

February 25, 2000

Mr. John K. Wood  
Vice President - Nuclear, Perry  
FirstEnergy Nuclear Operating Company  
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SUBJECT: PERRY NUCLEAR POWER PLANT, UNIT 1 - SAFETY EVALUATION OF  
LICENSEE RESPONSE TO GENERIC LETTER 96-05 (TAC NO. M97085)

Dear Mr. Wood:

On September 18, 1996, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," requesting each nuclear power plant licensee to establish a program, or to ensure the effectiveness of its current program, to verify on a periodic basis that safety-related motor-operated valves (MOVs) continue to be capable of performing their safety functions within the current licensing bases of the facility.

On November 18, 1996 (PY-CEI/NRR-2114L), the licensee (now identified as FirstEnergy Nuclear Operating Company) of the Perry Nuclear Power Plant submitted a 60-day response to GL 96-05 notifying the NRC that it would implement the requested MOV periodic verification program. On March 17, 1997 (PY-CEI/NRR-2142L), the licensee submitted a 180-day response to GL 96-05 providing a summary description of the MOV periodic verification program being implemented at Perry. In a letter dated September 10, 1998 (PY-CEI/NRR-2318L), the licensee updated its commitment to GL 96-05. On June 29, 1999 (PY-CEI/NRR-2403L), the licensee provided a response to a request for additional information regarding GL 96-05 forwarded by the NRC staff on March 25, 1999.

The staff has reviewed the licensee's submittals and applicable NRC inspection reports for the MOV program at Perry. The staff finds that the licensee has established an acceptable program to periodically verify the design-basis capability of the safety-related MOVs at Perry through its commitment to all three phases of the Joint Owners Group (JOG) Program on MOV Periodic Verification and the additional actions described in its submittals. As discussed in the attached safety evaluation (SE), the staff concludes that the licensee is adequately addressing the actions requested in GL 96-05.

The NRC staff may conduct inspections at Perry to verify that the implementation of the MOV periodic verification program is in accordance with the licensee's commitments; this NRC SE; and the NRC SE dated October 30, 1997, on the JOG Program on MOV Periodic Verification.

Mr. J. Wood

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This completes the staff's efforts on TAC No. M97085.

Sincerely,

***/RA/***

Douglas V. Pickett, Senior Project Manager, Section 2  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-440

Enclosure: Safety Evaluation

cc w/encl: See next page

Mr. J. Wood

- 2 -

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
LICENSEE RESPONSE TO GENERIC LETTER 96-05, "PERIODIC VERIFICATION OF  
DESIGN-BASIS CAPABILITY OF SAFETY-RELATED MOTOR-OPERATED VALVES,"  
PERRY NUCLEAR POWER PLANT  
DOCKET NUMBER 50-440

## 1.0 INTRODUCTION

Many fluid systems at nuclear power plants depend on the successful operation of motor-operated valves (MOVs) in performing their safety functions. Several years ago, MOV operating experience and testing, and research programs sponsored by the nuclear industry and the U. S. Nuclear Regulatory Commission (NRC), revealed weaknesses in a wide range of activities (including design, qualification, testing, and maintenance) associated with the performance of MOVs in nuclear power plants. For example, some engineering analyses used in sizing and setting MOVs did not adequately predict the thrust and torque required to operate valves under their design-basis conditions. In addition, inservice tests of valve stroke time under zero differential-pressure and flow conditions did not ensure that MOVs could perform their safety functions under design-basis conditions.

Upon identification of the weaknesses in MOV performance, significant industry and regulatory activities were initiated to verify the design-basis capability of safety-related MOVs in nuclear power plants. After completion of these activities, nuclear power plant licensees began establishing long-term programs to maintain the design-basis capability of their safety-related MOVs. This safety evaluation (SE) addresses the program developed by FirstEnergy Nuclear Operating Company (licensee) to periodically verify the design-basis capability of safety-related MOVs at the Perry Nuclear Power Plant.

