



Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

September 28, 1990

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Dresden Station Units 2 and 3
Quad Cities Units 1 and 2
Zion Station Units 1 and 2
LaSalle County Station Units 1 and 2
Byron Station Units 1 and 2
Braidwood Station Units 1 and 2
Alternative Schedule for Generic Letter 89-10
NRC Docket Nos. 50-237/249, 50-254/265
50-295/304, 50-373/374, 50-454/455 and 50-456/457

- References:
- (a) NRC Generic Letter 89-10, Safety-Related Motor Operated Valve Testing and Surveillance, dated June 28, 1989.
 - (b) M. Richter (CECo) letter to U.S. NRC, dated December 28, 1989.
 - (c) NRC Generic Letter 89-10 (Supplement 1), Results of the Public Workshops, dated June 13, 1990.
 - (d) L. Olshan (NRC) letter to CECo, dated July 11, 1990.

Dear Sir:

NRC Generic Letter 89-10 (Generic Letter) extended the recommendations outlined in Bulletin 85-03 and its supplement to all safety-related motor-operated valves (MOV) and position-changeable MOVs in safety-related systems. Additionally, the Generic Letter required a response within six months regarding compliance with the recommended actions and proposed schedule for MOV testing and surveillance. In Reference (b), Commonwealth Edison Company (CECo) indicated that a meeting would be arranged with the NRC to discuss CECo's proposed actions to address the Generic Letter. Reference (d) provided NRC feedback from that meeting, which was held on July 3, 1990 in Washington D.C. In addition the reference provided a revised due date of September 30, 1990 for the Generic Letter response.

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This letter provides CECO's response to Generic Letter 89-10 for Dresden, Quad Cities, Zion, LaSalle County, Byron and Braidwood Stations. The attached response provides a summary of the actions taken to date and delineates those actions planned to fulfill the requirements of the Generic Letter. CECO has utilized the NRC feedback provided in Reference (d) in the preparation of this response.

Please direct any questions you have regarding this response to this office.

Respectfully,



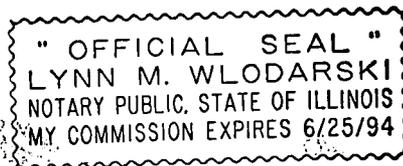
D. L. Taylor
Generic Issues Administrator

Attachment: CECO Response to Generic Letter 89-10

- cc: A.B Davis, Regional Administrator - Region III
- Resident Inspectors - D/QC/Z/LSCS/BY/BW
- B. Siegel, Project Manager - NRR
- L. Olshan, Project Manager - NRR
- C. Patel, Project Manager - NRR
- R. Pulsifer, Project Manager - NRR
- T. Boyce, Project Manager - NRR
- S. Sands, Project Manager - NRR

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Signed before me on this 28 day
of September, 1990
by Lynn M. Wlodarski
Notary Public



NRC RECOMMENDED ACTIONS

By this letter NRC extends the scope of the program outlined in Bulletin 85-03 and Supplement 1 of Bulletin 85-03 to include all safety-related MOVs as well as all position-changeable MOVs as defined below. The licensee's program should provide for the testing, inspection, and maintenance of MOVs so as to provide the necessary assurance that they will function when subjected to the design-basis conditions that are to be considered during both normal operation and abnormal events within the design basis of the plant. Although this program should address safety-related MOVs and position-changeable MOVs as a minimum, NRC envisions that, as part of a good maintenance program, other MOVs in the balance of plant should be considered for inclusion in the program, commensurate with the licensee's assessment of their importance to safety.

Any MOV in a safety-related system that is not blocked from inadvertent operation from either the control room, the motor control center, or the valve itself should be considered capable of being mispositioned (referred to as position-changeable MOVs) and should be included in the program. When determining the maximum differential pressure or flow for position-changeable MOVs, the fact that the MOV must be able to recover from mispositioning should be considered.

The program to respond to this letter should address items a through h below. Items a, b, c and the first paragraph of d are repeated, with limited changes, from Bulletin 85-03 or from Supplement 1 of that bulletin. The second paragraph of item d and items e, f, g, and h provide additional clarification and guidance.

