Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

March 23, 1992

Dr. T.E. Murley
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attn: Document Control Desk

Subject: Updated Status of Outstanding MOV Issues for Commonwealth Edison Company
NRC Docket Nos. 50/237, 50/249, 50/254, 50/265
50/295, 50/304, 50/373, 50/374, 50/454, 50/455
50/456, 50/457

Dear Dr. Murley,

Attached please find Commonwealth Edison Company's (CECo) response to several issues raised during MOV audits at several CECo nuclear stations. This response is being submitted in preparation for a meeting to be held on April 8, 1992, at the NRC Region III headquarters. Meeting attendees will include representatives from NRR, RIII, and CECo.

Please direct any questions you may have to this office.

Sincerely,

Terrence W. Simpkin

T.W. Simpkin
Nuclear Licensing Administrator

cc: R.M. Pulsifer, NRR
B. Clayton, RIII
J.M. Jacobson, RIII
S. Dupont - SRI, Braidwood

ZNLD/1571/15

Attachment

Response to Issues Raised During Braidwood MOV NRC Audit

Section I.

During the MOV inspection, the NRC requested that Commonwealth Edison (CECo) provide an update to the schedule for resolution of the degraded voltage issue raised during the Electrical Distribution System Functional Inspection (EDSFI) at Dresden Station during 1991. The NRC requested that the update provided by CECo include the plans for resolution of the lowest expected voltage vs. degraded voltage setpoint issue that was raised during the Braidwood MOV Inspection.

During the EDSFI for Dresden Station, CECo was requested to verify that the existing second-level undervoltage (degraded voltage) setpoint for the station's 4 kV safety buses was sufficient to ensure adequate voltage to start and operate all Class 1E equipment. Based on the results of that verification for Dresden Station, CECo is evaluating the second-level undervoltage setpoint for each of its nuclear station, including Braidwood. To support these evaluations, CECo is pursuing revised critical voltage calculations for each station. A critical voltage calculation for a composite division is being performed for Byron/Braidwood Stations. This calculation is being performed utilizing bounding loads and cable lengths from all divisions. This calculation will resolve the lowest expected voltage vs. degraded voltage setpoint that was raised during the Braidwood MOV inspection. The calculation will be completed by April 30, 1992. Interim compensatory actions, if necessary, will be implemented at that time to ensure equipment operability.

Section II.

CECo was requested to provide the NRC with the justification for our full dp testing criteria and our definition of "practicable".

Per CECo commitments to the NRC, all valves in the GL 89-10 Program will be evaluated to determine whether full differential pressure (dp) testing is practicable. CECo will test all valves that meet the practicable criteria at full dp conditions. Valves which do not meet the practicable criteria will be verified utilizing the 2-phase dp testing process defined in CECo's GL 89-10 program document.

CECo has split the practicable criteria for determining what type of testing to perform on GL 89-10 MOVs into 2 parts: 1) Practicability, and 2) Meaningfulness. The following contains the definition of these parts:

Step 1: Determine if dp testing is practicable.

A test is not practicable when conditions arise from performing the test that have adverse safety implications, violate plant Technical Specifications or procedures, and/or could result in damage to plant equipment. Some examples include: isolating an operating pump's suction valve, injecting cold water into an operating vessel, and/or deadheading a pump.

Step 2: Determine if Zero dp testing is meaningful.

Zero dp (static) testing is considered meaningful in lieu of design basis dp testing if the static load of the MOV dominates the load during the design basis condition. If the dp component of the total MOV thrust is less than 10%, then the static test is meaningful.

CECo's position is that the only appropriate form of dp testing is full design basis dp testing. CECo has used engineering judgment and consultation with industry experts in the field to define our full design basis dp testing criteria. CECo's criteria is that linear extrapolation of test results to 100% design basis flow conditions gives acceptable results for all valves tested at >90% of those conditions. This is consistent with the NRC's position detailed in Supplement 1 to the GL 89-10 document. The response to question #25 in Supplement 1 states that extrapolation of test results of an MOV in situ at conditions less severe than design basis conditions may be extrapolated, only if justified properly. CECo's position is that the linear extrapolation of MOV test data at conditions <90% of design basis dp conditions is not reliable. At this time, there is work ongoing at CECo to develop enhanced mathematical techniques that may allow extrapolation to 100% design basis conditions of data taken from certain MOVs tested between 80% and 90% of design basis conditions. CECo will only dp test MOVs where extrapolation of the test results to full design basis conditions can be justified. The valves that are not full dp tested will be verified utilizing the 2 stage process as defined in CECo's GL 89-10 program document.

Section III.

The NRC requested that CECo provide justification for the use of a stem friction coefficient for certain MOVs.

For the case of Westinghouse MOVs, a coefficient of friction of 0.15 is used by CECo for the degraded or worst case actuator on those valves. As a conservatism, in order to allow for stem lube degradation, a 0.1 coefficient of friction is calculated for a freshly cleaned and lubricated stem to increase initial thrust values.

The basis for the coefficient of friction of 0.15 is given in Westinghouse letter CAE-91-112, CCE-91-114, CWE-91-111, from G. P. Toth (Westinghouse) to R. D. Branson (CECo), dated January 18, 1992. This letter contains information for CECo's Westinghouse MOVs and is based on the EPRI Summary Report, "Westinghouse Gate Valve Closure Testing Program, (Engineering Memorandum 5683, Rev. 1), dated March 31, 1982. This letter states: "Review of the coefficient of friction from the thrust vs. torque testing verified the coefficient during testing was less than the coefficient of friction of .15 used in the equipment evaluations with the minimum stem friction testing of between .06 and .07."

In addition, at least one other manufacturer also used a coefficient of friction of 0.15 in their design basis of MOVs. Anchor/Darling uses a 0.15 coefficient of friction as stated in ABB/Brown Boveri Record of Conversation 0598-238, Brain Bunte to F. Bensinger, dated 2/26/92.

Section IV.

Braidwood Station made a commitment to the MOV team inspectors for post maintenance testing after packing adjustments. The following is a discussion of this commitment.

As a result of the MOV inspection, Braidwood Station committed to perform post maintenance verification tests on MOVs after packing adjustments are made on the valves. These post maintenance tests will utilize motor power and power factor to monitor the effects of packing load increases. The test data will be acquired by utilizing VOTES diagnostic or other suitable test equipment.

The review and evaluation of the data gathered during this program at Braidwood Station will be used to determine the applicability of implementation of this requirement at CECo's other nuclear stations.