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August 16, 1996 MN-96-117 JRH-96-181

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 96-023, Refueling Water Storage Tank Level Transmitter Uncertain Qualified Life

Gentlemen:

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Please find enclosed Maine Yankee Licensee Event Report 96-023. This report is submitted in accordance with 10 CFR 50.73(a)(2)(v).

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

Very truly yours,

emes & Steley

James R. Hebert, Manager Licensing & Engineering Support Department

TEO2/

mwf

Enclosure

c: Mr. Hubert Miller Mr. J. T. Yerokun Mr. E. H. Trottier Mr. Patrick J. Dostie Mr. Uldis Vanags

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NRE FORM 366 U.S. NUCLEAR REGULATORY COMMISSION LICENSEE EVENT REPORT (LER) (See reverse for required number of						APPROVED BY OMB MO. 3150-0104 EXPIRES 04/30/98 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REDUEST 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 2055-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET.										
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FACILITY NAME (1)							DOCKET NUMBER (2)					PAGE (3)				
Maine Yankee Atomic Power Company						50-309					1 OF 4					
Refuelin	ig Wa	ter Sto	vage Tank	Level Tra	nsmitte	r Uncer	tain Q	ualifie	d Lif	fe			in an			
EVENT DATE (5) LER NUMBER (6) REPORT DATE (7) OTHER FACILITIES INVOLVED (8)																
MONTH	DAY	YEAR	YEAR SE		REVISION	MONTH	DAY	YEAR	FAC	FACILITY NAME DOC			DOCKET	OCKET NUMBER		
07	19	96	96	023	00	08	16	96	FACILITY NAME			DOCKET NUMBER				
OPERATING MODE (9) 7 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11) 20,2203(a)(2)(v) 1000000000000000000000000000000000000																
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20.2203(a)(2)(ii)				(a)(2)(ii)		20.2203(a)(4)					50.73(a)(2)(iv)			OTHER		
			20.2203	3(a)(2)(iv)		50.36(c)(1) 50.36(c)(2)				X	50.73(a)(2)(vii)		below or in NRC Form		
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YES (If yes, complete EXPECTED SUBMISSION DATE). X NO							D	SUBMISSION DATE (15)								
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16) On July 19, 1996, at 2241 hours, Maine Yankee was proceeding with a controlled shutdown and was at approximately 85% power. Temperature measurements in the enclosure containing Refueling Water Storage Tank (RWST) Level Transmitters LT-304AK, BK, and CK found them to be at 133 °F. This temperature exceeded the operating temperature assumed in the instrument uncertainty calculation (130 °F). Caiculations of the qualified life of the transmitters at a temperature of 133 °F indicate a qualified life of (5) years. LT-304AK and LT-304CK have been installed for over ten (10) years, and LT-304BK has been installed for four years. Performance of LT-304AK and CK could not be assured. The level transmitters are relied upon to automatically initiate the recirculation signal (RAS) in response to a LOCA. The transmitters are also relied upon to monitor RWST level. The effects of the higher temperature upon transmitter operation and qualified life have been analyzed. LT-304AK and CK have been replaced and LT-304BK will be replaced in the next refueling cutage. The thermostat settings for the enclosure heaters have been changed to more reasonable values to prevent a recurrence of the high temperatures. Other, similarly heated, enclosures have been inspected to ensure that no other instruments are operating at																

NRC FORM 366 (4-95)

NRC FORM 368A (4-86) LICENSEE EV TEXT (/ENT REPORT (L	ER)	U.S. NU	ICLEAR REGU	LATOR	COMMI	SSION
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Maine Yankee Atomic Power Company	50-309	96	023	00	2	OF	F 4

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

INITIAL PLANT CONDITIONS:

The plant was operating in Condition 7 at approximately 85% power during a controlled shutdown. Shutdown was proceeding at a rate of approximately 15% power per hour from initiation at 2200, July 19, 1996, when the plant was at 90% power. All LT-304 series transmitters (and the LT-303 series transmitters) were operating normally. RWST level was normal (between 317,000 and 341,000 gallons).

EVENT DESCRIPTION:

At approximately 1600, July 19, 1996, instrument technicians measuring the temperature of the transmitter enclosure determined that the LT-304-series of Rosemount (Model 1153 Series B, Range Code 5) transmitters were at an operating temperature of 133 °F. LT-303AK, BK, and CK in the alternate train were also operating, but at a temperature between 85 and 90 °F. At 2233 on July 19, 1996, an Operability Determination (OD #96-45) was made on the three LT-304 transmitters. At that time, the RWST was determined operable because:

- the A train transmitters (LT-303AK, BK, and CK) were operable;
- the B train transmitters had no history of erratic behavior and were consistent in readings with the A train; and
- the B train RAS could be manually actuated.