RESPONSE

Commonwealth Edison Company (CECo) has developed a comprehensive MOV program in response to IE Bulletin 85-03. This program includes:

- a. the development of a corporate directive which sets policy for all six Commonwealth Edison (CECo) nuclear stations;
- b. the designation of an MOV Coordinator at each station and provision for additional corporate support;
- c. the designation of a PWR and BWR Corporate MOV Coordinator;
- d. the identification of applicable Bulletin valves and the design basis review of these valves;
- e. the evaluation of diagnostic testing techniques and the selection of the most appropriate method;
- f. and the actual diagnostic testing of valves.

The MOV program will be expanded to address the recommended actions of Generic Letter 89-10 to the extent described in our response to Items A through H.

CECo will incorporate into the MOV program all MOVs in safety-related piping systems not blocked from inadvertent operation using our currently accepted practices for prevention of inadvertent operation (as detailed in the FSAR for each station). The approximate number of applicable MOVs are listed in Table 1.

Discussions are currently being held between the NRC and the PWR and BWR Owners Groups aimed at reaching a consensus regarding the consideration of mispositioning in the determination of the maximum differential pressure experienced by a position changeable valve. CECo is participating in these discussions as a member of the Owners Groups. CECo will address the mispositioning issue consistent with the outcome of those discussions.

Due to the significant number of valves which have been added to the MOV program due to the Generic Letter (see Table 1), extensive resources will be required for program implementation. Therefore, the CECo program will be implemented first on those MOVs which have the greatest impact on plant safety and reliability. These valves have been classified as priority 1 valves (shown on Table 1) and are described in the response to item C.

NRC GENERIC LETTER 89-10 RESPONSE

TABLE 1

GENERIC LETTER 89-10 MOV POPULATION

<u>Station</u>	<u>Generic Letter Valve Population</u>	<u>Generic Letter Priority 1 Valves</u>	<u>NRC Bulletin 85-03 Valve Population</u>
Dresden	180	140	16
Quad Cities	200	120	24
LaSalle County	300	200	37
Zion	320	230	52
Byron	280	210	32
Braidwood	<u>260</u>	<u>190</u>	<u>32</u>
Total	1540	1090	193

DISCUSSION OF ACTION ITEMS

Item A

Review and document the design basis for the operation of each MOV. This documentation should include the maximum differential pressure expected during both the opening and closing of the MOV for both normal operations and abnormal events, to the extent that these MOV operations and events are included in the existing approved design basis.

Response

CECo will perform and document a design basis review on all MOVs in safety-related systems (approximately 1540 for all six nuclear stations). These design basis reviews are currently in progress and are expected to be completed by the end of 1992.

Item B

Using the results from Item A, establish the correct switch settings. This should include establishing a program to review and revise, as necessary, the methods for selecting and setting all switches (i.e., torque, torque bypass, position limit, overload) for each valve operation (opening and closing). One purpose of this letter is to ensure that a program exists for selecting and setting valve operator switches to ensure high reliability of safety-related MOVs.

Response

The MOV program developed in response to IE Bulletin 85-03 also addressed MOV switch settings. This program is being reviewed, and revised as necessary, to ensure that the selection and setting of switches are properly addressed for all MOVs in safety-related systems. Correct switch settings will be established utilizing the results from the design bases reviews (in Item A).

Item C

Individual MOV switch settings should be changed, as appropriate, to those established in response to Item B. Whether the switch settings are changed or not, the MOV should be demonstrated to be operable by testing it at the design-basis differential pressure and/or flow determined in response to Item A. Testing MOVs at design-basis conditions is not recommended where such testing is precluded by the existing plant configuration. An explanation should be documented for any cases where testing with the design-basis differential pressure or flow cannot practicably be performed. This explanation should include a description of the alternatives to design-basis differential pressure testing or flow testing that will be used to verify the correct settings.

Note: This letter is not intended to establish a recommendation for valve testing for the condition simulating a break in the line containing the MOV. However, a break in the line should be considered in the analyses described in Items A, B, and C if MOV operation is relied on in the design basis.

Each MOV should be stroke tested, to verify that the MOV is operable at no-pressure or no-flow conditions even if testing with differential pressure or flow cannot be performed.

Response

To ensure MOV operability Commonwealth Edison has performed:

- 1) diagnostic testing under static conditions and/or full differential pressure testing to ensure the proper thrust is developed in response to IE Bulletin 85-03,
- 2) periodic inspections in accordance with environmental qualification requirements, and
- 3) Inservice Testing (IST) Program testing.