## 2.0 REGULATORY REQUIREMENTS

The NRC regulations require that MOVs important to safety be treated in a manner that provides assurance of their intended performance. Criterion 1 to Appendix A, "General Design Criteria for Nuclear Power Plants," to Part 50 of Title 10 of the *Code of Federal Regulations* (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 Section 50.55a of 10 CFR Part 50, the NRC requires licensees to establish inservice testing (IST) programs in accordance with Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code.

In response to concerns regarding MOV performance, NRC staff issued Generic Letter (GL) 89-10 (June 28, 1989), "Safety-Related Motor-Operated Valve Testing and Surveillance," which requested that nuclear power plant licensees and construction 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 GL 89-10 program within approximately three refueling outages or 5 years from the issuance of the GL. Permit holders were requested to complete the GL 89-10 program before plant startup or in accordance with the above schedule, whichever was later.

The NRC staff issued seven supplements to GL 89-10 that provided additional guidance and information on MOV program scope, design-basis reviews, switch settings, testing, periodic verification, trending, and schedule extensions. GL 89-10 and its supplements provided only limited guidance regarding MOV periodic verification and the measures appropriate to assure preservation of design-basis capability. Consequently, the staff determined that additional guidance on the periodic verification of MOV design-basis capability should be prepared. On September 18, 1996, the NRC staff issued GL 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," requesting 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. In GL 96-05, the NRC staff summarized several industry and regulatory activities and programs related to maintaining long-term capability of safety-related MOVs. For example, GL 96-05 discussed 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," which allows the replacement of ASME Code requirements for MOV quarterly stroke-time testing with exercising of safety-related MOVs at least once per operating cycle and periodic MOV diagnostic testing on a frequency to be determined on the basis of margin and degradation rate. In GL 96-05, the NRC staff stated that the method in OMN-1 meets the intent of the GL with certain limitations. The NRC staff also noted in GL 96-05 that licensees remain bound by the requirements in their code of record regarding MOV stroke-time testing, as supplemented by relief requests approved by the NRC staff.

In GL 96-05, licensees were requested to submit the following information to the NRC:

- a. within 60 days from the date of GL 96-05, a written response indicating whether or not the licensee would implement the requested actions; and
- b. within 180 days from the date of GL 96-05, or upon notification to the NRC of completion of GL 89-10 (whichever is later), a written summary description of the licensee's MOV periodic verification program.

The NRC staff is preparing an SE on the response of each licensee to GL 96-05. The NRC staff intends to rely to a significant extent on an industry initiative to identify valve age-related degradation which could adversely affect the design-basis capability of safety-related MOVs (described in Section 3.0) where a licensee commits to implement that industry program. The NRC staff will conduct inspections to verify the implementation of GL 96-05 programs at nuclear power plants as necessary.

### 3.0 JOINT OWNERS GROUP PROGRAM ON MOV PERIODIC VERIFICATION

In response to GL 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. The Joint Owners Group (JOG) Program on MOV Periodic Verification is described by the BWROG in its Licensing Topical Report NEDC-32719, "BWR Owners' Group Program on Motor-Operated Valve (MOV) Periodic Verification," and described by WOG and CEOG in their separately submitted Topical Report MPR-1807, "Joint BWR, Westinghouse and Combustion Engineering Owners' Group Program on Motor-Operated Valve (MOV) Periodic Verification." The stated objectives of the JOG program on MOV Periodic Verification are (1) to provide an approach for licensees to use immediately in their GL 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. The specific elements of the JOG program are (1) providing an "interim" MOV periodic verification program for applicable licensees to use in response to GL 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.

