Maine Yankee
RELIABLE ELECTRICITY SINCE 1972

EDISON DRIVE • AUGUSTA, MAINE 04330 • (207) 622-4868

May 25, 1994
MN-94-48 JRH-94-115

UNITED STATES NUCLEAR REGULATORY COMMISSION
Attention: Document Control Desk
Washington, DC 20555

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

Subject: Maine Yankee Licensee Event Report 93-023-01: PCC/SCC Outside Design Basis Due to Continuous Venting Through NNS Piping-Supplemental Report

Gentlemen:

Please find enclosed the Maine Yankee Licensee Event Report 93-023-01 Supplemental Report. This report is submitted in accordance with 10 CFR 50.73(a)(2)(ii).

Please contact us if you have ary questions regarding this matter.

Very truly yours,

James R. Hebert

James R. Hebert, Manager
Licensing & Engineering Support Department

SJB/mwf

Enclosure

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Mr. J. T. Yerokun
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Mr. P. J. Dostie

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NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Maine Yankee Atomic Power Company	50-309	1 OF 4

TITLE (4)
PCC/SCC Outside Design Basis Due to Continuous Venting Through NNS Piping

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
12	02	93	93	-- 023 --	01	05	25	94	FACILITY NAME	DOCKET NUMBER

		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)					
OPERATING MODE (9)	7		20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
POWER LEVEL (10)	100		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
			20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)
			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 (Include Area Code)
Lisa M. Knobel, Senior Nuclear Safety Engineer	(207) 882-6321

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 15 single-spaced typewritten lines) (16)

Maine Yankee has identified discrepancies in the operation of safety class to non-nuclear safety class boundary valves in both the Primary Component Cooling (PCC) system and Secondary Component Cooling (SCC) system. These closed loop systems provide redundant cooling for Emergency Core Cooling System components, as well as, selected non-safeguards components. In the Secondary Component Cooling system, three manual vent valves from the pump discharges and heat exchanger to the top of the vented surge tank have been procedurally throttled open when SCC was required to be operable. These SCC vent paths are through a portion of non-nuclear safety class piping. In the Primary Component Cooling system, one manual vent valve from the pump discharge line was procedurally maintained open. Operation of the systems with these vent valves open has been determined to be outside the systems' design basis.

The SCC and PCC systems have been operated in this fashion with no loss of functionality. Based on the potential for these systems becoming inoperable during a seismic event, Maine Yankee has administratively tagged these valves shut pending resolution of this issue. The SCC and PCC systems remain operational with these valves shut.

Maine Yankee is continuing to evaluate various long term actions to correct this problem, which may include upgrading the existing vent lines, or upgrading other piping to use as a continuous vent path. Maine Yankee is also developing improved guidance to provide consistent evaluations of SC/NNS boundaries.

On November 2, 1993, while at full power, Maine Yankee identified a discrepancy in the operation of safety class 3 (SC-3) to non-nuclear safety (NNS) class boundary valves in the secondary component cooling (SCC) system. The manual valves are in a 1" vent line from the component cooling pump and heat exchanger discharges to the SCC surge tank. These manual valves have been procedurally throttled open to continuously vent non-condensable gases from the system. Further investigation revealed that the primary component cooling (PCC) system was also continuously vented through a 1" NNS vent path which placed the PCC system outside its design basis. On December 2, 1993, Maine Yankee determined that operating the PCC and SCC systems in this manner is outside their design basis.

Maine Yankee was constructed between 1968 and 1972. At that time there was no direct guidance for classifying piping and components. All systems were designed to Atomic Energy Commission requirements for quality standards. Around 1973, the systems were classified in accordance with ANSI 18.2-1973 which contained no guidance for controlling classification boundaries. At that time the SCC system was classified as SC-3. Subsequent modifications to plant systems were to be in accordance with the applicable revision of ANSI 18.2.

