

March 5, 2001

Mr. A. Alan Blind  
Vice President, Nuclear Power  
Consolidated Edison Company  
of New York, Inc.  
Broadway and Bleakley Avenue  
Buchanan, NY 10511

SUBJECT: COMPLETION OF LICENSING ACTION FOR GENERIC LETTER 96-05  
REGARDING CAPABILITY OF MOTOR-OPERATED VALVES, INDIAN POINT  
NUCLEAR GENERATING UNIT NO. 2 (TAC NO. M97057)

Dear Mr. Blind:

On September 18, 1996, the U.S. Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves." In this GL, the NRC requested each nuclear power plant licensee establish a program, or 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, Consolidated Edison Company of New York, Inc., (Con Edison) submitted its 60-day response to GL 96-05 notifying the NRC that it would implement the requested MOV periodic verification program at the Indian Point Nuclear Generating Unit No. 2 (IP2). On March 17, 1997, Con Edison submitted its 180-day response to GL 96-05 providing a summary description of the MOV periodic verification program to be implemented at IP2. In a supplemental response dated April 30, 1998, Con Edison updated its commitment to GL 96-05. On May 14, 1999, Con Edison provided a response to the NRC staff's request for additional information dated March 12, 1999.

The NRC staff has reviewed the Con Edison submittals and applicable NRC inspection reports. The staff finds that the licensee has established an acceptable program to periodically verify the design-basis capability of the safety-related MOVs at IP2 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. The staff concludes that the licensee is adequately addressing the actions requested in GL 96-05. The enclosed safety evaluation (SE) provides the details of the staff's review. The staff may conduct inspections at IP2 to verify that the implementation of the MOV periodic verification program is consistent with Con Edison's

A. Blind

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commitments, the enclosed NRC SE, the NRC SE dated October 30, 1997, on the JOG Program on MOV Periodic Verification, and the NRC SE dated April 14, 1998, on the Westinghouse Owners Group methodology for ranking MOVs by their safety significance.

This completes the staff's efforts on TAC No. M97057.

Sincerely,

**/RA/**

Patrick D. Milano, Senior Project Manager, Section 1  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-247

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RESPONSE TO GENERIC LETTER 96-05, "PERIODIC VERIFICATION OF  
DESIGN-BASIS CAPABILITY OF SAFETY-RELATED MOTOR-OPERATED VALVES"  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.  
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2  
DOCKET NUMBER 50-247

## 1.0 INTRODUCTION

Many fluid systems at nuclear power plants depend on the successful operation of motor-operated valves (MOV) 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 Consolidated Edison Company of New York, Inc., (Con Edison) to verify periodically the design-basis capability of safety-related MOVs at Indian Point Nuclear Generating Unit No. 2 (IP2).

## 2.0 REGULATORY REQUIREMENTS

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

Enclosure

accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, and more recently the ASME Code for Operation and Maintenance of Nuclear Power Plants.

In response to concerns regarding MOV performance, the NRC staff issued Generic Letter (GL) 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," on June 28, 1989. In GL 89-10, the NRC 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 NRC requested that licensees complete the GL 89-10 program within approximately 3 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 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 NRC staff determined that additional guidance on the periodic verification of MOV design-basis capability should be prepared.

On September 18, 1996, the NRC issued GL 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," requesting each licensee to 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 stated that the method in OMN-1 meets the intent of the GL with certain limitations. The NRC 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 also stated that it was preparing a safety evaluation (SE) on the response of each licensee to GL 96-05. Further, the staff intended 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 staff planned to 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 Generic Letter 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 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 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 Generic Letter 96-05." On April 14, 1998, the 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, the BWROG submitted on July 30, 1997, Licensing Topical Report NEDC-32719 (Revision 2) describing the JOG program. Similarly, the CEOG and the 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. On October 19, 1999, the Babcock & Wilcox Owners Group (B&WOG) forwarded Topical Report MPR-1807 (Revision 2) to the NRC, and stated that B&WOG is now participating in the JOG Program on MOV Periodic Verification. In a letter dated May 15, 2000, the NRC staff informed B&WOG that Topical Report MPR-1807 is acceptable for referencing in B&WOG licensing applications to the extent specified and under the limitations delineated in the report and the associated NRC SE dated October 30, 1997.

#### 4.0 INDIAN POINT UNIT NO. 2 GL 96-05 PROGRAM

On November 18, 1996, Consolidated Edison Company of New York, Inc., (Con Edison) submitted a 60-day response to GL 96-05 notifying the NRC that it would implement the requested MOV periodic verification program at IP2. 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 planned to be implemented at IP2. In a letter dated April 30, 1998, the licensee updated its commitment to GL 96-05. On May 14, 1999, the licensee provided a response to a request for additional information regarding GL 96-05 forwarded by the staff on March 12, 1999.

