

November 21, 2002

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2 - RELIEF REQUEST RV-14
(TAC NOS. MB5529 AND MB5530)

Dear Mr. Skolds:

By letter dated June 14, 2002, as supplemented by letter dated September 20, 2002, Exelon Generation Company, LLC, submitted a request for relief from the American Society of Mechanical Engineers (ASME) / American National Standards Institute (ANSI), Operation and Maintenance of Nuclear Power Plants, OMa-1988, Part 10 (OM-10) requirement for periodic testing of motor operated valves (MOVs). The Relief Request RV-14 by LaSalle County Station, Units 1 and 2, proposes as an alternative to OM-10 to use the MOV testing requirements of the ASME OMa-1996, Subsection Inservice Testing Code (ISTC), and Code Case OMN-1, "Alternative Rules for Pressure and Inservice Testing of Certain Electric Motor-Operated Valve Assemblies in Light Water Reactor Power Plants."

The Nuclear Regulatory Commission (NRC) staff has evaluated Relief Request RV-14, and finds that the proposed alternative may be authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that it provides an acceptable level of quality and safety. The proposed alternative is only being authorized for the remainder of the second 10-year Inservice Testing interval which is currently scheduled to end on October 11, 2006, for Unit 1, and on May 7, 2007, for Unit 2. Our safety evaluation is enclosed.

Sincerely,

/RA by L. Raghavan for/

Anthony J. Mendiola, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-373 and 50-374

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE INSERVICE TESTING REQUIREMENTS

RELIEF REQUEST RV-14

EXELON GENERATION COMPANY, LLC

LASALLE COUNTY STATION, UNITS 1 AND 2

DOCKET NOS. 50-373 AND 50-374

1.0 INTRODUCTION

By letter dated June 14, 2002, as supplemented by letter dated September 20, 2002, Exelon Generation Company, LLC (the licensee), submitted a request for relief from the American Society of Mechanical Engineers (ASME) / American National Standards Institute (ANSI) *Code for Operation and Maintenance of Nuclear Power Plants*, OMa-1988, Part 10 (OM-10) requirement for periodic testing of motor operated valves (MOVs). The Relief Request RV-14 by LaSalle County Station, Units 1 and 2, proposes as an alternative to OM-10 to use the MOV testing requirements of the 1995 Edition with the 1996 Addenda of the ASME OMa-1996, Subsection Inservice Testing Code (ISTC), "Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants," as it applies to MOVs, including Code Case OMN-1, "Alternative Rules for Pressure and Inservice Testing of Certain Electric Motor-Operated Valve Assemblies in Light Water Reactor Power Plants."

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, requires that inservice testing (IST) of certain ASME Code Class 1, 2, and 3 pumps and valves be performed at 120-month IST program intervals in accordance with a specified ASME Code and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Nuclear Regulatory Commission (NRC) pursuant to paragraphs (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In accordance with 10 CFR 50.55a(f)(4)(ii), licensees are required to comply with the requirements of the latest edition and addenda of the ASME Code incorporated by reference in the regulations 12 months prior to the start of subsequent 120-month IST program intervals. In accordance with the current requirements of 10 CFR 50.55a(f), licensees whose 120-month IST program interval ends on or after October 28, 2003, will be required to implement the 1998 Edition with the 2000 Addenda of the ASME OM Code with the conditions and modifications specified in 10 CFR 50.55a(b)(3). In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety, (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety, or (3) conformance is impractical for the facility. Section 50.55a authorizes the NRC to approve alternatives to and grant relief from ASME Code requirements upon making the necessary findings. Generic Letter (GL) 89-04 (and its Supplement 1), "Guidance on

Developing Acceptable Inservice Testing Program,” and NUREG-1482, “Guidelines for Inservice Testing at Nuclear Power Plants,” provide guidance for alternatives to Code requirements. In cases where GL 89-04 or NUREG-1482 provides guidance that conflicts with Code requirements, the licensee must obtain relief from the NRC prior to implementing that guidance.

The ASME OM Code specifies the performance of stroke-time testing of MOVs at quarterly intervals as part of the requirements for IST programs established under 10 CFR 50.55a. In response to concerns regarding MOV performance in nuclear power plants, the NRC staff issued GL 89-10, “Safety-Related Motor-Operated Valve Testing and Surveillance,” in June 1989 to request that licensees verify the design-basis capability of their safety-related MOVs 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. In GL 89-10, the staff noted the benefits of stroke-time testing of MOVs (such as valve exercising and providing a limited measure of on-demand reliability), but stated that such testing alone is not sufficient to provide assurance of MOV capability under design-basis conditions.

With recognition of the weakness in information provided by quarterly MOV stroke-time testing, the ASME developed Code Case OMN-1 as an acceptable alternative program of exercising and diagnostic testing to provide continuing assurance of the capability of MOVs to perform their safety functions. In particular, Code Case OMN-1 specifies exercising of MOVs at least once a year or every refueling cycle (whichever is longer) to verify electrical continuity and to provide internal lubrication. Further, Code Case OMN-1 specifies periodic diagnostic testing of MOVs (including a mix of static and dynamic tests) to obtain sufficient information to determine the rate of degradation of MOV performance in terms of the potential increase in required thrust and torque (as applicable), and the potential decrease in actuator output. From this information, licensees can establish periodic diagnostic test intervals that may extend up to 10 years if there is assurance that the MOV will remain capable of performing its safety function throughout the interval.

