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SUBJECT: Forwards response to Generic Ltr 89-10.

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AEP:NRG:0966F

Donald C. Cook Nuclear Plant Units 1 and 2
License Nos. DPR-58 and DPR-74
Docket Nos. 50-315 and 50-316
SAFETY-RELATED MOTOR-OPERATED VALVE TESTING
AND SURVEILLANCE: RESPONSE TO GENERIC LETTER 89-10

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

Attn: T. E. Murley

December 29, 1989

Dear Dr. Murley:

The attachment to this letter contains our response to Generic Letter 89-10. As required by the generic letter, the attachment includes a statement that the schedule and recommendations contained herein will be met, and, as necessary, provides justification for deviations to the generic letter.

This letter is submitted pursuant to 10 CFR 50.54(f), and, as such, an oath of affirmation is enclosed.

Sincerely,

A handwritten signature in dark ink, appearing to read 'M. P. Alexich'.

M. P. Alexich
Vice President

Attachments

MPA/eh

cc: D. H. Williams, Jr.
A. A. Blind, Jr. - Bridgman
R. C. Callen
G. Charnoff
A. B. Davis - Region III
NRC Resident Inspector - Bridgman
NFEM Section Chief

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STATE OF OHIO)
COUNTY OF FRANKLIN)

Milton P. Alexich, being duly sworn, deposes and says that he is the Vice President of licensee Indiana Michigan Power Company, that he has read the foregoing Response to Generic Letter 89-10: Safety-Related Motor-Operated Valve Testing and Surveillance and knows the contents thereof; and that said contents are true to the best of his knowledge and belief.

M. Alexich

Subscribed and sworn to before me this 29th
day of December, 1989.

W. H. B. [Signature]
Notary Public
(Commission Expires 3-9-91)

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ATTACHMENT TO AEP:NRG:0966F
RESPONSE TO GENERIC LETTER 89-10

This attachment constitutes our response to the individual items of Generic Letter 89-10.

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: A review of motor-operated valves (MOVs) at Cook Nuclear Plant will be performed to establish which MOVs will be included in the program per Generic Letter 89-10. A design basis review will be performed on all MOVs included in the scope of Generic Letter 89-10. The review will be based on the existing approved design basis. For example, the emergency core cooling system design basis includes conditions of single active component failure. Therefore, inadvertent MOV mispositioning is already addressed by the existing design basis of the emergency core cooling system for the Cook Nuclear Plant.

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: A program will be developed for selecting and setting valve actuator switches. The approach will basically follow that given in IE Bulletin 85-03 correspondence (our letters AEP:NRC:0966 and 0966B dated May 16 and October 10, 1986, respectively), with the additions of MOVs per the scope of Generic Letter 89-10.

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: The MOV testing and surveillance program, as a minimum, will require that each MOV receive an as-found stroke test with diagnostic equipment attached at no-pressure or no-flow conditions, be refurbished in accordance with Plant Maintenance Procedures, and receive an as-left stroke test at no-pressure or no-flow conditions. Testing at design basis differential pressure and/or flow will be performed where practical (see item f). An explanation will be documented describing alternatives to design basis testing that will be used. To determine the testing schedule, each MOV in the program will be prioritized. The following is a preliminary list of priorities:

- Priority 1: MOVs that are critical to safety (IEB 85-03) and MOVs which have demonstrated maintenance or operational problems.
- Priority 2: High differential pressure MOVs in safety-related systems.
- Priority 3: Environmentally qualified MOVs not included in Priorities 1 or 2.
- Priority 4: MOVs in safety-related systems not in Priorities 1, 2, or 3.
- Priority 5: Balance of Plant (BOP) MOVs that we consider important to safety.

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: Procedures related to MOVs will be reviewed and revised if necessary to include additional measures to verify that switch settings ensure MOV operability. During the review of existing procedures, the need for new procedures may arise at which time new procedures will be issued.

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 MOVs power supply and cables to provide the high initial current needed for the operation of the MOV.

Response: The design basis review of MOVs in the program will consider all design criteria to the extent that they are part of the existing design basis of Cook Nuclear Plant. The reviews will consider cable sizing, thermal overloads and degraded voltage as 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: The methods used in establishing switch settings will be documented as per applicable procedures. As part of the review of procedures being performed per item d, attention will be given to post-maintenance testing.

In our response to item c, the MOVs were prioritized to establish a testing sequence. The MOVs will also be grouped based on similarities. Where in situ design basis differential pressure and/or flow testing is practical, a minimum of one MOV from each group of similar MOVs will be tested at design basis differential pressure and/or flow. As discussed in item f (for non-testable valves), the design basis test results will be compared with other MOVs in the subject group.

