UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION RELATED TO INSERVICE TESTING PROGRAM RELIEF REQUESTS FOR COMMONWEALTH EDISON COMPANY LASALLE COUNTY STATION, UNITS 1 AND 2 DOCKET NOS. 50-373 AND 50-374

1.0 INTRODUCTION

The Code of Federal Regulations, 10 CFR 50.55a, requires that inservice testing (IST) of certain American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Code and applicable addenda, except where relief has been requested and granted or proposed alternatives have been authorized by the Commission pursuant to 10 CFR 50.55a(f)(6)(i), (a)(3)(i), or (a)(3)(ii). In order to obtain authorization or relief, the licensee must demonstrate that (1) conformance is impractical for its facility; (2) the proposed alternative provides an acceptable level of quality and safety; or (3) compliance would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. Section 50.55a(f)(4)(iv) provides that inservice tests of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in Section 50.55a(b), subject to the limitations and modifications listed, and subject to Commission approval.

NRC guidance contained in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides alternatives to the Code requirements determined to be acceptable to the staff and authorizes the use of the alternatives in Positions 1, 2, 6, 7, 9, and 10, provided the licensee follows the guidance delineated in the applicable position. When an alternative is proposed which is in accordance with GL 89-04 guidance and is documented in the IST program, no further evaluation is required; however, implementation of the alternative is subject to NRC inspection.

10 CRR 50.55a authorizes the Commission to grant relief from ASME Code requirements or to approve proposed alternatives upon making the necessary findings. The NRC staff's findings with respect to granting or not granting the relief requested or authorizing the proposed alternative as part of the licensee's IST program are contained in this safety evaluation (SE).

In a letter dated October 13, 1995, Commonwealth Edison Company (ComEd, the licensee) submitted Revision 1 to its second ten-year interval, pump and valve IST program for LaSalle County Station, Units 1 and 2. Revision 1 supersedes

ENCLOSURE

Revision 0 dated October 14, 1994, and includes for NRC review 12 relief requests, RP-01, RP-02, RP-03, RV-01, RV-02, RV-03, RV-04, RV-05, RV-06, RV-07, RV-08, and RV-09. An evaluation of the relief requests is provided below.

The licensee's IST program covers the second 10-year IST intervals from November 23, 1994, to November 23, 2004, for Unit 1 and from October 17, 1994, to October 17, 2004, for Unit 2. The LaSalle County Station, Units 1 and 2, IST program is based on the requirements of the ASME Code, Section XI, 1989 Edition, of which, by reference incorporates Part 6, "Inservice Testing of Pumps in Light-Water Reactor Power Plants," and Part 10, "Inservice Testing of Valves in Light-Water Reactor Power Plants," of the ASME Operations and Maintenance Standard OMa-1988.

2.0 PUMP RELIEF REQUEST RP-01

RP-01 requests relief from the flow measurement requirement of OM-6, Paragraph 5.2 for high-pressure core spray (HPCS) water leg pumps 1(2)E22-C003, low-pressure core spray (LPCS) water leg pumps 1(2)E21-C002, and residual heat removal (RHR) water leg pumps 1(2)E12-C003. The licensee proposes to monitor pump degradation by quarterly measurement of differential pressure and vibration.

2.1. Licensee's Basis for the Relief Request

The primary purpose of these pumps is to maintain the emergency core cooling system (ECCS) pump discharge lines filled and pressurized. Flow is not a significant design parameter and no flow instrument is installed in the water leg pump flow loop. There is no flow criterion on these pumps that could be used to determine whether the pumps are satisfactorily performing their intended safety functions. The flow path associated with the "keep fill" function is constant with a fixed hydraulic resistance.

Since OM-6 requires either flow or differential pressure to be set at a reference value, the intent of the Code is met in that flow is maintained constant.

LaSalle Station monitors the pump for degradation by measuring and trending pump inlet and discharge pressures, differential pressure, and vibration. These measurements are taken quarterly and provide satisfactory indication of operational readiness as well as the ability to detect potential degradation.

2.2 Proposed Alternate Testing

LaSalle verifies operability of these pumps by pressure maintenance of ECCS discharge lines within allowable pressure limits. In addition, performance monitoring of the pumps' mechanical and hydraulic performance is tended.