The NRC staff issued GL 96-05, “Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves,” in September 1996 to request that licensees establish a program, or ensure the effectiveness of their 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 staff stated that, with certain limitations, the method described in ASME Code Case OMN-1 is considered by the staff to meet the intent of the generic letter to verify the design-basis capability of safety-related MOVs on a periodic basis. The limitations identified by the NRC staff in GL 96-05 on the use of Code Case OMN-1 were: (1) a precaution regarding consideration of benefits and potential adverse effects when determining appropriate MOV testing, (2) a provision for the evaluation of applicable MOV test information before extending test intervals beyond 5 years or three refueling outages (whichever is longer), and (3) a provision for licensees participating in an industry pilot effort for IST programs considering risk insights to address the relationship of Code Case OMN-1 to their pilot initiative.

In response to GL 96-05, a Joint Owners’ Group (JOG) developed the JOG Program on MOV Periodic Verification to allow the sharing of MOV performance information on a generic basis among nuclear power plant licensees. The JOG Program consists of the following three phases: (1) an interim MOV static diagnostic test program, (2) a 5-year MOV dynamic diagnostic test program, and (3) a long-term MOV periodic diagnostic test program. On October 30, 1997, the NRC staff issued a safety evaluation (SE) accepting the JOG Program

as an industry-wide response to GL 96-05, with certain conditions and limitations. Licensees of 98 reactor units (including LaSalle County Station, Units 1 and 2) have committed to implement the JOG Program as part of their response to GL 96-05. The dynamic testing phase of the JOG Program currently includes a total of 195 valves that are receiving three repetitive dynamic tests with at least a 1-year time interval between tests at the 98 participating reactor units. Following completion of the JOG dynamic testing program, the JOG will submit a final topical report that establishes a long-term MOV periodic diagnostic test program based on the results of its evaluation of the MOV dynamic test data. The staff plans to prepare an SE addressing the JOG final topical report when submitted.

In a *Federal Register* notice dated September 22, 1999 (64 FR 51370), the NRC amended its regulations to incorporate by reference the IST provisions of the 1995 Edition with the 1996 Addenda of the ASME OM Code, with one limitation and one modification. The limitation specified in 10 CFR 50.55a(b)(3)(i) indicates that the requirements of NQA-1, "Quality Assurance Requirements for Nuclear Facilities," are acceptable as permitted by ISTA 1.4, "Owner's Responsibility," of the OM Code provided the licensee uses its 10 CFR Part 50, Appendix B, quality assurance program in conjunction with the OM Code requirements. The modification in 10 CFR 50.55a(b)(3)(ii) requires that licensees comply with the provisions for stroke-time testing in ISTC 4.2, "Inservice Exercising Tests for Category A and B Valves," of the OM Code, and establish a program to ensure that MOVs continue to be capable of performing their design-basis safety functions. Since submittal of the licensee's Relief Request RV-14, the NRC has amended its regulations as described in a *Federal Register* notice (67 FR 60520, September 26, 2002) to incorporate by reference the 1998 Edition with the 2000 Addenda of the ASME OM Code.

In 10 CFR 50.55a(b)(3)(iii), the NRC indicates the acceptability of ASME Code Case OMN-1 with two conditions as an alternative to the requirements of 10 CFR 50.55a(b)(3)(ii) in conjunction with ISTC 4.3, "Inservice Seat Leakage Rate Test for Category A Valves." The NRC specifies in the rule that licensees choosing to apply Code Case OMN-1 shall apply all of its provisions. The first condition for the application of Code Case OMN-1 requires licensees to evaluate the information obtained for each MOV, during the first 5 years or three refueling outages (whichever is longer) of voluntary use of Code Case OMN-1, to validate assumptions made in justifying a longer test interval. The second condition for the application of Code Case OMN-1 clarifies a provision in paragraph 3.6.2 of Code Case OMN-1 regarding consideration of risk insights if extending the exercising frequencies for MOVs with high-risk significance beyond a quarterly frequency. In particular, the regulations state that licensees are to ensure that increases in core damage frequency and/or risk associated with the increased exercise interval for high-risk MOVs are small and consistent with the intent of the Commission's Safety Goal Policy Statement (51 FR 30028, August 21, 1986).

In the Supplementary Information provided in the *Federal Register* notice dated September 22, 1999, the NRC discusses the application of ASME Code Case OMN-1 as an alternative to the Code provisions for MOV stroke-time testing. For example, licensees are cautioned that, when implementing Code Case OMN-1, the benefits of performing a particular test should be balanced against the potential adverse effects placed on the valves or systems caused by this testing. While there may be benefits to performing dynamic MOV testing, there are also potential detriments to its use (i.e., valve damage). Licensees should be cognizant of this consideration for each MOV when selecting the appropriate test method or combination of test methods for the IST program. The NRC also notes the importance of licensees having sufficient information from the specific MOV, or similar MOVs, to demonstrate that exercising on a refueling outage frequency does not significantly affect component performance. The

information may be obtained by grouping similar MOVs, and staggering the exercising of MOVs in the group equally over the refueling interval.