A Safety Issue Concern (SIC #96-013) was generated at 2242, July 19, 1996, and a Design Basis Screen (DBS #96-042) was performed.

NRC FORM 366A (4-95)	EE EVENT REPORT (LI	ER)	U.S. NUCLEAR I	REGULATO	ORY COMMISSION		
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

SAFETY SIGNIFICANCE:

The safety significance of the event was low. At the time of the event, the A train of level transmitters was operational, the B train had shown no signs of erratic or inconsistent behavior, and RAS could be initiated manually from the control room if needed.

The level transmitters in question provide level indication signals to the control room. The levels of the RWST are monitored and recorded in Control Room logs several times a day. In response to an accident involving a loss of primary coolant (LOCA), the RWST level may decrease. For a large enough break, the level in the RWST will decrease significantly, and the level transmitters carry the added responsibility of automatically initiating the recirculation actuation signal when the RWST level reaches its low limit. This signal will initiate the switch-over of the source of emergency core cooling system (ECCS) water from the RWST to the containment sump. The low limit (approximately 108,000 gallons) is chosen to ensure that sufficient net positive suction head (NPSH) exists for the ECCS pumps prior to RAS and to ensure that approximately 200,000 gallons of RWST water have been transferred to the sump. Long term core cooling is then accomplished using containment sump water. Automatic initiation of the RAS is relied upon in the Maine Yankee large break LOCA analysis.

The temperature of the level transmitters was discovered to be 133°F, which exceeds the temperature used to determine the calculated uncertainty of the transmitters. Thus, the transmitters were found in an unanalyzed condition.

The uncertainty in the level transmitters is a design input into the level settings and has a effect on the level at which the automatic RAS is initiated. Two out of three logic is required to initiate an RAS signal, and either train (A or B) can cause the signal to be initiated. In the train B enclosure, two of the three transmitters were determined to be outside of their qualified life. The third was within its qualified life, even at the elevated temperature.

The calculations which determine the uncertainty of the level indication were reviewed. The as-found temperature of 133 °F was used in the analysis to determine the higher temperature's effect on the uncertainty. The uncertainty increased, but marginally (\pm 147 gallons out of \pm 6,575 gallons, originally). The effect upon the available NPSH for the ECCS pumps is insignificant (\pm 0.19 inches of water).

NRC FORM 366A		U.S. NUCLEAR REGULATO	DRY COMMISSION						
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TEXT (If more space is required, use additional copies of NRC Form 366A	/ (17)								
CAUSAL FACTORS:									
The thermostat settings for the heaters for the er 135 °F and 140 °F. Maine Yankee is stili investi	nclosure cont igating the ro	taining LT-304AK, BK, a bot cause of these high	and CK were settings.						
CORRECTIVE ACTIONS:									
 Design Basis Screen #96-042 was prepared. Safety Issue Concern #96-013 was prepared. Operability Determination #94-045 was prepared for the affected transmitters. The calibration of level transmitters LT-304AK and CK was checked and confirmed to be within tolerance. Level transmitters LT-304AK and LT-304CK were replaced with new transmitters. The qualified life of LT-304BK was evaluated and its operability confirmed. The transmitter will be replaced before its qualified life is exceeded. The thermostat settings for the heaters of both enclosures have been adjusted such that the enclosure will stay within the qualified temperatures for the transmitters and the RWST fluid in the transmitter sensing lines. The enclosure was locked and a sign posted warning that Plant Engineering must be contacted prior to changing the thermostat setting of the enclosure. Enclosures containing safety class instruments were inspected to ensure proper heating of the enclosures. Maine Yankee is performing a Technical Evaluation (TE #12-96) which identifies the requirements and set points for enclosure heaters and heat tracing for safety class instruments. Completion of this item is anticipated by December 31, 1996. Maine Yankee anticipates completion of the root cause investigation for this event by October 1, 1996. Further preventative measures will be developed once the root cause is determined. 									
PREVIOUS SIMILAR EVENTS:									
LER 83-047 and LER 85-013 deal with the transr	nitters or reli	ated events.							
 LER 83-047 describes an incident where the cabinet doors were left open for an extend LER 55-013 describes an event where the installed properly. 	ne B-train sw ed period du cover of a si	ritches froze when their ring maintenance. milar model transmitter	enclosure was not						