During the first operating cycle, the plant had to be shutdown several times due to vapor binding in the SCC supplied generator hydrogen coolers. The hydrogen coolers are at the one of the higher points in the SCC system and were collecting the non-condensable gases in the system. Also, the SCC cooled air compressors were leaking air into the SCC system exacerbating the problem. In order to prevent future plant shutdowns, the SCC return from the air compressors was routed to the top of the surge tank and a continuous vent system was installed to vent the SCC pump discharge and heat exchangers to the surge tank. The vent lines were connected to the new air compressor SCC return line which runs to the top of the SCC surge tank (See Figure 1). The design change documents indicate that the modification was designed and installed to the then current SC-3 specifications for the SCC system.

In 1980, Maine Yankee determined that extensive modifications were required of the SCC and PCC systems to assure train separation and redundancy in the ECCS systems. During the design change process, engineers noted that many of the NNS components cooled by SCC could not be seismically qualified to assure the integrity of the SCC system during a design basis seismic event. Therefore, the design change also included installation of two trip valves to automatically isolate the NNS/non-seismic components from the SC-3/safeguards components in the event of a SCC line break. Once the automatic isolation valves were installed, the SCC piping to the NNS components including the air compressor return lines were declassified to NNS. It appears that at this time the SCC vent piping downstream of the three vent valves was also reclassified as NNS due to its connection to the air compressor return piping. Since 1981, the SCC system has been operated with the three vent valves procedurally throttled open.

Maine Yankee's design analysis for the automatic isolation of the NNS portions of the SCC system assumes that the break is in the largest diameter NNS piping and results in an initial break flow rate of approximately 7000 gpm. The safety class portions of the system are assumed to stay intact. The design calculation results, which do not include the vent lines, show that the surge tank inventory would be lost during a worst case line break, but the trip valves would shut in time to prevent loss of pump suction. Maine Yankee has estimated that the flow through the vent valves at one turn open would be approximately ten (10) gallons per minute. For the three vent valves, the total would be approximately 30 gpm. The design analysis also assumes that no makeup capability is available because the makeup system is also NNS. Thus, operating the SCC system with the vent valves one turn open is not encompassed in the design calculation.

The SCC system has been operated with the three vent valves procedurally throttled open since 1981 with no loss of functionality. The vent system actually enhances performance by reducing the likelihood of vapor binding in system components. Based on the potential for SCC becoming inoperable during a seismic event, the three vent valves were administratively tagged shut.