The JOG interim MOV periodic verification program includes (1) continuation of MOV stroke-time testing required by the ASME Code IST program, and (2) performance of MOV static diagnostic testing on a frequency based on functional capability (age-related degradation margin over and above margin for GL 89-10 evaluated parameters) and safety significance. In implementing the interim MOV static diagnostic test program, licensees will rank MOVs within the scope of the JOG program according to their safety significance. The JOG program specifies that licensees need to justify their approach for risk ranking MOVs. In Topical Report NEDC 32264, "Application of Probabilistic Safety Assessment to GL 89-10 Implementation," BWROG described a methodology to rank MOVs in GL 89-10 programs with respect to their relative importance to core-damage frequency and other considerations to be added by an expert panel. In an SE dated February 27, 1996, the NRC staff accepted the BWROG methodology for risk ranking MOVs in boiling water reactor nuclear plants with certain conditions and limitations. In the NRC SE (dated October 30, 1997) on the JOG Program on MOV Periodic Verification, the NRC staff indicated its view that the BWROG methodology for MOV risk ranking is appropriate for use in response to GL 96-05. With respect to Westinghouse-designed pressurized water reactor nuclear plants, WOG prepared Engineering Report V-EC-1658, "Risk Ranking Approach for Motor-Operated Valves in Response to GL 96-05." On April 14, 1998, the NRC staff issued an SE accepting with certain conditions and limitations, the WOG approach for ranking MOVs based on their risk significance. Licensees not applicable to the BWROG or WOG methodologies need to justify their MOV risk-ranking approach individually.

The objectives of the JOG dynamic test program are to determine degradation trends in dynamic thrust and torque, and to use dynamic test results to adjust the test frequency and method specified in the interim program if warranted. The JOG dynamic testing program includes (1) identification of conditions and features which 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, 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, BWROG submitted Licensing Topical Report NEDC-32719 (Revision 2) describing the JOG program on July 30, 1997. Similarly, CEOG and WOG submitted Topical Report MPR-1807 (Revision 2) describing the JOG program on August 6 and 12, 1997, respectively. On October 30, 1997, the NRC staff issued an SE accepting the JOG program with certain conditions and limitations as an acceptable industry-wide response to GL 96-05 for valve age-related degradation.

#### 4.0 PERRY GL 96-05 PROGRAM

On November 18, 1996, the licensee of the Perry Nuclear Power Plant submitted a 60-day response to GL 96-05 notifying the NRC that it would implement the requested MOV periodic verification program. On March 17, 1997, the licensee submitted a 180-day response to GL 96-05 providing a summary description of the MOV periodic verification program being implemented at Perry. In a letter dated September 10, 1998, the licensee updated its commitment to GL 96-05. On June 29, 1999, the licensee provided a response to a request for additional information regarding GL 96-05 forwarded by the NRC staff on March 25, 1999.

In its letter dated March 17, 1997, the licensee described its MOV periodic verification program, including scope, existing and planned testing, capability margin, and implementation of the JOG program at Perry. For example, the licensee indicated that the interim MOV static diagnostic test program at Perry would apply MOV risk and margin threshold values that are consistent with (or more conservative than) the JOG periodic verification program. The frequency of MOV static testing is based on valve safety significance and actuator functional capability. Adjustments to Perry's GL 96-05 program would consider the test results and recommendations from the JOG dynamic test program. In its letter dated September 10, 1998, the licensee updated its GL 96-05 commitment to implement Topical Report NEDC-32179 (Revision 2). In its letter dated June 29, 1999, the licensee described the MOV risk-ranking approach at Perry and clarified that its approach is identical to the method presented in BWROG Topical Report NEDC 32264 for risk-ranking MOVs.

#### 5.0 NRC STAFF EVALUATION

The NRC staff has reviewed the information provided in the licensee's submittals describing the program to periodically verify the design-basis capability of safety-related MOVs at Perry in response to GL 96-05. NRC Inspection Report 50-440/96005 (IR 96005) provided the results of inspections to evaluate the licensee's program to verify the design-basis capability of safety-related MOVs in response to GL 89-10. The staff closed the review of the GL 89-10 program at Perry in IR 96005 based on verification of the design-basis capability of safety-related MOVs at Perry. The staff's evaluation of the licensee's response to GL 96-05 is described below.

##### 5.1 MOV Program Scope

In GL 96-05, the NRC staff indicated that all safety-related MOVs covered by the GL 89-10 program should be considered in the development of the MOV periodic verification program.