In its letter dated March 17, 1997, the licensee described its MOV periodic verification program, including scope, testing, risk-ranking, and implementation of the JOG program at IP2. For example, the licensee described the interim MOV static diagnostic test program at IP2 as applying the same MOV margin threshold values as identified in the JOG topical report. The licensee's high risk criteria include both the high and medium risk criteria contained in the WOG MOV risk-ranking approach. The licensee stated that dynamic diagnostic testing of selected MOVs would be performed under its MOV periodic verification program and that adjustments would be made to its GL 96-05 program based on the test results and recommendations from the JOG testing program. In its letters dated April 30, 1998, and May 14, 1999, the licensee committed to continue its ongoing participation in the JOG MOV Periodic Verification Program

as a member of WOG and to implement the program elements described in Topical Report MPR-1807 (Revision 2) describing the JOG program.

## 5.0 NRC STAFF EVALUATION

The staff has reviewed the information provided in Con Edison's submittals describing the program to verify periodically the design-basis capability of safety-related MOVs at IP2 in response to GL 96-05. NRC Inspection Reports 50-247/98-11 (IR 98-11) and 50-247/97-06 (IR 97-06) provided the results of inspections to evaluate Con Edison'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 IP2 in NRC Inspection Report No. 50-247/98-11 (IR 98-11) based on verification of the design-basis capability of safety-related MOVs at IP2 and a documented plant process to confirm several program assumptions. The staff's evaluation of Con Edison's response to GL 96-05 is described below.

### 5.1 MOV Program Scope

In GL 96-05, the 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 its letter dated November 18, 1996, Con Edison committed to implement the requested MOV periodic verification program at IP2 in response to GL 96-05 and did not take exception to the scope of the GL. Con Edison's letter of March 17, 1997, and IR 97-06 describe the IP2 MOV program as containing 132 MOVs. The staff considers Con Edison to have made adequate commitments regarding the scope of its MOV program.

### 5.2 MOV Assumptions and Methodologies

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

In IR 98-11, the staff reviewed Con Edison's justification for the assumptions and methodologies used in the MOV program in response to GL 89-10 at IP2. The staff determined that Con Edison had adequately justified the assumptions and methodologies used in its MOV program, with certain long-term items discussed in the following section. In its May 14, 1999, letter, Con Edison indicated activities, such as review of motor actuator output, were ongoing to update its MOV program assumptions and methodologies. The staff considers Con Edison 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 IP2, the staff discussed in IR 98-11 several items of Con Edison's MOV program to be addressed over the long term. In its letter dated May 14, 1999, Con Edison reported on the status of those long-term GL 89-10 aspects. Con Edison stated that it (1) reviewed the NRC staff's SE of the Electric Power Research Institute (EPRI) MOV Performance Prediction Methodology (PPM); (2) developed checklists to ensure that EPRI MOV PPM calculations are performed according to the conditions and limitations specified in the SE; (3) would incorporate those checklists into existing EPRI MOV PPM calculations by July 31, 1999; and (4) would evaluate modification options for low margin valves identified during the review of Limtorque Technical Update 98-01 and complete any margin improvement modifications during the 2000 refueling outage. Con Edison also stated that it performed a dynamic diagnostic test of charging system valve 222, but the flow rate during the test was not sufficient to obtain useful data to determine the closing valve factor. As an alternative to testing, Con Edison selected a conservative valve factor and conducted an industry survey to obtain additional valve factor information for charging system valve 222. Based on the industry survey, Con Edison determined that insufficient data was available to justify a statistical approach to identifying a closing valve factor for this valve. Thus, Con Edison continues to use the bounding valve factor of 0.804. Con Edison also reviewed design requirements for the thermal barrier heat exchanger isolation valve, FCV-625, and concluded that the MOV is capable of meeting its mechanical wedging design requirement such that calculation revisions are not required.

Also in GL 89-10, the staff identified pressure locking and thermal binding as potential performance concerns for safety-related MOVs. The staff completed the review of Con Edison's actions in response to GL 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," in an SE dated May 20, 1999.

In its letter dated March 17, 1997, Con Edison stated that the tracking and trending program developed for the GL 89-10 program will be used to ensure that negative trends are identified and corrected in order to maintain actuator performance at an acceptable standard. In IR 98-11, the staff discussed qualitative and quantitative aspects of Con Edison's program for trending MOV performance at IP2. Con Edison uses a station-wide tracking system to track MOV deficiencies and failures. MOV test data are computerized so that performance trends can be displayed graphically and Con Edison periodically evaluates this information to identify and correct recurring problems.

With Con Edison's ongoing MOV activities and trending program, no outstanding issues regarding Con Edison's GL 89-10 program remain at IP2.

