UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

NRC INSPECTION MANUAL

EMEB

TEMPORARY INSTRUCTION 2515/140

PERIODIC VERIFICATION OF DESIGN-BASIS CAPABILITY OF SAFETY-RELATED MOTOR-OPERATED VALVES (GL 96-05)

SALP FUNCTIONAL AREA: MAINTENANCE (MAINT)

APPLICABILITY: This TI is to be performed at two sites in each region. At the completion of those inspections, NRR and the regions will perform an evaluation to determine if additional sites need to be inspected.

2515/140-01 OBJECTIVE

The objective of this TI is to determine whether the licensee or construction permit holder has established and is implementing a program that will ensure the long-term performance of motor-operated valves (MOVs) in safety-related systems.

2515/140-02 BACKGROUND

The NRC regulations require that MOVs important to safety be treated in a manner that provides assurance of their intended performance. Criterion 1 in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50 states, in part, that structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. The quality assurance program to be applied to safety-related components is described in Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50. In 10 CFR 50.55a, the NRC requires licensees to comply with Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code.

Over the past few years, nuclear power plant operating experience, valve performance problems, and MOV research have revealed that the focus of the ASME Code on stroke time and leak-rate testing for MOVs was not sufficient in light of the design of the valves and the conditions under which they must function.

For this reason, 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 permit holders ensure the capability of MOVs in safety-related systems to perform their intended functions by reviewing MOV design bases, verifying MOV switch settings initially and periodically, testing MOVs under design-basis conditions where practicable, improving evaluations of MOV failures and necessary corrective action, and trending MOV problems. The staff requested that licensees complete the Generic Letter 89-10 program within approximately three refueling outages or 5 years from the issuance of Generic Letter 89-10. Permit holders were requested to complete the Generic Letter 89-10 program before plant startup or in accordance with the preceding schedule, whichever was later.

The NRC staff issued seven supplements to Generic Letter 89-10 that provided additional guidance and information on program scope, design-basis reviews, switch settings, testing, periodic verification, trending, and schedule extensions. Generic Letter 89-10 and its supplements offered only limited guidance regarding periodic verification and the measures appropriate to assure preservation of design-basis capability.

Licensees of all active nuclear power plants (except Browns Ferry Unit 1 and Millstone Unit 1) have notified the NRC of the completion of the verification of the design-basis capability of the MOVs within their Generic Letter 89-10 programs. The NRC staff has been closing its review of individual Generic Letter 89-10 programs on the basis of the completion of the verification of design-basis capability of safety-related MOVs with only limited review of plans for MOV periodic verification.

The NRC staff issued Generic Letter 96-05 to present more detailed information on the development of programs for the periodic verification of MOV design-basis capability than was in Generic Letter 89-10. In Generic Letter 96-05, the NRC staff requested that each licensee establish a program, or ensure the effectiveness of its current program, to verify on a periodic basis that safety-related MOVs continue to be capable of performing their safety functions within the current licensing bases of the facility. Generic Letter 96-05 supersedes Generic Letter 89-10 and its supplements with regard to MOV periodic verification. Licensees that had developed periodic verification programs in response to Generic Letter 89-10 were requested to review those programs to determine whether any changes are appropriate in light of the information in Generic Letter 96-05.

The NRC staff is evaluating the submittals from nuclear power plant licensees in response to Generic Letter 96-05. The staff intends to prepare a safety evaluation describing its review of each licensee's response to Generic Letter 96-05. In Attachment 1 to Generic Letter 96-05, the staff discussed some of the then-ongoing industry and regulatory activities and programs related to maintaining long-term capability of safety-related MOVs. Current principal activities and programs are summarized below:

A. Electric Power Research Institute (EPRI) MOV Program

An MOV testing program conducted by EPRI yielded significant information regarding the long-term, design-basis capability of safety-related MOVs. In addition to finding that the thrust required to operate gate valves is typically greater than the thrust originally predicted by valve vendors, EPRI found that the thrust required to operate gate valves can increase with valve strokes until a plateau is reached. The Nuclear Energy Institute (NEI) submitted EPRI Topical Report TR-103237, "EPRI MOV Performance Prediction Program," describing the methodology developed by EPRI to predict dynamic thrust or torque requirements for gate, globe, and butterfly valves without dynamic tests by licensees. On March 15, 1996, the NRC staff issued a safety evaluation approving the topical report with certain conditions and limitations. On February 20, 1997, the NRC staff issued a supplement to the safety evaluation on general issues and two unique gate valve designs. The NRC staff issued Information Notice (IN) 96-48 (August 21, 1996), "Motor-Operated Valve Performance Issues," to alert licensees to lessons learned from the EPRI MOV program.

