a)(2)(i)	50.73(a)(2)(viii)
			20.2203(a)(1)		20.2203(a)(3)(i)				50.73(a)(2)(ii)	50.73(a)(2)(x)
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)				50.73(a)(2)(iii)	73.71
			20.2203(a)(2)(iii)		20.2203(a)(4)				50.73(a)(2)(iv)	OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)				50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(iv)		50.36(c)(2)				50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME

George N. Stowers, Senior Nuclear Safety Specialist

TELEPHONE NUMBER (Include Area Code)

(207) 882-5749

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs
B	BI	V	P305	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE):	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On November 14, 1996 Maine Yankee was operating steady state at 90% power.

On November 12, 1996, while performing a surveillance test, one of four redundant safety class service water pumps was declared inoperable due to a sticking check valve in the gland cooling water supply line to the pump. The stuck check valve provides a boundary between non-nuclear safety class and safety class portions of the Service Water system. Further investigation determined that the sticking was caused by a deficiency in the design of the valve.

On November 14, 1996, all four service water were pumps declared inoperable because of the potential for common mode failure due to use of identical check valves.

The affected check valves have been replaced with valves of different design and satisfactorily tested.

Other uses of the make/model of check valve are being identified and evaluated for replacement.

A QC hold has been placed on Warehouse stock of the valve, and a "Do Not Order" hold place on all stock codes associated with this make/model of valve.

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

INITIAL PLANT CONDITIONS:

On November 14, 1996 Maine Yankee was operation steady state at 90% power

EVENT DESCRIPTION:

On November 12, 1996 Procedure 3-1-2.9, ECCS ROUTINE TESTING - SERVICE WATER PUMP TEST, was being used to perform the gland cooling test. The surveillance interval was recently changed from quarterly to monthly as a result of a root cause analysis performed in accordance with Maine Yankee's Maintenance Rule program due to recurring failure of gland cooling check valves RW-128, RW-133, SW-179, and SW-185. This was the first monthly test.

At 1150, Service Water(BI)pump(P) P-29C was declared inoperable due to leaking gland cooling check valve(V) RW-133. At this time P-29C was the operating pump on the north Service Water header. The remedial actions of Technical Specifications 3.6.B&C and 3.12.B were entered and a work order initiated to repair the valve.

At 1205, the redundant Service Water pump for the north header, P-29D was started and Technical Specification remedial actions of Tech. Spec. 3.6.B&C and 3.12 were exited.

A failure analysis of RW-133 resulted in a determination that excessive clearances existed which allow the top of the disk to catch on the valve body seat causing the valve to fail in the open position. This failure mode was also demonstrated with new valves drawn from stock. The excessive clearance appears to be the result of a design flaw in the valve. RW-133 is a 3/4", swing-check, valve manufactured by W. M. Powell Co, Model Number - 560Y. As a result of this determination, at 1242, on November 14, 1996, all four service water pumps were declared inoperable and Technical Specification 3.0.A.2 entered.

At 1259, on November 14, 1996, The raw water gland cooling supply to Service Water pump P-29A was isolated and the pump's discharge flow aligned to supply gland cooling. P-29A was then declared operable. Technical Specification 3.0.A.2 was then exited and Tech Specs 3.6.B&C, 3.12.B remedial actions entered.

The Raw Water check valve to P-29A (SW-179) was verified to be seated by removing a test connection and verifying no back leakage. The raw water supply valve was tagged shut and the test connection tagged open.

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Similar methodology was used to ensure the operability of P-29C. At 1304 November 14, 1996, P-29C was declared operable and the remedial actions of Technical Specification 3.6.B&C, and 3.12.B were exited.

On November 15, 1996, the Raw Water gland cooling check valves for all four Service Water pumps were replaced with valves of a different make and model than those originally installed. In an additional effort to improve seating of the check valves, a valve design with a different seating angle was selected. Post installation functional testing confirmed the effectiveness of these actions.

SAFETY SIGNIFICANCE:

Valves RW-128, RW-133, SW-179, and SW-185 are boundary valves between the Nuclear Safety Class and Non-Nuclear safety Class portions of the Service Water system. The failure of these valves to seat when required could have resulted in reduced cooling water flow to the Service Water pump glands during a design basis accident. This could have caused accelerated wear possibly leading to premature failure of the pumps.

CAUSAL FACTORS:

The apparent cause of this event is a design deficiency in, W. M. Powell, 3/4", swing-check valves, Model Number 560Y.

A formal root cause analysis of this failure is being performed to more definitively identify the causal factors associated with this event.

CORRECTIVE ACTIONS:

1. RW-128, RW-133, SW-179, and SW-185 were replaced with valves of a different design and tested with satisfactory results.
2. All applications of the Powell 560Y check valve within the plant are being reviewed. Replacement of these valves is being considered.
3. Warehouse stock of Powell 560Y check valves has been placed on QC hold and all associated requisitions for additional valves have been stopped. "Do not re-order" holds have been placed on all stock codes associated with the Powell 560Y check valves.

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PREVIOUS SIMILAR EVENTS:

LER 96-011, Service Water Pump Cutless Bearing Cooling Water System Design, describes a previous similar event in which it was initially thought inadequate cooling water flow might be supplied to the Service Water pumps under certain conditions. However, as the problem described did not involve the gland cooling water check valves, this event does not represent a missed opportunity to identify and correct this problem.