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NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DEC 03 1990

MEMORANDUM FOR: David H. Jaffe, Project Manager
Project Directorate I-4
Division of Reactor Projects-I/II

FROM: Ledyard B. Marsh, Chief
Mechanical Engineering Branch
Division of Engineering Technology

SUBJECT: REPORT OF THE AUDIT OF THE GENERIC LETTER 89-10
PROGRAM AT MILLSTONE UNIT 3

On November 6 to 8, 1990, the NRC staff conducted an audit of the program being developed at Millstone Unit 3 in response to Generic Letter 89-10, "Safety-Related Motor-operated Valve Testing and Surveillance."

The enclosed report was prepared jointly by the audit team members. Please forward the audit report to the licensee and the NRC Public Document Room.

L B Marsh

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Mechanical Engineering Branch
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Enclosure:
As stated

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Please place in
PDR and
LPDR for Millstone 3.

Tom Sambrogh
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NRC STAFF AUDIT OF
THE PROGRAM BEING DEVELOPED AT MILLSTONE UNIT 3
IN RESPONSE TO GENERIC LETTER 89-10

AUDIT DATES: NOVEMBER 6-8, 1990

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BACKGROUND

On June 28, 1989, the NRC staff issued Generic Letter 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," which requested that licensees and construction permit holders establish a program to ensure that switch settings for safety-related motor-operated valves (MOV) and certain other MOVs in safety-related systems are selected, set and maintained properly. The staff held public workshops to discuss the generic letter and to answer questions regarding its implementation. On June 13, 1990, the staff issued Supplement 1 to Generic Letter 89-10 to provide the results of those public workshops. In Supplement 2 to Generic Letter 89-10 (August 3, 1990), the staff states that inspections of programs developed in response to Generic Letter 89-10 would not begin until January 1, 1991, but that audits would be conducted to determine licensees' progress in developing those programs. In response to concerns raised by the results of NRC-sponsored MOV tests, the staff issued Supplement 3 to Generic Letter 89-10 on October 25 which requests that BWR licensees evaluate the capability of MOVs used for containment isolation in the steam supply lines to the High Pressure Coolant Injection and Reactor Core Isolation Cooling Systems, in the supply line to the Reactor Water Cleanup System, and in the lines to the isolation condenser, as applicable.

The NRC staff is conducting audits of the programs being developed in response to Generic Letter 89-10 at selected plant sites. The first of these audits took place on November 6 to 8, 1990, at Unit 3 of the Millstone nuclear facility. The Mechanical Engineering Branch (EMEB) of NRR is leading the audits with the participation of regional inspectors. One of the principal objectives of the audits is to provide feedback to the licensees regarding their progress in developing an acceptable generic letter program.

AUDIT PLAN

The staff used the draft temporary instruction (TI) for Generic Letter 89-10 as a guide in conducting the audit of the program being developed at Millstone Unit 3. Part 1 of the draft TI involves a review of the generic letter program developed by the licensee and certain aspects of the overall program for providing assurance of the proper performance of MOVs. Part 2 of the draft TI involves verification of the implementation of the program by means of sampling MOVs in safety-related systems. Because of the early stages of the licensee's generic letter program, the audit focused on Part 1 of the TI.

Each audit team member took the lead for the review of the licensee's efforts to satisfy an area of the generic letter. These areas are (1) establishment of the scope of the generic letter program, (2) the performance of design-basis reviews for MOVs within the program, (3) the determination of correct MOV switch settings, (4) the demonstration of design-basis capability of MOVs within the program by testing or, where testing is not practicable, by alternative methods, (5) establishment of a method for the periodic verification of MOV capability, (6) establishment of a method for analyzing, justifying and trending MOV failures and corrective actions, and (7) establishment of a schedule for the completion of the recommended actions of

the generic letter.

As part of the review of a licensee's program in response to the generic letter, it is necessary to review certain aspects of the licensee's overall program for providing assurance of proper MOV performance. Such aspects include oversight of the MOV program, design control for MOVs, control of MOV switch settings, maintenance plans and procedures, training of personnel involved in MOV activities, and use of MOV diagnostics. As time permitted, the audit team reviewed these aspects of the MOV program at Millstone 3.

