

**North
Atlantic**

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The Northeast Utilities System

Ted C. Feigenbaum
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NYN- 95097

December 3, 1995

United States Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

Reference: Facility Operating License No. NPF-86, Docket No. 50-443

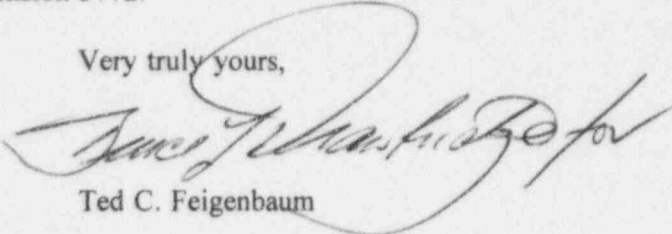
Subject: Licensee Event Report (LER) No. 95-007-00: "Main Steam Safety Valve Setpoint Testing Failures"

Gentlemen:

Enclosed please find Licensee Event Report (LER) No. 95-007-00 for Seabrook Station. This submittal documents an event which occurred on November 3, 1995. This event is being reported pursuant to 10CFR50.73(a)(2)(i).

Should you require further information regarding this matter, please contact Mr. James M. Peschel, Regulatory Compliance Manager, at (603) 474-9521, extension 3772.

Very truly yours,



Ted C. Feigenbaum

TCF:EWM/sm

Enclosures: NRC Forms 366/366A

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cc: Mr. Thomas T. Martin
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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) Seabrook Station	DOCKET NUMBER (2) 05000443	PAGE (3) 1 OF 3
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TITLE (4)
Main Steam Safety Valve Setpoint Testing Failures

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	03	95	95	-- 007	-- 00	12	03	95		05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)									
POWER LEVEL (10) 40	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)(ii)	<input type="checkbox"/>	50.73(a)(2)(ii)	50.73(a)(2)(x)					
	20.2203(a)(2)(i)	20.2203(a)(3)(iii)	<input type="checkbox"/>	50.73(a)(2)(iii)	73.71					
	20.2203(a)(2)(ii)	20.2203(a)(4)	<input type="checkbox"/>	50.73(a)(2)(iv)	OTHER					
	20.2203(a)(2)(iii)	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A					
	20.2203(a)(2)(iv)	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)						

LICENSEE CONTACT FOR THIS LER (12)

NAME Mr. James M. Peschel, Regulatory Compliance Manager	TELEPHONE NUMBER (Include Area Code) 603-474-9521 extension 3772
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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
X	SB	RV	C710	Y					

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO		MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On November 3, 1995 North Atlantic Energy Service Corporation (North Atlantic) and contractor personnel conducted Main Steam Safety Valve (MSSV) [C24] setpoint testing as required by Technical Specification 4.0.5 and Section XI of the ASME Boiler and Pressure Vessel Code. During the testing, the plant was in MODE 1, with power levels being gradually reduced in preparation for Refueling Outage 4. The power level at the initiation of the MSSV testing was approximately 40% rated thermal power (RTP) and the power range neutron flux high trip setpoints were lowered to 48% prior to the initiation of testing. The as-found lift settings of four of the twenty MSSVs were found outside of the ± 3 percent tolerance allowed by Technical Specifications 3.7.1.1, Table 3.7-2.

There were no adverse safety consequences as a result of this event. An evaluation, using the as-found setpoint values, concluded that the consequences of postulated overpressure events in the Secondary System remained in compliance with the requirements of the ASME Boiler & Pressure Vessel Code (1974 Edition, including Summer 1975 Agenda).

Based on these four arbitrary setpoint deviations there is insufficient information to support a definitive root cause. Therefore, the root cause of this event will be evaluated on an ongoing basis and will be available for NRC review.

The four MSSVs which were out of their required lift setting tolerance were reset to their required setpoint and retested satisfactorily at Seabrook Station using the Trevitest device. Long term corrective actions will include monitoring future testing to determine if a common conclusion can be reached regarding setpoint deviations and an effective corrective action identified.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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Seabrook Station	05000443	95	007	00	2 OF 3

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

On November 3, 1995 North Atlantic Energy Service Corporation (North Atlantic) and contractor personnel conducted Main Steam Safety Valve (MSSV) [C24] setpoint testing as required by Technical Specification 4.0.5 and Section XI of the ASME Boiler and Pressure Vessel Code. During the testing, the plant was in MODE 1, with power level being gradually reduced in preparation for Refueling Outage 4. The power level at the initiation of the MSSV testing was approximately 40% rated thermal power (RTP) and the power range neutron flux high trip setpoints were lowered to 48% prior to the initiation of testing. The as-found lift settings of four of the twenty MSSVs were found outside of the $\pm 3\%$ tolerance allowed by Technical Specifications 3.7.1.1, Table 3.7-2.

Seabrook Station is a four loop Westinghouse PWR, where each steam generator has 5 MSSVs with staggered setpoints ranging from 1185 psig to 1255 psig. In response to a notification from Westinghouse that the Power Range Neutron Flux - High Setpoints with inoperable MSSVs provided in Technical Specification Table 3.7-1 may be non-conservative, North Atlantic issued a Technical Clarification (as temporary guidance) that included the revised maximum allowable neutron flux high setpoints with inoperable MSSVs. A license amendment (LAR 95-04) was submitted to the NRC which revised the MSSV lift setpoints and the maximum Power Range Neutron Flux High Setpoints with inoperable MSSVs to assure that the consequences of postulated overpressure events will remain in compliance with the Basis for Technical Specification 3.7.1.1. Specifically, the Secondary System pressure will be limited to within 110% (1320 psia) of its design pressure of 1200 psia during the most severe anticipated system operation transient.

