Mr. William T. Cottle
President and Chief Executive Officer
STP Nuclear Operating Company
South Texas Project Electric
Generating Station
P. O. Box 289
Wadsworth, TX 77483

February 14, 2000

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 - COMPLETION OF GENERIC LETTER 96-05, "PERIODIC VERIFICATION OF DESIGN-BASIS CAPABILITY OF SAFETY-RELATED MOTOR-OPERATED VALVES" REVIEW (TAC NOS. M97102 AND M97103)

Dear Mr. Cottle:

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." This generic letter requested 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.

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 American Society of Mechanical Engineers (ASME) Code Case OMN-1, "Alternative Rules for Preservice and Inservice Testing of Certain Electric Motor Operated Valve Assemblies in LWR [Light-Water Reactor] 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 generic letter 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.

On November 6, 1996, Houston Lighting & Power Company submitted a 60-day response to GL 96-05 notifying the NRC that it had developed an effective MOV periodic verification program at South Texas Project (STP), Units 1 and 2. STP also stated that it would review its MOV program and incorporate appropriate changes in response to GL 96-05. On March 17, 1997, Houston Lighting & Power Company submitted a 180-day response to GL 96-05 providing a summary description of the MOV periodic verification program being implemented at STP. STP Nuclear Operating Company provided an updated GL 96-05 submittal on November 18, 1998. On July 13, 1999, STP Nuclear Operating Company provided a response to a request for additional information regarding GL 96-05 forwarded by the NRC staff on April 15, 1999.

The NRC has reviewed your submittals and applicable NRC inspection reports for the MOV program at STP. The NRC staff has determined that you have established an acceptable program to verify periodically the design-basis capability of the safety-related MOVs at STP through your commitments to all three phases of the Joint Owners Group (JOG) Program on MOV Periodic Verification and the additional actions described in your submittals. As discussed in the enclosed safety evaluation, the NRC staff concludes that you adequately addressed the actions requested in GL 96-05. The NRC staff may conduct inspections at STP to verify the implementation of the MOV periodic verification program is in accordance with your commitments; this NRC safety evaluation; and the NRC safety evaluation dated October 30, 1997, on the JOG Program on MOV Periodic Verification.

Your submittals provided both the information requested and the responses required by GL 96-05; therefore, TAC Nos. M97102 and M97103 are closed.

Sincerely,

/RA/

John A. Nakoski, Senior Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

Enclosure: Safety Evaluation

cc w/encl: See next page

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John A. Nakoski, Senior Project Manager, Section 1
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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,"

SOUTH TEXAS PROJECT, UNITS 1 AND 2

DOCKET NUMBERS 50-498 AND 50-499

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 Houston Lighting & Power Company (licensee) to verify periodically the design-basis capability of safety-related MOVs at South Texas Project (STP), Units 1 and 2.

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 generic letter. 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 generic letter 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 that 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 Generic Letter 89-10 Implementation," the 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 Generic Letter 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 SOUTH TEXAS PROJECT GL 96-05 PROGRAM

On November 6, 1996, Houston Lighting & Power Company submitted a 60-day response to GL 96-05 notifying the NRC that it had developed an effective MOV periodic verification program at STP. The licensee also stated that it would review its MOV program and incorporate appropriate changes in response to GL 96-05. 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 STP. The licensee provided an updated GL 96-05 submittal on November 18, 1998. On July 13, 1999, the licensee provided a response to a request for additional information regarding GL 96-05 forwarded by the NRC staff on April 15, 1999.

In its letter dated March 17, 1997, the licensee described its MOV periodic verification program, including planned dynamic testing, MOV risk ranking, and participation in the JOG program at STP. In its letter dated November 18, 1998, the licensee updated its GL 96-05 commitment to participate in the JOG dynamic testing program. The licensee stated that it had evaluated the JOG program described in Topical Report MPR-1807 (Revision 2) against STP's MOV periodic verification program and found that there are no significant differences. In its letter dated July 13, 1999, the licensee stated that its commitment to the JOG program is consistent with the NRC staff's interpretation of the commitment to all three phases of the JOG program. The licensee also described its planned MOV risk-ranking approach and stated that the methods described in the WOG Engineering Report V-EC-1658 (Revision 2) and the STP program documents are identical, with the exception of the actual criteria used in the risk-ranking process. The licensee planned to complete the MOV risk ranking at STP by the end of 1999. The licensee stated that it will revise its MOV static test frequencies to be consistent with the JOG interim static test program after the STP MOV risk ranking is completed.

5.0 NRC STAFF EVALUATION

The NRC staff has reviewed the information provided in the licensee's submittals describing the program to verify periodically the design-basis capability of safety-related MOVs at STP in response to GL 96-05. NRC Inspection Report 50-498 & 499/94-32 (IR 94-32) and previous reports 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 STP in a letter dated March 2, 1995, based on the results documented in IR 94-32 and information contained in a letter from the licensee dated January 9, 1995. 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 6, 1996, the licensee committed to implement the requested MOV periodic verification program at STP in response to GL 96-05 and did not take exception to the scope of the generic letter. In IR 50-498 & 50-499/92-06, the NRC staff reviewed the scope of the licensee's MOV program in response to GL 89-10 and did not identify any discrepancies associated with the scope of GL 89-10 and its supplements. The NRC staff concluded that the licensee appropriately justified MOVs that were excluded from its GL 89-10 program.

