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

Perry Nuclear Power Plant
Docket No. 50-440
Generic Letter 89-10
Safety-Related Motor Operated
Valve Testing and Surveillance

Gentlemen:

In Generic Letter (GL) 89-10, "Safety-Related Motor Operated Valve (MOV) Testing and Surveillance", the NRC recommends that licensees extend the scope of the MOV Test Program outlined in NRC Bulletin 85-03 and Supplement 1 to Bulletin 85-03 to include all safety-related MOVs as well as all "position changeable" MOVs. The intent of GL 89-10 is for licensees to implement programs to ensure all applicable MOVs are capable of operating under design basis conditions.

CEI recognizes the need to ensure that safety-related equipment will perform its design function. Therefore, CEI has implemented a motor operated valve testing and preventive maintenance program at the Perry Nuclear Power Plant (PNPP) that will provide a high degree of assurance that all applicable MOVs are capable of performing their design function. This program is discussed in the following paragraphs and in the attachment to this letter. However, although committed to improving MOV reliability, CEI does not believe that all the recommendations in GL 89-10 are necessary or practical to ensure MOV reliability. To this end, CEI is in agreement with the concerns expressed by the Nuclear Management and Resources Council (NUMARC) to Dr. T. E. Murley (NRC) by letter dated November 17, 1989 concerning the as yet unresolved inconsistencies between the written recommendations of GL 89-10 and the interpretations expressed by NRC staff in subsequent workshops. Based upon PNPP's experience, the majority of problems encountered with MOVs could be eliminated by implementation of effective programs for preventive and corrective maintenance, personnel training, and root cause evaluation of problems encountered.

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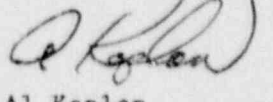
CEI has defined the initial scope of its MOV program in its responses to Bulletin 85-03 (reference letters (1) PY-CEI/OIE-0206L dated May 14, 1986 (2) PY-CEI/OIE-0263L dated January 16, 1987, (3) PY-CEI/NRR-0835L dated March 31, 1988, and (4) PY-CEI/NRR-0841L dated April 20, 1988). CEI has since expanded the scope of PNPP's MOV program to include all safety-related motor operated valves. Although CEI's current MOV program does not include dynamic testing, for example, full flow testing, valve switch settings and post maintenance operability are verified by both diagnostic test methodology and by stroke testing. In addition, CEI has implemented a comprehensive program for the periodic examination and preventive maintenance of all MOVs at PNPP, the scope of which includes documentation and control of setpoints, valve lubrication inspection and maintenance, examination for structural/mechanical integrity, inspection of limit switches, electrical controls and contacts, motor insulation resistance testing, etc. PNPP's MOV test program was scrutinized by the NRC during an on-site Diagnostic Evaluation conducted during February and March of 1989. The NRC concluded, in its report issued May 30, 1989, that PNPP's "motor operated valve maintenance and testing was comprehensive and exceeded the scope of Bulletin 85-03 by a considerable margin." CEI will continue to aggressively pursue improvements to the PNPP MOV program and participate in industry efforts that provide solutions to MOV problems. CEI also intends to upgrade its existing program for MOVs on an ongoing basis based upon industry experience and knowledge gained from specific test programs. Based upon these efforts, CEI believes its current MOV program, expanded as outlined in Attachment 1, will meet or exceed the recommendations of GL 89-10 as written.

CEI fully supports various industry efforts to resolve the MOV reliability issue, including NUMARC's efforts to resolve the current inconsistencies identified with GL 89-10 and the BWR Owner's Group (BWROG) efforts to develop a generic BWR position and methodology for meeting the requirements of GL 89-10. CEI believes these issues should be resolved as much as possible on a generic basis between NUMARC and NRC.

CEI also reserves the right to pursue all available appeal options concerning backfit issues that may arise during the development and implementation of PNPP's MOV Program.

If you have any questions or concerns, please feel free to call.

Very truly yours,



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cc: T. Colburn
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Introduction

The following is a summary of CEI's position on each specific GL 89-10 action item. In those cases where CEI has deviated from the GL 89-10 recommendations a brief discussion is provided to explain the acceptability of the position taken.

CEI has chosen not to include motor operated dampers and weir (sluice) gates within the scope of its MOV program because these items are not included within the scope of GL 89-10. CEI has recognized that the NRC staff has taken a position in the MOV workshops that dampers and sluice gates are included within the scope of GL 89-10. This appears to be an attempt to extend the scope of the GL beyond MOVs in piping systems simply because these dampers or sluice gates may have Limitorque motor operators. To the extent that dampers have motor operators other than Limitorque there is even less justification for their inclusion within the scope of the GL. Interpretations by the staff, beyond that which are specifically recommended in the GL, appear to be changes in the scope of the GL which contribute to confusion for licensees attempting its implementation.

In addition, CEI does not agree with implementation of the GL 89-10 recommendation for position changeable valves on an industry wide basis because (1) this requirement is beyond the design basis and has the effect of negating previously existing NRC requirements for single failure criteria, and (2) the requirement contradicts NRC statements in both the GL and in the workshops that the GL does not apply beyond the existing design basis of the plant.