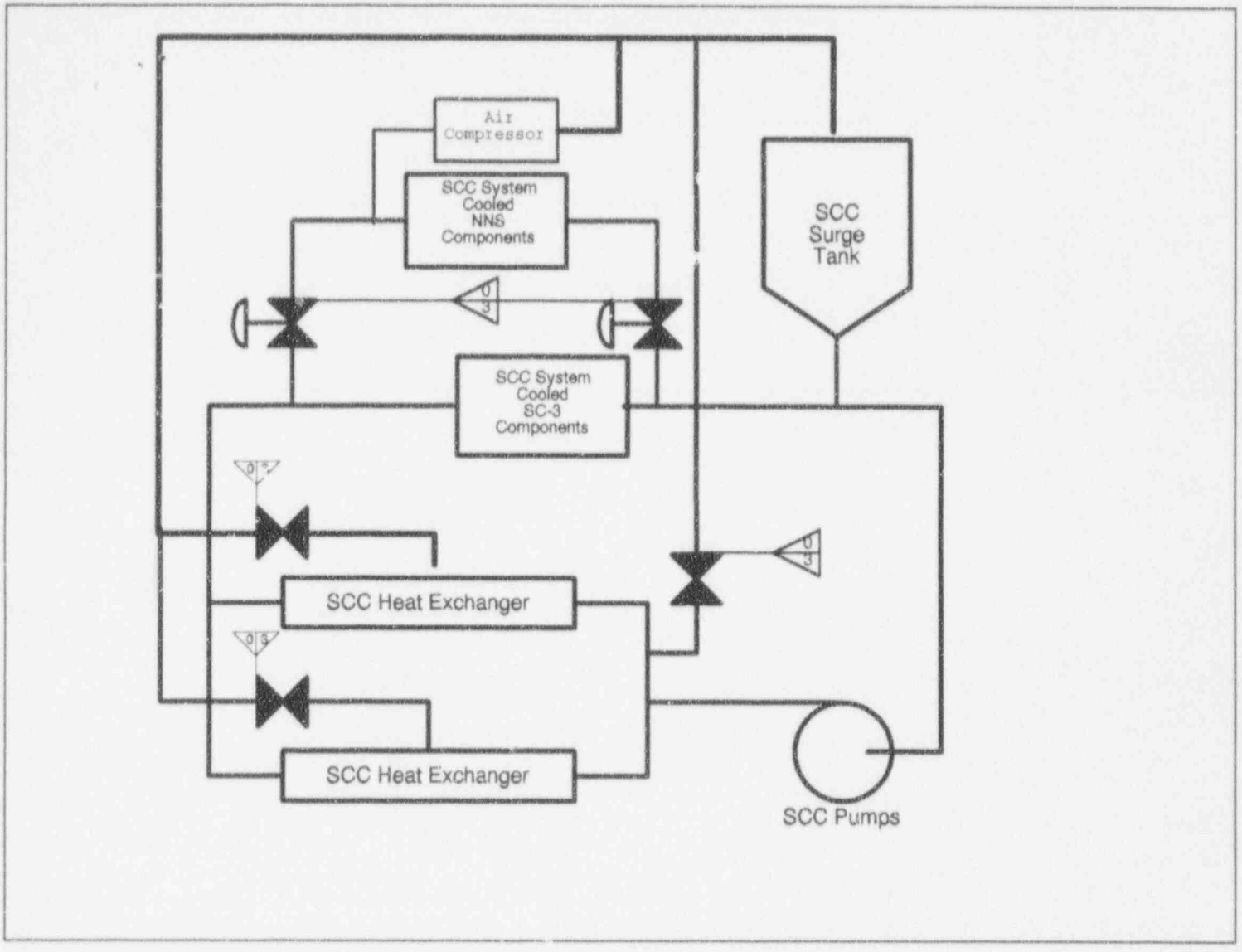
A similar situation was also discovered in the Primary Component Cooling system. The system is vented to the surge tank at the pump discharge. There is also a piping classification change at a valve in the vent line. Since September of 1992, this valve was also throttled open using a special test procedure. Prior to September of 1992, this valve was procedurally maintained closed. The PCC vent valves were opened to facilitate changeout of the corrosion inhibitor in the system. Following the corrosion inhibitor changeout, the system operating procedure was also changed, in August of 1993, to maintain the vent valve throttled open. Unlike SCC, NNS portions of the PCC system are automatically isolated on Containment Isolation and Recirculation Actuation signals. Thus, only a potential break in the 1" NNS vent line needs to be considered. The interface valve has been tagged shut for administrative control.

The lack of establishing controls over SC\NNS boundaries when the SCC continuous vent subsystem classification was changed in 1981 is the major cause for operating the SCC system outside its design basis. Failure to recognize the significance of SC\NNS interface valves contributed to the PCC vent valve being opened.

With the vent valves tagged closed, both the SCC and PCC systems remain operable to perform their safety related functions. The vent valves will remain shut using administrative safety tagging pending resolution of this issue. Operations is monitoring the PCC and SCC systems' performance and chemistry to assure that gas binding does not occur. If system performance should degrade, these valves may be periodically opened in accordance with applicable system Technical Specifications.

Maine Yankee is continuing to evaluate various long term actions to correct this problem, which may include upgrading the existing vent lines, or upgrading other piping to use as a continuous vent path. Maine Yankee is also developing improved guidance to provide consistent evaluations of SC/NNS boundaries.

Figure 1


Air Compressor
SCC System Cooled NNS Components
SCC Surge Tank
SCC System Cooled SC-3 Components
SCC Heat Exchanger
SCC Heat Exchanger
SCC Pumps