January 3, 2000

Mr. J. A. Scalice
Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

SUBJECT: SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 - CLOSEOUT OF GENERIC LETTER 96-05, "PERIODIC VERIFICATION OF DESIGN-BASIS CAPABILITY OF SAFETY-RELATED MOTOR-OPERATED VALVES" (TAC NOS. M97100 AND M97101)

Dear Mr. Scalice:

On September 18, 1996, the 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, Tennessee Valley Authority (TVA) 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, TVA submitted a 180-day response to GL 96-05 providing a summary description of the MOV periodic verification program planned to be implemented at the Sequoyah Nuclear Plant, Units 1 and 2. In a letter dated April 28, 1998, TVA updated its commitment to GL 96-05. On April 23, 1999, TVA provided a response to a request for additional information regarding GL 96-05 forwarded by the NRC staff on January 27, 1999.

The NRC has reviewed TVA's submittals and applicable NRC inspection reports for the MOV program at Sequoyah. Based on our understanding of TVA's commitment to all three phases of the Joint Owners Group (JOG) Program on MOV Periodic Verification, the NRC staff finds that TVA has established an acceptable program to verify periodically the design-basis capability of the safety-related MOVs at Sequoyah. As discussed in the enclosed Safety Evaluation (SE), the NRC staff concludes that TVA is adequately addressing the actions requested in GL 96-05. The NRC staff may conduct inspections at Sequoyah to verify the implementation of the MOV periodic verification program is in accordance with TVA'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 Westinghouse Owners Group methodology for ranking MOVs by their safety significance.

On the basis of the discussions in the enclosed SE, the NRC staff concludes that TVA has adequately addressed the actions requested in GL 96-05. Should you have any questions, please call me at (301) 415-2010.

Sincerely,

/RA/

Ronald W. Hernan, Senior Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

Enclosure: Safety Evaluation

cc w/encl: See next page

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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"

SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NUMBERS 50-327 AND 50-328

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 Tennessee Valley Authority (TVA, licensee) to verify periodically the design-basis capability of safety-related MOVs at the Sequoyah Nuclear Plant, 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, "Safety-Related Motor-Operated Valve Testing and Surveillance," on June 28, 1989. GL 89-10 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 taking necessary corrective action, and trending MOV problems. The NRC 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 the WOG and the 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, the 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, the JOG will evaluate the test results to validate the assumptions in the interim program to establish a long-term MOV periodic verification program to be implemented by licensees. A feedback mechanism will be established to ensure timely sharing of MOV test results among licensees and to prompt individual licensees to adjust their own MOV periodic verification program, as appropriate.

Following consideration of NRC staff comments, the BWROG submitted Licensing Topical Report NEDC-32719 (Revision 2) describing the JOG program on July 30, 1997. 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.

4.0 SEQUOYAH GL 96-05 PROGRAM

On November 18, 1996, TVA 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 planned to be implemented at Sequoyah. In a letter dated April 28, 1998, the licensee updated its commitment to GL 96-05. On April 23, 1999, the licensee provided a response to a request for additional information regarding GL 96-05 forwarded by the NRC staff on January 27, 1999.

In its letters dated March 17, 1997, and April 28, 1998, TVA committed to participate in the JOG MOV Periodic Verification Program as a member of the WOG and to implement the program elements described in the Topical Report MPR-1807 (Revision 2) describing the JOG program. The licensee also addressed the specific conditions and limitations identified in the NRC SE accepting the JOG program, dated October 30, 1997, and described its MOV periodic verification program, including scope, existing and planned testing, and implementation of the JOG program at Sequoyah. TVA stated that (1) the interim MOV static diagnostic test program at Sequoyah would apply the same MOV risk and margin categories as recommended in the JOG topical report, (2) dynamic testing of selected MOVs would be performed under its MOV periodic verification program, (3) adjustments would be made to its GL 96-05 program based on the test results and recommendations from the JOG testing program, and (4) the JOG program would begin implementation at Sequoyah during the refueling outages scheduled for the Fall of 1997 (Unit 2) and 1998 (Unit 1).

