

**North
Atlantic**

North Atlantic Energy Service Corporation
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The Northeast Utilities System

February 5, 1997

Docket No. 50-443
NYN-97008

United States Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, D.C. 20555

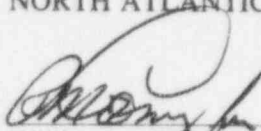
Seabrook Station
Voluntary Licensee Event Report (LER) 96-010-00
Response Time Testing of Main Steam
Isolation and Reactor Trip Circuits

Enclosed, please find voluntary Licensee Event Report (LER) No. 96-010-00 for Seabrook Station. This submittal documents a condition identified on November 25, 1996 related to Technical Specification Response Time Testing.

Should you require further information regarding this matter, please contact Mr. Allen L. Legendre, Jr., Nuclear Licensing Supervisor, at (603) 773-7773.

Very truly yours,

NORTH ATLANTIC ENERGY SERVICE CORP.


William A. DiProffio
Station Director

cc: H. J. Miller, Regional Administrator
A. W. De Agazio, NRC Project Manager, Seabrook Station
J. B. Macdonald, Senior Resident Inspector, Seabrook Station

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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)

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TITLE (4)

RESPONSE TIME TESTING OF MAIN STEAM ISOLATION AND REACTOR TRIP CIRCUITS

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	25	96	96	010	00	02	05	97	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
POWER LEVEL (10)		100	20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(ii)		50.73(a)(2)(viii)	
			20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(iii)		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)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		<input checked="" type="checkbox"/> 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

Allen L. Legendre, Jr., Nuclear Licensing Supervisor

TELEPHONE NUMBER (Include Area Code)

(603) 773-7773

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)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On November 25, 1996, North Atlantic Energy Service Corporation (North Atlantic) determined that Response Time testing of two additional circuits is necessary. The two circuits are the Steam Generator Pressure-Negative Rate High for Main Steam Isolation and the Power Range High Positive Flux Rate Reactor Trip. Seabrook Station's Updated Final Safety Analysis Report Chapter 15 accident analyses contains no explicit credit for these two functions, therefore they were not Response Time tested. The Seabrook Technical Requirements Manual (TRM) lists the Response Time of the two circuits as Not Applicable (N/A). Westinghouse and Yankee Atomic Electric Company informed North Atlantic that accident analyses implicitly credit these functions although Chapter 15 of the UFSAR does not identify that explicit credit is taken. Thus, North Atlantic determined that Response Time testing of the two circuits is appropriate.

North Atlantic is not able to conclusively determine the cause of this event. North Atlantic performed an Operability Determination on both circuits and determined that they are OPERABLE. This conclusion is based primarily on satisfactory testing of common components that these circuits share with other Response Time tested circuits and industry data documented by Westinghouse. North Atlantic will Response Time test both circuits during the refueling outage scheduled to begin May 10, 1997. North Atlantic will revise Seabrook Station's TRM and the UFSAR Chapter 15 accident analysis to include explicit credit for these circuits. North Atlantic is submitting this voluntary LER to apprise the NRC of this situation since other nuclear units with Westinghouse reactors may be affected.

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

I. Description of Event

On November 25, 1996, North Atlantic determined that Response Time testing of two additional circuits is necessary. Accident analyses implicitly credit the two circuits, although Chapter 15 of the Updated Final Safety Analyses Report (UFSAR) does not identify that explicit credit is taken. Yankee Atomic Electric Company (YAEC) informed North Atlantic of the errors after they completed a review of the effects of radial power distribution during a Rod Ejection (RE) event, and after they were informed by Westinghouse of an evaluation conducted for a plant similar to Millstone 3 and Seabrook. That evaluation revealed the need to take explicit credit for the Steam Generator Pressure Negative Rate High actuation of Main Steam Isolation during hot standby conditions.

The Seabrook Station UFSAR accident analyses for Steam Line Rupture (SLR) and Rod Ejection (RE) do not explicitly take credit for the actuation signals from Steam Generator Pressure Negative Rate High (SGPNRH) and Power Range High Positive Flux Rate (PRHPFR). However, Westinghouse and YAEC informed North Atlantic that based on a recent review of these accidents, explicit credit for these two functions must be taken in order to ensure satisfactory acceptance criteria for the two accidents.

In the case of the SLR, the review concluded that when the reactor is shutdown and in Mode 3, (Tavg between 350°F and 557°F) the SGPNRH actuation of Main Steam Isolation is necessary to close the Main Steam Isolation Valves (MSIV). This limits the SLR to one Steam Generator (SG). It is necessary to limit the break to one SG in order to meet the acceptance criterion for peak containment pressure during the SLR.