The staff noted that the program should consider 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.

In a letter dated November 18, 1996, the licensee committed to implement the requested MOV periodic verification program at Perry in response to GL 96-05 and did not take exception to the scope of the GL. In its letter dated March 17, 1997, the licensee stated that the scope of its MOV periodic verification program includes the safety-related MOVs within the scope of its GL 89-10 program. The licensee noted that 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 are included in the scope of GL 96-05 unless the system (or train) is declared inoperable when the MOVs are in their nonsafety position. In IR 96005, the NRC staff reviewed the licensee's MOV program scope in response to GL 89-10 and the licensee took action to address the inspector concerns.

The staff considers the licensee to have made adequate commitments regarding the scope of its MOV program.

## 5.2 MOV Assumptions and Methodologies

Licensees maintain their assumptions and methodologies used in the development of MOV programs consistent with the plant configuration throughout the life of the plant (a concept commonly described as a "living program"). For example, the design basis of safety-related MOVs is maintained up to date, including consideration of any plant modifications or power uprate conditions.

In IR 96005, the NRC staff reviewed the licensee's justification for the assumptions and methodologies used in the MOV program in response to GL 89-10 at Perry. With certain long-term items discussed in the following section, the staff determined that the licensee had adequately justified the assumptions and methodologies used in its MOV program. The licensee's letter dated June 29, 1999, indicated ongoing activities, such as review of motor actuator output, to update its MOV program assumptions and methodologies. The NRC staff considers the licensee to have adequate processes in place to maintain the assumptions and methodologies used in its MOV program, including the design basis of its safety-related MOVs.

## 5.3 GL 89-10 Long-Term Items

When evaluating the GL 89-10 program at Perry, the NRC staff discussed in IR 96005 several items of the licensee's MOV program to be addressed over the long term. In its letter dated June 29, 1999, the licensee reported on the status of those long-term GL 89-10 items. For example, the licensee modified the actuator overall gear ratio for valve 1G33-F040 to increase its available margin. The licensee plans to continue its efforts to gather valve factor information for specific Anchor/Darling and Borg-Warner gate valves, including the application of JOG data when available. The licensee is continuing to gather stem friction coefficient data as part of its periodic verification program. Test data gathered to date supports the use of a 0.15 stem friction coefficient as the design value. Also, in GL 89-10, the NRC staff identified pressure locking and thermal binding as potential performance concerns for safety-related MOVs. The NRC staff completed its review of the licensee's actions in response to GL 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," in an SE dated April 15, 1999.

In IR 96005, the NRC staff discussed qualitative and quantitative aspects of the licensee's program for trending MOV performance at Perry. For example, the licensee uses a computerized database with the capability to trend various MOV information. This allows analysis of MOV diagnostic test data, failure information, preventive maintenance actions, and corrective maintenance items. The licensee evaluates this information to identify trends every 2 years or after each refueling outage. In its letter dated June 29, 1999, the licensee stated that it uses a combination of preventive maintenance and periodic test results to trend MOV performance. Gearbox grease sample inspection, valve stem cleaning and lubrication, and limit switch compartment cleaning and inspection are examples of routine MOV preventive maintenance items. Torque and thrust values (i.e., at unseating, average running, seat contact, control switch trip, maximum, and differential pressure test flow cutoff), motor current (i.e., at unseating, average running, control switch trip, and maximum), motor power at maximum loads, stem friction factor, valve factor, stroke time, rate of loading, and available margin are MOV parameters that are monitored and trended.

With the licensee's ongoing MOV activities and trending program, no outstanding issues regarding the licensee's GL 89-10 program remain at Perry.

