



**Commonwealth Edison**  
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BBS-73-39

50-254

March 7, 1973

Mr. Angelo Giambusso  
 Deputy Director for Reactor Projects  
 Directorate of Licensing  
 U. S. Atomic Energy Commission  
 Washington, D. C. 20545

Reference: Quad-Cities Nuclear Power Station, Unit 1  
 Docket 50-254, License DPR-29,  
 Appendix A, Section 6.6.C.2.

Dear Mr. Giambusso:

The purpose of this letter is to inform you of a condition relating to the operation of Unit 1 in which the setpoints of the electromatic relief valves were found to be high. This condition was reported to Region III Compliance by telephone on February 8, 1973.

Following the January 20, 1973 isolation and scram on Unit 2, a calibration check of the electromatic relief valve pressure controllers revealed that the setpoints of some valves had drifted 10 to 15 psi low. In order to determine if a similar condition existed on Unit 1 a calibration was performed on February 7, 1973. The actuation/reset pressures of valves 203-3A, B, C, D & E were found to be 1245/1100, > 1400/1080, 1152/1081, > 1400/1108, and 1195/1160 respectively. The design setpoints for these valves are 1125 (203-3A), 1130 (203-3B & C), and 1135 (203-3 D & E) plus a 9 psi head correction. The "as left" setpoints on July 6, 1972, the last previous calibration, were 1132/1113, 1137/1117, 1136/1118, 1142/1124, and 1147/1115 psi.

Following the discovery of this abnormal drift, the setpoints of all the pressure controllers were adjusted. A second

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calibration on February 7, 1973 was conducted to confirm the adjusted setpoints. Station management personnel including the Instrument Engineer observed this calibration and inspected the controllers. No abnormal conditions were detected and the trip points were found to be no more than 3 psi different from the as left setting earlier in the day with one exception. The controller for relief valve 3E had drifted about 50 psi due to a loose nut on the bracket which supports the micro switches. This nut was tightened and the controller was recalibrated successfully.

The pressure switch assembly for the 3B valve was removed from the controller for a closer inspection in the instrument shop. The switch appeared to be in perfect condition and was re-installed prior to the reactor startup on February 8, 1973. After installation the switch was calibrated and found to have drifted only 10 psi from the previous setting.

The pressure controllers are supplied with the electromatic relief valves by Dresser Industries. The pressure sensing device in the controller is a Barksdale bourdon tube which actuates two micro switches.

Although the non-safety related pressure relief function of the relief valves was rendered inoperable, the valves were fully operable manually at all times. Also the capability of the valves to perform their auto pressure relief function as an ECCS subsystem was unaffected; therefore, none of the Limiting Conditions for Operation in the Technical Specifications were exceeded. The coincident failure of the relief valves and the turbine bypass system is analyzed in the FSAR and demonstrates that the safety valves alone are adequate to prevent exceeding ASME Code, Section III peak allowable pressures.

During the period of operation since the previous calibration on July 6, 1972 reactor pressure never exceeded 1100 psi following any scram. If pressure had increased above the design relief valve lift pressures, the valves would have been opened manually by the control room operator to limit pressure below the safety valve setpoints.

The Station Review Board has reviewed this condition and an increased surveillance program on these switches was implemented. The program consists of a calibration after two weeks of operation and then at intervals of one month, 3 months, and 3 months until the fall refueling outage. The need for

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permanent surveillance on a quarterly basis will then be evaluated based on the observed drift history. The first check was conducted on February 23, 1973 and all switches were within 1% of the previous calibration setting.

It can be seen from the setpoint changes observed that the switches which actuate the relief valves, the right hand micro switch, all drifted high while the left hand switches which reset the valves all drifted low. The one exception being the 3E valve which was explained by a loose bracket nut. Both switches are actuated by a bracket which is attached to the tip of the bourdon tube. The observed drift could be explained by a slight rotation of the bracket which would have the effect of increasing one switch while decreasing the other. Examination of the switches, however, did not indicate that this had occurred.

The switch manufacturer, Barksdale, was advised of the situation but could offer no explanation for the drift experienced. The calibration technique and equipment (1500 psi Heise gage and hand pump) are also being considered as a possible cause along with personnel error. These are considered unlikely, however, in view of the manner in which the switches drifted and the simplicity of the procedure. In a further attempt to identify the cause of failure a replacement bourdon tube-switch assembly is being obtained to allow one of the suspect switches to be removed for laboratory testing. Any additional information obtained from this study will be reported to your office.

Very truly yours,

COMMONWEALTH EDISON COMPANY  
QUAD CITIES NUCLEAR POWER STATION

*R. A. Newkirk*

*for* B. B. Stephenson  
Superintendent

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