During a plant cooldown to Modes 4,5 and 6, it is necessary to block the automatic Safety Injection and Main Steamline Isolation that would occur as the plant is cooled down and depressurized. The P-11 Block is used to accomplish this. With the P-11 block manually inserted, the SGPNRH will close the MSIVs on a quickly decreasing steamline pressure rate, such as might occur on a SLR during cooldown. The P-11 block defeats automatic Main Steam Isolation on low steamline pressure. The SGPNRH Main Steam Isolation signal is automatically inserted when the P-11 block is inserted.

For the RE accident, the review concluded that rod ejections from low power involving low worth rods may not generate a High Power Reactor Trip signal. For these accidents, explicit credit for the PRHPFR reactor trip is necessary. This will ensure meeting the acceptance criterion for Departure From Nucleate Boiling for the low power range RE accident.

II. Cause of Event

North Atlantic is not able to conclusively determine the cause of this event. Documentation regarding the basis for the decision to not perform Response Time testing on the SGPNRH and PRHPFR circuits has not been located. Key individuals involved with the development of the Seabrook Station UFSAR, Technical Specifications and Technical Requirements Manual do not specifically recollect the basis for the decision to not Response Time test the two circuits. Some key individuals are no longer associated with Seabrook Station.

Seabrook Station UFSAR Section 7.2 "Reactor Trip System" explicitly states that the Power Range High Positive Flux Rate reactor trip "...provides DNB protection against rod ejection accidents of low worth from mid-power and is always active." The UFSAR Chapter 15 accident analysis for RE does not take explicit credit for

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this trip and as a result, Seabrook Station's Technical Specifications contain no Response Time surveillance test requirement for this circuit.

Similarly, UFSAR Section 7.3 "Engineered Safety Features Actuation System" describes the SGPNRH Main Steamline Isolation. The UFSAR chapter 15 accident analyses does not take explicit credit for this isolation signal and as a result, Seabrook Station's Technical Specifications contain no Response Time surveillance test requirement for this circuit.

III. Analysis of Event

Operability Determinations completed for the SLR and RE accidents concluded that the SGPNRH and PRHPFR circuits are OPERABLE. This ensures that the protective functions provided by these circuits are available to mitigate the consequences of these accidents. Thus there are no safety consequences as a result of this event. The two circuits will provide the necessary protection to ensure satisfactory acceptance criteria for the UFSAR Chapter 15 accident scenarios.

Operability Determinations completed for each circuit explain in detail the basis for concluding that the circuits are OPERABLE. The Operability Determination for the SGPNRH and PRHPFR circuits rely on a number of factors. Both circuits share common components with Technical Specification tested ESFAS and Reactor Trip circuits. These common circuits always satisfactorily passed their Time Response tests. North Atlantic completed a comprehensive evaluation of components unique to the SGPNRH and PRHPFR circuits using data from WCAP 14036, "Elimination of Periodic Channel Response Time Tests". This analysis produced bounding values for acceptable time response values for the two rate circuits. These values were then compared to the allowed maximum value calculated to ensure satisfactory acceptance criteria for the UFSAR Chapter 15 accidents. In all cases the bounded value was less than the maximum allowed value.

The conclusion reached by the Operability Determinations is that the SGPNRH and PRHPFR circuits will pass Time Response tests. The historical review of completed calibration surveillances for the rate circuits and Response Time surveillances for the circuits with which common components are shared, substantiates the major point of WCAP 14036. That is, routine calibration surveillance tests will detect any response time degradation based on failed components. Response Time values for the SGPNRH and PRHPFR circuits were always within tolerance limits and only minor adjustments were necessary during the calibrations to maintain tolerance limits. These values were also always within the Technical Specification acceptance criteria's range.

IV. Corrective Action

Operability Determinations for the SGPNRH and PRHPFR have been completed. The Operability Determinations concluded that both circuits were OPERABLE. Modifications of the surveillance procedures to include Time Response testing of the two circuits are in the final review stage and will be complete in time to test the circuits during the refueling outage scheduled to begin May, 10, 1997. During the upcoming refueling outage the Time Response surveillance tests will be completed. The UFSAR Chapter 15 accident analyses will be modified to take explicit credit for the Main Steamline Isolation Signal from SGPNRH and the Reactor Trip from PRHPFR.

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Tables 15.0-4 " Trip Points And Time Delays To Trip Assumed In Accident Analyses" and Table 15.0-5 "Plant Systems And Equipment Available For Transient And Accident Conditions" will be modified so that the tables include explicit credit for the protective functions associated with these two circuits.

North Atlantic completed an independent assessment of all of the UFSAR Chapter 15 accident analyses as part of our NRC required 50.54f review. The assessment is a measure of the overall effectiveness of the configuration management and design control process at Seabrook Station. One of the conclusions of the assessment was that " The input and assumptions and results are, for the most part, accurately described in the UFSAR." The complete results of the assessment have been documented in a Seabrook Station corrective action document and will be reported to the NRC in North Atlantic's 50.54f response letter.

V. Additional Information

None

Similar Events

None

Manufacturer Data

Not applicable