The results of the audit are described below. Attached is a list of the licensee documents reviewed by the audit team.

GENERAL COMMENTS

In Generic Letter 89-10, the NRC staff requested licensees to submit a response to the generic letter by December 28, 1989. In a letter dated December 15, 1989, the licensee of Millstone Unit 3 (Northeast Utilities) committed to developing a program in accordance with the generic letter. The staff acknowledged that commitment by letter on July 11, 1990.

At the entrance meeting, the staff described the objectives of the audit. The licensee then provided a presentation on its development of a program in response to the generic letter. The audit team considered the presentation to be beneficial in providing an overview of the licensee's planned generic letter program. As a result, the audit team was able to focus on the individual areas of the program.

In reviewing the licensee's activities, the audit team found a sound structure for developing a program that will be responsive to Generic Letter 89-10. Strong management support for the development of the generic letter program was evident.

The audit team found that the licensee has reviewed the staff guidance provided in Supplement 1 to the Generic Letter 89-10 and is taking that guidance into consideration as its program is developed. In addition, the licensee is applying lessons learned from its Bulletin 85-03 program in developing its program in response to Generic Letter 89-10.

The audit team commended the licensee for its involvement in industry MOV activities and its consideration of new diagnostic systems.

An aspect of the licensee's current organizational structure that was of concern to the audit team involved the minimal number of personnel assigned full time to the MOV program. The licensee indicated that only about two individuals in its four reactor unit organization were assigned full time to the MOV program. Although the licensee has assigned MOV coordinators at each unit, those individuals appeared to have other tasks in addition to MOV activities. The audit team recommended that the licensee evaluate the need for additional full time MOV personnel within its organizational structure.

GENERIC LETTER 89-10 AREAS

(1) Scope of the Generic Letter Program

The NRC staff position is that the scope of Generic Letter 89-10 includes all safety-related MOVs and other MOVs that are position-changeable in safety-related piping systems. Through Supplement 1 to the generic letter, the staff defined "position-changeable" as any MOV in a safety-related piping system that is not blocked from inadvertent operation from the control room.

Based on licensee statements and documents, the audit team believes that the scope of the licensee's generic letter program will follow Generic Letter 89-10 and its supplements. The licensee indicated that 179 MOVs have been included within its generic letter program. As a sample check of the program scope, the audit team reviewed the service water system and found all MOVs within this system to be included within the scope of the program. The audit team considered this appropriate in that all of the system MOVs either (1) have an active safety function or (2) have a required safety-related position and are mispositionable.

The audit team reviewed an October 22, 1990, memorandum from C. D. Maxson, NUSCO, regarding the licensee's position on the prevention of inadvertent valve operation. The memorandum references Supplement 1 to the generic letter. The audit team considers the licensee's position to be consistent with that supplement.

During its overview presentation, the licensee indicated that the prioritization of valves for testing is based on their importance to safety as influenced by the Millstone 3 probabilistic risk assessment (PRA). In Section 7.6.1 of GL 89-10 - MP3 Project Description, it is stated that "[i]n general, Plant Engineering shall prioritize the MOVs according to their importance to safety." The licensee should clarify the basis for the determination of a valve's importance to safety.

(2) Design-Basis Reviews

In recommended action a of Generic Letter 89-10, the staff requests the review and documentation of the design basis for the operation of each MOV within the generic letter program to determine the maximum differential pressure and flow expected for both normal operations and abnormal conditions. The audit team reviewed the licensee's methodology for the performance of design-basis reviews and considers the methodology to be consistent with Generic Letter 89-10 and its supplements.

The audit team found the design-basis reviews, which are being conducted by B&W for the licensee, to be comprehensive. For example, they encompass the conditions where a valve might be required to operate during Final Safety Analysis Report (FSAR) scenarios, normal conditions, and abnormal events, including events described in the Emergency Operating Procedures (EOP). The methodology for determining the differential pressures was established and documented, but not yet complete and therefore not controlled. The licensee

has developed a matrix to reference the scenarios where valve operation would be required, with calculation sheets providing the results of the differential pressure analysis. The licensee is documenting the analysis and results for each valve, including assumptions, discussions of conditions for opening and closing, mispositioning, calculations, references, and a Piping and Instrumentation Drawing (P&ID). Before final approval, a licensee technical manager will perform an independent review of the analysis. The licensee indicated that the design-basis reviews would be completed in 1991.

