Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

July 31, 1992

Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Attn: Document Control Desk

Subject: Additional Information Related to Byron Station Inservice Test Program Relief Request VR-4

Byron Units 1 and 2
NRC Docket Nos. 50-454 and 50-455
TAC Nos. 75575 and 75576

References: (1) Commonwealth Edison - NRC teleconference, August 8, 1991

(2) R.J. Barrett to J. Kovach letter dated August 16, 1991

Dear Dr. Murley:

The purpose of this letter is to provide the results of a special test (SPP 91-059) performed at the request of the NRC on Containment Spray check valve 1CS008A. This test was suggested as an alternative to the leak test provisions of Byron Station ASME XI InService Test (IST) program relief request VR-4, Revision 10b.

As described in the Attachment, this special test failed to provide any additional information about the post reinstallation functionality of the check valve. Since this non-intrusive diagnostic test and air partial flow test has not produced the desired results, Commonwealth Edison (CECo) is requesting that the portion of Relief Request VR-4 Revision 10b dealing with valves 1/2CS008A/B, be approved for the remainder of the first inspection interval. This portion of VR-4 was originally granted interim approval.

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Background

In a July 1, 1991 transmittal, CECo provided valve Relief Request VR-4, Revision 10b, from the Byron Station ASME Section XI Inservice Test (IST) program. VR-4 requested relief from requirements of ASME Boiler and Pressure Vessel Code, Section XI, IWV-3521, IWV-3522, IWV-3412, and IWV-3200, full flow/full stroke exercise for containment spray pump discharge valves, 1/2CS003A/B; and for contianment spray to containment ring header check valves, 1/2CS008A/B. CECo proposed to disassemble and inspect the valves on a sampling basis during refueling outages. After reassembly, CECo proposed to perform partial flow tests on 1/2CS003A/B and leak tests on 1/2CS008A/B.

Reference (2) granted relief as requested for the 1/2CS003A/B valves but provided only interim relief for the 1/2CS008A/B valves. The interim relief of one year was provided to give CECo an opportunity to pursue a means of performing a non-intrusive diagnostic test and air partial flow test for the 1/2CS008A/B valves. CECo had discussed the details of this proposed test and committed to attempt the post-disassembly test in the Reference (1) conversation. The performance of the test described in the Attachment satisfies the Reference (2) Safety Evaluation request.

If there are any questions regarding the test methodology or comments on the VR-4 relief request, please contact me at (708) 515-7292.

Sincerely,

D. J. Chrzanowski

David J. Chrzanowski
Nuclear Licensing Administrator

Attachment

cc: A. Bert Davis, Regional Administrator-RIII
J. Hickman, Project Manager-NRR/PDIII-2
W. Kropp, Senior Resident Inspector-Byron

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ATTACHMENT

SPP 91-054 Rev. 1 RESULTS SUMMARY

A Special Procedure (SPP 91-054) was written to be executed during the Byron Unit 1 fall outage (B1R04) and officially approved by the Byron Station On-Site-Review process on October 8, 1991. On October 16, 1991 NRC Site personnel were invited to observe and Special Procedure SPP 91-054 was executed to verify operability of check valve 1CS008A.

The objectives of the test were as follows:

A. Air from an instrument air line was introduced into the Containment Spray line at 90 to 110 psia through a fully open valve 1CS058A (through a 3/4 drain tap on the process pipe). The intended outcome of this step was to observe (via an in-line pressure gauge) a continual increase in pressure followed by an obvious decrease indicative of check valve 1CS008A having opened.

B. During the time that air was being passed through the 1CS008A valve, acoustic monitoring equipment was attached to the valve and acoustic traces were collected. The intended outcome of this activity was:

   1. To identify from the acoustic traces the point where the check valve opened "start"

   2. To verify the absence of discontinuous noise during the period when the valve was experiencing steady flow "steady" (discontinuous noise would suggest the presence of loose parts)

   3. To identify the point where the valve disk contacted the seat upon cessation of flow "stop"

   4. To detect wear or abnormal functioning of the check valve by comparison of its current acoustic trace to a trace taken from a point in time when it was known to be functioning properly or from a valve of the same size and design. The only baseline data available for use with the 1CS008A trace is a trace taken from a check valve of the same size and design experiencing liquid flow (during a partial stroke test): 2CS003A.

The results of the test were as follows.

Objective A was not achievable during this test:

The observed response was that no pressure build-up was evident. This may have been the result of the 1CS008A valve opening slightly and providing an immediate flow path for the air through the check valve.

Objective B part 1 was not achievable during this test

This trace gives no conclusive evidence of the disk having contacted the backstop upon initiation of flow. However, there is no reason to assume that this is indicative of any abnormalities in the check valve or of anything other than the fact that the air flow is insufficient to fully open the check valve. There is also no reason to assume from looking at this trace that the noise registered gives any evidence that the check valve actually opened. The noise registered may have been nothing more than the initiation of air flow.

Objective B part 2 may have been partially achieved

The results of the attempt to achieve this objective were inconclusive. No abnormalities appear in the "steady" trace however, it could be argued that the volume and pressure of the air flow may not have been sufficient to shake any loose parts severely enough to create a signal on the trace. It should be noted here that loose parts for this particular valve were not expected since the valve had been removed and visually inspected immediately prior to the execution of this procedure.

Objective B part 3 was not achievable during this test:

The trace gives no conclusive evidence of the disk having contacted the seat upon cessation of flow. However, there is no reason to assume that this is indicative of any of abnormalities in the check valve. Looking at the trace gives no evidence that the noise registered is anything more than the cessation of air flow.

Objective B part 4 may have been partially achieved:

It was determined that by comparing the traces from the two valves that the "start" and "steady" traces differ primarily in acceleration amplitude but the "stop" traces differ in the absence of distinct spikes from the "seat" trace for the 1CS008A trace. This could indicate that the 2CS003A trace shows evidence of valve closure upon cessation of flow and the 1CS008A trace does not. However it could be argued that this gives no reliable data about the check valve since the absence of a closure signal could be a result of the air flow having been incapable of lifting the disk sufficiently far from the seat for its closure to generate a signal or that the low amplitude of the acceleration for the 1CS008A is an indication that what is being recorded here is the noise generated by the cessation of flow and not by the actual closure of the check valve. It should be noted here that a Type C Local Leakage Rate Test (an Appendix J requirement) is normally performed after reassembly verifying seating of the valve disk on the valve body seat. This test was successfully performed for valve 1CS008A after reinstallation.