2.3 Evaluation

The water leg pumps function to prevent water hammer in the ECCS pump discharge lines by keeping the lines filled and pressurized when the ECCS is in a standby mode. The licensee states--and a review of the P&IDs confirms--that no flow instrument is installed in the water leg pump flow loop. The licensee proposes to monitor for pump degradation by quarterly measurement of inlet pressure, discharge pressure, differential pressure, and vibration. The licensee did not make any statements regarding whether portable instrumentation can be effectively used in this case to measure flow.

A key indicator in assessing pump operability and degradation is flow. Although there appears to be no system flow criteria for these water leg pumps, there are component level flow criteria for assessing the operational readiness of pumps that are based on the reference values determined when the pumps are known to be operating properly in accordance with OM-6, Paragraph 4.3. The NRC does not consider the procurement and installation of flow instrumentation to be an undue burden or a hardship. GL 89-04, Position 9, which concerns a similar case, states that in cases where only the minimum flow line is available for pump testing, regardless of test interval, flow instrumentation which meets the Code must be installed.

The licensee has not demonstrated that the proposed alternate testing would provide reasonable assurance that the pumps are not degraded. Therefore, long term relief can not be granted. The licensee should investigate the procurement and installation of flow instrumentation to allow these pumps to be flow tested in accordance with the Code. In the interim, the licensee's continued monitoring of pump vibration and differential pressure should provide a reasonable assessment of operational readiness.

2.4 Conclusion

Based upon the impracticality of measuring flowrate with the current plant design configuration, interim relief is granted in accordance with § 50.55a (f)(6)(i) for a period of 1 year or until the next refueling outage, whichever is longer, to allow the licensee time to evaluate potential system modifications. In the interim, the licensee's continued monitoring of pump vibration and differential pressure should provide a reasonable assessment of operational readiness. The licensee should investigate the procurement and installation of flow instrumentation to test these pumps in accordance with the Code requirements.

3.0 PUMP RELIEF REQUEST RP-02

RP-02 requests relief from the requirements of OM-6, Paragraph 4.6, which states that (1) accuracy for instruments used for measurement of pressure shall be ± 2 percent, and (2) full scale range of instruments shall be three times the reference value or less.

Affected Valves:

1(2)E12-C003	RHR Water Leg Pump
1(2)E12-C002A	RHR Pump A
1(2)E12-C002B	RHR Pump B
1(2)E12-C002C	RHR Pump C

3.1 Licensee's Basis for the Relief Request

Inlet pressure is not a required measurement per OM-6, but it is used in the calculation of differential pressure which is a required value. The reference values for the inlet pressures of RHR Pumps A, B and C are all > 7.5 psig. The reference value for the inlet pressure of the RHR water leg pump is > 8 psig. The full scale range of the inlet pressure gauges for all four pumps reads 0 - 250 psig. The inlet pressure for these pumps may attain a maximum pressure of 135 psig plus system head during certain modes of RHR and, therefore, the pumps require a gauge with a larger scale.

The gauges installed on the RHR pump suction lines are accurate to ± 0.5 percent of full scale, which is equivalent ± 1.32 psi. These gauges are readable to the nearest 2.5 psi or 1 percent of full scale. The resulting instrument error may be up to 31 percent of the reference value. An error of 6 percent of suction pressure reference value would be introduced if a gauge meeting the Code requirements is used. The difference in measurements between the existing gauge and a Code required gauge could be ± 2 psi. This increased error margin of ± 2 psi represents 1.5 percent of the reference value of the calculated pump differential pressure. This additional error in suction pressure measurement does not significantly effect the differential pressure calculation and does not impair the ability to determine RHR pump operability or monitor for degradation.

See Table 1 for a summary of the above basis.

3.2 Proposed Alternate Testing

Pump inlet pressure will be measured using the existing gauges with larger scale ranges to accommodate pressure rises of pump suction.