The determination of differential pressures and flows resulting from inadvertent operation of MOVs appeared consistent with the generic letter and its supplements. The licensee indicated that the conditions associated with recovery from mispositioning will be verified to be enveloped by the open and close differential pressure, or a specific thrust will be calculated.

The audit team identified an inconsistency between the draft MOV Program and the licensee's discussions of its differential pressure analysis. Contrary to the licensee's description of its analysis, Section 2.3 of the draft MOV Project Description states that design basis accidents will be considered in the analysis, but does not address non-accident conditions which may be more demanding. Consideration of only design basis accidents to determine differential pressures would not meet Generic Letter 89-10. The licensee should correct the Project Description to prevent nonconservative results from occurring in future differential pressure analyses.

(3) MOV Switch Settings

In recommended action b of Generic Letter 89-10, the staff requests licensees to review, and to revise as necessary, the methods for selecting and setting all MOV switches. The audit team reviewed the licensee's planned response to this item and had the following comments.

The licensee plans to use the results of the design-basis reviews to calculate the thrust required to operate the valves. The licensee will compare the calculated thrust to the MOV's limiting parameter (i.e., the weak link), such as operator or valve thrust limits. Thrust values are to be calculated through the use of PC-based software called MOVE (Motor-Operated Valve Evaluation) being developed by B&W. The licensee indicated that the thrust analyses would be completed by the end of 1991. The audit team informed the licensee that a thorough analysis of the software should be performed in order to verify its adequacy prior to implementation and that future inspections would encompass a check of the calculations. Further, the audit team recommended that the margins assigned in the calculations be formalized and documented.

In its consideration of degraded voltage conditions, the licensee has documented calculations of the minimum available voltage at the Motor Control Centers (MCCs) and the additional voltage losses from the MCC to the valves. The licensee verified the minimum MCC voltages during start-up testing, but has not measured minimum voltages at valve motors and did not have plans for such measurements at the time of this audit. The licensee calculated cable voltage drops based on assumed 90 degrees Celsius cable temperatures. The

minimum voltage at the valve is then incorporated into the analysis for determining whether the MOV can achieve the thrust required under the maximum differential pressure conditions. The licensee's justification for its minimum voltages will be reviewed in more detail during future inspections.

During normal operations and surveillance testing, thermal overload devices (TOLs) trip the valve motor and alarm if an overcurrent condition occurs. For valves identified in the FSAR as having an active safety function, the TOLs are bypassed during accident conditions. Additionally, the control room operator can manually bypass the TOL with a pushbutton. As part of its response to Generic Letter 89-10, the licensee plans to resize the TOLs using IEEE 741-1990 criteria. TOLs currently installed will be replaced by TOLs which meet the new criteria according to the testing schedule for the valves within the generic letter program. The licensee should ensure that its use of TOLs is consistent with the staff positions provided in Regulatory Guide 1.106 or should justify an alternative approach. The NRC staff will review the resizing of the TOLs during future inspections.

The licensee has established a mechanism for the control of torque switch setpoints. At this time, the licensee is converting from the use of torque switch settings to thrust values. The audit team noted that the licensee should carefully monitor the changeover to this different control parameter. In particular, the licensee should ensure that procedures and training are established and implemented to control the torque switches and to avoid improper adjustment of torque switches as a result of past practice by maintenance personnel.

(4) Design-Basis Differential Pressure and Flow Testing

In recommended action c of the generic letter, the staff requests licensees to test MOVs within the generic letter program in situ under their design-basis differential pressure and flow conditions. If testing in situ under those conditions is not practicable, the staff allows alternate methods to be used to demonstrate the capability of the MOV. The staff suggests a two-stage approach for a situation where design-basis testing in situ is not practicable and, at this time, an alternate method of demonstrating MOV capability cannot be justified. With the two-stage approach, a licensee would evaluate the capability of the MOV using the best data available and then would work to obtain applicable test data within the schedule of the generic letter.