B. ASME Code Case OMN-1

Licensees are currently bound by the requirements in their code of record regarding stroke-time inservice testing (IST), as supplemented by relief requests approved by the NRC staff. Through non-mandatory ASME Code Case OMN-1, "Alternative Rules for Preservice and Inservice Testing of Certain Electric Motor Operated Valve Assemblies in LWR Power Plants, OM Code 1995 Edition; Subsection ISTC," ASME is allowing the replacement of quarterly stroke-time testing with periodic exercising of all safety-related MOVs once per cycle and periodic diagnostic testing under static or dynamic conditions, as appropriate, on a frequency to be determined on the basis of margin and degradation rate. This code case is published in the 1996 Addenda to the OM Code 1995 Edition. In Generic Letter 96-05, the NRC staff states that the method in OMN-1 meets the intent of the generic letter with certain limitations. ASME is considering incorporation of OMN-1 into a future revision of the Code. The NRC is considering endorsement of the OMN-1 code case with certain exceptions as part of an ongoing rulemaking effort.

C. Attributes of Effective MOV Periodic Verification Programs

As described in Generic Letter 96-05, the NRC staff has found that effective programs for periodic verification of safety-related MOV design-basis capability at nuclear power plants are characterized by several attributes, as follows:

1. A risk-informed approach may be used to prioritize valve test activities, such as frequency of individual valve tests and selection of valves to be tested.

2. The valve test program provides adequate confidence that safety-related MOVs will remain operable until the next scheduled test.

3. The importance of the valve is considered in determining an appropriate mix of exercising and diagnostic testing. In establishing the mix of testing, the benefits (such as identification of decreased thrust output and increased thrust requirements) and potential adverse effects (such as accelerated aging or valve damage) are considered when determining the appropriate type of periodic verification testing for each safety-related MOV.

4. All safety-related MOVs covered by the Generic Letter 89-10 program are considered in the development of the periodic verification program. The program includes safety-related MOVs that are assumed to be capable of returning to their safety position when placed in a position that prevents their safety system (or train) from performing its safety function; and the system (or train) is not declared inoperable when the MOVs are in their nonsafety position.

5. Valve performance and maintenance are evaluated and monitored, and the periodic verification program is periodically adjusted as appropriate.

D. Joint Owners Group (JOG) Program on MOV Periodic Verification

In response to Generic Letter 96-05, the Boiling Water Reactor Owners Group (BWROG), Westinghouse Owners Group (WOG), and Combustion Engineering Owners Group (CEOG) jointly developed an MOV periodic verification program to obtain benefits from the sharing of information between licensees on MOV programs. The stated objectives of the JOG Program on MOV Periodic Verification are (1) to provide an approach for licensees to use immediately in their Generic Letter 96-05 programs, (2) to develop a basis for addressing the potential age-related increase in required thrust or torque under dynamic conditions, and (3) to use the developed basis to confirm, or if necessary to modify, the applied approach. Specific elements of the JOG program are (1) providing an "interim" MOV periodic verification program for applicable licensees to use in response to Generic Letter 96-05, (2) conducting a dynamic testing program over the next 5 years to identify potential age-related increases in required thrust or torque to operate gate, globe, and butterfly valves under dynamic conditions, and (3) evaluating the information from the dynamic testing program to confirm or modify the interim program assumptions.

According to the JOG, the objective of the interim MOV periodic verification program is to ensure that the MOVs remain set up consistent with Generic Letter 89-10 criteria and to provide additional margin for age-related degradation. The elements of the interim program are (1) continuation of ASME IST program stroke-time testing and (2) performance of static diagnostic testing on a frequency based on functional capability (age-related degradation margin over and above the margin for Generic Letter 89-10 evaluated parameters) and safety significance.

