

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: 500 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 (1-6733) 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)
Potential Safety Injection Pump Runout Conditions Due to Incorrect Test Equipment Assumptions

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	13	96	98	002	00	02	12	98	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		0	20 2201(b)			20 2203(a)(2)(v)			50 73(a)(2)(i)	50 73(a)(2)(viii)
			20 2203(a)(1)			20 2203(a)(3)(i)			<input checked="" type="checkbox"/> 50 73(a)(2)(ii)	50 73(a)(2)(x)
			20 2203(a)(2)(i)			20 2203(a)(3)(ii)			<input checked="" type="checkbox"/> 50 73(a)(2)(iii)	73.71
			20 2203(a)(2)(ii)			20 2203(a)(4)			<input checked="" type="checkbox"/> 50 73(a)(2)(iv)	OTHER
			20 2203(a)(2)(iii)			50 36(c)(1)			<input checked="" 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 checked="" type="checkbox"/> 50 73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME James M. Peschel, Regulatory Compliance Manager	TELEPHONE NUMBER (include Area Code) (603) 773-7194
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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

SUPPLEMENTAL REPORT EXPECTED (14)

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 January 22, 1998 North Atlantic Energy Service Corporation (North Atlantic) determined that from August 6, 1997 to August 10, 1997 and again from October 21, 1997 to December 6, 1997 the Emergency Core Cooling System (ECCS) [BQ] may not have been capable of performing its intended safety function during a design basis accident. On these dates SI-V131, a 3/4 inch valve in the Safety Injection (SI) [BQ] test header, was opened for extended periods of time to support check valve backleakage surveillance procedure. When the valve was open, conditions were created that could have resulted in the inability to satisfy the Technical Specification 4.5.2.h.2)b) maximum flow requirement of 669 gpm, assuming single failure criteria.

This condition was caused by a failure to perform a documented evaluation of the potential sources of errors associated with the use of ultrasonic flowmeters. The lack of evaluation resulted in multiple disciplines failing to recognize the potential error introduced by using nominal wall thickness as an input to the ultrasonic flowmeters.

Upon determination that the opening of SI-V131 could potentially subject the Train A SI pump to exceed runout flow conditions, a safety evaluation was performed to support revisions to the surveillance procedure, that included specific administrative controls during certain configurations. Additionally as a result of this event, a procedure will be developed that clearly defines which instrumentation requires the performance of an uncertainty analysis; the ECCS Flow Balance Test procedure will be revised to reflect the use of actual pipe diameters and wall thicknesses when using ultrasonic flowmeters; and the Operating Experience screening process will be reviewed and a self assessment plan will be developed to include sampling previously reviewed NRC Information Notices.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1) Seabrook Station	DOCKET NUMBER (2) 05000443	LER NUMBER (6)				PAGE (3) 2 of 3
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		98	--	002	--	

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

I. Description of Event

On January 22, 1998 North Atlantic Energy Service Corporation (North Atlantic) determined that from August 6, 1997 to August 10, 1997 and again from October 21, 1997 to December 6, 1997 the Emergency Core Cooling System (ECCS) [BQ] may not have been capable of performing its intended safety function during a design basis accident. On these dates SI-V131, a 3/4 inch valve in the Safety Injection (SI) [BQ] test header, was opened for extended periods of time to support check valve backleakage surveillance procedure, EX1804.047 "Reactor Coolant System Pressure Isolation Valve Leakage Rate Tests". This valve provides an alternate parallel flowpath for ECCS cold leg injection. When the valve was open, conditions were created that could have resulted in the inability to satisfy the Technical Specification 4.5.2.h.2)b) maximum flow requirement of 669 gpm, assuming single failure criteria. The potential accident scenario would involve SI-V131 being open concurrent with a B Train Solid State Protection System (SSPS) [JG] failure. The B Train SSPS failure would prevent operation of the B Train ECCS pumps and additionally prevent the automatic closure of SI-V131. Post ECCS operation could have resulted in the A Train SI pump exceeding the value stated in Technical Specification Surveillance Requirement 4.5.2.h.2)b).