Summary and Response to GL 89-10 Recommendations

Item a. Review and document the design basis for the operation of each MOV. This documentation should include the maximum differential pressure expected during 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 to Item a. CEI will review and document the design basis for the operation of each MOV within the test program as recommended in item a. The documentation will include the maximum expected differential pressure of each valve when performing its design basis functions. Only valve operation and events within PNPP's existing approved design basis will be considered.

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 MOV's.

Response to Item b. CEI's MOV program includes provisions for establishing and verifying correct switch settings based on the results of the design basis review in Item a. CEI also intends to upgrade its existing MOV program on an ongoing basis based upon industry experience and knowledge gained from specific test programs.

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 the 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 Item c. CEI has identified approximately 260 valves within the scope of GL 89-10, a significant increase from the original 25 valves within the Bulletin 85-03 test program. Venetian type dampers and weir (sluice) gates are not included for reasons previously discussed. Individual MOV switch settings will be verified correct or adjusted as necessary based upon design basis conditions (see response to item b). CEI will demonstrate valve operability by diagnostic testing. Based upon the diagnostic test data, CEI will ensure that MOV switch settings encompass conservative thrust requirements. As a minimum, each valve within the program will be stroke tested. CEI cannot flow test all MOVs. CEI will perform a comprehensive review to determine which valves can be tested at design basis conditions. CEI will not test at design basis conditions where doing so would place the plant in an unanalyzed condition or jeopardize equipment integrity or

personnel safety or where such testing is precluded by existing plant configuration. CEI does not believe design basis differential pressure/flow testing is the only method available to ensure valve operability.

CEI will document an explanation for cases where testing at design-basis differential pressure or flow cannot practicably be performed, including a description of any alternatives to be used to verify correct settings. CEI considers the examples provided in GL 89-10 Item f among acceptable alternative test methods.

Item d. Prepare or revise procedures to ensure that correct switch setting 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 setting 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 10CFR 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 to Item d. MOV test procedures have been developed in response to Bulletin 85-03. Additional procedures will be developed as appropriate to implement the expanded MOV program pursuant to GL 89-10. These procedures will be reviewed and revised as appropriate whenever new information is obtained or developed. CEI's program currently employs diagnostic testing of MOVs as necessary as part of its post maintenance testing. In this way correct switch settings are established and will be maintained throughout the life of the plant.

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 to Item e. The design basis review (item a) will verify those conditions used as part of the licensing basis analysis, including degraded voltage.

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 setting 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 to Item f. CEI will document the actions taken for each valve within the MOV program. Where design basis pressure/flow testing is determined not to be possible or practicable, alternatives will be explained and documented. The documentation related to each MOV will be retained as recommended. See also response to item c.

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 to Item g. While CEI regards item g as information with no action recommended, CEI has reviewed Attachment A to GL 89-10 and expects to utilize similar failure condition descriptions in documenting and trending MOV failures at PNPP.

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 to Item h CEI's program will include provisions for review and documentation of MOV failures and corrective action taken. This documentation will be retained as a QA record. Only valid MOV failures and the corrective action performed as a direct result thereof will be subject to the documentation and trending recommendations of item h.

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.

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.

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 to Item i The schedule for program completion cannot be accurately estimated until (1) a comprehensive review is performed to determine the extent to which design basis pressure and/or flow testing is practicable (see response to item c), (2) alternative test methods are identified where design basis differential pressure and/or flow cannot practicably be performed, (3) plant/system requirements to support in-plant testing, where practicable, are determined and proceduralized, and (4) the results of discussions between NUMARC and NRC (referred to in NUMARC's 11/17/89 letter to Dr. T.E. Murley) regarding clarification of inconsistencies and backfit issues associated with GL 89-10 are known. However, CEI will commit to the one year and 5 year/3 refuel outage schedule recommended in item i, for the MOV program scope as defined in our response to items a through h above. If, however, following application of the backfit procedures pursuant to 10CFR50.109, the NRC were to require full flow testing (either in situ or prototype) or expansion of the scope of the program to include position changeable valves, dampers, etc., this schedule commitment would have to be re-evaluated. If determined necessary, CEI will utilize the reporting procedure recommended in item l for advising the NRC of a revised schedule including justification for the revision.

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 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 to Item j CEI's MOV Program will include provisions for evaluating the effects of subsequent maintenance and adjustments on valve operability and for implementing remedial action where appropriate. CEI will pursue valve periodic inspection and testing once the initial scope of GL 89-10 MOV testing has been accomplished. The specific schedule for performing followup inspection and testing will depend upon specific valve operability considerations, trend results, and future developments in testing methodology and technology.

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 to Item k. CEI regards this as information with no action recommended.

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 to Item l The information provided under the above items a through k provide CEI's approach for implementing the recommendations and schedule set forth in GL 89-10. As noted in item i above, CEI recognizes the possibility of having to supplement this response upon conclusion of NUMARC's discussions with the NRC.

CEI considers the additional reporting request for "future changes to scheduled commitments" presented in the second paragraph of item l as unnecessary, ambiguous as to the detail requested, and unduly burdensome for both licensees to prepare and for the NRC to review. CEI proposes that specific deviations and schedule changes be documented, along with justification for the changes, and made available consistent with the recommendation provided in item i for initial documentation of the 89-10 MOV program description and schedule.

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 to Item m. CEI will notify the NRC within 30 days after actions described in the first paragraph of item i have been completed.

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