The JOG describes the objectives of its dynamic testing program as determination of the degradation-related trends in dynamic thrust and torque, and use of dynamic test results to adjust the interim program if warranted. The elements of the JOG dynamic testing program are (1) identification of conditions and features that could potentially lead to MOV degradation, (2) definition and assignment of valves for dynamic testing, (3) testing valves three times over a 5-year interval with at least a 1-year interval between valve-specific tests according to a standard test specification, (4) evaluation of results of each test, and (5) evaluation of collective test results.

In the last phase of its program, the JOG will evaluate the test results to validate the assumptions in the interim program to establish a long-term MOV periodic verification program to be implemented by licensees. A feedback mechanism will be established to ensure timely sharing of MOV test results among licensees and to prompt individual licensees to adjust their own MOV periodic verification program, as appropriate.

Following consideration of NRC staff comments on the JOG program and after holding public meetings, the BWROG submitted Revision 2 to Licensing Topical Report NEDC-32719, "BWR Owners' Group Program on Motor-Operated Valve (MOV) Periodic Verification," on July 30, 1997. Similarly, the CEOG and the WOG submitted Revision 2 to Topical Report MPR-1807, "Joint BWR, Westinghouse and Combustion Engineering Owners' Group Program on Motor-Operated Valve (MOV) Periodic Verification," on August 6 and 12, 1997, respectively. On October 30, 1997, the NRC staff issued a safety evaluation accepting the JOG program with certain conditions and limitations as an acceptable industry-wide response to Generic Letter 96-05 for age-related valve degradation.

E. MOV Risk-Ranking Methodologies

In Topical Report NEDC 32264, "Application of Probabilistic Safety Assessment to Generic Letter 89-10 Implementation," the BWROG describes a methodology to rank MOVs in Generic Letter 89-10 programs with respect to their relative importance to core-damage frequency and other considerations to be added by an expert panel. In a safety evaluation dated February 27, 1996, the NRC staff accepted the BWROG methodology for risk-ranking MOVs in BWR plants with certain conditions or limitations because the plant-specific insights are supplemented by generic insights and expert review involving additional considerations, such as external events and shutdown issues. In addition, the MOV rankings are used in combination with deterministic considerations that ensure a minimally acceptable frequency of testing is established even for safety-related MOVs with the least risk significance. In the NRC safety evaluation on the JOG Program on MOV Periodic Verification, the NRC staff indicates its view that the BWROG methodology for MOV risk ranking is appropriate for use in response to Generic Letter 96-05.

On June 2, 1997, the WOG submitted Engineering Report V-EC-1658, "Risk Ranking Approach for Motor-Operated Valves in Response to Generic Letter 96-05," for NRC

review. On October 30, 1997, the NRC staff held a public meeting with the WOG representatives to discuss the engineering report. On December 19, 1997, the WOG submitted Revision 1 to its report that reflected the NRC staff comments. The WOG MOV risk-ranking approach results in safety-significance rankings of MOVs based on (1) an expert panel process, including the panel's experience and judgment; (2) the risk importance rankings of the components from the probabilistic safety assessment (PSA); and (3) the industry-established threshold values for risk importance. On April 14, 1998, the NRC staff issued a safety evaluation accepting the WOG approach for ranking MOVs according to their risk significance, with certain conditions and limitations.

2515/140-03 INSPECTION REQUIREMENTS

03.01 Review licensee commitments in response to Generic Letter 96-05.

03.02 Verify the implementation of plans and commitments made as part of the completion of the MOV program in response to Generic Letter 89-10.

03.03 Determine whether the licensee has established and is implementing a program to provide continued assurance that the MOVs within the scope of Generic Letter 96-05 are capable of operating under design-basis conditions. On the basis of a sample of MOVs, the inspector should evaluate the licensee's justification for the following aspects of its Generic Letter 96-05 program:

a. Scope of the Generic Letter 96-05 program.

b. Current design basis of the MOVs in the Generic Letter 96-05 program.

c. Degradation rate for the potential increase in the thrust or torque (as applicable) requirements to operate the valves.

d. Degradation rate for the potential decrease in MOV actuator output under dynamic conditions.

e. Periodic test method to identify age-related degradation affecting the valve thrust or torque requirements, and actuator output.

f. Evaluation of test data to justify MOV test intervals.

g. Periodic test interval that ensures continued MOV design-basis capability until next scheduled test.