The licensee stated in its overview presentation that MOVs within the program will be tested in situ under design-basis conditions wherever possible. The licensee stated, however, that non-position changeable MOVs without an active safety function would likely not be tested. The audit team considers the licensee's commitment to be consistent with Generic Letter 89-10.

The licensee currently anticipates that one-third of the MOVs within the program can be tested under design-basis differential pressure and flow conditions (referred to by the licensee as "flow testing"). The licensee bases this value on an initial review of testing limitations. The licensee stated that the two-stage approach would be followed where necessary.

It was not evident to the audit team that continuing efforts are being expended by the licensee to evaluate the practicality of testing in order to increase the percentage of valves that can be tested under design-basis conditions. The licensee should look carefully at its definition of "practicable" in determining MOVs that can be full differential-pressure tested and should be innovative in developing test capabilities.

In the overview package, the licensee provided two charts entitled GL 89-10 MOV Program Preliminary Two Phase Approach. These charts represent a good initial step in outlining the licensee's plans for implementing the test recommendations of the generic letter. The charts contain a number of paths which indicate that the licensee has made a serious effort to capture the various situations that might arise. The audit team provided comments on the charts. First, the charts are weak in that a clear distinction between the two phases is not apparent. For example, one box on Chart 1 requires, when in-situ full differential pressure testing cannot be performed, that Low Flow, Low Temperature, or Single Phase Flow MOVs be "baseline setup w/ conservative values." This end point does not indicate that a justification for the selected values must be provided nor whether the licensee considers Phase 1, Phase 2, or both phases complete. Second, the licensee should provide additional guidance regarding actions necessary if a negative determination is made when the charts require assessment of "at what rate of MOV to pass DP test."

Similar to the concern regarding actions when it is determined that an MOV would not pass the differential pressure test, the audit team also noted that Section 2.2.5 of the Project Description indicates that only a nonconformance report must be written if an MOV is found inoperable. The audit team recommended that the licensee provide additional guidance for instances when the MOV is determined to be inoperable during the generic letter program.

The audit team's review of a document entitled "Verification of MOV Operability through Signature Analysis Testing and/or Analytical Techniques" revealed that Sections 2.1.4, 2.1.5, 2.2.4 and 2.2.5 of the document appear to allow gate and globe valves to be omitted from design-basis differential pressure and flow testing for certain valve factors assumed by the licensee to be conservative or where data are obtained from a prototype. The audit team has significant concerns regarding these sections. First, they are inconsistent with the licensee's commitment to test MOVs within the generic letter program in situ under design-basis differential pressure and flow conditions, where practicable. Second, if the statements are intended to apply only where design-basis testing is not practicable, then insufficient justification was provided for the use of these alternatives. The audit team requested that the licensee correct this document to be consistent with its commitments.

In Section 2.1.6 of Verification of MOV Operability, the licensee states that "rate of loading" will be accommodated. The licensee indicated that it intends to rely on planned guidelines from the Electric Power Research Institute (EPRI) for the consideration of rate of loading. The licensee should monitor the progress of EPRI to ensure that justifiable guidelines will be forthcoming in a timely manner.

In Sections 4.1.3 and 4.3.1 of Verification of MOV Operability, the licensee indicates that required MOV thrust may be extrapolated to design-basis differential pressure if the test differential pressure is within 20% of the design-basis condition. The licensee should establish documented justification for this extrapolation.

(5) Periodic Verification of MOV Capability

In recommended action d of the generic letter, the staff requests that licensees prepare or revise procedures to ensure that adequate MOV switch settings are determined and maintained throughout the life of the plant. In paragraph j of the generic letter, the staff recommends that the surveillance interval be based on the safety importance of the MOV as well as its maintenance and performance history, but that the interval not exceed 5 years or 3 refueling outages. Further, the capability of the MOV will need to be verified if the MOV is replaced, modified, or overhauled to an extent that the existing test results are not representative of the MOV.

