



Commonwealth Edison
Quad-Cities Nuclear Power Station
Post Office Box 216
Cordova, Illinois 61242
Telephone 309/654-2241



August 28, 1973

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

Reference: Quad-Cities Nuclear Power Station Unit 2
Docket No. 50-265, License DPR-30 Appendix A, Section 6.6.B.2

Dear Mr. O'Leary:

The purpose of this letter is to report an unusual event concerning the reactor protection system wiring of Unit 2 at Quad-Cities Nuclear Power Station. A wiring error was discovered on July 29, 1973 in the neutron monitoring trip and mode switch interlock portion of the circuitry. This error was discussed with Mr. J. Fishbaugher of the Directorate of Regulatory Operations - Region III.

PROBLEM AND INVESTIGATION

While performing routine instrument surveillance tests prior to a Unit 2 reactor startup a wiring error was found which effectively bypassed the scram function of IRM 18 whenever APRM 4 was on-scale or bypassed regardless of the mode switch position. Trouble shooting subsequently determined that a two conductor cable (no. 28353) had its leads reversed at terminal board 1B in the 902-37 panel. Because of the physical configuration of the associated wiring this resulted in the mode switch contact (intended to bypass the IRM trip in the Run mode only) being removed from the circuit.

EVALUATION AND CORRECTIVE ACTION

The Intermediate Range Monitoring (IRM) System provides protection against excessive power levels and short reactor periods in the startup and intermediate power ranges. The arrangement of the neutron monitoring trip circuit is such that although the mode switch contact was bypassed, the IRM would have performed its trip function properly throughout the startup and intermediate ranges due to the APRM's being downscale at these power levels. Only in the overlap region at greater than 5% power or if channel 4 of the APRM system had been bypassed would the IRM trip function have been defeated under normal startup or shutdown conditions. This represents a very short period of time since the reactor is placed in the Run mode when the APRM downscale trips clear during a startup. In addition, if the reactor were maintained in the Startup mode in this overlap region the primary neutron monitoring protective trip would be the 15% APRM scram which was not affected by this wiring error. In view of these conditions and the fact that only one of the eight IRM channels was affected, the safety implications of this event are minor.

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The wiring error on the mode switch contact existed from the time of initial startup and as such the exact cause of the error cannot be determined. The IRM high flux trip is functionally tested prior to startups. In this condition the APRM's are downscale and the error could not be detected since the IRM produced the required RPS trip. On July 29th, however, APRM 4 was bypassed during the checks and a trip was not received. Upon locating the error, corrective action was taken to wire the circuit in accordance with design drawings. The mode switch interlock was functionally tested on all other IRM channels on both units with their associated APRM channels bypassed. No other errors were found.

The Unit 2 preoperational test of the Reactor Protection System was reviewed in an attempt to ascertain why this error had not been detected at that time. The interlock check was included as a part of the test and was signed off as being completed. It is apparent though that the procedure was deficient in this area. As the last step in a 21 step procedure to test the neutron monitoring system trips, IRM's 15, 16, 17 & 18 were to be given upscale trips individually with APRM's 4, 5 & 6 onscale for three different mode switch positions (Shutdown, Refuel and Startup). The proper operation of the bypass switch was also to be checked in this step. This lack of detail and breakdown to a step-by-step procedure is considered to be the reason that this error was not detected.

The Commonwealth Edison Company Quality Assurance Manual has designated the System Mechanical and Structural Engineer as the individual responsible for coordinating the preparation of all startup and preoperation tests. He has been advised of the deficiency in the test procedure and will insure that the preoperational tests for future nuclear stations include sufficient detail.

Very Truly Yours,

COMMONWEALTH EDISON COMPANY
QUAD-CITIES NUCLEAR POWER STATION



B. B. Stephenson
Station Superintendent

cc: Regional Director
Directorate of Regulatory Operations - Region III

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