The NRC staff is preparing draft Regulatory Guide DG-1089, "Operation and Maintenance Code Case Acceptability, ASME OM Code," for final issuance. The draft regulatory guide identifies ASME Code Case OMN-1 as acceptable for implementation provided the listed modifications are satisfied by licensees whose Code of record is one of those specified in the regulatory guide. The modifications listed in the draft regulatory guide for application of Code Case OMN-1 are consistent with the conditions specified in 10 CFR 50.55a. When the final regulatory guide is issued, licensees with a Code of record specified in the regulatory guide may implement Code Case OMN-1 in accordance with the indicated modifications as an alternative to the MOV stroke-time testing requirements in their applicable Code of record without submittal of a relief request.

In Relief Request RV-14 and the supplemental information provided by letter dated September 20, 2002, the licensee supports its request to use the testing provisions of ASME OMa-1996, Subsection ISTC, including ASME Code Case OMN-1, for MOVs in the IST Program at LaSalle County Station. In its submittals, the licensee addresses the NRC guidance for acceptable application of Code Case OMN-1.

3.0 TECHNICAL EVALUATION

3.1 RELIEF REQUEST RV-14

In lieu of the testing requirements in its Code of record for MOVs (Part 10 of ASME OMa-1988), the licensee requests relief to use the testing requirements of ASME OMa-1996, Subsection ISTC, and ASME Code Case OMN-1 for MOVs in the IST Program at LaSalle County Station, Units 1 and 2.

3.1.1 Licensee's Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee requests relief to use the testing provisions of ASME OMa-1996, Subsection ISTC, including ASME Code Case OMN-1, for MOVs in the IST Program at LaSalle County Station on the basis that the proposed alternative would provide an acceptable level of quality and safety.

In support of its request, the licensee references the final rule issued by the NRC in the *Federal Register* (64 FR 51370) on September 22, 1999, that amended 10 CFR Part 50 to incorporate by reference the 1995 Edition with the 1996 Addenda of the ASME OM Code and revised the IST requirements for MOVs. The licensee notes that the final rule permits the use of the MOV testing provisions described in ASME Code Case OMN-1 in lieu of specific IST provisions of ASME OM Code, Subsection ISTC, for licensees that have ASME OMa-1996 as their Code of record, with the following conditions:

1. At 5 years or three refueling outages (whichever is longer) from initial implementation of Code Case OMN-1, the adequacy of the test interval for each MOV must be evaluated and adjusted as necessary.
2. In establishing exercise intervals for high-risk MOVs, the licensee will be expected to ensure that the potential increase in core damage frequency and risk associated with extending exercise intervals beyond a quarterly frequency is

small and consistent with the intent of the Commission's Safety Goal Policy Statement.

The licensee also notes that the NRC cautioned that licensees implementing Code Case OMN-1 should balance the benefits of performing a particular test against the potential adverse effects placed on the valves or systems caused by this testing.

In Relief Request RV-14, the licensee states that the implementation of ASME Code Case OMN-1 will reconcile and consolidate the MOV testing program developed under GL 89-10 and GL 96-05 with the IST Program at LaSalle County Station. The licensee also states that use of Code Case OMN-1 will eliminate unnecessary testing that provides minimal information about MOV operational readiness. As part of its commitment on MOV periodic verification testing made in response to GL 96-05, the licensee is participating in the JOG Program for MOV Periodic Verification. The licensee plans to use many of the JOG Program activities to meet the provisions of Code Case OMN-1, but considers some JOG activities to be in conflict with Code Case OMN-1. The licensee describes specific exceptions to, and clarifications for, its application of Code Case OMN-1 in Relief Request RV-14.

3.1.2 Licensee's Proposed Alternative Provisions

The licensee proposes to use the MOV testing provisions of ASME OMa-1996, Subsection ISTC, to revise the IST Program at LaSalle County Station. With the approval of the testing provisions in Subsection ISTC in the NRC regulations, the licensee states that the use of those testing provisions for MOVs at LaSalle County Station provides an acceptable level of quality and safety. The licensee states that exercising and position-indication testing will be applied in accordance with Subsection ISTC to those MOVs that are not subject to diagnostic testing.

In Relief Request RV-14, the licensee proposes to apply ASME Code Case OMN-1 as part of the IST Program at LaSalle County Station. The licensee notes that the NRC has approved the use of Code Case OMN-1 with certain conditions. The licensee describes its compliance with those conditions as follows:

1. The MOV test frequencies identified in the IST Program at LaSalle County Station do not exceed three refueling outages (i.e., nominal 6 years). Therefore, the licensee states that the expectation that frequency of testing be evaluated and adjusted within 5 years or three refuel outages, whichever is longer, will be satisfied.
2. Medium and low safety significant MOVs will be exercised at least once every refuel cycle as specified in Code Case OMN-1, paragraph 3.6.1. Initially, the licensee commits to continue to test high-risk MOVs quarterly. Where it is not practicable to exercise an MOV during plant operations, the licensee states that the MOV will be exercised in cold shutdown or refuel outages in accordance with OMN-1, paragraph 3.6.3. After sufficient performance data have been obtained and evaluated for medium and low safety significant MOVs exercised at least once every refuel cycle, the licensee states that the data will be used in evaluating the same exercise frequency for high-risk MOVs. When extending the exercise test intervals for high-risk MOVs beyond a quarterly frequency, the licensee states that it will ensure that the potential increase in core damage frequency and risk associated with the extension is small and consistent with the intent of the Commission's Safety Goal Policy Statement. Upon extension of

these frequencies, the licensee states that the IST Program at LaSalle County Station will be appropriately revised.