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 94-32, 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 STP. 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 July 13, 1999, indicated ongoing activities, such as review of MOV capability in light of recent information. 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 STP, the NRC staff discussed in IR 94-32 several items of the licensee's MOV program to be addressed over the long term. In its letter dated July 13, 1999, the licensee reported on the status of those long-term GL 89-10 items. The licensee is currently reviewing the Electric Power Research Institute MOV performance prediction model results for those MOVs without in-plant test data available to validate the assumed valve factor. The licensee plans to complete this review by the end of 1999. The licensee is dynamically testing nine gate valves, one globe valve, and one butterfly valve at a maximum interval of 18 months to identify potential degradation. The licensee revised its post-maintenance test guidelines to consider dynamic testing regardless of valve type or achievable test differential pressure. The licensee completed an MOV overcurrent protection review and is implementing modifications to prevent inadvertent circuit breaker trips under design-basis conditions. 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 is reviewing the licensee's actions in response to GL 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," and will issue an SE at the completion of the review.

In IR 94-32, the NRC staff discussed qualitative and quantitative aspects of the licensee's program for trending MOV performance at STP. For example, the licensee enters MOV performance data into a computerized database with the capability to trend various MOV information and periodically evaluates this information. In its letter dated July 13, 1999, the licensee stated that valve factors are monitored as part of the evaluation of valve dynamic test results, and that diagnostic test results are input into its MOV tracking and trending program to evaluate the data for adverse trends and to predict valve performance.

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

5.4 JOG Program on MOV Periodic Verification

In its letter dated July 13, 1999, the licensee committed 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 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 STP. In its letter dated July 13, 1999, the licensee confirmed its commitment to all three phases of the JOG program. The conditions and limitations discussed in the NRC SE dated October 30, 1997, apply to the JOG program at STP. The staff considers the commitments by the licensee to implement all three phases of the JOG program at STP to be an acceptable response to GL 96-05 for valve age-related degradation.

In its letter dated July 13, 1999, the licensee described its planned MOV risk-ranking approach. The licensee stated that the methods described in the WOG Engineering Report V-EC-1658 (Revision 2) and the STP program documents are identical, with the exception of the actual criteria used in the risk-ranking process. The licensee's criteria used in the MOV risk-ranking

process are based on plant information provided in the South Texas Probabilistic Safety Assessment (PSA) Risk Ranking Program. The licensee also stated that use of plant actual criteria is consistent with the process described in Section 3 of WOG Engineering Report V-EC-1658. The NRC staff notes that Section 3.3 of WOG Engineering Report V-EC-1658 states that use of plant-specific MOV failure rates is appropriate and also provides guidelines for the use of such failure rates. The licensee stated that the WOG example list of risk-significant MOVs will be reviewed and evaluated by the STP MOV working group and expert panel. The licensee also stated that the conditions and limitations identified in the NRC SE dated April 14, 1998, on the WOG MOV risk-ranking methodology are applicable to the STP approach. The licensee planned to complete the MOV risk ranking at STP by the end of 1999. The staff considers the licensee's approach to risk ranking MOVs at STP to be acceptable.

In its letter dated November 18, 1998, the licensee indicated that its current MOV program at STP includes MOV static diagnostic testing at least once every three cycles, with testing not to exceed 5 years. In its letter dated July 13, 1999, the licensee stated its current MOV static diagnostic test frequency will be revised to be consistent with JOG recommendations after completion of the MOV risk ranking. The licensee's MOV program will be implemented on a test frequency based on the safety significance and functional capability of each GL 96-05 MOV as specified by the JOG interim test program.

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 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 its letter dated July 13, 1999, the licensee indicated that, to assure adequate actuator output capability for safety-related MOVs at STP to perform their design-basis functions, it uses a combination of periodic static testing, data trending, and preventative maintenance in accordance with established site procedures and programs. For example, the licensee noted that routine diagnostic test results are used to monitor and evaluate actuator capability. Further, the licensee routinely inspects and maintains the motor actuator mechanical condition and lubrication to ensure that MOV performance does not degrade. The licensee also uses engineering evaluations and calculations to determine motor actuator capability as an input to calculate deterministic MOV margin used in its tracking and trending programs.

In Technical Update 98-01 and its Supplement 1, Limitorque Corporation provided updated guidance for predicting the torque output of its ac-powered motor actuators. In its letter dated July 13, 1999, the licensee reported that it applied a methodology developed by the Commonwealth Edison Company (ComEd) for predicting ac-powered motor output to all ac-powered MOVs in the STP MOV program. The licensee noted that the output capability of the ac-powered MOVs in its GL 96-05 program was determined to be acceptable. Potential MOV operability concerns that might be identified in the future or any changes to the ComEd methodology resulting from the Limitorque update 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, Limitorque indicates that a future technical update will be issued to address the application of dc-powered MOVs. In its letter dated July 13, 1999, the licensee stated that dc-powered MOV output capabilities were evaluated using the approach in the Limitorque Technical Update 98-01 and its supplement. The licensee also considered potential temperature effects related to dc-powered motor performance degradation that have been identified in recent NRC-sponsored test programs. The licensee stated that dc-powered MOV output capability was acceptable in all cases. The NRC staff notes that the guidance in Limitorque Technical Update 98-01 and its supplement applies to ac-powered MOVs, but does not object to the general use of this guidance as applicable in the interim until updated guidance on dc-powered MOV performance is available from an ongoing industry effort.

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 verify periodically the design-basis capability of the safety-related MOVs at STP 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 STP to verify 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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