The inspector should verify that all elements of the MOV program are encompassed by the quality assurance criteria of Appendix B to 10 CFR Part 50.

General Guidance

a. Inspection Preparation. The inspector should contact the Mechanical Engineering Branch in the NRC Office of Nuclear Reactor Regulation (EMEB/NRR) prior to the inspection to discuss specific aspects of the licensee's MOV program.

b. Plan. In planning the performance of an inspection according to this TI, the inspector should review the safety evaluation prepared by NRR on the licensee's response to Generic Letter 96-05. If the NRC safety evaluation on the licensee's response to Generic Letter 96-05 has not been completed, the inspector should discuss with EMEB/NRR (1) the aspects of the licensee's MOV periodic verification program to be evaluated during the inspection and (2) the support necessary from NRR to perform the inspection. (EMEB recommends conducting the Generic Letter 96-05 inspection after issuance of the NRC safety evaluation on the specific plant's Generic Letter 96-05 program.) The inspector should also review the inspection reports, licensee submittals, and NRC letters associated with the closeout of the NRC review of the Generic Letter 89-10 program for any licensee commitments or plans for its long-term MOV program. It is suggested that at least one inspection be conducted in each region at a facility participating in the JOG Program on MOV Periodic Verification and at a facility developing a separate MOV periodic verification program. Also, the inspector should ensure that the candidate facility has sufficient test data for performing a meaningful review of the licensee's tracking and trending program.

c. Additional Information. If the licensee has committed to implement the JOG Program on MOV Periodic Verification, the inspector should review the topical report describing the JOG program and the NRC safety evaluation dated October 30, 1997. If a licensee commits to establish and implement the JOG program, the NRC staff will rely on that licensee commitment in the preparation of the safety evaluation on the licensee's response to Generic Letter 96-05. For example, the staff will rely on the development and implementation of the JOG program to address many aspects of MOV periodic verification (such as degradation rates) to be addressed by the JOG program. During the inspection, the inspector should verify that the licensee is implementing the JOG program as described in the JOG topical report, NRC safety evaluation on the JOG program, and the specific safety evaluation on the licensee's Generic Letter 96-05 program.

If a licensee did not commit to the JOG program, the NRC staff will prepare a plant-specific safety evaluation based on a detailed review of the licensee's Generic Letter 96-05 program to periodically verify the design-basis capability of its MOVs within the scope of the program. During the inspection, the inspector should verify the implementation of

each aspect of the licensee's MOV periodic verification program described in the licensee's submittals and the NRC safety evaluation. Where the NRC staff has not completed the safety evaluation, the documents discussed in the Background section of this TI contain information on the various aspects of an appropriate program to periodically verify the design-basis capability of MOVs.

On August 17, 1995, the staff issued Generic Letter 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," that provides recommendations for licensees and permit holders to consider in addressing pressure locking and thermal binding. The NRC staff is reviewing licensee submittals in response to Generic Letter 95-07 for the preparation of a safety evaluation describing the acceptability of each licensee's response to Generic Letter 95-07. The inspector should determine whether a safety evaluation has been prepared on the response of the licensee to Generic Letter 95-07 and whether any specific issue with respect to pressure locking or thermal binding within the licensee's MOV program needs to be reviewed during the planned inspection.

Specific Guidance

04.01 Commitments made regarding the Generic Letter 96-05 program do not relieve licensees from IST requirements pursuant to their code of record and the IST program, as approved by the NRC. Licensees were required to submit the following written responses to Generic Letter 96-05:

1. Within 60 days from the date of Generic Letter 96-05, a written response indicating whether or not the licensee would implement the requested actions.

2. Within 180 days from the date of Generic Letter 96-05, or upon notification to NRC of completion of the licensee's Generic Letter 89-10 program (whichever is later), a written summary description of the licensee's MOV periodic verification program.