With respect to the caution regarding the benefits and potential adverse effects of MOV dynamic testing, the licensee reports that it performed practicability reviews for differential-pressure testing as part of its GL 89-10 program that evaluated the benefits of performing a particular test against the potential adverse effects placed on the valves or systems caused by the testing. The evaluation was said to include an assessment of potential component (valve or pump) damage or system availability concerns that may outweigh the benefits of dynamic testing for some MOVs. As a result, the licensee states that some MOVs are not subject to differential-pressure testing, but are justified for design-basis performance by analysis.

In Relief Request RV-14, the licensee requests relief from the following OMN-1 provisions:

1. OMN-1, paragraph 3.3(b) that specifies inservice tests be conducted in the as-found condition.
2. OMN-1, paragraph 3.4, "Effect of MOV Replacement, Repair, or Maintenance," that specifies deviations between the previous and new inservice tests be identified and analyzed.
3. OMN-1, paragraph 6.3. "Evaluation of Data," that specifies evaluations be performed to determine the amount of degradation in functional margin that occurred over time.

In lieu of these OMN-1 provisions, the licensee proposes to perform sample as-found testing of its MOVs, rather than as-found testing in all situations. The licensee asserts that as-found testing is not necessary in every instance because of the manner in which it determines MOV functional margin and test interval. Unlike the example in OMN-1, paragraph 6.4.4, "Determination of MOV Test Interval," the licensee states that it uses a process which is less dependent on as-found testing. When preservice testing is performed, the licensee applies a degradation factor to extrapolate the appropriate test frequency based on a calculated decline in functional margin over time. The licensee randomly selects valves for as-found testing, and uses the test results to validate degradation assumptions in accordance with JOG Program guidelines. The licensee then applies the results of the sample as-found testing in calculational methods to ensure that functional margin is adequate over the testing interval. Therefore, the licensee requests relief from the OMN-1 provision to perform as-found testing in each instance, and states that it will follow its commitments to GL 96-05 to perform as-found tests on a sample basis.

In Relief Request RV-14, the licensee provides the following clarifications for its compliance with Code Case OMN-1 at LaSalle County Station:

1. OMN-1, paragraph 3.1, "Design Basis Verification Test," allows the use of testing that was conducted prior to the implementation of Code Case OMN-1 if it satisfies the provisions of the code case. The licensee intends to utilize the testing performed under GL 89-10 to satisfy the provision for a one-time test to verify the capacity of each MOV at LaSalle County Station to meet its safety-related design-basis requirements.
2. OMN-1, paragraph 3.2, "Preservice Test," specifies that each MOV be tested during the preservice test period or before implementing inservice testing. The

licensee intends to utilize the testing performed under GL 89-10 to satisfy this OMN-1 provision at LaSalle County Station. The licensee will perform a new preservice test when an MOV at LaSalle County Station undergoes maintenance or modification that could affect its performance.

3. OMN-1, paragraph 3.3(b), states that maintenance activities, such as stem lubrication, shall not be conducted if they might invalidate the as-found condition for inservice testing. At LaSalle County Station, the licensee states that the frequency of stem lubrication and periodic MOV verification testing differ considerably, and the times at which these activities are optimally performed often do not coincide. As part of the GL 96-05 program at LaSalle County Station, the licensee states that as-found data are being collected for a sample population of MOVs under various lubrication conditions. The licensee used the as-found data to create stem factor variability assumptions to estimate the effect of lubrication on stem performance over the entire lubrication cycle. Based on this information, the licensee does not consider that stem lubrication invalidates the as-found condition of an MOV at LaSalle County Station.
4. OMN-1, paragraph 3.3(c), specifies that the inservice test program include a mix of static and dynamic MOV performance testing. The licensee will utilize the JOG Program's dynamic MOV performance testing to satisfy this OMN-1 provision. Additionally, the licensee will utilize the existing engineering standards to conduct evaluations to alter the mix of required MOV performance testing.
5. OMN-1, paragraph 3.3.1(b), specifies that MOV inservice testing be conducted every two refueling cycles or 3 years (whichever is longer), if insufficient data exist to determine inservice test frequencies. The licensee states that LaSalle County Station has sufficient MOV testing data to justify the current testing frequencies.
6. OMN-1, paragraph 6.4.4, "Determination of MOV Test Interval," specifies that calculations for determining MOV functional margin be evaluated to account for anticipated time-related changes in performance. The licensee will utilize the JOG process for setting test frequencies which is based on margin and safety significance to meet this OMN-1 provision at LaSalle County Station.

The licensee notes that the NRC regulations specify that ASME Code Case OMN-1 can be used in lieu of the provisions for preservice and inservice testing as specified in Subsection ISTC of ASME OMa-1996, except for ISTC 4.3, "Inservice Seat Leakage Rate Test for Category A Valves." The licensee states that the two-year frequency for valve position-indication specified in ISTC 4.1, "Valve Position Verification," does not apply to MOVs being tested in accordance with Code Case OMN-1. The licensee states that it will perform position-indication testing at LaSalle County Station during MOV diagnostic testing at a frequency consistent with the JOG Program guidelines.