In Section 3.4.1 of Verification of MOV Operability, the licensee commits to a 5-year or 3-refueling outage schedule for periodic verification of MOV capability, unless a longer interval is justified for any particular MOV. The licensee needs to develop the plans and procedures for periodic verification of MOV capability. In particular, the licensee should develop appropriate periodic verification that will provide adequate confidence that the MOV is capable of operating under the differential pressure and flow conditions determined from the design-basis review. The staff will expect the licensee to justify its periodic verification schedule, especially proposed intervals longer than five years. Also, the licensee should address the link between trending and periodic verification as recommended by the generic letter.

The audit team reviewed licensee procedure EN 31120, MOV Signature Analysis, which discusses the verification of the adequacy of torque switch settings following maintenance. The audit team indicated that a note in Attachment 9.1 of the procedure allows a possible exception to diagnostic testing after packing adjustment. The licensee stated that the note will be clarified to require a thrust determination. Attachment 9.1 to the procedure does not require diagnostic testing following cleaning and relubrication of the valve stem. The audit team recommended that the licensee document justification for this omission of diagnostic testing. In addition to other maintenance work, the licensee should ensure that adequate demonstration of MOV capability is provided following the performance of the scheduled 18-month preventive maintenance on each MOV.

(6) MOV Failures, Corrective Actions, and Trending

In recommended action h of the generic letter, the staff requests that licensees analyze or justify each MOV failure and corrective action. 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 also suggested that the material be periodically examined (every 2 years or after each refueling outage after

program implementation) as part of the 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 verify periodically adequate MOV capability. The generic letter indicates that a well-structured and component-oriented system is necessary to track, capture, and share equipment history data.

The audit team reviewed MOV maintenance, surveillance, and repair procedures for identification, reporting, documentation, engineering evaluation, and resolution of failures or nonconformances. In particular, the audit team reviewed Procedure MP 3782 EA (Rev 5), Limitorque Motor Operator PM; MP 3782 EB, Limitorque Actuator Repair and Disassembly; MP 3782 EJ, Limitorque Motor Operator Troubleshooting; and MP 3702 A, EEQ Maintenance Program, for steps that would require personnel performing maintenance, surveillance, or repair to report as-found abnormalities or failures.

Procedure MP 3782 EA states in step 4.2.6 that a work order must be issued to repair a degraded component. This procedure does not indicate that a failure would require an engineering review. MP 3782 EA also indicates in step 5.1.15 that, if torque switch settings are found higher than required, the reason for the higher setpoint must be determined. MP 3782 EA, however, only requires immediate attention for high torque switch setpoints.

Procedure MP 3782 EB, Limitorque Actuator Repair and Disassembly, does not address the need to report failed parts.

Procedure MP 3782 EJ, Limitorque Motor Operator Troubleshooting, states that a work order will be issued to repair as-found problems. After the work order is issued, the review path is defined in Administrative Control Procedure ACP-QA-2.02C, Work Orders. In step 5.5 of ACP-QA-2.02C, an engineering review is only required if the responsible department head requests it. Clear steps requiring engineering review are not apparent.

The licensee stated that a Plant Incident Report (PIR) would be initiated if an item of nonconformance or failure was identified during the course of a maintenance, repair or surveillance. The requirements to issue a PIR was said to be based on whether the problem involves 10 CFR Part 21, is associated with recurring failures of equipment that have a significant effect on plant reliability or operability, or is of direct concern to a shift supervisor. No specific requirement was evident to the audit team regarding the review of MOV historical data for the affected valve and similar MOV failures. Further, the audit team did not find a method for retrieving specific MOV history data from the preventative maintenance management system (PMMS).

The draft Program Description references trending recommendations in an attached memorandum, but the specific responsibilities of personnel or organizations are not defined. The Root Cause Procedure, ACP-QA-10.12, requires in step 6.2 that a trending database be collected and reviewed.

The established maintenance and quality assurance procedures together with non-formalized arrangements appear to cover the provisions of paragraph h of Generic Letter 89-10. The audit team found that there is a method for

tracking MOV problems. The MOV databases may be reviewed by the engineering sections through informal arrangements. However, there are no clearly defined steps in the present procedures to indicate that the provisions of paragraph h of the generic letter will be met. The audit team recommends that the Program Description specifically define the engineering review requirements and documentation requirements necessary to satisfy the generic letter. For example, trending and engineering involvement should be formalized. In addition, a trending review of MOV problems should be documented at least every 2 years, as recommended in the generic letter.