TABLE 1

Pump Gauge Accuracy Comparison Table

	LaSalle HPCS Pumps	ASME Required Gauge	LaSalle RHR Pumps	ASME Required Gauge
Full Scale Range	115 psig 30" HG - 100 psig	12 psig	265 psig 30" HG - 250 psig	24 psig
Gauge Accuracy	± 0.5 % of full scale (± 0.5 %) x 115 psig = ± 0.6 psig	± 2 % of full scale (± 0.2 %) x 12 psig = ± 0.24 psig	± 0.5 % of full scale (± 0.5 %) x 265 psig = ± 1.32 psig	± 2 % of full scale (± 2 %) x 25 psig = ± 0.48 psig
Reference Value (RV) for Suction Pressure	4 psig	4 psig	8 psig	8 psig
Scale Increments	1 psig Resolution to 0.5 psig		5 psig Resolution to 2.5 psig	
% Error	(± 0.6 % psig) x (100 %) / (4 psig) = ± 15 % of RV	(± 0.24 psig) x (100 %) / (4 psig) = ± 6 % of RV	(± 2.5 psig) x (100 %) / (8 psig) = ± 31 % of RV	(± 0.48 psig) x (100 %) / (8 psig) = ± 6 % of RV
Difference in Accuracy for Suction Pressure	(0.6 psig) - (0.24 psig) = 0.36 psig		(2.5 psig) - (0.48 psig) = 2.02 psig	
Reference Value (RV) for Differential Pressure	430 psid		130 psid	
Increase in Accuracy for Differential Pressure	[(± 0.36 psig)/ (430 psig)] x (100 %) = 0.1 %		[(± 2.02 psig) / (130 psig)] x (100 %) = 1.5 %	

3.3 Evaluation

The instrument accuracy and range requirements of OM-6, Paragraph 4.6 are to ensure that test measurements are sufficiently sensitive to changes in pump condition to allow detection of degradation. OM-6, Paragraph 4.6, states that (1) accuracy for instruments used in the measurement of pressure shall be ± 2 percent, and (2) full scale range of pump instruments shall be three times the

reference value or less. The range of greater than three times the reference value can be acceptable if the instrument is proportionately more accurate than required. As indicated in Section 5.5.1 of NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," an alternative can be approved if the combination of range and accuracy yields a reading that meets ± 6 percent of reference value.

In the case of RP-02, the instruments are used to measure differential pressures across the water leg pumps and the RHR pumps. The accuracy requirement of OM-6, Paragraph 4.6, applies to the loop consisting of two pressure instruments--one for the inlet pressure and the other for the discharge pressure. Typically, most error components associated with instruments will be random and can be combined using the square root sum of squares (SRSS) method (see Instrument Society of America, ISA-dRP67.04, Part II, Draft Recommended Practice, Methodologies for the Determination of Nuclear Safety-Related Instrumentation [Draft 10], August 1992). Using the SRSS method:

$$a=\sqrt{b^2+c^2}$$

where, ± a = accuracy of differential pressure measurement
± b = accuracy of inlet pressure instrumentation
± c = accuracy of discharge pressure instrumentation

Also, the licensee has identified in the Pump Gauge Comparison Table, two additional error components for the inlet pressure instrumentation -- namely, gauge accuracy and scale increments resolution. If these two error components are independent, the accuracy of the differential pressure measurement would be:

$$a=\sqrt{c^2+d^2+e^2}$$

where, ± d = inlet pressure gauge accuracy
± e = inlet pressure instrument scale increment resolution

The licensee did not provide the discharge pressure instrumentation accuracy; therefore, the differential pressure measurement accuracy is not calculated. However, based on the information presented, the inlet pressure instrumentation accuracy relative to the differential pressure reference value of 130 psid is well within the allowable accuracy limit of ± 6 percent of reference value for differential pressure.

Meeting the Code requirements would involve purchasing and installing more accurate pressure instruments. Making these modifications could require an extended plant outage, which would constitute a hardship for the licensee. The licensee should determine the in-situ instrument accuracy and the repeatability of the conditions under which the measurements are made for each system application. If the licensee can not demonstrate that the instrumentation used to determine pump differential pressure provides indication that is sufficiently accurate and repeatable to detect degradation and permit the use

of the allowable ranges of OM-6, Paragraph 4.6, they should develop a method to compensate for the additional uncertainty when evaluating these pumps. One possible method of accounting for the additional uncertainty would be to add the additional uncertainty onto measurements above the reference value and subtract the additional uncertainty from measurements below the reference value when comparing to the allowable ranges of pressure differential.

3.4 Conclusion

Based on the determination that the proposal provides a reasonable assurance of operational readiness and that compliance with the Code would result in hardship without a compensating increase in the level of quality and safety, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) with the following provision. The licensee should either (1) demonstrate that the instruments provide indication that is sufficiently accurate and repeatable to detect degradation and permit the use of the allowable ranges of OM-6, Paragraph 4.6, or (2) develop a method to compensate for the additional uncertainty when evaluating these pumps.