The licensee states that a comparison of the GL 96-05 program to the IST program has identified a population of MOVs at LaSalle County Station that have IST requirements, but are not subject to diagnostic testing. The licensee will continue to exercise test and position-indication test these MOVs in accordance with ISTC requirements. If future program changes result in additional MOVs that are not subject to diagnostic testing, the licensee states that it will test those MOVs in accordance with ISTC requirements.

The licensee requests Relief Request RV-14 to apply to the remainder of the second ten-year IST interval which is currently scheduled to end on October 11, 2006, for Unit 1 and May 7, 2007, for Unit 2, at LaSalle County Station.

3.1.3 Evaluation

The NRC staff has evaluated Relief Request RV-14 and the supplemental information provided in the licensee's letter dated September 20, 2002. In the following paragraphs, the staff summarizes its technical evaluation of Relief Request RV-14 and the supplemental information submitted by the licensee.

In Relief Request RV-14, the licensee requests approval to apply the testing provisions of ASME OMa-1996, Subsection ISTC, including ASME Code Case OMN-1, for MOVs in the IST Program at LaSalle County Station. In the relief request, the licensee focuses its discussion on the application of Code Case OMN-1 in lieu of the MOV stroke-time testing provisions of the ASME OM Code. In response to an NRC staff question, the licensee states in its supplemental submittal dated September 20, 2002, that it did not intend to implement any changes to inservice testing at LaSalle County Station as a result of Relief Request RV-14, other than the application of the provisions of Code Case OMN-1. In particular, the licensee reports that it has identified very few technical differences between ASME OMa-1988 (its current Code of record) and OMa-1996 with regard to MOV inservice testing. The licensee states that it will update its programmatic references (e.g., Program Plan and Bases Document) to OMa-1996 as the new Code of record for MOVs. The licensee indicates that a similar update to the ASME OMa-1996 Code had been previously accepted for check valves at LaSalle County Station. The staff notes that the update of the Code of record at LaSalle County Station for MOV inservice testing to the ASME OMa-1996 Code requires the licensee to satisfy the applicable limitations and modifications specified as part of its incorporation by reference in 10 CFR 50.55a of the NRC regulations.

The licensee describes the aspects of its MOV program that satisfy the conditions specified by the NRC for application of ASME Code Case OMN-1. First, the licensee reports that the MOV test frequencies identified in the IST Program at LaSalle County Station do not exceed three refueling outages (i.e., nominal 6 years). This aspect of the MOV program at LaSalle County Station satisfies the condition that the frequency of testing be evaluated and adjusted within 5 years or three refuel outages, whichever is longer. Second, the licensee commits to initially continue to test high-risk MOVs quarterly where practicable. For MOVs that cannot practicably be exercised during plant operations, the licensee states that those MOVs will be exercised in cold shutdown or in refuel outages in accordance with Code Case OMN-1, paragraph 3.6.3. If the licensee subsequently considers extension of the exercise test intervals for high-risk MOVs beyond a quarterly frequency, the licensee commits to ensure that the potential increase in core damage frequency and risk associated with the extension is small and consistent with the intent of the Commission's Safety Goal Policy Statement. These two commitments in the IST Program at LaSalle County Station satisfy the conditions placed on the application of Code Case OMN-1 by the NRC.

The licensee addresses the caution regarding the consideration of the benefits and potential adverse effects of dynamic testing of MOVs. In particular, the licensee has performed practicability reviews for differential-pressure testing conducted under GL 89-10 that evaluated the benefits of performing a particular test against the potential adverse effects placed on the valves or systems caused by this testing. Where differential-pressure testing is not conducted for specific MOVs, the licensee justifies the design-basis performance of those MOVs by

analysis. The licensee's consideration of the benefits and potential adverse effects of MOV dynamic testing satisfies the caution in this area provided by the NRC.

In Relief Request RV-14, the licensee proposes an alternative to specific provisions in three paragraphs in ASME Code Case OMN-1. The NRC staff's evaluation of those alternatives is discussed below:

