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May 14, 1984
RBG- 17814
File Nos. G9.5, G9.25.1.1

Mr. John T. Collins, Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV, Office of Inspection and Enforcement
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011



Dear Mr. Collins:

River Bend Station Unit 1
Docket No. 50-458
Final Report/DR-142

On April 13, 1984, GSU notified Region IV by telephone it had determined DR-142 concerning the bellows assembly of a relief valve supplied by Crosby Valve & Gage Company to be reportable under 10CFR50.55(e). The attachment to this letter is GSU's final 30-day written report pursuant to 10CFR50.55(e) with regard to this deficiency.

Sincerely,

J. E. Booker

J. E. Booker
Manager-Engineering,
Nuclear Fuels & Licensing
River Bend Nuclear Group

JEB/PJD/kt

cc: Director of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

NRC Resident Inspector-Site

INPO



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May 14, 1984
RBG-

ATTACHMENT

DR-142/Bellow Assembly of a
Relief Valve Supplied by
Crosby Valve Company

Background and Description of the Problem

This deficiency concerns relief valve 1E12*RVF055A supplied by Crosby Valve & Gage Company with a bellows assembly constructed with metal too thin to withstand the operating conditions of the valve.

This Crosby Model JB-56-TD valve was purchased via Specification No. 247.521 from Crosby Valve & Gage Company, Division of Geosource, Inc. It was designed, fabricated, and tested in accordance with the requirement of ASME Section III, 1974 edition, to Winter 1976 addenda. The Style JB valve is a balanced bellows relief valve used where multiple relief valves are vented into a closed exhaust system or header.

The bellows assembly is designed to counterbalance the backpressure surges caused by the other relief valves discharging into the header. This valve is the closed bonnet-type, with a bonnet vent built into the valve bonnet to prevent pressure buildup within the housing. The vent also provides a means to monitor the integrity of the bellows.

Safety Implication

This relief valve is one of two relief valves required to protect the RHR system heat exchanger shell side and piping from overpressurization if steam pressure control valve 1E12*PVF051A fails wide open. (Refer to GE Design Specification No. 22A3845.) Thus, failure of this valve to actuate properly could result in an overpressurization condition during the initial stage of RHR steam condensing operations when steam pressure is still high and could lead to failure of one train of the RHR system.

Based on investigation by the manufacturer concerning design criteria, the bellows would weaken over time and either split or develop a hole. This would cause leakage into the bonnet of the valve and could jeopardize the safe operation of the valve.

As long as none of the other relief valves piped into the common header with 1E12*RVF055A are relieving, the valve will operate properly. However, if one of the other relief valves tied to the header is relieving, the performance of 1E12*RVF055A will be affected. As the backpressure increases with respect to inlet pressure, the lifting forces which hold the valve open are diminished and a decrease in lift of the valve will result. This results in a shift in the set pressure at which the valve opens. This shift is the spring setting plus the backpressure on the valve, which would cause the set pressure to increase.

Corrective Action

The underlying cause of the problem is isolated to 1E12*RVF055A and was a case of vendor oversight in choosing improper design criteria for the bellows thickness.

The vendor checked the design criteria for all bellows style valves for RBS (RHR relief valves 1E12*RVF055B, 1RHS-RV3A, and 1RHS-RV3B) and re-evaluated the bellows thickness. They were found to contain the proper bellows thickness and are acceptable.

The corrective action required by Nonconformance and Disposition Report No. 4273 consists of shipping the valve to the manufacturer for replacement of the bellows assembly and retesting.

The vendor assures that all other valves supplied to RBS are correct and that this particular case is an isolated occurrence. The vendor also has assured that similar problems will not occur in the future because reinstruction has taken place for those involved in choosing design criteria.