#### 5.4 JOG Program on MOV Periodic Verification

In its letter dated September 10, 1998, the licensee updated its commitment to implement the JOG Program on MOV Periodic Verification as described in Topical Report NEDC-32179 (Revision 2). In an SE dated October 30, 1997, the NRC staff accepted the JOG program as an industry-wide response to GL 96-05 with certain conditions and limitations. The JOG program consists of the following three phases: (1) the JOG interim static diagnostic test program; (2) the JOG 5-year dynamic test program; and (3) the JOG long-term periodic test program. The staff considers the licensee's commitment in response to GL 96-05 to include implementation of all three phases of the JOG program at Perry. The conditions and limitations discussed in the NRC SE dated October 30, 1997, apply to the JOG program at Perry. The staff considers the commitments by the licensee to implement all three phases of the JOG program at Perry to be an acceptable response to GL 96-05 for valve age-related degradation.

In its letters dated March 17, 1997, and June 29, 1999, the licensee stated that its MOV risk-ranking approach was identical to the approach presented in BWROG Topical Report NEDC-32264. For example, the licensee's MOV risk-ranking approach incorporates Fussell-Vesely importance measures utilizing base line failure data, sensitivity study failure data defined according to NUREG/CR-4550 and NUREG/CR-5140, and an expert panel. During a telephone conversation conducted on February 3, 2000, the licensee clarified to the NRC staff that it reviewed the BWROG example list of risk-significant MOVs and justified any differences between the BWROG example list and the licensee's list of risk-significant MOVs. The conditions and limitations discussed in the NRC SE dated February 27, 1996, related to the BWROG methodology, are also applicable to the MOV risk-ranking approach at Perry. Based on the licensee's submittals, the staff considers the licensee's methodology for risk ranking MOVs at Perry to be acceptable.

In its letters dated March 17, 1997, and June 29, 1999, the licensee noted that the interim MOV static diagnostic testing under the JOG program would be performed on a test frequency based on the safety significance and functional capability of each GL 96-05 MOV. The MOV static diagnostic test frequency matrix at Perry is consistent with (or more conservative than) the JOG recommendations. For example, the licensee defined low margin as less than 10% compared to 5% assigned by the JOG program. In its letter dated March 17, 1997, the licensee noted that

its interim static test program allows some valves with medium and high margins to be tested on a four and six refueling outage frequency, respectively (not to exceed 10 years). In its letter dated June 29, 1999, the licensee clarified that sample valve tests have been completed for all groups assigned to a longer-frequency test category with the exception of Group 12 valves. The licensee plans to test a sample valve from this group during Cycle 8 which is scheduled for 2001. The NRC staff finds the licensee's interim MOV static test program frequency to be acceptable.

The licensee suggests in its letter of March 17, 1997, that MOVs set up using the Electric Power Research Institute (EPRI) MOV Performance Prediction Methodology (PPM) should not require periodic dynamic testing. The JOG program includes MOVs set up using the results of the EPRI MOV PPM. The NRC staff considers that JOG will determine if MOVs set up using the EPRI MOV PPM should be periodically dynamically tested at the completion of its test program and that the licensee will follow the JOG recommendations.

The JOG program is intended to address most gate, globe and butterfly valves used in safety-related applications in the nuclear power plants of participating licensees. JOG indicates that each licensee is responsible for addressing any MOVs outside the scope of applicability of the JOG program. The NRC staff recognizes that JOG has selected a broad range of MOVs and conditions for the dynamic testing program, and that significant information will be obtained on the performance and potential degradation of safety-related MOVs during the interim static diagnostic test program and the JOG dynamic test program. As the test results are evaluated, JOG might include or exclude additional MOVs with respect to the scope of its program. Although the test information from the MOVs in the JOG dynamic test program might not be adequate to establish a long-term periodic verification program for each MOV outside the scope of the JOG program, sufficient information should be obtained from the JOG dynamic test program to identify any immediate safety concern for potential valve age-related degradation during the interim period of the JOG program. Therefore, the NRC staff considers it acceptable for the licensee to apply its interim static diagnostic test program to GL 96-05 MOVs that currently might be outside the scope of the JOG program with the feedback of information from the JOG dynamic test program to those MOVs. In the NRC SE dated October 30, 1997, the NRC staff specifies that licensees implementing the JOG program must determine any MOVs outside the scope of the JOG program (including service conditions) and justify a separate program for periodic verification of the design-basis capability (including static and dynamic operating requirements) of those MOVs.