In paragraph 3.3(b), Code Case OMN-1 specifies that MOV inservice tests be conducted in the as-found condition. In Relief Request RV-14, the licensee proposes to perform as-found testing on a sample basis. In accordance with its MOV program, the licensee applies a degradation factor to extrapolate the appropriate test frequency based on a calculated decline in functional margin over time. The licensee selects MOVs on a random basis for as-found testing, and validates its degradation assumptions based on the test results. In response to GL 96-05, the licensee stated in a letter dated March 15, 1997, that it would apply ASME Code Case OMN-1 and discussed its use of sample as-found testing in implementing the code case. As part of NRC activities related to GL 89-10 and GL 96-05, the NRC staff reviewed the licensee's MOV program at LaSalle County Station, including the licensee's approach for performing as-found tests. In NRC Inspection Report Nos. 50-373 and 50-374/95009 (dated November 29, 1995), the staff completed its review of the GL 89-10 program at LaSalle County Station. With respect to GL 96-05, the staff prepared an SE dated November 15, 1999, that determined that the licensee had established an acceptable program to verify periodically the design-basis capability of safety-related MOVs at LaSalle County Station. In its review of MOV programs, the staff has recognized that it is not practicable to perform MOV tests in the as-found condition in every instance. In NUREG-1482, the staff noted that the ASME Code does not specifically require testing to be performed for components in the as-found condition, except in special cases. However, the staff also indicated that the as-found condition is generally considered to be the condition of a valve without pre-stroking or maintenance. As discussed in NRC Information Notice (IN) 97-16, "Preconditioning of Plant Structures, Systems, and Components before ASME Code Inservice Testing or Technical Specification Surveillance Testing," equipment is typically tested in the as-found condition when performing technical specification surveillance and ASME Code inservice testing. Nevertheless, some surveillance testing cannot be performed without disturbing the equipment. As noted in IN 97-26, the staff expects such disturbance or alteration to be limited to the minimum necessary to perform the test and prevent damage to the equipment. Paragraph 3.5, "Grouping of MOVs for Inservice Testing," in Code Case OMN-1 indicates that grouping MOVs for inservice testing is permissible where justified by an engineering evaluation, an alternative testing technique, or both. In recognition that as-found testing is not always practicable and that pre-stroking or maintenance is not to be conducted to influence test results, the staff considers the licensee's approach to conduct sample as-found testing to validate its degradation assumptions for MOV performance at LaSalle County Station to be consistent with the licensee's GL 96-05 program as accepted by the staff; the allowed use of grouping in Code Case OMN-1 to share test results among MOVs; the guidance in NUREG-1482; and the information provided in IN 97-16.

Paragraph 3.4, "Effect of MOV Replacement, Repair, or Maintenance," in ASME Code Case OMN-1 specifies that deviations between the previous and new inservice tests are to be identified and analyzed. In its submittal dated September 20, 2002, the licensee states that its reference to paragraph 3.4 was intended to address any as-found testing provisions that might be implied in that paragraph. The licensee explains that it will not

analyze performance directly prior to maintenance and directly after maintenance because as-found testing will not be performed in every instance prior to MOV replacement, repair, or maintenance. However, the licensee indicates that deviations between previous and new inservice test values will be identified and analyzed after MOV maintenance, repair, or replacement. The staff considers the licensee's plans for identifying and analyzing deviations between previous and new inservice tests for MOV replacement, repair, or maintenance to be acceptable and consistent with its approach for as-found testing.

Paragraph 6.3, "Evaluation of Data," in ASME Code Case OMN-1 specifies that evaluations are to be conducted to determine the amount of degradation in functional margin of MOV capability that occurred over time. In its submittal dated September 20, 2002, the licensee explains that it uses proceduralized methods to evaluate MOV test data that include analyzing data from a sample of as-found tests to determine rates of degradation, and applying those degradation factors to other MOVs to determine margin and allowable test interval. In satisfying paragraph 6.3, the licensee will evaluate degradation in functional margin of MOV capability over time for those instances where as-found testing is performed. Where as-found testing is not performed, the licensee will use previously determined degradation factors to calculate an appropriate frequency of operation until future maintenance and testing is necessary. The NRC staff considers the licensee's method of determining degradation in MOV functional margin to be acceptable and consistent with its approach for as-found testing.

As part of its response to GL 96-05 at LaSalle County Station, the licensee committed in a letter dated August 28, 1998, to implement the JOG Program on MOV Periodic Verification consisting of: (1) an interim MOV periodic verification program, (2) a JOG dynamic testing program, and (3) a long-term MOV periodic verification program. In an SE dated November 15, 1999, the NRC staff concluded that the licensee had established an acceptable program to verify periodically the design-basis capability of safety-related MOVs at LaSalle County Station through its commitments to all three phases of the JOG Program. Currently, the JOG Program is collecting data from multiple MOV tests at most nuclear power plants, including LaSalle County Station, to evaluate degradation of valve factors that can increase the thrust necessary to operate MOVs over time. The JOG will revise its topical report to establish a long-term MOV periodic verification program for implementation by the participating licensees based on the evaluation of the MOV test data being collected. As noted above, the staff will prepare an updated SE on the JOG MOV periodic verification program upon revision of the topical report. As part of its commitment in response to GL 96-05, the licensee will need to determine whether any adjustments are necessary to its MOV program based on the JOG final report and the applicable NRC SE.

In Relief Request RV-14, the licensee provides several clarifications regarding its application of specific provisions of ASME Code Case OMN-1. The NRC staff has reviewed those clarifications and considers them to be consistent with the intent of the code case as discussed below:

Paragraph 3.1, "Design Basis Verification Test," in Code Case OMN-1 allows the use of testing that was conducted prior to the implementation of Code Case OMN-1 if it meets the provisions of the code case. The NRC staff considers the licensee's plan to apply the results of tests performed in response to GL 89-10 to satisfy the provision in paragraph 3.1 for a one-time test to verify the design-basis capability of MOVs within the scope of the LaSalle County Station IST Program.