(7) Schedule

In Generic Letter 89-10, the staff requested that licensees complete all design-basis reviews, analyses, verifications, tests, and inspections that were initiated in order to satisfy the generic letter recommended actions by June 28, 1994, or 3 refueling outages after December 28, 1989, whichever is later. In Section 4.0 of the GL 89-10 - MP3 Project Description, the licensee discusses the schedule that will be followed by Millstone 3 in completing its generic letter program. The audit team considers the licensee's schedule commitment to be consistent with the recommendations in the generic letter.

The audit team reviewed the test schedule for valves within the generic letter program. The audit team also reviewed the test plan for the upcoming outage (RFO 3). The audit team found that the testing of certain MOVs within the program has not been scheduled. For example, the licensee stated that the scheduling of testing of the 40 butterfly valves has been delayed, in part, because of the anticipated availability of diagnostic equipment for butterfly valves. The audit team indicated that the licensee will need to determine whether reliable diagnostic equipment for butterfly valves will be available in a timely manner to allow the licensee to meet its schedule commitments. The audit team noted that the licensee may need to reach a decision to proceed with butterfly valve testing despite the unavailability of diagnostic equipment. In addition, the audit team did not identify any licensee action on the development of alternative plans in the event that satisfactory diagnostic methods are not developed for butterfly valves.

The audit team concluded that the licensee's current testing schedule will not meet the generic letter. For example, the licensee has not allocated sufficient time to test the butterfly valves and to perform any retesting that may be needed to complete the second stage for those valves being handled using the two-stage approach. The audit team recommended that the licensee reconsider its schedule in an effort to meet the generic letter schedule. The audit team suggested that, if the licensee determines that its commitments to the generic letter schedule cannot be met, the licensee notify the NRC staff at the earliest possible time.

WALKDOWN

The audit team arranged with the licensee to view MOV MV-8821B, B Safety Injection Pump to Cold Leg Injection, with the limit switch compartment cover removed and to witness full stroking of the valve. The audit team noted that

the MOV torque switch and the 4 limit switch rotors were made of fibrite. The audit team did not identify any problems with MOV operation or condition. The audit team had one concern regarding a stem movement indicator which might mislead plant personnel. At the outset of the valve stroke, the stem movement indicator was directed to the lower end of its scale. During the stroke, the indicator moved little from that position. The licensee should ensure that plant personnel are aware of the purpose and operation of the stem movement indicator as part of its training program.

OTHER MOV AREAS ADDRESSED

(1) Overall Administration of MOV Activities

The audit team reviewed the overall administration of the licensee's MOV activities. The licensee has numerous MOV activities under way that appear to be well supported. In addition, the licensee has established a position of MOV Coordinator for each of its four reactor units. However, there is no overall program plan or administrative procedure that addresses control or coordination of the entire scope of activities necessary to ensure proper MOV performance. As a result, the licensee relies heavily on the dedication of one individual to ensure that the various activities are coordinated. Although no specific problems were found, the audit team saw this as a potential weakness and recommended that the licensee formalize the coordination of its MOV activities.

(2) Use of Diagnostics

The licensee owns MOV diagnostic equipment referred to as VOTES that is supplied by Liberty Technology. The licensee intends to use this diagnostic equipment in its generic letter program. The licensee currently relies on B&W for assistance in diagnostic equipment training, but plans to provide that training on its own at some point in the future.

The licensee reported that an accuracy of 9.8% for the VOTES equipment was asserted by the diagnostic equipment vendor. The licensee, however, did not provide the audit team with documentation to justify this assumed accuracy. The audit team stated that the licensee must justify the accuracy of its diagnostic equipment. This will be a significant item in future inspections.

The diagnostic equipment used by the licensee is calibrated based on thrust developed in the closing direction. The audit team noted that thrust measurements in the open direction and the accuracy of the open torque switch are also important. For example, if it is determined that an MOV torque switch setting must be adjusted to provide more closing thrust, the licensee needs to consider the increased unseating force that will be required to open the valve. The licensee should ensure that its diagnostic equipment provides accurate thrust measurements in the open and close direction. The audit team also stated that the licensee will be expected to demonstrate that each MOV torque switch can be relied on to trip at known thrust values in the open and close directions.

