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Docket Number 50-346

License Number NPF-3

Serial Number 1748

January 5, 1990

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Subject: Response to Generic Letter Number 89-10, Safety-Related
Motor-Operated Valve (MOV) Testing and Surveillance (TAC Number
M75517)

Gentlemen:

Generic Letter 89-10 (Log 2984 dated June 28, 1989) recommends that licensees develop and implement a program that provides for design basis review, baseline testing and periodic testing of all safety-related MOVs and position changeable MOVs. The Generic Letter extends the scope of the program outlined in Bulletin 85-03 and Supplement 1 of Bulletin 85-03.

Attachment 1 provides Toledo Edison's response to the program specific items identified in the Generic Letter.

As a result of the Davis-Besse June 9, 1985 Loss of Feedwater Event, Toledo Edison developed and implemented a comprehensive program to improve MOV reliability. This program has continued to expand and improve, and now encompasses all Limitorque motor-operated valves (approximately 165 safety-related MOVs).

Toledo Edison is recognized as an industry leader in identifying and resolving MOV problems. Based on its experience, TE does not believe all the recommendations included in the Generic Letter are necessary or practical to ensure MOV reliability. Moreover, it is felt that the majority of MOV problems could be eliminated by implementation of effective programs for preventive and corrective maintenance, personnel training, and root cause evaluation of problems encountered. Toledo Edison believes the current MOV program at Davis-Besse satisfies GL 89-10 recommendations as originally intended. Toledo Edison will continue to aggressively pursue improvements to the ongoing Davis-Besse MOV program and participate in industry actions that provide solutions to MOV problems. The MOV program will be modified based on industry experience and knowledge gained from specific test programs.

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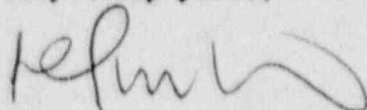
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Toledo Edison representatives attended the NRC workshop in Chicago during which the NRC provided additional clarification of the intent of the GL. There were several responses to licensee's questions that were inconsistent with the Generic Letter. Significant inconsistencies were identified to the NRC in a NUMARC letter to Mr. T. E. Murley, Director - Office of Nuclear Reactor Regulation, dated November 17, 1989. Toledo Edison agrees with the concerns identified by NUMARC and requests that the NRC provide further clarification on the points addressed by the NUMARC letter. Further clarification should allow consistent application of GL recommendations industry wide.

Should you have and questions concerning this matter, please contact Mr. R. W. Schrauder, Manager - Nuclear Licensing at (419) 249-2366.

Very truly yours,



EBS/ssg

cc: P. M. Byron, DB-1 NRC Senior Resident Inspector
A. B. Davis, Regional Administrator, NRC Region III
T. V. Wambach, DB-1 NRC Senior Project Manager

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RESPONSE TO GENERIC LETTER 89-10,

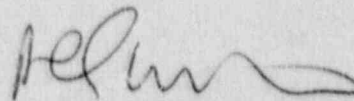
FOR

DAVIS-BESSE NUCLEAR POWER STATION

UNIT NUMBER 1

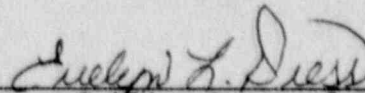
This letter is submitted pursuant to 10CFR50.54(f). Enclosed is Toledo Edison's response to Generic Letter 89-10, (Serial Number 1748) "Safety-Related Motor-Operated Valve Testing and Surveillance".

By:



D. C. Shelton, Vice President, Nuclear

Sworn and subscribed before me this 5th day of January 5, 1990.



Notary Public, State of Ohio

EVELYN L. DRESS
NOTARY PUBLIC, STATE OF OHIO
My Commission Expires July 28, 1994

Attachment 1

INTRODUCTION

The following provides a point by point summary of Toledo Edison's position on each specific Generic Letter (GL) Action Item. In those cases where TE has deviated from recommended actions a justification is provided for the deviation.

