

# Maine Yankee

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10 CFR 50.73

January 3, 1991  
MN-91-02

SEN-91-02

UNITED STATES NUCLEAR REGULATORY COMMISSION  
Attention: Document Control Desk  
Washington, D. C. 20555

References: (a) License No. DPR-36 (Docket No. 50-309)  
(b) Maine Yankee Letter to NRC dated November 9, 1990 (MN-90-112)  
LER 90-007-00

Subject: Maine Yankee Licensee Event Report 90-007-01 - Power Range Safety Channels  
Level I Bistables Out of Calibration

Gentlemen:

Please find enclosed Maine Yankee Licensee Event Report 90-007-01. This report is submitted in accordance with the requirements of 10 CFR 50.73(a)(2)(ii) and supplements that information previously provided with Reference (b).

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

Very truly yours,

*SEN. Nichols*

S. E. Nichols, Manager  
Nuclear Engineering & Licensing

SEN/sjj

Enclosure

c: Mr. Thomas T. Martin  
Mr. E. H. Trottier  
Mr. Charles S. Marschall  
Mr. Patrick J. Dostie

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LICENSEE EVENT REPORT (LER)

Facility Name(1) Maine Yankee Atomic Power Company	Docket Number(2) 0 5 0 0 0 3 0 9 1	Page(3) 1 of 3
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Title(4)  
Power Range Safety Channels Level I Bistables Out of Calibration

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)
10	02	90	90	007	01	12	07	90		

This Report is Submitted Pursuant to the Requirements of 10 CFR § (Check one or more of the following) (11)

Operating Mode (9) 5	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
Power Level (10) 0 0 0	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 James M. Taylor, Senior Nuclear Safety Engineer	Telephone Number Area Code 2 0 7 8 8 2 6 3 2 1
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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

Supplemental Report Expected (14)

(If yes, complete Expected Submission Date)

Yes  No

Expected Submission Date(15)	Month	Day	Year

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

On October 2, 1990, with the plant in hot shutdown (Condition 5), all four Power Range Safety Channel Nuclear Instrumentation Level I Bistables were found to be out of calibration in a non-conservative direction (high).

Because their setpoints were high, the Level I Bistables inhibited the Reactor Protective System (RPS) Symmetric Offset Trip Functions at a power level slightly above that permitted by Technical Specifications. The startup rate trip was conservatively enabled at a slightly higher power level than normal.

An evaluation of the Safety Analysis for Design Basis Accidents and Anticipated Operational Occurrences was performed for the affected power range with Symmetric Offset Trip inoperable. This evaluation showed that the safety analysis results, for events initiated from this lower power range (15-20% rated thermal power), continue to be bounded by the corresponding limiting events initiated from higher power levels.

The following corrective actions have been or will be taken.

1. During a subsequent plant shutdown to less than Condition 6 (Hot Standby), a calibration of the power signal to the Level I Bistables was performed.
2. On-line calibration of the Level I Bistables will be performed during normal power reductions while power is held at 20%. The shutdown schedule for power reductions to less than 20% power has been revised to include a 2.0 hour hold at 20% for Level I Bistable setpoint calibration. Control Room operators have been notified by the required reading of this LER and Operations Department memo O-90-206.
3. Prior to the end of the next refueling outage a design change to the circuitry for Power Range Safety Channel ion chamber output to the Level I Bistables will be made.

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		Year 810	Sequential Number 007	Revision Number 01	

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

On October 2, 1990, with the plant in hot shutdown (Condition 5), input signals to the Power Range Safety Channel Nuclear Instrumentation (IG) Level I Bistables (94) were calibrated. Setpoint values for Channels A, B, C, and D were found to be 17.4, 16.6, 16.7, and 17.1% power respectively. They should have been no greater than 15%.

Power Range Level I Bistables trip when power increases to its setpoint value (15%) and resets when power decreases below its setpoint value (15% minus reset). Resetting the Level I Bistable bypasses the Symmetric Offset Trip, bypasses the Loss of Load Trip, and enables the Startup Rate Trip.

Technical Specifications 2.1.1 and 3.9 provide the operability requirements for all four Reactor Protection System (JOC) Channels of Symmetric Offset Trip. Technical Specifications indicate this trip may be bypassed below 15% power. The Power Range Nuclear Instrumentation Level I Bistables automatically bypassed Symmetric Offset Trip at 15% power minus reset. The reset value is less than 2%, therefore, Technical Specification requirements may not have been met during the power decrease through the 17.4-15.0% power range. Loss of Load trip is not required by Technical Specifications and Startup Rate Trip was conservatively enabled at a higher power level than normal. No other trip functions were affected.

An evaluation of the Safety Analysis for Design Basis Accidents and Anticipated Operational Occurrences was performed for the 15-20% power range with the Symmetric Offset Trip bypassed. This evaluation showed that the safety analysis results, for events initiated from this lower power range, continue to be bounded by the corresponding limiting events initiated from higher power levels.

Output signals from Power Range Safety Channel ion chambers require calibration for changes caused by core burnup. A daily calibration is performed for the power signal going to the Reactor Protective System panel by using the nuclear calibration potentiometer, but the signal to the Level I Bistables is taken from the circuit upstream of the potentiometer. Therefore, calibration of the signal to Level I Bistables is not performed. Normally, calibration of the Level I Bistables is performed during shutdown because performing it on-line would require de-energizing the associated RPS channel. Setpoint for the Level I Bistable is 14.0% +0.5% and -1.0% power.

On November 7, 1990, with the plant at 100% power, as-found Level I Bistable setpoints for Channels A, B, C and D were 11.7, 12.2, 12.2 and 12.0% power respectively. The setpoints were adjusted to 13.5, 14.7, 13.9 and 13.7% power respectively to meet the 14.0 + .5 - 1.0% power criterion. Adjustment of the nuclear calibration potentiometer (in addition to adjustments made for core burnup) during power reductions to bring indicated nuclear power into agreement with delta T power causes the Level I Bistables to be out-of-calibration. On November 24, 1990, with power at 40% during a maintenance power reduction, all four Level I Bistable setpoints were found to be greater than 15% (15.5, 16.0, 15.8 and 15.5). It was determined that Level I Bistable adjustments at full power were ineffective at compensating for adjustment of the nuclear calibration potentiometer during power reductions. Therefore, a modified interim calibration process was established until such time as system design changes can be completed.

Following a power reduction on December 18, 1990, Channels B, C and D were found at 15.2, 16.7 and 15.4% respectively. These channels were adjusted to be within the acceptance criteria specified above.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

The following corrective actions have been or will be taken.

1. During a subsequent plant shutdown to less than Condition 6 (Hot Standby), a calibration of the power signal to the Level I Bistables was performed.
2. On-line calibration of the Level I Bistables will be performed during normal power reductions while power is held at approximately 20%. The shutdown schedule for power reductions to less than 20% power have been revised to include a 2.0 hour hold at 20% for Level I Bistable setpoint calibration. Control Room operators have been notified by the required reading of this LER and Operations Department memo 0-90-206.
3. Prior to the end of the next refueling outage (12-31-91), a design change will be made to the Power Range Safety Channel Ion chamber's output circuitry to the Level I Bistables. This change will allow the nuclear power signal to the Level I Bistables to be taken from the circuit at a position downstream of the nuclear calibration potentiometer. Thus, calibration of the Power Range Safety Channels output to the RPS panel will include calibration of the Level I Bistable setpoint.