4.0 PUMP RELIEF REQUEST RP-03

RP-03 requests relief from the instrument full scale range requirements of OM-6 for the HPCS pumps 1(2)E22-C001. OM-6, Paragraph 4.6.1.2a requires that the full scale range of pump instruments shall be three times the reference value or less.

4.1 Licensee's Basis for the Relief Request

Inlet pressure is not a required measurement per OM-6, but it is used in the calculation of differential pressure. The reference value for the inlet pressure of the HPCS pump is 4 psig when drawing water from the suppression pool. The full range of the inlet pressure gauge is 30" Hg to 100 psig (approximately 115 psig range). The range is necessary because of the configuration of the HPCS system. When the HPCS pump is stopped, a pressure spike is induced in the pump suction. This pressure spike causes a suction pressure indicator with a smaller range to overrange and go out of calibration. A suction pressure gauge with a larger scale is required to enable the gauge to remain in calibration for the measurement of suction pressure of the HPCS pump.

See Table 1 in RP-02 for a summary of the following discussion. The gauges installed on the HPCS pump suction lines are calibrated to an accuracy of ± 0.5 percent of full scale which is equivalent to ± 0.6 psi. The gauges are readable to the nearest 0.5 psig. Using this information, the maximum error seen in the HPCS pump suction pressure reading is ± 0.6 psi, which is ± 15 percent of the reference value. If a gauge which met the requirements of OM-6 were used (full scale of 12 psi, ± 2 percent accurate), the error would be ± 6 percent of the reference value. This is an additional error margin of approximately 0.1 percent of the differential pressure reference value. The increase in suction pressure accuracy gained by using a Code required gauge

would have a negligible effect on the calculation of pump differential pressure. Thus, the existing suction pressure gauges on the HPCS pumps do not impair or hinder LaSalle Station's ability to monitor for pump degradation.

4.2 Proposed Alternate Testing

Pressure spikes in the HPCS pump suction line are experienced when the pump is stopped; therefore, a gauge with a larger scale will be used to measure inlet pressure.

4.3 Evaluation

The instrument accuracy and range requirements of OM-6, Paragraph 4.6 are to ensure that test measurements are sufficiently sensitive to changes in pump condition to allow detection of degradation. OM-6, Paragraph 4.6, states that (1) accuracy for instruments used in the measurement of pressure shall be ± 2 percent, and (2) full scale range of pump instruments shall be three times the reference value or less. The range of greater than three times the reference value can be acceptable if the instrument is proportionately more accurate than required. As indicated in Section 5.5.1 of NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," an alternative can be approved if the combination of range and accuracy yields a reading that meets ± 6 percent of reference value.

In the case of RP-03, the instruments are used to measure differential pressures across the HPCS pumps (see Table 1, Section 3.2, above). The accuracy requirement of OM-6, Paragraph 4.6, applies to the loop consisting of two pressure instruments--one for the inlet pressure and the other for the discharge pressure. Typically, most error components in instruments will be random and can be combined using the SRSS method (see Instrument Society of America, ISA-dRP67.04, Part II, Draft Recommended Practice, Methodologies for the Determination of Nuclear Safety-Related Instrumentation [Draft 10], August 1992). Using the SRSS method:

$$a=\sqrt{b^2+c^2}$$

where, ± a = accuracy of differential pressure measurement
± b = accuracy of inlet pressure instrumentation
± c = accuracy of discharge pressure instrumentation

Also, the licensee has identified in the Pump Gauge Comparison Table, two error components for the inlet pressure instrumentation--namely, gauge accuracy and scale increments resolution. If these two error components are independent, the accuracy of the differential pressure measurement would be:

$$a=\sqrt{c^2+d^2+e^2}$$

where, ± d = inlet pressure gauge accuracy
± e = inlet pressure instrument scale increment resolution

The licensee did not provide the accuracy of the discharge pressure instrumentation; therefore, the differential pressure measurement accuracy is not calculated. However, based on the information presented, the inlet pressure instrumentation accuracy relative to the differential pressure reference value of 430 psig is within ± 0.2 percent. This is not significant since the allowable limit in this case is ± 6.0 percent.