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 Sequoyah in response to GL 96-05. NRC Inspection Report 50-327, 50-328/97-18 (IR 97-18) 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 Sequoyah in IR 97-18 based on verification of the design-basis capability of safety-related MOVs at Sequoyah and commitments made by the licensee to confirm several program assumptions. NRC Inspection Report 50-327, 328/98-09 (IR 98-09) provided the results of an inspection to evaluate completion of those MOV program assumptions. 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 its letter dated November 18, 1996, TVA committed to implement the requested MOV periodic verification program at Sequoyah in response to GL 96-05 and did not take exception to the scope of the GL. In its letter dated April 28, 1998, the licensee stated that the criteria for determining the scope of MOVs for GL 96-05 are consistent with the NRC's acceptance of the scope of MOVs associated with GL 89-10. The staff considers the licensee to have made adequate commitments regarding the scope of its MOV program. The licensee will be responsible for justifying any deviations from the recommended scope of GL 96-05 at Sequoyah.

5.2 MOV Assumptions and Methodologies

The NRC staff expects licensees to maintain the assumptions and methodologies used in the development of its 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 97-18 and IR 98-09, 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 Sequoyah. 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 April 23, 1999, indicated ongoing activities, such as review of motor actuator output, to update its MOV program assumptions and methodologies. The 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 Sequoyah, the NRC staff discussed in IR 97-18 several items of TVA's MOV program to be addressed over the long term. For example, the NRC staff noted that the licensee planned to (1) use the Electric Power Research Institute

(EPRI) MOV Performance Prediction Methodology (PPM) to establish thrust requirements for several valve groups, (2) apply additional industry information and revise necessary torque calculations for Pratt butterfly valves, and (3) implement maintenance improvements for the Unit 1 pressurizer power-operated relief valve (PORV) block valves. In addition, the licensee planned to (1) obtain additional valve factor information for specific Walworth, Anchor/Darling, and Copes Vulcan gate valves, and (2) increase the output capability of the containment spray valves as part of its long-term MOV program. In IR 98-09, the staff found that the licensee had adequately addressed its commitment to apply results obtained from the EPRI MOV PPM, and the PORV block valve maintenance improvements were complete. The staff found that the licensee had obtained applicable industry information that supported the existing Pratt butterfly valve torque requirements, and that revisions were not needed for the existing torque calculations. The staff also noted that the licensee's plans to increase the output capability of the Unit 1 containment spray valves were complete and that the licensee plans to modify the Unit 2 valves during the Spring 1999 refueling outage. In its letter dated April 23, 1999, TVA reported on the status of its efforts to obtain additional valve factor information for the specific valve groups identified in IR 97-18. For example, the licensee applied results from the EPRI MOV PPM to a group of solid-wedge Walworth gate valves. The licensee provided additional qualitative justifications to support the assumed valve factors applied to three groups of Anchor/Darling double-disc gate valves. The licensee utilized a contractor evaluation that applied the EPRI MOV PPM methodology to Copes Vulcan double-disc gate valves based on their similarity to Anchor/Darling double-disc gate valves.

The NRC staff completed the 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 August 27, 1998.

In IR 97-18, the NRC staff noted the licensee was trending MOV performance and provided comments on possible enhancements. In its submittals dated April 28, 1998, and April 23, 1999, TVA provided additional information on its trending of performance parameters to evaluate motor actuator capabilities. Actuator total thrust, average running current and stem factor are examples of MOV parameters that are trended. TVA will be expected to provide trending of qualitative and quantitative MOV performance parameters.

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

5.4 JOG Program on MOV Periodic Verification

In its letter dated April 28, 1998, the licensee updated its commitment to implement the JOG Program on MOV Periodic Verification as described in Topical Report MPR-1807 (Revision 2) and responded to the conditions and limitations on use of the topical report identified in the NRC SE dated October 30, 1997, accepting the JOG program as an industry-wide response to GL 96-05. 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 commitment by the licensee to implement the JOG program at Sequoyah to include all three phases of the JOG program and is an acceptable response to GL 96-05 for valve age-related degradation. If TVA proposes to implement an approach at Sequoyah different from the JOG program, the NRC staff will evaluate the proposed alternative approach.