Licensees committing to implement the JOG Program on MOV Periodic Verification were to submit an updated response to Generic Letter 96-05 following issuance of the NRC safety evaluation on the JOG topical report. The inspector should review the responses submitted by the licensee, the NRC staff requests for additional information and subsequent licensee replies, and the NRC safety evaluation on the licensee's response to Generic Letter 96-05 (if available) to determine the commitments of the licensee with respect to Generic Letter 96-05, and the NRC staff's position on those commitments. The inspector should verify that the licensee is implementing its commitments in response to Generic Letter 96-05.

04.02 In completing their programs to verify the design-basis capability of safety-related MOVs in response to Generic Letter 89-10, licensees have made long-term plans or commitments with respect to MOV testing or analyses. These

plans or commitments could include testing of specific MOVs or implementation of procedures for analyzing MOV failures for justifying corrective action, and for trending MOV performance problems. For example, item h of Generic Letter 89-10 recommended that licensees ensure that each MOV failure is analyzed and the resulting corrective action (including repair, alteration, analysis, test, and surveillance) is justified. As recommended in Generic Letter 89-10, the failure analysis and justification of the corrective action should be documented. All documentation should be retained and reported in accordance with plant requirements. Generic Letter 89-10 also recommended that MOV data on failures and corrective action be examined at least every 2 years or after each refueling outage as part of a monitoring and feedback effort to establish trends of MOV performance. The inspector should review the inspection reports or NRC letters prepared for closing out the NRC review of the licensee's Generic Letter 89-10 program for such plans or commitments. For example, the inspector should verify the adequacy of the licensee's analysis of MOV failures, justification of corrective action, and trending of failures and corrective actions for the sampled MOVs. The trending of test information and corrective action should include the results of MOV testing conducted as part of the MOV periodic verification program under Generic Letter 96-05. The inspector should also verify implementation of any licensee commitments associated with testing to confirm program assumptions made during completion of the Generic Letter 89-10 program (such as stem friction coefficient, load sensitive behavior, or stem lubricant degradation) in order to establish a foundation for the Generic Letter 96-05 program.

04.03

a. The scope of the licensee's program in response to Generic Letter 96-05 is expected to be essentially the same as the scope of the licensee's program in response to Generic Letter 89-10. As discussed in Generic Letter 96-05, all safety-related MOVs covered by the Generic Letter 89-10 program should be considered in the development of the periodic verification program. The program should include safety-related MOVs that are assumed to be capable of returning to their safety position when placed in a position that prevents their safety system (or train) from performing its safety function; and the system (or train) is not declared inoperable when the MOVs are in their nonsafety position. The attachment to TI 2515/109 for Generic Letter 89-10 contains additional information on the scope of MOV programs developed in response to that generic letter.

   The inspector should select 6 to 10 MOVs within the scope of the Generic Letter 96-05 program for detailed review. The licensee may be alerted before the inspection to the particular MOVs to be inspected in order to assemble the necessary documentation or to ensure that it is readily available at the site. During the inspection, the inspector may find other MOVs that should be included in the sample. The inspector should verify that the licensee has justified the continued capability of each selected MOV. The inspector should verify that the licensee has satisfied the plant technical specifications and NRC regulations (e.g., Code and IST

requirements) where operability concerns are identified. If the licensee cannot justify the operability of a sampled MOV, the inspector should expand the review to similar MOVs.

b. Licensees established the design basis for their safety-related MOVs in response to Generic Letter 89-10. As part of their programs in response to Generic Letter 96-05, licensees should maintain as current the design basis for their Generic Letter 96-05 MOVs. For example, licensees may have implemented a power uprate since completion of the NRC staff review of the Generic Letter 89-10 program at the plant. On the basis of the sample of MOVs, the inspector should verify that the licensee has revised its MOV program as appropriate to address any plant changes associated with the power uprate (such as increased flow, higher differential pressure, or elevated temperatures). The inspector should also verify that any changes to the MOV design basis associated with the licensee's response to Generic Letter 95-07 on pressure locking or thermal binding of gate valves have been incorporated.