Meeting the Code requirements would involve purchasing and installing accurate pressure instruments. Making these modifications could require an extended plant outage, which would constitute a hardship for the licensee. The licensee should determine the in-situ instrument accuracy and the repeatability of the conditions under which the measurements are made for each system application. If the licensee can not demonstrate that the instrumentation to be used to determine pump differential pressure will provide indication that is sufficiently accurate and repeatable to detect degradation and permit the use of the allowable ranges of OM-6, Paragraph 4.6, it should develop a method to compensate for the additional uncertainty when evaluating these pumps. One possible method of accounting for the additional uncertainty would be to add the additional uncertainty onto measurements above the reference value and subtract the additional uncertainty from measurements below the reference value when comparing to the allowable ranges of pressure differential.

4.4 Conclusion

Based on the determination that the proposal provides a reasonable assurance of operational readiness and that compliance with the Code would result in hardship without a compensating increase in the level of quality and safety, the proposed alternative is authorized pursuant to § 50.55a(a)(3)(ii) with the following provision. The licensee should either demonstrate that the instruments provide indication that is sufficiently accurate and repeatable to detect degradation and permit the use of the allowable ranges of OM-6, Paragraph 4.6, or develop a method to compensate for the additional uncertainty when evaluating these pumps.

5.0 VALVE RELIEF REQUEST RV-01

RV-01 requests relief from the OM-10, Paragraph 4.3.2.1 exercising test frequency requirement for check valves and proposes to follow GL 89-04, Position 2, requirements.

Affected Valves:

1(2)E12-F046A/B/C	LPCI Minimum Flow Line Check Valves
0DG002	0 DG Cooling Water Pump Discharge Check Valve
1(2)DG002	A DG Cooling Water Pump Discharge Check Valves
1(2)E22-F028	HPCS DG Cooling Water Pump Discharge Check Valves
1(2)FC044A/B	FP Emergency Makeup Pump Discharge Check Valves
1E32-F010/11	MSIV-LCS Low Pressure Manifold Drain Check Valves
1(2)E32-F310A/B/C/D	MSIV-LCS Exhaust Blower Manifold Check Valves
2E32-F010/11	MSIV-LCS Exhaust Blower Manifold Check Valves

5.1 Licensee's Basis for the Relief Request

Per GL 89-04, the NRC staff has established a position regarding valve disassembly and inspection as an approved alternate method of determining that a valve disc will full-stroke exercise open or of verifying closure capability. When direct or indirect methods of exercising check valves are not available or when it is impracticable to demonstrate opening and closing capabilities by other means, the disassembly and inspection method will be used to fulfill the IST requirements.

5.2 Proposed Alternate Testing

When practicable, partial valve stroking quarterly or during cold shutdowns, or after reassembly will be performed. The following positions regarding disassembly and inspection of check valves will be met.

1. Visually inspect internals for worn, loose or corroded parts and manually cycle the valve disk to check for any concerns relating to operability (stuck open, stuck closed, or binding).

2. Because of the scope of this testing, the personnel hazards involved, and system operating restrictions, valve disassembly and inspection will be performed during reactor refueling outages. Since this frequency differs from the Code required frequency, this deviation will be specifically noted in the valve's associated refueling justification.

3. Where it is burdensome or not practicable to disassemble and inspect all applicable valves in a group each refueling outage, a sample disassembly and inspection plan for the groups of identical valves in similar application may be employed. The following additional guidelines for this plan are outlined below.

   a) Valve sample groups are required to have the same design (unit, manufacturer, size, model number, and materials of construction) and have the same service conditions and media (process fluid, temperature, pressure, flow, etc.) including valve orientation. The maximum number of valves in a group is limited to four valves.

b) Visually inspect internals for worn, loose or corroded parts, and manually cycle the valve disk to check for any concerns relating to operability.

c) A different valve of each group is required to be disassembled and inspected at each successive refueling outage, until the entire group is tested. Once this is completed, the sequence of disassembly must be repeated unless extension of the interval can be justified.

d) If the disassembled valve does not exhibit full-stroke capability, or there is binding or failure of the valve internals, the remaining valves in that group not yet inspected for the current sequence must be disassembled, inspected, and full-stroke exercise during the same outage.

Extension of the valve disassembly/inspection interval to one valve every other refueling outage for single valve groupings or expansions of the group size above four valves will only be considered in cases of extreme hardship where the extension is supported by actual in-plant data from previous testing.

In order to justify extension of the valve disassembly/inspection interval after all valves in a particular grouping have been tested to longer than once every six years, the following information shall be evaluated and documented.

1. Review the inspection documentation of each valve in the grouping; taking into account both the physical condition of the valve and the ability of the valve to be full-stroked.