(3) Training

The audit team visited the licensee's training laboratories, reviewed training documents, and discussed the training program with licensee instructors. The licensee is providing MOV training for a significant number of plant personnel in the electrical, mechanical, and testing groups. The licensee instructors demonstrated a high level of MOV knowledge during discussions with the audit team. The audit team also found significant management support for the training program which is crucial to its success. The audit team considers the training program to be a strong area within the licensee's MOV activities.

(4) Bulletin 85-03

The licensee stated that 33 MOVs had been included within its program developed in response to Bulletin 85-03. Fifteen of those MOVs were said to have been tested under design-basis differential pressure and flow conditions with the remaining MOVs having their capability justified by analysis. The audit team determined that the licensee's past program in response to Bulletin 85-03 had been structured similarly to the program being developed for Generic Letter 89-10. In particular, the licensee indicated that its consideration of valve mispositioning is unchanged from Bulletin 85-03 to Generic Letter 89-10.

Although the licensee typically does not remove torque limiter plates, the licensee indicated that, during the implementation of Bulletin 85-03, several torque limiter plates had been removed. The audit team noted that the licensee should ensure that evaluations in accordance with 10 CFR 50.59 are prepared when torque switch limiter plates are removed or modified. Further, Supplement 1 to Generic Letter 89-10 reminds licensees (on page 37) of the need to comply with the requirements of 10 CFR 50.59 for the performance of safety reviews. The audit team also stated that a documented program for the control of maximum torque settings must be established for cases where torque limiter plates are removed.

(5) Maintenance

The audit team reviewed maintenance procedures and discussed the maintenance program with licensee personnel. The licensee stated that an 18 month preventive maintenance schedule has been established for all safety-related MOVs. The licensee reported only one MOV failure in the last few months and that had involved an incorrectly-set limit switch.

Section 2.3 of the GL 89-10 - MP3 Project Description states that MOV repair, modification, and replacement are outside the project scope. This is contrary to the information contained in the licensee's charts on the two phase approach provided in the overview package. The licensee should correct this section of the project description.

The audit team noted that Beacon 325 is being used for lubrication in the limit switch gearboxes. The audit team discussed with licensee personnel the problems of degradation of Beacon 325 under high temperatures. The licensee indicated that the condition of this lubricant is evaluated during the

performance of the 18 month preventive maintenance for each MOV. The audit team stated that licensee should be alert for possible problems with this lubricant and should be prepared to take generic corrective action if problems begin to appear.

Licensee procedure MP 3782 EA in step 5.1.7.2 discusses the distinction between brown fibrite and brown phenolic. This distinction is important in that the phenolic is not qualified for adverse environments. The licensee reported that brown phenolic is no longer used in its facility, but that the procedure had not been updated to reflect this development. The audit team stated that the procedure should be corrected to prevent confusion during maintenance.

(6) Editorial matters

The audit team identified several typographical errors in the licensee's documents and provided those to the licensee. One particular error that needs correction is the omission of the word "not" from the end of the next to last line in Section 6.2 of the MP3 Project Description. The audit team was not surprised that a few typographical errors were present in the draft documents. The licensee should ensure that a thorough editing review is performed before the plans and procedures are finalized.

CONCLUSIONS

The licensee is currently developing a program in response to Generic Letter 89-10. As the licensee's generic letter program is not fully established, the audit team cannot reach a final decision on the acceptability of the program. The audit team expects the licensee to complete the development of the program consistent with its commitments and to resolve the concerns raised by the audit team. At this time, the audit team believes that the licensee has made a good beginning in the development of an acceptable generic letter program.

LICENSEE DOCUMENTS REVIEWED BY THE AUDIT TEAM AT MILLSTONE 3

Letter, dated December 15, 1989, from E. J. Mroczka, Northeast Utilities, to the NRC.

Millstone Unit 3 MOV Presentation Package, November 6, 1990.