Paragraph 3.2, "Preservice Test," in Code Case OMN-1 specifies that each MOV be tested during the preservice test period or before implementing inservice testing. The NRC staff considers the licensee's plan to use testing performed in response to GL 89-10 to satisfy this provision. The staff agrees with the licensee's plan to perform a new preservice test when an MOV undergoes maintenance or modification that could affect its performance.

Paragraph 3.3(b) in Code Case OMN-1 specifies that maintenance activities, such as stem lubrication, shall not be conducted if they might invalidate the as-found condition for inservice testing. In Relief Request RV-14, the licensee states that it does not consider stem lubrication to invalidate the as-found condition of an MOV based on the collection of as-found performance data at LaSalle County Station for a sample population of MOVs under various lubrication conditions. Nevertheless, in its submittal dated September 20, 2002, the licensee states that it will continue to perform sample as-found testing in accordance with its commitment to GL 96-05 in its letter dated March 15, 1997, to determine rates of MOV performance degradation. In its submittal dated September 20, 2002, the licensee notes that the adequacy of the MOV stem lubrication degradation assumptions will be observed through MOV performance monitoring and trending. The licensee will adjust stem lubrication and test intervals as necessary from this information. The NRC staff does not consider sufficient data to be available to make a generic determination that stem lubrication will not affect the as-found condition for MOV inservice testing. Therefore, the staff agrees with the licensee's plan to continue its commitment in response to GL 96-05 to perform sample as-found testing to evaluate stem lubricant degradation.

Paragraph 3.3(c) in Code Case OMN-1 specifies that the inservice test program will include a mix of static and dynamic MOV performance testing. The NRC staff agrees that the licensee may use the JOG Program's MOV dynamic performance testing to help satisfy this OMN-1 provision for those valves within the scope of the JOG Program. The JOG Program is analyzing MOV performance data from dynamic tests of almost 200 valves at 98 reactor units to determine appropriate degradation assumptions for a wide range of valve types. The staff considers it acceptable to apply the JOG Program results in the determination of test intervals in Code Case OMN-1 for MOVs within the scope of the JOG Program. The licensee will need to determine appropriate test intervals, including satisfying paragraph 3.3(c) of Code Case OMN-1, for those valves outside the scope of the JOG Program. The staff agrees with the licensee that the mix of static and dynamic testing at LaSalle County Station may be adjusted with additional experience. The staff notes that the licensee may need to modify its approach based on its commitment to the JOG Program following review of the final JOG topical report and the applicable NRC SE, when issued.

Paragraph 3.3.1(b) in Code Case OMN-1 specifies that MOV inservice testing is to be conducted every two refueling cycles or 3 years (whichever is longer), if insufficient data exist to determine inservice test frequencies. Based on the extensive MOV testing conducted in response to GL 89-10 and GL 96-05, including the licensee's participation in the JOG Program, the NRC staff accepts the licensee's determination that sufficient MOV test data are available at LaSalle County Station to justify the current MOV test frequencies.

Paragraph 6.4.4, "Determination of MOV Test Interval," in Code Case OMN-1 specifies that calculations for determining MOV functional margin be evaluated to account for anticipated time-related changes in performance. The licensee states that the JOG

process for setting test frequencies based on margin and safety significance will be used to meet this OMN-1 provision. The NRC staff considers the licensee's reliance on its commitment to implement the JOG Program as described in the final JOG topical report and the applicable NRC SE, when issued, to be acceptable and to meet the intent of Code Case OMN-1.

In Relief Request RV-14, the licensee states that the two-year frequency for valve position verification specified in ISTC 4.1, "Valve Position Verification," does not apply for MOVs being tested in accordance with ASME Code Case OMN-1. The licensee indicates that position-indication testing will be performed during MOV diagnostic testing at a frequency consistent with the JOG guidelines. The NRC staff considers the activities conducted as part of the implementation of Code Case OMN-1 will achieve valve position verification as intended in ISTC 4.1. For example, paragraph 3.6, "MOV Exercising Requirements," in Code Case OMN-1 specifies that MOVs within the scope of the code case are to be exercised on an interval not to exceed 1 year or one refueling cycle (whichever is longer). In particular, paragraph 3.6.3 states that each MOV is to be full-stroke exercised to the position(s) required to fulfill its function(s). Further, item (j) of paragraph 9.1, "Test Information," in Code Case OMN-1 indicates that significant observations, such as abnormal or erratic MOV action noted either during or preceding performance testing, are to be considered.

The licensee states that its comparison of the GL 96-05 program to the IST Program at LaSalle County Station has identified a population of MOVs that have IST requirements, but are not subject to diagnostic testing. The licensee states that it will continue to exercise test and position-indication test these MOVs in accordance with ISTC requirements. If future program changes result in additional MOVs that are not subject to diagnostic testing, the licensee indicates that those MOVs will be tested in accordance with ISTC requirements. The NRC staff notes that the diagnostic test provisions of ASME Code Case OMN-1 are applicable to all MOVs within the scope of the code case. Supplement 1 to GL 89-10 indicated that successful industry experience with some valve types (such as ball and plug valves) could be used to justify the omission of the dynamic tests to validate design-basis capability in response to GL 89-10. The weakness of stroke-time testing in assessing the capability of MOVs to perform their safety function is applicable to MOVs regardless of the valve type.