2. Review the nuclear plant reliability data system (NPRDS) failure data regarding the same type of valve used in similar service.

3. Review the installation for any applicable misapplication concerns addressed in the "EPRI Application Guidelines for Check Valves in Nuclear Power Plants."

4. Review the inspection data for the valve group to ensure that the failure rate is less that 25 percent. A higher failure rate than this may indicate that the group size should be decreased.

5.3 Evaluation

Paragraph 4.3.2.2(e) of OM-10 requires that if valve exercising is not practicable during plant operation or cold shutdowns, full-stroke exercising is to be performed during refueling outages. Paragraph 4.2.3.4(c) allows disassembly every refueling outage to verify operability of check valves. When no other means is practical, a sample disassembly and inspection plan is allowed by GL 89-04, Position 2, for groups of identical valves in similar

applications when the licensee determines that it is burdensome to disassemble and inspect all applicable valves each refueling outage.

The licensee proposes to follow the sample disassembly and inspection program of GL 89-04, Position 2; however, the bases are not in sufficient detail to justify this request. The bases should be described in such a way that it is evident that exercising these valves as required by the Code is not practicable. The licensee should provide additional detail for not exercising quarterly, during cold shutdowns, and during refueling outages as required by the Code. The request should specifically address technical concerns such as damage to equipment, loss of containment integrity or safety system function during operation, hazards to personnel, or the possibility of a plant trip that would unnecessarily challenge safety systems, stress components, and cycle equipment. If personnel radiation exposure concerns form part of the argument, then information about the general area radiation field, local hot spots, plant radiation limits and stay times, and the amount of exposure personnel performing the test would receive should be included.

In cases of extreme hardship, GL 89-04, Position 2, allows extension of disassembly interval to one valve every refueling outage or expansion of group size above four valves if extension is supported by actual in-plant data from previous testing. The following should be documented when developing relief requests for these cases:

1. The impracticality of full-stroke exercising the valves with flow or other positive means during power operations, cold shutdowns, and refueling outages.

2. The extreme hardship of examining the valves at the GL 89-04 interval.

3. Satisfactory completion of the examination and reviews required for extension by GL 89-04, Position 2.

4. Bases showing that the longer examination interval should provide adequate assurance of continued valve operational readiness.

The licensee may also wish to investigate the use of alternate testing methods to verify that the valves will open and/or close. The licensee's investigation may consider non-intrusive diagnostic techniques such as magnetics, acoustics, ultrasonics, and radiography. The licensee may consider, as necessary, installation of test connections or other system modifications to meet the Code requirements.

5.4 Conclusion

The licensee proposes to follow the sample disassembly and inspection program of GL 89-04, Position 2. However, the basis in this relief request should be expanded to clearly show that the guidance of GL 89-04, Position 2 is met. If an alternative is proposed which is in accordance with GL 89-04 guidance and

is documented in the IST program, no further evaluation is required; however, implementation of the alternative is subject to NRC inspection.

6.0 VALVE RELIEF REQUESTS RV-02, RV-03, AND RV-06

For relief requests RV-02, RV-03, and RV-06, the valves in question are not identified as ASME Code Class 1, 2, or 3; therefore, they are not subject to IST in accordance with 10 CFR 50.55a. No relief request from IST requirements is required.

7.0 VALVE RELIEF REQUEST RV-04

RV-04 requests relief from the OM-10, Paragraph 4.3.2, exercising test frequency requirements for hydrogen recombiner water-spray cooler supply check valves 1(2)HG017A,B, and proposes to full-stroke exercise each valve every 36 months.

7.1 Licensee's Basis for the Relief Request

The hydrogen recombiner water-supply cooler supply is designed to cool the recombined gas exiting the reaction chamber to less than 250 degrees Fahrenheit. This corresponds to a flow rate of 7 to 20 gpm at a supply pressure of 40 to 150 psi. Demonstrating that each supply check valve can pass sufficient water to maintain the recombined gas existing the reaction chamber to a temperature less that 250 degrees Fahrenheit verifies full-stroke capability.