Northeast Utilities - Generic Letter 89-10 Program Description - Draft A, Rev. 0.

Informal List of MOVs included in Generic Letter 89-10 Program.

Administrative Control Procedure ACP-QA-2.02C, Work Orders, Rev. 25.

ACP-QA-8.27, Millstone Station Training and Qualification, Rev. 2.

ACP-QA-10.01, Plant Incident Reports, Rev. 33.

ACP-QA-10.12, Root Cause Process, Rev. 1.

Letter dated June 27, 1988, from E. J. Mroczka, Northeast Utilities, to NRC, regarding Bulletin 85-03 program.

Maintenance Form 3702B-1, EQ Maintenance Requirements Evaluation, Rev. 1, March 14, 1986.

Maintenance Form 3782EA-1, 18 Month PM on Limitorque Motor-Operated Valves, Rev. 3.

Maintenance Form 3782EB-1, Limitorque Actuator Data, Rev. 1, dated April 25, 1989.

Maintenance Forms on Lubrication Techniques for various MOVs.

Memorandum regarding close to open torque switch bypass requirements, from J. J. Hirsch, dated July 21, 1989.

Memorandum regarding scope of Generic Letter 89-10 program, from R. Hykys, dated September 6, 1989.

Memorandum forwarding thermal overload test plan, from M. T. Smaga, dated September 10, 1990.

Memorandum regarding definition of "position changeable" in Generic Letter 89-10 program, from C. D. Maxson, dated October 22, 1990.

Memorandum regarding proposed program policy on MOV torque limiter plates, from J. J. Hirsch, Draft 1, dated November 1, 1990.

Memorandum regarding MOV performance trending, from J. J. Hirsch, draft dated November 1, 1990.

Nuclear Engineering and Operations (NEO) MP3 Project Description for Generic Letter 89-10, Rev. 0, draft.

NEO Procedure 2.01, Implementation of 10CFR21: Reporting of Defects and Noncompliances, Rev. 4, dated June 4, 1990.

NEO Procedure 2.11, Trend Analysis from Quality Documents, Rev. 3, dated July 2, 1990.

NEO Procedure 2.25, Operability and Reportability Determinations (10CFR50.72, 10CFR50.73, and 10CFR50.9), Rev. 2, dated June 4, 1990.

NEO Procedure 4.01, Communications with the Nuclear Regulatory Commission, Rev. 5, dated March 3, 1990.

Piping & Instrumentation Drawings 25212-26933, Sheets 1 through 4, Service Water and Chemical Feed-Chlorination Systems, Rev. 0.

Plant Incident Report printout, dated October 23, 1990.

Station Procedure EN 31120, MOV Signature Analysis, Rev. 0, dated November 7, 1990.

Station Procedure MP 3702A, EEQ Maintenance Program, Rev. 1.

Station Procedure MP 3702B, Limitorque Motor Operator Closeout Requirements, Rev. 2, dated May 4, 1989.

Station Procedure MP 3782EA, Limitorque Motor Operator PM, Rev. 5, Change 1, dated June 1, 1989.

Station Procedure MP 3782EB, Limitorque Actuator Repair and Disassembly, Rev. 2, Change 1, dated October 6, 1989.

Station Procedure MP 3782EJ, Limitorque Motor Operator Troubleshooting, Rev. 0, dated April 4, 1990.

Station Procedure PT1420B/21420B/31420B, Procedure for Testing Motor Operated Valves using VOTES, Rev. 2, dated September 12, 1990.

Training Course Descriptions for Generation Test Services (Rev. 3, dated May 18, 1990), MP3 Electrician (Rev. 3, dated May 18, 1990), MP3 Mechanical-Basic (Rev. 2, dated August 3, 1989), and MP3 Mechanical-Advanced (Rev. 2, dated August 3, 1989).

Training Handout, Electrical, NU-TT-ELCT-VLVLIM, undated.

Training Manual, Valve Construction Generation Test Services, PT-TT-ELCT-VLVTES-801005, undated.

Training Syllabus on Valves for Generation Test Services, dated November 5, 1990.

Verification of MOV Operability through Signature Analysis Testing and/or Analytical Techniques, Draft A, undated.