

North Atlantic Energy Service Corporation P.O. Box 300 Seabrook, NH 03874 (603) 474-9521

The Northeast Utilities System

December 1, 2000

Docket No. 50-443

<u>NYN-00102</u>

United States Nuclear Regulatory Commission Attention: Document Control Desk Washington, DC 20555

> Seabrook Station Licensee Event Report (LER) 00-007-00 Over Pressure Protection System Relief Valves Outside Technical Specification Limits

Enclosure 1 contains Licensee Event Report (LER) 00-007-00 for an event that occurred at Seabrook Station on November 2, 2000. This event is being reported pursuant to 10 CFR 50.73(a)(2)(i).

Should you require further information regarding this matter, please contact Mr. James M. Peschel, Manager-Regulatory Programs at (603) 773-7194.

Very truly yours,

NORTH ATLANTIC ENERGY SERVICE CORP.

for

Ted C. Feigenbaum Executive Vice President and Chief Nuclear Officer

cc: H. J. Miller, NRC Regional Administrator
 V. Nerses, NRC Project Manager, Project Directorate 1-2
 R. K. Lorson, NRC Senior Resident Inspector



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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)	MC	ISSION -	MONTH DA'	Y YEA		

On November 2, 2000 with the unit in Mode 6, defueled, the as found set pressure for the "A" Train Residual Heat Removal (RHR) suction relief valve 1-RC-V-24, was found to be outside the tolerance allowed by Technical Specification (TS) 3.4.9.3. This condition was identified during testing conducted in accordance with TS 4.0.5 and Appendix I of the ASME Operation and Maintenance (O & M) Code-1995. 1-RC-V-24 is one of two relief valves used to provide overpressure protection of the Reactor Coolant System (RCS) and the RHR System while in Modes 4, 5, and 6. In response to the requirements of the ASME O&M Code for a valve test failure, the one remaining valve in the same test group, the "B" Train Residual Heat Removal suction relief valve 1-RC-V-89 was tested and actuated at 452.5 psig or 2.5 psig above its allowed TS value of 450 psig. There were no adverse safety consequences as a result of this event since the RHR System was not challenged by a condition that would have caused 1-RC-V-24 to lift. 1-RC-V-24 lifting prematurely is a condition addressed in North Atlantic's Abnormal Procedures. In the event 1-RC-V-89 was required to actuate, with the RHR System design pressure at 600 psig, there would be sufficient margin to ensure that RHR System integrity would be maintained. The cause of this condition for 1-RC-V-24 has been determined to be associated with the recent changes in the testing methodology. The cause of this condition for 1-RC-V-89 has been determined to be associated with 1-RC-V-89 being inadvertently knocked over prior to as-found testing. 1-RC-V-24 and 1-RC-V-89 were replaced with pretested spare valves.

NRC FORM 366A (4-95)	<u></u>		U.S. NUCLEAR REGULATORY COMMISSION						
LICENSEE EVENT REPORT (LER) TEXT CONTINUATION									
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

I. Description of Event

On November 2, 2000 at 0845, with the unit in Mode 6, defueled, the as-found set pressure for the "A" Train Residual Heat Removal (RHR) [BP] suction relief valve [RV] 1-RC-V-24, was found to be outside the tolerance of (+0/-3) percent as allowed by Technical Specification (TS) 3.4.9.3. Relief valve 1-RC-V-24 is one of two relief valves used to provide overpressure protection of the Reactor Coolant System (RCS) [AB] and the RHR System while in Modes 4, 5, and 6. This condition was identified during testing conducted in accordance with TS 4.0.5 and Appendix I of the ASME Operation and Maintenance (O & M) Code-1995.

In August of 2000, North Atlantic submitted the Second Ten-Year Interval Inservice Inspection (ISI) Program Plan. The Plan was developed to meet the requirements of ASME O&M Code (1995 Edition, 1996 Addenda). New relief valve testing requirements were developed as a result of the newly endorsed ASME Code in that it requires testing to be performed with the test media and ambient conditions at normal operating temperature for which they are designed. North Atlantic's First Ten-Year ISI Program Plan endorsed 1983 Edition (including the Summer of 1983 Addenda) of Section XI of ASME Boiler and Pressure Vessel Code which allowed testing under ambient conditions. Specifically, the new test conditions required a process fluid of 350 degrees Fahrenheit and an ambient air temperature of 120 degrees Fahrenheit to simulate expected accident conditions consistent with those that 1-RC-V-24 would normally experience. The setpoint listed in TS 3.4.9.3 is 450 psig (+ 0/-3 percent), equating to 436.5 psig. 1-RC-V-24 actuated at 415 psig or 21.5 psig below the TS limit.