Included in LaSalle's plant design, two individual water supply lines exist for each Unit's recombiner: one from the B RHR loop which supplies the recombiner when operated from the same unit, and the other from the A RHR loop which supplies the recombiner when operated from the opposite unit. This is to ensure that the water taken from the applicable unit's suppression pool is returned back to the same suppression pool, and that the two containments are not physically cross-connected. Only one of the two check valves can be exercised during the hot functional test. The valve which is exercised depends on what unit the recombiner is operated from. Testing the hydrogen recombiner more frequently to accommodate exercising the water supply check valves on a quarterly basis is not recommended by the manufacturer, nor from the standpoint of equipment qualification (40-year life).

Each water supply check valve can only be full-stroke exercised during the Technical Specification (TS) hot functional test using heaters. This hot functional test is performed once every 18 months regardless of plant conditions (i.e., not limited to cold shutdown or refueling outages). This hot functional testing is stated in TSs 3/4.6.6.1 and recommended by GL 93-05 and NUREG-1366.

7.2 Proposed Alternate Testing

Each valve will be full-stroke exercised every 36 months in conjunction with the hydrogen recombiner TS hot functional test. One valve of each unit will alternately be tested every 18 months.

7.3 Evaluation

Paragraph 4.3.2.2(e) of OM-10 requires that if valve exercising is not practicable during plant operation or cold shutdowns, full-stroke exercising is to be performed during refueling outages. In addition, Paragraph 4.2.3.4(c) allows disassembly every refueling outage to verify operability of check valves.

The licensee proposes to full-stroke exercise the hydrogen recombiner water-spray cooler supply check valves every 36 months (about every other refueling outage) during the hydrogen recombiner TS hot functional tests. The relief request states that testing the hydrogen recombiner more frequently to accommodate exercising the water supply valves on a quarterly basis is not recommended by the manufacturer, nor from the standpoint of equipment qualification. The request, however, did not specifically address the practicality of disassembly and inspection during refueling outages; in particular, for those valves not tested during the hot functional test in the previous 18 months. Also, the request did not include details of the manufacturer's recommendation and equipment qualification necessary to justify the 36-month test frequency.

The basis should be described in such a way that it is evident that exercising these valves as required by the Code is not practicable. The licensee should provide additional details for not exercising quarterly, during cold shutdowns, and during refueling outages as required by the Code. The request should specifically address technical concerns such as damage to equipment, loss of containment integrity or safety system function during operation, hazards to personnel, or the possibility of a plant trip that would unnecessarily challenge safety systems, stress components, and cycle equipment. If personnel radiation exposure concerns form part of the bases, then information about the general area radiation field, local hot spots, plant radiation limits and stay times, and the amount of exposure personnel performing the test would receive should be included.

The licensee may also wish to investigate the use of alternate testing methods to verify that the valves will open and/or close. The licensee's investigation may consider non-intrusive diagnostic techniques such as magnetics, acoustics, ultrasonics, and radiography. The licensee may consider as necessary, installation of test connections or other system modifications to meet the Code requirements.

7.4 Conclusion

No relief request from IST requirements is required provided each valve is either tested or disassembled and inspected per OM-10 at least every refueling outage and the documentation forming the basis for deferred testing, such as the manufacturer's recommendation and equipment qualification, are documented in the IST program and available during NRC inspections. If the licensee can not meet this provision, additional bases as described in Section 7.3, above should be submitted within 6 months of this SE to support the 36-month check valve full-stroke exercising interval.

8.0 VALVE RELIEF REQUEST RV-05

With respect to the suppression chamber-drywell vacuum breakers 1(2)PC001A, B, C, and D, the licensee's proposal in RV-05 to full-stroke exercise on a monthly frequency and to perform an opening force test every refueling outage is not a deviation from the Code requirements. However, the licensee did not specifically address the impracticality of performing an opening force test quarterly. If testing is impracticable quarterly during power operation and during cold shutdowns, OM-10, Paragraph 4.3.2, specifies full-stroke exercising at each refueling outage. The licensee's proposed testing frequencies are consistent with the Code provided the basis for impracticality of performing an opening force test quarterly is documented in the IST program as required by OM-10, Paragraph 6.2. The basis for deferral of testing is subject to review during NRC inspections.

9.0 VALVE RELIEF REQUEST RV-07

The licensee's proposal to closure test the RCIC turbine exhaust check valves 1(2)E51-F040 and the barometric condenser vacuum pump discharge check valve 1(2)E51-F028 by means of a local leak test performed on a refueling outage frequency is not a deviation from the Code requirements. No relief request from IST requirements for this closure testing is required since OM-10, Paragraph 4.3.2, specifies full-stroke exercising at each refueling outage if exercising is impracticable quarterly during power operation and during cold shutdowns. The licensee's basis for impracticality of closure testing quarterly and during cold shutdowns is documented in the IST program as required by OM-10, Paragraph 6.2. The basis for deferral of testing is subject to review during NRC inspections.