## 5.5 Motor Actuator Output

The JOG program focuses on the potential age-related increase in the thrust or torque required to operate valves under their design-basis conditions. In the NRC SE dated October 30, 1997, on the JOG program, the NRC staff specifies that licensees are responsible for addressing the thrust or torque delivered by the MOV motor actuator and its potential degradation. Although the JOG does not plan to evaluate degradation of motor actuator output, significant information on the output of motor actuators will be obtained through the interim MOV static diagnostic test program and the JOG dynamic test program. Several parameters obtained during MOV static and dynamic diagnostic testing help identify motor actuator output degradation when opening and closing the valve including, as applicable, capability margin, thrust and torque at control switch trip, stem friction coefficient, load sensitive behavior, and motor current.

In IR 96005, the NRC staff reported that the licensee's MOV trending program appeared to be capable of adequately tracking and evaluating data to maintain MOV design-basis capability.

In its letter dated June 29, 1999, the licensee indicated that it uses a combination of preventive maintenance, periodic diagnostic test results and data trending to detect decreases in actuator output to ensure adequate actuator output capability for safety-related MOVs at Perry. Torque and thrust values, motor current, spring pack, motor power, stem friction factor, valve factor, stroke time, rate of loading, and available margin are examples of critical parameters that are trended.

In Technical Update 98-01 and its Supplement 1, Limatorque Corporation provided updated guidance for predicting the torque output of its ac-powered motor actuators. In its letter dated June 29, 1999, the licensee reported that it is addressing this information. The licensee evaluated the output capability of its ac-powered GL 96-05 MOVs using a methodology developed by Commonwealth Edison Company (ComEd) where applicable. The licensee applied the guidance in Limatorque Technical Update 98-01 to those MOVs not covered by the ComEd methodology. The licensee has requested additional information from Limatorque for four MOVs with a specific worm gear ratio. In the interim, the licensee revised the calculations for these four MOVs to include a 0.9 application factor and verified that the differential-pressure operating requirement was near zero for these valves. The licensee reported that it had completed the corrective actions for MOVs where the revised motor capability or existing torque switch settings were not sufficient. These corrective actions involved a gear change in one MOV and adjustment of torque switch settings for other MOVs. The NRC staff notes that the licensee is responsible for addressing any changes to the ComEd methodology resulting from the Limatorque update. Further, any MOV operability concerns that might be identified in the future will be processed in accordance with established regulatory requirements and plant-specific commitments.

In its letter dated July 17, 1998, forwarding Technical Update 98-01, Limatorque indicates that a future technical update will be issued to address the application of dc-powered MOVs. In its letter dated June 29, 1999, the licensee stated that it is participating in the BWROG effort to provide updated guidance for dc-powered MOVs. Currently, the licensee stated that it calculates dc-powered MOV actuator capability using pullout efficiency, a 0.9 application factor, a 0.9 reduction factor for motor performance curve correction, and motor winding resistance losses for motor temperature rise. The licensee will evaluate any new dc-powered MOV output information and process this information in accordance with established regulatory requirements and plant-specific commitments.

The NRC staff considers the licensee to be establishing sufficient means to monitor MOV motor actuator output and its potential degradation.

## 6.0 CONCLUSION

The NRC staff finds that the licensee has established an acceptable program to periodically verify the design-basis capability of the safety-related MOVs at Perry through its commitment to all three phases of the JOG Program on MOV Periodic Verification and the additional actions described in its submittals. Therefore, the staff concludes that the licensee is adequately addressing the actions requested in GL 96-05. The staff may conduct inspections at Perry to verify that the implementation of the MOV periodic verification program is in accordance with the licensee's commitments; this NRC SE; and the NRC SE dated October 30, 1997, on the JOG Program on MOV Periodic Verification.

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Date: February 25, 2000