The MOV Program will involve both static and dynamic testing. CECO will perform diagnostic testing of all MOVs within the scope of the program under static conditions. Additionally, CECO will perform full differential pressure (dP) testing where practicable, with the expectation that a minimum of 10% of the valves per station will be full dP tested.

The program will be implemented first on those MOVs which have the greatest impact on plant safety and reliability. Each MOV in the program has been prioritized as follows:

Priority 1: MOVs which are required to:

- a) ensure adequate core cooling, ensure reactor shutdown, or minimize consequences of a high energy line break, or
- b) mitigate FSAR accidents or other events covered in the Emergency Operating Procedures.

Priority 2: The remaining MOVs in safety-related systems not included in Priority 1.

The MOVs have been initially prioritized; however, as additional design or field data become available, a valve's priority will be reviewed and may be upgraded if necessary. The MOV program will ensure that the most critical valves will have the highest priority for design basis review and for scheduling of testing. The schedule is described in the response to Item I.

MOVs will be grouped to take advantage of similar valves and similar operating conditions. For valves that cannot practicably be full dP tested, CECO will utilize the "two-stage approach" as described in Supplement 1 to the Generic Letter. CECO intends to utilize analytical correlations between static test data and industry full dP test data to verify correct switch settings. This includes correlations between different units at the same station, between

different CECo stations, or between other utilities and test facilities. If a valve is unique and bears no similarities between any other valve in the plant or at other stations, prototype testing will be considered upon completion of EPRI efforts in this area. At this time, the cost impact for prototype testing is prohibitive; however, viability of prototype testing will be under periodic evaluation by CECo. As more complete valve test data becomes available, CECo will incorporate it as appropriate into the MOV Program.

In summary, CECo's MOV Program will include a comprehensive testing program to verify valve operability. All MOVs in safety-related systems will be static tested with diagnostics and full dp testing with diagnostics will be done when practicable.

Item D

Prepare or revise procedures to ensure that correct switch settings are determined and maintained throughout the life of the plant. These procedures should include provisions to monitor MOV performance to ensure the switch settings are correct. This is particularly important if the torque or torque bypass switch setting has been significantly raised above that required.

It may become necessary to adjust MOV switch settings because of the effects of wear or aging. Therefore, it is insufficient to merely verify that the switch settings are unchanged from previously established values. The switch settings should be verified in accordance with the program schedule (see Item J). The ASME Code Section XI stroke-timing test required by 10 CFR Part 50 is not oriented toward verification of switch settings. Therefore, additional measures should be taken to adequately verify that the switch settings ensure MOV operability. The switch settings need not be verified each time the ASME Code stroke-timing test is performed.

Response

CECo has developed an MOV program in response to IE Bulletin 85-03 which addresses MOV switch settings. This program will be reviewed to ensure that correct switch settings are established, maintained, and monitored throughout the life of the plant. Switch settings will be verified in accordance with the schedule developed in response to Item J.

Item E

Regarding Item A, no change to the existing plant design basis is intended and none should be inferred. The design-basis review should not be restricted to a determination of estimated maximum design-basis differential pressure, but should include an examination of the pertinent design and installation criteria that were used in choosing the particular MOV. For example, the review should include the effects on MOV performance of design-basis degraded voltage, including the capability of the MOV's power supply and cables to provide the high initial current needed for the operation of the MOV.

Response

The design-basis reviews will consider appropriate design criteria to the extent that they are part of the existing design-basis of the plant. These reviews will consider cable sizing, degraded voltage and thermal overloads where appropriate.

Item F

Documentation of explanations and the description of actual test methods used for accomplishing Item C should be retained as part of the required records for the MOV.

It is also recognized that it may be impracticable to perform in-situ MOV testing at design-basis degraded voltage conditions. However, the switch settings established in response to Item B should at least be established to account for the situation where the valves may be called on to operate at design-basis differential pressure, or flow, and under degraded voltage conditions. If the licensee failed to consider degraded voltage, power supply, or cable adequacy for MOVs in systems covered by Bulletin 85-03, the design review and established switch settings for those MOVs should be reevaluated.