c. Licensees will need to obtain dynamic test information on the effects of aging to establish the rate at which the thrust required to operate gate and globe valves and torque required to operate butterfly valves might increase with time. Licensees committed to the JOG Program on MOV Periodic Verification will be determining the degradation rate for the potential increase in thrust (or torque) requirements for valves and conditions within the scope of the JOG program through their participation in the JOG dynamic test program. Those licensees will need to address the degradation rate for the potential increase in thrust or torque for valves and conditions outside of the JOG program separately. Licensees not committed to the JOG program will need to develop their own justification for the degradation rate for the potential increase in the thrust or torque required to operate their MOVs. On the basis of the sample of MOVs, the inspector should verify that the licensee has justified the assumed rate at which the thrust required to operate gate and globe valves and torque required to operate butterfly valves might increase with time in accordance with its commitments and the NRC safety evaluation on its Generic Letter 96-05 program.

d. Licensees will need to obtain dynamic test information on the effects of aging to establish the rate at which the output of the MOV actuator thrust (or torque for butterfly valves) might decrease with time. The JOG program does not address the aging effects on actuator output. Licensees will need to develop their own justification for the degradation rate for potential decrease in actuator output for their MOVs. For example, the stem lubricant for rising-stem MOVs can degrade with age such that the thrust output under dynamic conditions from the actuator might decrease although the torque output remains relatively constant.

On May 15, 1998, Limitorque Corporation prepared Technical Update 98-01 to revise its guidelines for sizing ac-powered motor actuators in light of recent test information and analysis. On July 17, 1998, Limitorque forwarded Technical Update 98-01 and its Supplement 1 to nuclear utilities. The NRC issued Supplement 1 to IN 96-48 on July 26, 1998, to alert licensees to the revised sizing criteria for ac-powered motor actuators. The inspector should review the licensee's consideration of this updated guidance from Limitorque on its sizing of ac-powered motor actuators. Limitorque will be evaluating its sizing guidance for dc-powered motor actuators following completion of additional NRC-sponsored tests.

On the basis of the sample of MOVs, the inspector should verify that the licensee has justified its determination of the actuator output, including the assumed rate at which the MOV actuator output thrust for gate and globe valves, and output torque for butterfly valves, might decrease with time in accordance with its commitments and NRC safety evaluation.

e. Licensees will need to justify their test method used on a periodic interval to identify age-related degradation affecting thrust or torque operating requirements and actuator output. <u>The test method should include a mix of static and dynamic diagnostic testing of MOVs.</u>

Licensees committed to the JOG program may follow the guidelines for an interim static diagnostic test program based on margin and risk significance. These licensees will be expected to update their periodic test method as appropriate following completion and evaluation of the JOG dynamic test program. These licensees may obtain information on age-related degradation affecting actuator output from the static and dynamic diagnostic tests conducted as part of the JOG program and as followup to specific Generic Letter 89-10 issues.

Licensees not committed to the JOG program in their response to Generic Letter 96-05 must justify their periodic test method so that age-related degradation affecting thrust (or torque requirements) and actuator output is identified. In addition, those licensees must justify their grouping of MOVs to share test information or minimize testing. Supplement 6 to Generic Letter 89-10 contains information on the grouping of MOVs.

Licensees may apply risk-ranking approaches in implementing their MOV programs in response to Generic Letter 96-05. Applicable licensees may use the guidelines in the BWROG topical report or WOG engineering report together with the conditions and limitations specified in the NRC safety evaluations on those documents. Otherwise, the inspector should verify that the licensee's MOV risk-ranking approach satisfies the regulatory guidance for application of risk insights to nuclear power plant programs.

On the basis of the sample of MOVs, the inspector should verify that the licensee has justified its test method used on a periodic interval to identify age-related degradation affecting thrust or torque operating requirements and actuator output in accordance with its commitments and NRC safety evaluation.

f. Licensees will need to justify their method of evaluating test information to support their MOV test intervals and to address operability decisions for specific retested MOVs. Licensees will need to address the variation in test data resulting from random and biased uncertainties. Licensees committed to the JOG program will be sharing information as part of that program. On the basis of the sample of MOVs, the inspector should verify that the licensee has grouped MOVs with test intervals longer than 5 years or three refueling outages with similar MOVs that have shorter test intervals and is analyzing the test results and margins to provide confidence that the MOVs will remain operable until the next scheduled test. For licensees committed to the JOG program, the inspector should verify that the licensee is coordinating the feedback and use of the general and plant-specific information obtained through the JOG dynamic test program and the JOG analyses of the test data.