In response to the requirements of the ASME O&M Code for a valve test failure, the one remaining valve in the same test group, the "B" Train Residual Heat Removal (RHR) [BP] suction relief valve [RV] 1-RC-V-89 was tested. 1-RC-V-89 actuated at 452.5 psig or less than 0.5 percent above its allowed TS value of 450 psig and was replaced with a tested spare. Previous TS surveillance's of 1-RC-V-24 and 1-RC-V-89 have been within acceptable TS limits. This is the first recorded TS failure for 1-RC-V-24 or 1-RC-V-89.

Based on the accepted industry practice, as approved by the 1983 Edition (including the Summer of 1983 Addenda) of Section XI of ASME Boiler and Pressure Vessel Code, of setting relief valves at ambient temperature, it is likely that this condition has existed for a period of time that was greater than the TS Allowed Outage Time of 8 hours. As a result, this condition is reportable pursuant to 10 CFR 50.73(a)(2)(i) as a condition prohibited by TS.

II. Cause of Event

The cause of this condition is that 1-RC-V-24 was set in accordance with an old code approved methodology and it is now tested in accordance with a new code approved methodology. The relief valve testing requirements of 1983 Edition (including the Summer of 1983 Addenda) of Section XI of ASME Boiler and Pressure Vessel Code did not include testing at expected accident conditions. Under the new testing methodology, which was adopted in August of 2000, 1-RC-V-24 and 1-RC-V-89 were tested in an environment that would simulate actual plant conditions. The ability to test relief valves in a condition that is closer to actual expected accident conditions is consistent with the requirements of ASME O&M Code (1995 Edition, 1996 Addenda). The premature lifting of 1-RC-V-24 at 415 psig is attributed to the change in testing methodology. The cause of this condition for 1-RC-V-89 has been attributed to the valve being inadvertently knocked over prior to as-found testing. When 1-RC-V-89 w as inadvertently knocked over, the valve disc was disturbed causing the valve to exhibit excessive seat leakage during its first as-found test.

NRC FORM 366A (4-95)			ι	J.S. 1	NUCLE	AR RE	EGULATORY	COMMISSION	
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

III. Analysis of Event

There were no adverse safety consequences as a result of this event since the RHR System was not challenged by a condition that would have caused 1-RC-V-24 or 1-RC-V-89 to lift. Additionally, while this condition has regulatory significance as a condition prohibited by TS, it is not safety significant. While in Modes 4, 5 and 6 relief valve 1-RC-V-24 and 1-RC-V-89 provides protection of the RCS and RHR Systems from inadvertent overpressurization when the RHR inlet isolation valves are open. In the event 1-RC-V-24 lifted prematurely during actual plant cooldown operations, 1-RC-V-24 would discharge back to the Primary Relief Tank (PRT). A decreasing RCS pressure and Pressurizer level along with an increase in the PRT level would alert the Operators of a premature relief valve failure and the RHR suction valves could be closed. This condition is addressed in North Atlantic's abnormal procedures. In addition to the RHR System overpressurization protection. Had 1-RC-V-24 is one of the components used to provide low temperature overpressurization protection. Had 1-RC-V-24 actuated of at 415 psig in lieu of its lowest TS limit of 436.5 psig, 1-RC-V-24 would have performed its intended safety function. In addition, had 1-RC-V-89 been required to actuate, with the RHR System design pressure at 600 psig, there would be sufficient margin to ensure that RHR System integrity would be maintained.

As a result of the new relief valve testing methodology being employed for testing TS 4.0.5 relief valves, additional setpoint deviations have been identified during testing. A supplemental LER will be submitted if any of these deviations are found to be reportable.

IV. Corrective Action

1-RC-V-24 and 1-RC-V-89 were each replaced with a pre-tested spare valve.

V. Additional Information

To meet the requirements of ASME O&M Code (1995 Edition, 1996 Addenda), North Atlantic developed a test stand that has the ability to test relief valves using the test media and ambient conditions at normal operating temperatures. Early results have shown that relief valves tested under actual operating conditions have actuated at a lower than expected setpoint when the temperature, especially when the ambient air temperature is increased. North Atlantic anticipates partnering with EPRI to provide test results for validating a model for the full range of Class 2 and Class 3 relief valve designs in use in the industry. In addition, the data obtained will provide very significant insights into the effects of fluid and ambient temperatures on relief valve setpoints.

Similar Events

This is the first event of this type. North Atlantic has reported other events involving relief valves that were outside their TS acceptance criteria. However, this is the first time setpoint deviation was observed as a result of using the new testing methodology that replicates actual plant conditions for testing.

Manufacturer Data

1-RC-V-24 and 1-RC-V-89 were manufactured by Crosby Valve and Gage Company [C710]. 1-RC-V-24 and 1-RC-V-89 are a 3" by 4", Model JB-35-TD-WR with a capacity of 900 GPM.