Alternatives to testing a particular MOV in-situ at design-basis pressure or flow, where such testing cannot practicably be performed, could include a comparison with appropriate design-basis test results on other MOVs, either in situ or prototype. If such test information is not available, analytical methods and extrapolations to design-basis conditions, based on the best data available, may be used until test data at design-basis conditions become available to verify operability of the MOV. If this two-stage approach is followed, it should be accomplished within the schedule outlined in Item I and would allow for MOV testing and surveillance to proceed without excessive delay.

Testing of MOVs at design-basis conditions need not be repeated unless the MOV is replaced, modified, or overhauled to the extent that the licensee considers that the existing test results are not representative of the MOV in its modified configuration.

Response

CECo will document and maintain the design-basis reviews, and MOV calculations, test methods and results. The MOV program will involve both static and dynamic testing. For MOVs that cannot practicably be fully tested, alternative approaches will be utilized as described in the response to Item C (e.g., the two stage approach).

Item G

A number of deficiencies, misadjustments, and degraded conditions were discovered by licensees, either as a result of their efforts to comply with Bulletin 85-03 or from other experiences. A list of these conditions (including improper switch settings) is included in Attachment A to this letter for licensee review and information.

Response

The list of conditions provided in Attachment A has been reviewed and the MOV program will consider these items.

Item H

Each MOV failure and corrective action taken, including repair, alteration, analysis, test, and surveillance, should be analyzed or justified and documented. The documentation should include the results and history of each as-found deteriorated condition, malfunction, test, inspection, analysis, repair, or alteration. All documentation should be retained and reported in accordance with plant requirements.

It is suggested that these MOV data be periodically examined (at least every 2 years or after each refueling outage after program implementation) as part of a monitoring and feedback effort to establish trends of MOV operability. These trends could provide the basis for a licensee revision of the testing frequency established to periodically verify the adequacy of MOV switch settings (see Items D and J). For this monitoring and feedback effort, a well-structured and component-oriented system (e.g., the Nuclear Plant Reliability Data System (NPRDS)) is needed to capture, track, and share the equipment history data. The NRC encourages the use of the industry-wide NPRDS, appropriately modified, for this purpose in view of the multiple uses for these data.

Response

MOV failures and corrective actions will be reported, documented and maintained in accordance with existing Station requirements. Data collected on each MOV will be used to trend the performance and condition of the MOV over the life of the plant. The overall data base will be examined at 2 year intervals beginning immediately after program implementation. Testing frequencies will be adjusted based on the results of this evaluation.

Schedule

The program to respond to this letter should be implemented in accordance with the schedule outlined in Items I through K below. The scheduled dates should ensure that Item C is implemented soonest for those MOVs that the licensee considers to have the greatest impact on plant safety.

Item I

Each licensee with an operating license (OL) should complete all design-basis reviews, analyses, verifications, tests, and inspections that have been instituted in order to comply with Items A through H within 5 years or three refueling outages of the date of this letter, whichever is later. Each licensee with a construction permit (CP) should complete these actions within 5 years of the date of this letter or before the OL is issued, whichever is later.

For plants with an OL, the documentation described in Items 1 and 2 below should be available within 1 year or one refueling outage of the date of this letter, whichever is later. For plants with a CP, the documentation outlined in Items 1 and 2 should be available within one year of the date of this letter or before the OL is issued, whichever is later. The documents should include:

1. The description and schedule for the design-basis review recommended in item a. (including guidance from item e.) for all safety-related MOVs and position-changeable MOVs as described, and
2. The program description and schedule for Items B through H for all safety-related MOVs and position-changeable MOVs.

Response

CECo's implementation of the MOV program will reflect our corporate objective of focusing limited discretionary resources such that improvement in plant safety and reliability is maximized. This will require that completion of the MOV testing program extend beyond the dates requested in the Generic Letter.

The schedule for completion of the MOV program is as follows:

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- Design basis reviews, diagnostic static testing, and practicable full differential pressure testing with diagnostics for all Priority 1 valves will be completed by the end of the third refueling outage per unit beginning with the Spring 1991 outages.
- Design basis reviews, diagnostic static testing, and practicable full differential pressure testing with diagnostics for all Priority 2 valves will be completed by the end of the fifth refueling outage per unit beginning 1991 outages.
- For MOVs that cannot be in-situ tested, analytical correlations between static testing and full differential pressure testing data will be completed as stated above for the initial MOV operability evaluation (as discussed in the response to Item C). The second stage evaluation will be performed after sufficient industry data is available.