On January 13, 1998, North Atlantic determined that ultrasonic flowmeter input data used for ECCS flow balance testing was slightly nonconservative. Specifically, the flow balance data that was collected during the 1997 refueling outage using nominal versus actual pipe diameters and wall thicknesses. This did not affect compliance with the Technical Specification ECCS flow requirements although it did reduce the margin to runout flow conditions by increasing the total flow up to approximately 2.4 percent greater than previously assumed. On January 22, 1998, North Atlantic determined that previous operation with SI-V131 open in conjunction with the corrected flow balance data presented the potential for ECCS runout as described above. North Atlantic reported this condition to the NRC on January 22, 1998, as a 4-hour non-emergency report pursuant to 10 CFR50.72(b)(2)(iii) as an event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident."

Additionally, since SI-V131 remained in this alignment for an extended period of time, it is further reportable pursuant to: 10 CFR 50.73 (a)(2)(ii)(B), as a condition that was outside the design basis of the plant; 10 CFR 50.73 (a)(2)(v)(D), as an event or condition that alone could have prevented the fulfillment of the safety function of structures or systems needed to mitigate the consequences of an accident, and; 10 CFR 50.73 (a)(2)(vii)(D), as an event that where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to mitigate the consequences of an accident.

II. Cause of Event

This condition was caused by a failure to perform a documented evaluation of the potential sources of errors associated with the use of ultrasonic flowmeters. Presently, there are no formal requirements to perform an evaluation of this type. The lack of evaluation resulted in multiple disciplines failing to recognize the potential error introduced by using nominal wall thickness as an input to the ultrasonic flowmeters. A documented uncertainty analysis which addresses the assumptions associated with a particular type of instrumentation, and other potential sources of instrument error, would provide an accurate basis for utilizing specific test instrumentation.

A contributing cause for this event was the limited review of NRC Information Notice 95-08 "Inaccurate Data Obtained with Clamp-on Ultrasonic Flow Measurement Devices." The principles regarding the accuracy of ultrasonic flow instrumentation contained in this information notice were similar to those in this event. However, it was concluded that the ultrasonic flow instrumentation utilized at Seabrook Station was calibrated using pipe dimensions of the same size and schedule as those found in the plants ECCS system. This was believed to adequately address the pipe dimension issue described in the information notice.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1) Seabrook Station	DOCKET NUMBER (2) 05000443	LER NUMBER (6)				PAGE (3) 3 of 3
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		98	-- 002	-- 00		

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

III. Analysis of Event

This event was significant due to the potential for a safety related ECCS pump to not be able to perform its intended safety function under certain accident conditions. The potential accident scenario would involve SI-V131 being open concurrent with a B Train SSPS failure. The B Train SSPS failure would prevent operation of the B Train ECCS pumps and additionally prevent the automatic closure of SI-V131. Post ECCS operation could have resulted in the A Train SI pump exceeding the value stated in Technical Specification Surveillance Requirements 4.5.2.h.2)b). There were no adverse safety consequences resulting from this event in that there was not an event that required the SI pumps.

IV. Corrective Action

Upon determination that the opening of SI-V131 could potentially subject the Train A SI pump to exceed runout flow conditions, a safety evaluation was performed to support revisions to surveillance procedures EX1804.047 and OS1005.05 "Safety Injection System Operation" to include specific administrative controls regarding configurations used to support the check valve backleakage surveillance procedure.

As a result of this event, a procedure will be developed that clearly defines which instrumentation requires the performance of an uncertainty analysis. Emphasis will be placed on instrumentation that is used to verify Technical Specification requirements or the operability of safety related components. This will aid in preventing the introduction of unevaluated potential errors when using permanent plant instrumentation and measuring & test equipment (M&TE).

The ECCS Flow Balance Test procedure will be revised to reflect the use of actual pipe diameters and wall thicknesses when using ultrasonic flowmeters.

The Operating Experience screening process will be reviewed to determine if additional requirements are needed as a result of this event. Furthermore, a self assessment plan will be developed which will include sampling previously reviewed NRC Information Notices that were previously screened as not applicable to Seabrook Station.

V. Additional Information

None.

Similar Events

North Atlantic reported a related event to the NRC in LER 98-001-00 "Inadequate ECCS Venting Surveillance". This event resulted in the potential for High Head Injection and SI pump runout conditions due to a lack of administrative controls during ECCS venting during surveillance testing.

Manufacturer Data

Not applicable.