g. Licensees will need to justify that their periodic test interval ensures continued MOV design-basis capability until the next scheduled test. A maximum of 10 years is allowed for the test interval. Licensees participating in the JOG program may apply the interim static diagnostic test method based on margin and risk significance for valves and conditions within the scope of the JOG program. JOG will establish a long-term periodic test method and interval following the JOG dynamic test program. Those licensees will need to justify the test interval for valves and conditions outside the scope of the JOG program separately. Licensees not committed to the JOG program will need to justify their assumed test interval. On the basis of the sample of MOVs, the inspector should verify that the licensee has justified a periodic test interval that ensures the continued MOV design-basis capability until the next scheduled test in accordance with its commitments and NRC safety evaluation.

2515/140-05 REPORTING REQUIREMENTS

Notify EMEB/NRR of the inspection findings upon completion of the inspection and before issuing the inspection report. EMEB/NRR need not concur on Generic Letter 96-05 inspection reports. EMEB/NRR will informally review Generic Letter 96-05 inspection reports before they are issued (as resources permit) if requested by a region. Send a copy of the issued inspection report to the Mechanical Engineering Branch, Division of Engineering, NRR.

2515/140-06 COMPLETION SCHEDULE

The inspection requirements of this TI will be completed by 09/01/2000.

2515/140-07 EXPIRATION

This TI will remain in effect until 09/01/2000.

2515/140-08 CONTACT

Address questions concerning this TI to Thomas G. Scarbrough, EMEB/DE/NRR, at 301-415-2794 or to Allen G. Hansen, PDIII-3/DRPW/NRR, at 301-415-1390.

The lead LPM for this TI is Allen G. Hansen, PDIII-3/DRPW/NRR.

2515/140-09 STATISTICAL DATA REPORTING

Record actual inspection effort to 2515/140 for the regulatory information tracking system (RITS) with an IPE code of SI.

The SIMS issue number for this TI is GL-96-05.

2515/140-10 ORIGINATING ORGANIZATION INFORMATION

10.01 Organizational responsibility. EMEB/NRR initiated this TI as part of its responsibility for coordinating the NRC review of licensee activities to ensure proper MOV performance. EMEB will work with the regions to provide a consistent regulatory effort in implementing this TI. EMEB will review the results of inspections performed by headquarters and region personnel. On the basis of that review and other information, EMEB will evaluate the need for additional regulatory action or information.

10.02 Estimated resources. It is estimated that 3 days of inspector effort will be needed in preparing for an inspection using this TI. The Direct Inspection Effort on site for 2 inspectors may require up to 70 hours, including entrance and exit meetings. Follow-up administrative time (such as report writing) is estimated to be 7 inspector-days.

10.03 Parallel inspection procedures. There are no parallel inspection procedures in the core inspection program relative to this TI.

2515/140-11 TRAINING

EMEB/NRR will conduct a meeting or telephone conference to provide training for NRC personnel on Generic Letter 96-05 and inspections using this TI. EMEB/NRR will provide assistance to the regions in the performance of sample inspections conducted in accordance with this TI. EMEB/NRR will provide periodic briefings on the performance of Generic Letter 96-05 inspections upon request by the regions.

2515/140-12 REFERENCES

Bulletin 85-03 (November 15, 1985), "Motor-Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings," and its supplement.

Generic Letter 89-10 (June 28, 1989), "Safety-Related Motor-Operated Valve Testing and Surveillance," and its seven supplements.

Generic Letter 95-07 (August 17, 1995), "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves."

Generic Letter 96-05 (September 16, 1996), "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves."

NRC Information Notice 96-48 (August 21, 1996), "Motor-Operated Valve Performance Issues," and Supplement 1 (July 24, 1998).

TI 2515/109 (Revision 3, June 23, 1997) "Inspection Requirements for Generic Letter 89-10, Safety-Related Motor-Operated Valve Testing and Surveillance."

END