Where in situ design basis differential pressure and/or flow testing is impractical for all MOVs in a group, the two-stage approach mentioned in item f based on analytical methods and extrapolations will be used with the test schedule as stated in response to item i. However, industry and/or prototype design basis differential pressure and/or flow test data may not be available for the MOVs in this group, in which case the extrapolated stroke tests will constitute the verification of operability.

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: An appropriate list of deficiencies, misadjustments and degraded conditions will be considered in the MOV program.

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 two 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 review of the multiple uses for these data.

Response: The inspection, testing and repairs made on MOVs will be documented in a data base. The results of testing, inspections and repairs of MOVs will be reviewed periodically, by Cook Nuclear Plant and AEPSC personnel. Any trends found during the review will be used to implement preventative and predictive maintenance. Also, an inspection program to periodically inspect MOVs has been established in the plant preventive maintenance program for MOVs.

Item 1

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 five 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 one 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 a through h for all safety-related MOVs and position changeable MOVs.

Response: The design basis reviews, analyses, verifications, tests and inspections for the Generic Letter 89-10 program will be completed per the following schedule:

- o Design basis reviews, diagnostic stroke testing and representative design basis pressure and/or flow testing for all Priority 1, 2 and 3 valves will be completed in three refueling outages or five years, whichever is later.
- o Design basis reviews, diagnostic stoke testing and representative design basis pressure and/or flow testing for all Priority 4 and 5 valves will be completed by the end of the outages corresponding to the end of the second ten-year ASME Section XI ISI/IST interval for Cook Nuclear Plant, about mid-1996.

The description and schedule will be available for NRC review within one year or one refueling outage from the date of the Generic Letter, whichever is later.

Item j

The program for the verification of the procedure 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 five 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 stated in the responses to items d and h, the MOV program description will address MOV degradation and 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 maintenance history and/or technical evaluation.

Item k

In recognition of the necessity for preplanning, refueling outages that start within six 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: There are no refueling outages for Cook Nuclear Plant scheduled to start within six months after the date of Generic Letter 89-10. It is anticipated that testing activities on applicable safety-related MOVs will begin during the 1990 outages.

REPORTING REQUIREMENTS

Pursuant to 10 CFR 50.54(f), licensees are required to provide information to the NRC as outlined in items l and m below.

Item l

Each licensee shall advise the NRC in writing, within six 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 our response to the recommendations and proposed schedules outlined in Generic Letter 89-10. The schedule proposed under item i above is different than that recommended in the Generic Letter, and technical justification is required. There are over 250 MOVs in safety-related systems at Cook Nuclear Plant. During a typical ten-week refueling outage, it is estimated that only two to three weeks are available during which MOV design basis testing can be performed. Based on our experience gained from doing diagnostic and limited differential pressure testing for Bulletin 85-03, this schedule cannot be accomplished without significant impact on outage duration. Additionally, substantial difficulty is anticipated obtaining complete design basis information from valve manufacturers that have either gone out of business, been purchased by another company, or are not providing design support. In most cases, prototype testing is not feasible due to inadequate test facilities, uniqueness of valve design or unavailability of spares. Therefore, the schedule proposed in item i has been developed to provide for testing of the most critical MOVs within the recommended schedule of the Generic Letter. The proposed schedule adds one additional outage, the longer end-of-ten-year interval outage, to allow for completion of less critical MOVs.

Testing of each MOV at design basis differential pressure and/or flow at Cook Nuclear Plant is different than recommended. A preliminary review of MOVs scheduled for testing in 1990 revealed that a majority cannot be tested at their design basis differential pressure and/or flow. The two-stage approach described in item f is based upon utilizing industry data or prototype testing to verify operability within the schedule described in item i. Industry and/or prototype test data is not available at this time, and is dependent on a concerted industry coordination effort outside the control of a single utility. Furthermore, due to unique designs and discontinued equipment lines, similar MOVs may not be available for prototype testing. Therefore, analytical methods and extrapolations to design basis conditions will be used to verify operability.

Where in situ design basis differential pressure and/or flow testing is practical, a minimum of one MOV from each group of similar valves will be tested at design basis differential pressure and/or flow. For similar valves, design basis pressure and/or flow testing may not be performed on other valves with identical design basis conditions, or design basis conditions bounded by another similar valve. Redundant design basis testing on similar valves cannot practicably be accomplished within the schedule outlined in item i, and will not provide sufficient meaningful data to warrant outage extension. Generic or valve-specific problems can be identified through stroke testing with diagnostic equipment attached, extrapolation to design basis conditions, and comparison with test results of a similar valve at design basis conditions.

Item m

Each licensee shall notify the NRC in writing within thirty days after the actions described in the first paragraph of item i have been completed.

Response: The NRC will be notified, in writing, within thirty days of the completion of the design basis reviews, analyses, verifications, tests, reviews of the test results, and inspections that will be instituted.