### 5.4 JOG Program on MOV Periodic Verification

In its letter dated April 30, 1998, Con Edison updated its commitment to implement the JOG Program on MOV Periodic Verification as described in Topical Report MPR-1807 (Revision 2). In an SE dated October 30, 1997, the staff accepted the JOG program as an industry-wide response to GL 96-05 with certain conditions and limitations. The JOG program includes: (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 commitments in response to GL 96-05 to include all 3 phases of the JOG program at IP2. The

conditions and limitations discussed in the NRC SE dated October 30, 1997, apply to the JOG program at IP2. The staff considers the licensee's commitments to implement all 3 phases of the JOG program to be an acceptable response to GL 96-05 for age-related valve degradation.

In its letter dated March 17, 1997, Con Edison 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. In its letter dated May 14, 1999, Con Edison indicated that it had compared its MOV risk-ranking method to the risk-ranking approach presented in the WOG Engineering Report V-EC-1658-A, and identified those areas where additional effort is necessary to be completely consistent with the WOG approach. For example, Con Edison's MOV risk-ranking method grouped MOVs into two categories (risk important and non-risk important) and WOG Engineering Report V-E-1658-A grouped MOVs into three categories (high, medium, and low). Con Edison's method for grouping MOVs was more conservative than the WOG approach and Con Edison may consider applying the new industry criteria in future MOV program updates. Con Edison also stated that personnel experienced in probabilistic risk assessment, MOV issues, and operations and maintenance participated in the MOV risk-ranking development and review; however, a formal expert panel was not used during the process as recommended by WOG. Con Edison incorporated the use of an expert panel into its MOV risk-ranking method during 2000 and has now completed its review. In its report, WOG provided an example list of risk-significant MOVs for consideration by each licensee in applying the owners group methodology. Based on Con Edison's summary, the staff considers Con Edison's methodology for risk ranking MOVs at IP2 to be acceptable.

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 staff recognizes that JOG has selected a broad range of MOVs and conditions for the dynamic testing program. Consequently, the staff expects significant information to 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, the 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 staff considers it acceptable for Con Edison 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 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 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 can be obtained during MOV static and dynamic testing to 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 its letter dated May 14, 1999, Con Edison indicated that it ensures adequate actuator output capability for safety-related MOVs at IP2 to perform their design-basis functions by performing preventive maintenance and implementing the periodic verification program. Preventive maintenance includes stem lubrication, grease inspections, and switch inspections. The periodic verification program is based on JOG guidance. In IR 98-11, the NRC staff reported that Con Edison is monitoring stem friction coefficient, comparing data from static and dynamic MOV tests with existing assumptions, and making adjustments as necessary.

In Technical Update 98-01 and its Supplement 1, Limitorque Corporation provided updated guidance for predicting the torque output of its motor actuators. In IR 98-11, the NRC reported that Con Edison's MOV calculations properly used pullout efficiencies but did not include the 0.9 application factor specified by Limitorque in Technical Update 98-01. In its letter dated May 14, 1999, Con Edison reported that it had evaluated the margins for each valve in its GL 89-10 MOV program using the guidance contained in Technical Update 98-01 and its Supplement 1 and had found current design margins and MOV setpoints acceptable. However, Con Edison noted that two concerns were identified during the review. The first concern involved actuator capability of some GL 89-10 program MOVs to trip their torque switch during degraded voltage conditions. Con Edison used results from the Commonwealth Edison Company (ComEd) ac-powered motor methodology to justify actuator capability to ensure proper MOV operation during degraded voltage conditions. Con Edison noted that any recommended modifications or setpoint changes would be implemented during the refueling outage in 2000. The second concern involved ten MOVs that required a specific configuration review by Limitorque or had terminal voltages lower than 70 percent of the nameplate-rated voltage. In the telephone conference on August 10, 1999, Con Edison clarified to the staff that the terminal voltages were near 70 percent of nameplate-rated voltage and that it would review the voltage available to these MOVs. Any MOV operability concerns that might be identified in the future will be processed in accordance with established regulatory requirements and plant-specific commitments. The staff considers that calculations that are used to demonstrate the design-basis capability of safety-related MOVs are required to meet the requirements of 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." Therefore, controls are required to be in place to ensure that any industry MOV output methodology provisions and revisions are properly implemented.

In the telephone conference with the staff on August 10, 1999, Con Edison clarified that there are no dc-powered MOVs in the GL 96-05 program at IP2.

The staff considers Con Edison to be establishing sufficient means to monitor MOV motor actuator output and its potential degradation.

## 6.0 CONCLUSION

The staff finds that Con Edison has established an acceptable program to verify periodically the design-basis capability of the safety-related MOVs at IP2 through its commitment to all three phases of the JOG program on MOV periodic verification and the additional actions described in the licensee's submittals. Therefore, the staff concludes that Con Edison has adequately addressed the actions requested in GL 96-05. The staff may conduct inspections to verify the implementation of the MOV periodic verification program is consistent with Con Edison's commitments; this NRC SE; the NRC SE dated October 30, 1997, on the JOG Program on MOV Periodic Verification; and the NRC SE dated April 14, 1998, on the WOG methodology for ranking MOVs by their safety significance.

Principal Contributors: T. Scarbrough  
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Date: March 5, 2001