In its submittal dated September 20, 2002, the licensee provides information on five categories of MOVs in the IST Program at LaSalle County Station that are not currently diagnostically tested. These five categories of MOVs at LaSalle County Station are discussed below:

The first category includes reactor head and residual heat removal (RHR) heat exchanger vent valves that are classified as "passive" and are not stroke-time tested under the ASME Code by the licensee.

The second category includes several backwash strainer valves that have motor operators with no electrical safety function and are manually operated.

The third category includes several MOVs that do not have a safety function, but have stroke-time test commitments as part of the alternate leakage treatment path associated with the removal of the main steam isolation valve leakage control system.

The fourth category includes valves used for RHR heat exchanger steam condensing suppression pool return isolation with a passive closed safety function.

The fifth category includes several quarter-turn MOVs that operate under low differential-pressure conditions, such as air dampers and isolation valves. In the inspection report dated November 29, 1995, closing the review of the GL 89-10 program at LaSalle County Station, the NRC staff stated that the licensee's design-basis capability verification of the butterfly valves at LaSalle County Station was determined to be acceptable based on dynamic test results and on considerable margin exhibited by each of the 16 butterfly valves in the program. In the inspection report, the staff also noted that the licensee planned to review the NRC SE on the MOV program conducted by the Electric Power Research Institute (EPRI) for additional information. In response to NRC staff questions regarding its GL 96-05 program, the licensee noted in a letter dated April 12, 1999, that the NRC inspection of the GL 89-10 program at LaSalle County Station had been conducted prior to issuance of the NRC SE on the EPRI MOV program, and reconciliation of its corporate white papers on butterfly valve design assumptions with the EPRI program. The licensee stated in its April 12, 1999, letter that it subsequently determined that its corporate white papers on butterfly valves were consistent with the EPRI program, and referenced NRC staff inspections at its Braidwood and Byron nuclear power plants where the staff had reviewed and accepted its corporate butterfly valve program. The licensee's letter dated April 12, 1999, also discusses the performance of diagnostic testing of butterfly valves at the Braidwood and Byron plants as part of its corporate MOV program. In its letter dated September 20, 2002, the licensee states that it will obtain diagnostic test information for the subject quarter-turn MOVs at LaSalle County Station through motor current signature traces from the motor control center.

The NRC staff considers the licensee to have justified its current activities at LaSalle County Station related to the specific valves identified in its submittal dated September 20, 2002, that have minimal diagnostic monitoring. Under its 10 CFR 50, Appendix B, quality assurance program, the licensee will need to consider whether corrective action becomes necessary regarding performance monitoring for any applicable safety-related MOVs in the identified categories in light of lessons learned from operating experience, such as valve performance information through the JOG Program. With respect to possible future program changes, the licensee will be required to satisfy the provisions of ASME Code Case OMN-1 as part of its new Code of record for MOVs in the IST Program at LaSalle County Station.

Based on review of Relief Request RV-14 and the supplemental information provided in the licensee's submittal dated September 20, 2002, the NRC staff finds that the licensee's proposed alternative to the MOV testing requirements of its current Code of record will provide an acceptable level of quality and safety. The staff expects the licensee to satisfy its commitments related to the implementation of ASME Code Case OMN-1 discussed in Relief Request RV-14; its submittal dated September 20, 2002; and this SE. The staff notes that the licensee will be required to satisfy the provisions of Code Case OMN-1 as part of its new Code of record for MOVs at LaSalle County Station with respect to possible future program changes.

4.0 CONCLUSION

The NRC staff concludes that the proposal by Exelon Generation Company, LLC, in Relief Request RV-14 together with the additional information in the licensee's submittal dated September 20, 2002, to implement ASME OMa-1996, Subsection ISTC, including ASME Code Case OMN-1, at LaSalle County Station, Units 1 and 2, as an alternative to the requirements for MOV testing in Part 10 of ASME OMa-1988, provides an acceptable level of quality and safety, and is authorized pursuant to 10 CFR 50.55a(a)(3)(i), consistent with the commitments

specified by the licensee and discussed in this SE. Application of this relief request is authorized for the remainder of the second ten-year IST interval which is currently scheduled to end on October 11, 2006, for Unit 1, and on May 7, 2007, for Unit 2 at LaSalle County Station. The licensee will be expected to satisfy its commitments related to the implementation of Code Case OMN-1 discussed in Relief Request RV-14; its submittal dated September 20, 2002; and this NRC SE. As part of its new Code of record for MOVs, the licensee will be required to satisfy the provisions of Code Case OMN-1 as described in this NRC SE for future IST Program changes associated with MOV testing at LaSalle County Station.

5.0 REFERENCES

1. Exelon Generation Company, LLC, LaSalle County Station, Units 1 and 2, "Request to Implement the 1995 Edition and 1996 Addenda of the American Society of Mechanical Engineers *Code for Operation and Maintenance of Nuclear Power Plants*," June 14, 2002.
2. Letter from W. A. Macon, Jr. (U.S. Nuclear Regulatory Commission) to J. L. Skolds (Exelon Generation Company, LLC), "LaSalle County Station, Units 1 and 2 - Request for Additional Information," August 15, 2002.
3. Exelon Generation Company, LLC, LaSalle County Station, Units 1 and 2, "Response to Request for Additional Information Relief Request RV-14," September 20, 2002.

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