Although this implementation schedule is longer than that proposed in the Generic Letter, it should result in only a marginal reduction in the net benefit resulting from the Generic Letter Action Items. As indicated in our response, the valves which have the greatest impact on plant safety and reliability will be evaluated and tested early in the implementation of the program. Additionally, Commonwealth Edison has developed a comprehensive MOV program (in response to IE Bulletin 85-03) to support the immediate and ongoing effort to ensure that the critical valves will operate when required under design basis conditions. The following are essential elements of the existing program:

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- 1) A corporate directive has been issued to set policy for all six stations.
- 2) MOV coordinators, both corporate and on-site station specific, have been designated to ensure that MOVs will receive the proper level of attention.
- 3) IE Bulletin 85-03 valves have been evaluated and tested.
- 4) All environmentally qualified valves are inspected every three years.

Thus, CECO expects to realize significant improvements in plant safety and reliability from the implementation of MOV program as scheduled above.

Additionally a review of CECO's MOV program in light of the backfit analysis for Generic Letter 89-10 (NUREG/CR-5140) indicates that CECO's expenditures for this program exceed those anticipated by the backfit analysis.

Specifically, the backfit analysis indicates an anticipated expenditure of \$2830 per valve to perform all actions required by the Generic Letter. By contrast, CECO has budgeted approximately \$24,500 per valve to perform those same actions. Thus, CECO expects the program costs associated with Priority 1 valve testing alone will be approximately \$26.7 million dollars. This figure is approximately 8 times larger than that postulated for total completion of the Generic Letter actions as indicated in the backfit analysis.

Given this significant level of expenditures in conjunction with our safety significant prioritization methodology, CECO believes we have made a good faith effort to comply with the intent of Generic Letter 89-10.

The MOV program description and schedule for Items I1 and I2 will be available on site by January 1, 1991 as requested by Supplement 2 to the Generic Letter.

Item J

The program for the verification of the procedures outlined in Item D, as well as other tests or surveillance that the owner may choose to use to identify potential MOV degradations or misadjustments, such as those described in Attachment A, should be implemented after maintenance or adjustment (including packing adjustment) of each MOV, and periodically thereafter. The surveillance interval should be based on the licensee's evaluation of the safety importance of each MOV as well as its maintenance and performance history. The surveillance interval should not exceed 5 years or three refueling outages, whichever is longer, unless a longer interval can be justified (see Item H) for any particular MOV.

Response

As previously indicated in the responses to Items D and H, CECO will develop a program to address MOV degradation. This program will also address post maintenance testing. The results of testing and maintenance history reviews will be used to determine the initial surveillance interval. The resulting interval may be increased or decreased based on the maintenance history and/or technical evaluation.

Item K

In recognition of the necessity for preplanning, refueling outages that start within 6 months of the date of this letter need not be counted in establishing the schedule to meet the time limits recommended in Items I and J.

Response

CECo expects to begin testing activities on applicable safety-related MOVs during Spring 1991 outages as explained in the response to Items I.

REPORTING REQUIREMENTS

Pursuant to 10 CFR 50.54(f), licensees are required to provide information to NRC as outlined in Items L and M below:

Item L

Each licensee shall advise the NRC in writing, within 6 months of the date of this letter, that the above schedule and recommendations will be met. For any date that cannot be met, the licensee shall advise the NRC of a revised schedule and provide a technical justification in writing. For any recommendation that it cannot meet or proposes not to meet, the licensee shall inform the NRC and provide a technical justification, including any proposed alternative action, in writing.

Each licensee shall also submit, in writing, any future changes to scheduled commitments; for example, changes made on the basis of trending results (see Items H and J). These revised schedules or alternative actions may be implemented without NRC approval. Justification for the revised schedules and alternative actions should be retained on site.

Response

This response satisfies the requirement to advise the NRC in writing of CECO's response to the recommendations and proposed schedules outlined in Generic Letter 89-10.

CECO will notify the NRC in writing of future programmatic changes.

Justification for all schedule changes and alternative actions will be maintained on site.

Item M

Each Licensee shall notify the NRC in writing within 30 days after the actions described in the first paragraph of Item I have been completed.

Response

CECo will notify the NRC in writing within 30 days following the completion of all of the design-basis reviews, analyses, verifications, tests, and inspections that will be instituted.