In its letters dated March 17, 1997, and April 28, 1998, TVA indicated that (1) 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, and (2) MOV ranking at Sequoyah was assigned based on the MOV risk-ranking approach and results presented in the WOG Engineering Report V-EC-1658. An expert panel consisting of representatives of appropriate site organizations at Sequoyah reviewed the results of the analysis and provided additional input for the final determination in risk ranking the MOVs. TVA will be expected to address the concerns identified in the NRC SE of the WOG Engineering Report dated April 14, 1998. The NRC staff notes that the WOG also provided an example list of risk-significant MOVs for consideration by each licensee in applying the owners group methodology. Based on TVA's summary, the staff considers the licensee's methodology for risk ranking MOVs at Sequoyah to be reasonable.

In its letter dated April 23, 1999, the licensee stated that it plans to correlate main control center (MCC) data to output torque for Pratt butterfly valves that have been diagnostically tested on a test stand. Based on the licensee's summary, the staff considers the licensee's methodology for using MCC testing to monitor butterfly valve degradation to be reasonable. TVA stated that, in the future, it intended to evaluate the use of MCC testing for other valves in its GL 96-05 program. In applying test data obtained from the MCC in its GL 96-05 program, the licensee will be expected to address the following issues as applicable to its use of MCC test data: (1) the correlation between new MCC test data and existing direct MOV data measurements; (2) the relationship between changes in MCC test data and MOV thrust and torque performance; (3) system accuracies and sensitivities to MOV degradation for both outputs and operating performance requirements; and (4) validation of MOV operability using MCC testing.

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. The JOG indicates that each licensee is responsible for addressing any MOVs outside the scope of applicability of the JOG program. 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 of those MOVs. TVA's submittal dated April 28, 1998, described certain types of valves that are outside the scope of applicability of the JOG dynamic test program, and its plans to monitor the performance of those MOVs.

The NRC staff recognizes that the JOG has selected a broad range of MOVs and conditions for the dynamic testing program. Consequently, the NRC 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 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. Upon completion of the JOG dynamic test program and development of the JOG long-term MOV periodic verification criteria,

the licensee will be expected to establish a long-term MOV periodic verification program for those MOVs outside the scope of the JOG program by applying information from the JOG program or additional dynamic tests, as necessary.

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.

In its letter dated April 23, 1999, TVA indicated that it uses a combination of direct and MCC diagnostic testing under static and dynamic conditions, and data trending to monitor actuator performance to ensure adequate output capability. The staff notes that 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 Technical Update 98-01 and its Supplement 1 thereto, Limitorque Corporation provided updated guidance for predicting the torque output of its ac-powered motor actuators. In its letter dated April 23, 1999, TVA reported that it has completed reviewing this information and is incorporating the results of these reviews into the MOV sizing calculations at Sequoyah. In addition, a list of MOVs requiring specific configuration review has been sent to Limitorque for further review. The NRC staff notes that TVA is responsible for resolving any MOV operability concerns in accordance with regulatory and plant-specific requirements.

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 April 23, 1999, TVA stated that Sequoyah has two dc-powered MOVs in its GL 96-05 program. The licensee indicated that it is monitoring the industry effort on dc-powered MOV performance and will evaluate any new recommendations.

The NRC staff considers that TVA has established sufficient means to monitor MOV motor actuator output and its potential degradation.

6.0 CONCLUSION

On the basis of this evaluation, the NRC staff finds that TVA has established an acceptable program to verify periodically the design-basis capability of the safety-related MOVs at its Sequoyah Nuclear Plant, Units 1 and 2. Therefore, the staff concludes that TVA 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 in accordance with the licensee'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.

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Date: January 3, 2000

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