

# Commonwealth Edison Company

QUAD-CITIES NUCLEAR POWER STATION

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50-265

FAP-72-124

June 29, 1972

U.S. ATOMIC ENERGY COM. REG. DIV. MAIL & RECORDS SECTION

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RECEIVED

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

Dear Mr. O'Leary:

Ref: Quad-Cities Nuclear Power Station - Unit 2  
DPR-30 Appendix A - Section 1.A.4, Section  
6.6.B.2 and Section 6.6.B.3.

The purpose of this letter is to inform you of the details regarding the failure of electromatic relief valve 2-203-3D to open when given a manual signal. This incident occurred at Quad-Cities Unit 2 on June 19, 1972 at 4:50 a.m.

## DESCRIPTION OF FAILURE

During Phase IV startup testing on Unit 2 at Quad-Cities Nuclear Power Station with the reactor operating at 650 MWt, Electromatic Relief Valve 2-203-3D failed to open when given a manual initiation signal. The turbine-generator was not in operation at the time of the occurrence. Operation of the various relief valves was being carried out as a part of STI-98, Torus Movement Special Test. Previous to this occurrence at 1:41 a.m. this same day, the subject valve had operated successfully. During the subsequent test to prove the operability of the HPCI system, it was discovered that there was an oil leak at the HPCI emergency oil pump. It was decided to make the HPCI system inoperable in order to repair the oil leak. In accordance with Specifications 3.5.C.3 and 3.5.D.4, shutdown of the reactor was initiated at 6:53 a.m.

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INVESTIGATIONS

Investigations into the failure included measuring the resistance of the solenoid circuit for the electromatic valve. The four operable valves were found to measure 5 OHMS resistance; the inoperable "D" valve was found to measure approximately 300 OHMS resistance. Plans were made to enter the drywell and replace the solenoid on the "D" valve.

Continued investigations into the problem revealed that of the two coils in the solenoid for each valve, the "Operating Coil" had a resistance of 5 OHMS; the second coil, called the "Holding Coil" had a resistance of 290 OHMS. When the valve is closed, a shorting switch shorts out the holding coil. When the valve is opened, the shorting switch opens and allows the holding coil to maintain the valve open. It was reasoned that the shorting switch had probably not closed the last time the valve closed. This would account for the measured resistance of 300 OHMS.

The subsequent inspection of the solenoid coils of the "D" relief valve revealed that the shorting switch was "hung-up" on some of the wires within the control box for the valve. It was observed that the wires had not been properly "trained" when the box was wired. Thus, the wires interfered with the proper operation of the shorting switch.

REPAIRS

The wires were "trained" to their proper position to allow proper operation of the shorting switch. At 4:05 p.m. that same day, the 2-203-3D electromatic relief valve was proven to be operable. Scheduled start-up testing on the Unit resumed immediately.

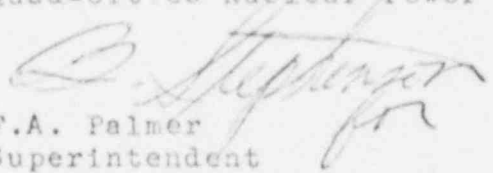
The control boxes for the other Unit 2 electromatic relief valves were inspected and the wiring was found to be satisfactory. Inspection of the similar equipment on Unit 1 is planned at the next opportunity to enter the drywell.

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CONCLUSION

In conclusion, it is felt that a combination of events led to this occurrence. It is known that there is some vibration associated with each relief valve operation. As part of the scheduled testing that day, there were a considerable number of relief valve operations. These two items coupled with the unsatisfactory wiring within the control box led to the wires jiggling to a position that interfered with the shorting switch operation.

Very truly yours,

COMMONWEALTH EDISON COMPANY  
Quad-Cities Nuclear Power Station  
F.A. Palmer  
Superintendent

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