The MSSV setpoint testing, pursuant to Technical Specification Surveillance Requirement 4.0.5, was conducted during the power decrease in preparation for Refueling Outage 4. The MSSV setpoint verification and testing commenced at approximately 40% RTP. Furmanite Trevitest devices were used to perform this testing and are capable of measuring the valve setpoint within $\pm 1\%$ of the nominal setpoint. During the testing the as-found setpoints were measured and readjusted to the new setpoints approved in the MSSV license amendment. Normally, the initial test population of MSSVs to be tested is 7, however implementation of setpoint changes in support of the MSSV license amendment, required 16 MSSVs to be tested and adjusted to the new setpoints. Setpoint deviations (as-found setpoints outside $\pm 3\%$ of nominal setpoint) further increased the tested population to include all 20 MSSVs. Out of the twenty valves tested, four valves (MS-V22, MS-V23, MS-V24 and MS-V50) were found to be outside of the $\pm 3\%$ of setpoint tolerance allowed by Technical Specifications, all with as-found lift setpoints above the allowed 3%. These four valves were subsequently retested prior to any setpoint adjustments and the lift setpoints tested within the allowed $\pm 3\%$ range. These subsequent tests found three of the MSSVs with setpoints above the nominal setpoint and one below the nominal setpoint.

This event is reportable pursuant to 10CFR50.73(a)(2)(i)(B) as a "condition or operation prohibited by the plant's Technical Specifications". The setpoint deviation experienced by the 4 MSSVs causing them to be outside of their required setpoint range occurred at an indeterminate time during Cycle 4. This conclusion is supported by the engineering judgement of North Atlantic test engineers. Because the setpoint testing is conducted at the end of the operating cycle, it is not known at what point during the cycle the setpoint departed from the required range. At the time of the testing, the Seabrook Station Technical Specifications (via Technical Clarification) required the Power Range Neutron Flux High Setpoint to be reduced to less than or equal to 49% RTP with one MSSV per steam generator inoperable, less than or equal to 29% RTP with two MSSVs per loop inoperable, and less than or equal to 10% RTP with three MSSVs per steam generator inoperable. Contrary to this requirement, Seabrook Station operated at full power with up to three MSSVs inoperable in one loop for an indeterminate period of time.

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TEXT CONTINUATION

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

Safety Consequences

There were no adverse safety consequences as a result of this event. The Updated Final Safety Analysis Report (UFSAR) states that the total capacity of the 20 MSSVs exceeds 110 percent of full load steam flow at a pressure not exceeding 110 percent of the steam generator shell side design pressure. Yankee Atomic has verified that the as-found MSSV lift setpoints would not have resulted in secondary system pressures exceeding the Condition II (Events of Moderate Frequency) pressure limit (110 percent of design pressure) for the secondary system during the turbine trip event. The limiting UFSAR overpressure transient for Seabrook Station is the Loss of Load/Turbine Trip event. This verification was performed by Yankee Atomic using previously approved analytical methodology utilized in support of License Amendment Request (LAR) 95-04 "Revisions to Main Steam Safety Valve Setpoints and Maximum Allowable Power Range Neutron Flux High Setpoints with Inoperable Main Steam Safety Valves" approved by the NRC on November 2, 1995. The evaluation concluded that the consequences of postulated overpressure events in the Secondary System, using the as-found setpoint values, remain in compliance with the requirements of the ASME Boiler & Pressure Vessel Code (1974 Edition, including Summer 1975 Agenda).

Root Cause

This scenario where the as-found setpoint is out of tolerance high and subsequent tests are within the lift setpoint tolerance is very common throughout industries that use safety valves. Discussions with other utility engineers confirm that very often the as-found lift setpoint data is out of tolerance high with subsequent tests in tolerance. Discussions with the valve manufacturer, Crosby Valve and Gage Company [C710] concluded that based on these arbitrary setpoint deviations there is insufficient information to support a definitive root cause. The root cause of this event will be evaluated on an ongoing basis over future operating cycles. The evaluation date will be available for NRC review.

Corrective Actions

The four MSSVs which were out of their required lift setting tolerance were reset to their required setpoint and retested satisfactorily at Seabrook Station using the Trevitest device. North Atlantic will continue to gather additional data during future MSSV testing to determine if a conclusion can be reached regarding a cause for the setpoint deviations and an effective corrective action identified. Additionally, the MSSV test population for the next scheduled test will include an appropriate sampling of valves that have previously tested out-of-tolerance.

Plant Conditions

At the time of this event the plant was in MODE 1, with power levels being gradually reduced in preparation for Refueling Outage 4. The power level at the time at the initiation of the valve testing was approximately 40 percent rated thermal power (RTP) with reactor coolant system average temperature at 569° Fahrenheit and pressure at 2235 psig .

Similar Events

North Atlantic previously reported similar instances, where safety valves were determined to have as-found setpoints outside of the required setpoint range, in LER 92-05-00 and 92-016-00.