



**North
Atlantic**

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The Northeast Utilities System

February 12, 1997

Docket No. 50-443
NYN-97017

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

Seabrook Station
Licensee Event Report (LER) 97-002-00
Containment Penetration Piping Overpressure Potential (GL 96-06)

Enclosed, please find Licensee Event Report (LER) No. 97-002-00 for Seabrook Station. This submittal documents a condition reported on January 13 and 24, 1997, pursuant to 10CFR50.72(a)(2)(ii).

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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Records Center
700 Galleria Parkway
Atlanta, GA 30339

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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 4

TITLE (4)

CONTAINMENT PENETRATION PIPING OVERPRESSURE POTENTIAL (GL 96-06)

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
01	28	97	97	002	00	02	12	97	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)								
		20.2201(b)			20.2203(a)(2)(v)			50.73(a)(2)(ii)		50.73(a)(2)(viii)
POWER LEVEL (10)		20.2203(a)(1)			20.2203(a)(3)(i)			<input checked="" type="checkbox"/> 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)		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

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

In response to NRC Generic Letter 96-06 North Atlantic Energy Service Corporation (North Atlantic) completed an evaluation of the three issues outlined in GL 96-06. North Atlantic reported to the NRC in its response to GL 96-06 that Seabrook Station's containment air cooler cooling water system was not susceptible to either waterhammer or two phase flow. North Atlantic also reported that the containment penetrations themselves were not susceptible to thermally induced overpressurization. However, several containment isolation valves were found to have the potential for overpressurization due to the heatup of trapped fluid in the piping inboard of the inner containment isolation valve. Corrective actions were initiated to ensure that the affected containment isolation valves are not challenged by overpressure conditions and would remain capable of performing their intended safety function.

North Atlantic initiated non-emergency one hour reports on January 13 and 24, 1997, due to the potential for containment bypass. The postulated bypass scenario is one in which the inner containment isolation valve fails as a result of the overpressure condition and the outer containment isolation valve does not close upon receipt of an automatic closure signal (single failure condition). There are two systems that have inside containment isolation valves that are susceptible to the thermally induced overpressure and bypass condition. The two systems are the Safety Injection System [BQ] test line and accumulator fill line, and the Waste Liquid System [WK]. A vent valve in each system was opened to provide a controlled relief path should the postulated condition develop.

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

I. Description of Event

On September 30, 1996, the NRC issued Generic Letter (GL) 96-06 "Assurance Of Equipment Operability And Containment Integrity During Design Basis Accident Conditions." GL 96-06 asked licensees to determine if cooling water systems that serve containment air coolers were susceptible to waterhammer or two phase flow during accident conditions. GL 96-06 also asked licensees to determine if piping systems that penetrate the containment are susceptible to thermal expansion of fluid such that overpressurization of piping could occur. GL 96-06 stated "thermally induced overpressurization of isolated water-filled piping sections in containment could jeopardize the ability of accident-mitigating systems to perform their safety functions and could also lead to a breach of containment integrity via bypass leakage. Corrective actions may be needed to satisfy system operability requirements."

The methodology used by North Atlantic to determine Seabrook Station's susceptibility to these conditions included an evaluation of each penetration in the containment. All containment piping penetrations described in the Seabrook Station UFSAR Figure 6.2-91 were reviewed. A detailed description of the configuration of the containment penetrations is contained in North Atlantic's response to GL 96-06, NYN-97010, submitted to the NRC on January 28, 1997. One conclusion reached by North Atlantic is that each containment penetration is adequately protected from any thermally induced overpressurization that might result from trapped fluid between the containment isolation valves. Another conclusion reached was that Seabrook Station's cooling water system, serving the containment air coolers, is not susceptible to either waterhammer or two phase flow conditions during either a loss of coolant accident (LOCA) or a main steam line break (MSLB).

Piping systems that are on the inboard side of the inside containment isolation valves and connected to the containment isolation valves were reviewed to determine if a trapped volume of water could heat up and overpressurize the inside containment isolation valve. Several containment isolation valves were found to have the potential for overpressurization due to heat up of trapped fluid in the line connected to the inside containment isolation valve. The affected containment penetrations are:

- 1) Those bounded by the SIS test line/ accumulator fill line, valves SI-V70, SI-V131, SI-V134, SI-V158, SI-V160, RH-V27, RH-V28 and RH-V49.
- 2) The refueling cavity drain line to the spent fuel pool cleanup loop, valve SF-V86
- 3) The waste liquid drain line from the reactor coolant drain tank to the primary drain tank, valve WLD-V81.

For the Safety Injection (SI) and Waste Liquid Drain (WLD) valves, North Atlantic initiated non-emergency one hour reports on January 13, and 24, 1997, due to the potential for containment bypass. The bypass condition could occur during a scenario in which the inner containment isolation valve is challenged as a result of the overpressure condition. If the outer containment isolation valve does not close upon receipt of an automatic closure signal (single failure condition), then a containment bypass leakage path could exist. The Spent Fuel System [DA](SF) valve was not reported because that flow path contains a normally locked closed manual valve and thus is not susceptible to the single failure scenario.

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

II. Cause of Event

The cause of this event is that the original design of the affected systems did not consider the effect of thermally induced overpressure conditions. A post accident environment will heat up and pressurize piping that is connected to the inside containment isolation valves. Overpressure relief capability was not included in the original design of the affected systems. The design did not consider the potential failure mode of thermally induced overpressurization. The design also did not anticipate the effect of thermally induced overpressure conditions on the performance of the containment isolation valves.

III. Analysis of Event

Operability Determinations for the SI and WLD lines are complete. These Operability Determinations concluded that once the vent paths were established for the lines, the inside containment isolation valves connected to this piping were operable. Thus the containment isolation valves will perform their intended safety function of isolating the containment during accident conditions. The original design of the affected piping systems allowed the potential to exist for containment bypass during accident conditions. This would have been possible only if the limiting single failure during an accident was the failure of an open outside containment isolation valve to automatically close.

The limiting single active failure would apply to only one valve thus the containment bypass during this postulated scenario would be limited to only one line. Both the SI and WLD lines are closed systems which flow to contained tanks in the Waste Processing Building. Both tanks are vented to the HEPA filter which filters all primary side exhaust before it is released via the plant vent stack. This HEPA filtering would have minimized any offsite release which might have occurred as a result of a scenario as described in this report.

IV. Corrective Action

Immediate corrective actions have been completed for all three affected lines. The corrective actions prevent the build up of pressure in these lines during accident conditions. The short term corrective action was to open a vent valve in the SI test line and the SF drain line. Care was taken to route the expected release of pressurized water to the containment sump and away from any nearby components. Other considerations such as pipe whip were evaluated in the design change that incorporated the vent valve arrangement for the SI line. Long term corrective actions will be to install relief valves in the SI and SF piping.

Short term corrective action for the WLD line was to open a normally closed valve in the line. This allows that section of piping to vent to a drain tank in the containment during accident conditions. The long term corrective action will be to modify the SF valve lineup to permanently incorporate the necessary relief flow path.

V. Additional Information

None

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

Similar Events

None

Manufacturer Data

Not Applicable