Recommendations Summary

- NRC 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 to Item a Toledo Edison has reviewed and documented the design basis for all safety related MOVs as part of its ongoing program.
- NRC 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 to Item b These settings were established based on the maximum differential pressure determined in Item a. However, experience gained from industry testing has shown that previously acceptable methods for calculation of required thrusts are not always conservative. Toledo Edison will readjust switch settings, as it becomes necessary, to ensure a conservative margin is available. This will be accomplished during normal maintenance over the next three outages or five years.
- NRC 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

Toledo Edison can not test all MOVs under full flow test conditions. Approximately 40 out of 165 safety related valves have been tested at maximum differential pressures with 10 of these valves being tested under full flow conditions. Selection of valves for testing at maximum differential pressures and under full flow conditions was based on size, type, and valve operator capability (i.e., valve operators with least capable operator and the highest requirement were tested). A minimum of 10 percent of the valve population was tested. Data was extrapolated from these tests to verify that the remaining valve population would perform its intended function. Toledo Edison is currently evaluating any further flow testing that may be possible. It is expected that only approximately 35% of the MOV population will be testable under these conditions. Valve operability at Davis-Besse is demonstrated by testing MOVs with diagnostics to ensure they are in proper operating condition. Based on diagnostic test data, TE will ensure that MOV switch settings encompass "worst-case" thrust requirements as shown in testing to date.

Davis-Besse's MOV program, which has the following attributes, provides assurance of MOV operability:

- 1) Static testing of all MOVs using diagnostics
- 2)
 - a. Design review to ensure proper MOV application
 - b. Switch setting methodologies that bound operating requirements as shown by testing
 - c. Incorporation of industry information on a continuing basis
 - d. Selected differential pressure testing where suitable conservative margins cannot be achieved
- 3)
 - a. Formal training for Engineering and Maintenance personnel

- b. Comprehensive procedures for corrective maintenance, predictive maintenance and data evaluation, and post-maintenance testing

Item 1 ensures proper valve operation, Item 2 allows proper valve setup and Item 3 ensures that this information is translated effectively into the field.

NRC 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 testing 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

Toledo Edison's current procedures provide adequate controls to ensure that correct switch settings are determined and maintained. These procedures include provisions for monitoring parameters (e.g., motor power or current) other than stroke time for MOVs. Toledo Edison currently requires diagnostic testing of MOVs as a part of its post-maintenance testing and as a part of its preventive maintenance program. No further changes are necessary to meet Item d recommendations.

NRC 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 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

Toledo Edison's review included the effects of MOV performance at design-basis degraded voltage and other parameters noted above. The existing design was determined adequate.

NRC 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 MOVs.

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 re-evaluated.

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 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 Documentation of explanations and descriptions of actual test methods used for accomplishing item c will be retained as part of the required records for MOVs.

NRC 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 TE has evaluated these deficiencies for impact on its MOV program. No additional action is warranted.

NRC 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 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

Toledo Edison's current program encompasses the recommendation described in Item h.

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.

Response
to Schedule

The GL states that operating licensees should complete all design-basis reviews, analyses, verifications, tests, and inspections that are implemented to comply with items a through h within five years or three refueling outages of the date of the GL, whichever is later. Toledo Edison currently tests approximately one-third of its MOVs per outage using diagnostics and differential pressure testing where possible. Toledo Edison's current program has been fully implemented and all design-basis reviews, analyses verifications, tests, and inspections for MOVs at Davis-Besse have been completed for the scope described above in our response to Item a through h.

However, if full flow testing of all MOVs becomes a requirement, the GL's schedule for testing is not practical. The assumptions made by the NRC in NUREG/CR-5410 with regard to schedule are questionable. The NRC assumed prototype testing would be required of only 10 percent of the valve population and a test rate during unit outages of four valves per day could be achieved. Toledo Edison believes this assumed valve population is very low based on preliminary estimates by utilities. In addition, a testing rate of one valve per day has been seen almost uniformly across the industry. Also, many older plants

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have valves which will require prototype testing yet the valve is no longer available from the vendor or sub supplier, essentially making the test impossible. In light of the above and the fact that valve populations at most plants are in excess of the 150 assumed by the NRC, it is evident that the schedule of three refueling outages or five years is not realistic.