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June 4, 1986

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Dresden Station Units 2 and 3
- Quad Cities Station Units 1 and 2
- Safety Parameter Display System
Isolation Device Test Results
NRC Docket Nos. 50-237/249 and 50-254/265

Reference: Telecon between J. R. Wojnarowski and R. Gilbert
(NRR) et. al., on November 26, 1985.

Dear Mr. Denton:

During the referenced telecon, Commonwealth Edison agreed to perform testing on the Acromag signal isolators used in the Safety Parameter Display Systems at Dresden and Quad Cities. This transmittal provides the results of those tests.

The Acromag signal isolators were tested at 120V, fused at 15A, to demonstrate their ability to prevent anomolous output conditions from affecting the performance of input signals. Open circuit, short circuit, ground circuit, hot voltage and reverse voltage injection tests were run on the Acromag isolators. Testing was performed on Acromag Models 712-L and 722-TL-Y. Model 712-H was not tested due to the unavailability of a spare isolator at the time of the test. However, a comparison of the schematics of the 712-H and the 712-L indicates that the Model 712-H would respond similarly to the 712-L, offering similar isolation capability.

Four recorder pens were utilized for each of the five tests, i.e., open circuit, short circuit, ground circuit, hot voltage and reverse voltage injection tests. Pens 1 and 2 measured the input signal, representing the safety related signal inputs, while pen 3 measured the output signal, representing the non-safety related computer outputs. Pen 4 monitored the output positive leg and, because the output is floating and not tied to ground, continued to measure 0 V for all but the hot voltage tests, during which the pen trace indicated the applied 120V ac.

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Recorder traces for runs I and II were similar but for the applied input signal voltage. The Acromag Model 712L has its input rated 1-5 volts dc, and runs I and II tested each end of the range. Run I utilized a 5 V dc input, while run II utilized a 1 V dc input. Pens 1 and 2 did not indicate any fluctuation in input signal despite the applied anomalies on the output of the isolator recorded by pens 3 and 4. The applied anomalies consisted of the five conditions of open circuit, short circuit, ground circuit, hot voltage and reverse voltage injection. The plots of pens 1 and 2 demonstrated that credible faults, i.e., the above five test conditions, applied on the isolator card outputs have no adverse impact on the performance of the input signals to the isolator cards.

Run III was made to test the Acromag Model 722-TL-Y with an input signal of 100 mV monitored by pens 1 and 2. The five applied anomalies to its output were recorded by pen 3. Pens 1 and 2 did not indicate any fluctuation in input signal despite the application of credible faults on the output, thus demonstrating the ability of the Model 722-TL-Y to successfully isolate output from input.

The test data indicates that the Acromag isolators were able to provide adequate isolation between safety and non-safety circuits when the credible fault conditions are applied to the non-safety related output circuits. Fault conditions were not promulgated through the isolator to the safety related input circuitry.

If you have any questions concerning these test results, please contact this office.

One signed original and ten (10) copies of this letter are provided for your use.

Very truly yours,



J. R. Wojnarowski
Nuclear Licensing Administrator

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cc: R. Gilbert - NRR
R. Bevan - NRR
NRC Resident Inspector - D/QC

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