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BBS-73-125

June 12, 1973

Mr. John F. O'Leary, Director
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

Reference: Quad-Cities Nuclear Power Station, Unit 1
Docket No. 50-254, DPR-29, Appendix A
Section 1.0.A.2, 3.4.A and 6.6.B

Dear Mr. O'Leary:

While conducting the monthly surveillance test on the Unit 1 Standby Liquid Control System, the 1B pump did not obtain the required flow rate due to actuation of its relief valve. This abnormal occurrence was reported previously by telegram on June 4, 1973.

PROBLEM AND INVESTIGATION

On June 4, 1973, Unit 1 was operating at about 75% power. The monthly flow rate tests of the Standby Liquid Control System were being conducted to demonstrate 39 gpm at 1275 psig as required by Technical Specification Surveillance Requirement 4.4.A.1. At 5:30 a.m. after the 1A pump had been satisfactorily tested, the flow rate of the 1B pump was measured to be 13.9 gpm. The "B" system was declared inoperable; reactor operation continued in accordance with Specification 3.4.B since the "A" system had been proven operable.

Maintenance personnel began disassembly and inspection of the 1B pump the same day. The inspection of the Union pump did not reveal any abnormal conditions. One of the internal check valves appeared to stick slightly more than the others, however, this was evaluated and was not considered to be the cause of the test failure. The pump was reassembled and at 4:00 p.m. on June 4, 1973 an operability test was successfully performed with the 1B pump producing 45 gpm.

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The most probable causes of the low flow rate measured were the setpoint and characteristics of the pump discharge relief valve. The setpoint of this valve was determined to be 1360 psig by in-place testing on June 5, 1973. This deviates from the setpoint of 1400-1490 psig required by section 4.4.A.2 of the Technical Specifications. When the valve lifts, it returns water to the storage tank. This flow is not measured in the test tank. The setpoint of the 1A pump relief was checked and found to be 1380 psig.

The relief valves have a design blowdown of 175 psi before they reseat fully after lifting. In the initial test when the required flow rate was not achieved it is strongly suspected that the relief valve lifted and did not reseat at the test pressure of 1275 psig. It is also possible that the test pressure was actually higher than 1275 psig due to the difficulty in reading the pressure gage in the presence of oscillations. This condition was duplicated on June 5, when a low flow rate was measured following an intentional relief valve actuation.

EVALUATIONS AND CORRECTIVE ACTION

It is very unlikely that either of the Standby Liquid Control Systems would have failed to perform their required function if needed since the discharge pressure would in all probability not have exceeded 1300 psi during an actual injection. The margin of safety was reduced, however, by the lower than design relief valve setpoints.

The relief valves, RV-1105A and RV-1105B, were reset to lift at 1440 and 1420 psig respectively and will be checked again during the next monthly surveillance test. The Unit 2 valves will also be checked at that time. In the course of the investigations demineralized water was added to the storage tank by repeated relief valve actuations. The solution was analyzed on June 4 and found to be 13.0%. The concentration was again checked after all testing on the 5th and had been diluted to 12.1%. For the existing volumes of 4050 and 4260 gallons the volume-concentration requirements of Specification 3.4.C were met at all times.

Based on the results of future relief valve checks, additional testing and investigations will be conducted as necessary to provide assurance that the 1400-1490 psig requirement is not exceeded. Operating procedures will also be revised to caution operators not to exceed the relief valve setpoint when throttling the discharge valve to obtain the test pressure.

Very truly yours,

COMMONWEALTH EDISON COMPANY
Quad-Cities Nuclear Power Station

B. Stephenson

B. B. Stephenson
Plant Superintendent

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