10.0 VALVE RELIEF REQUEST RV-08

For the shutdown cooling testable check valves 1(2)E12-F050 A and B, the licensee's proposal in RV-08 to partial-stroke test during cold shutdowns and full-stroke test on a refueling outage frequency is not a deviation from the Code requirements. No relief request from IST requirements is required since OM-10, Paragraph 4.3.2 specifies full-stroke exercising at each refueling outage if testing is impracticable quarterly during power operation and during cold shutdowns. The licensee's basis for impracticality of partial- or full-stroke testing at higher frequencies is documented in the IST program as

required by OM-10, Paragraph 6.2. The basis for deferral of testing is subject to review during NRC inspections.

11.0 VALVE RELIEF REQUEST RV-09

The licensee's proposal in RV-09 to stroke time test the HPCS pump minimum flow bypass line isolation valves 1(2)E22-F012 and the RCIC minimum flow isolation valves 1(2)E51-F019 in the closed direction on a refueling outage frequency and in the open direction quarterly is not a deviation from the Code requirements. No relief request from IST requirements is required since OM-10, Paragraph 4.2.1, specifies full-stroke exercising at each refueling outage if testing is impracticable quarterly during power operation and during cold shutdowns. The licensee's basis for impracticality of stroke timing at higher frequencies is documented in the IST program as required by OM-10, Paragraph 6.2. The basis for deferral of testing is subject to review during NRC inspections.

12.0 CONCLUSIONS

Based on its review of the October 13, 1995, submittal on Revision 1 of the licensee's second ten-year interval IST program for pumps and valves, the staff concludes the following:

1. For RP-01, interim relief is granted in accordance with 10 CFR 50.55a(f)(6)(i) for a period of 1 year or until the next refueling outage, whichever is longer, to allow the licensee time to investigate the procurement and installation of flow instrumentation to test the pumps in accordance with the OM-6 requirements.

2. The licensee's proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for RP-02 and RP-03 with the following provision: the licensee should either demonstrate that the instruments provide indication that is sufficiently accurate and repeatable to detect degradation and permit the use of the allowable ranges of OM-6, Paragraph 4.6, or they should develop a method to compensate for the additional instrument uncertainty when evaluating the pumps.

3. The basis in RV-01 should be expanded to show that the guidance of GL 89-04, Position 2 is met. If an alternative is proposed that is in accordance with GL 89-04 guidance and is documented in the IST program, no further evaluation is required; however, implementation of the alternative is subject to NRC inspection.

4. For RV-02, RV-03, and RV-06, the valves in question are not identified as ASME Code Class 1, 2, or 3; therefore, they are not subject to IST in accordance with 10 CFR 50.55a. No relief from IST requirements is required.

5. No relief from IST requirements is required for RV-04 provided each check valve is tested or disassembled at least every refueling outage in

accordance with OM-10 and the bases for deferred testing, such as the manufacturer's recommendation and equipment qualification referenced in this relief request, are documented in the IST program and available during NRC inspections. If the licensee can not meet this provision, additional bases should be submitted within 6 months of this SE to support the 36-month exercising interval.

6. Regarding RV-05, RV-07, and RV-08, the licensee's proposal to defer check valve exercising tests from quarterly during power operation to cold shutdown or refueling outage frequencies do not deviate from the Code. No relief from IST requirements is required provided the bases for determining impracticality of partial- and full-stroke exercising quarterly or during cold shutdowns, as applicable, are documented. The bases for deferral of testing are subject to review during NRC inspections.

7. The licensee's proposal in RV-09 to stroke time the power operated valves in the closed direction on a refueling outage frequency and in the open direction quarterly is not a deviation from the Code requirements. No relief from IST requirements is required since OM-10, Paragraph 4.2.1, specifies full-stroke exercising at each refueling outage if testing is impracticable quarterly during power operation and during cold shutdowns. The basis for deferral of testing is subject to review during NRC inspections.

The staff concludes that the relief requests as evaluated and modified by this SE will provide reasonable assurance of the operational readiness of the pumps and valves to perform their safety-related functions. The staff has determined that granting relief pursuant to 10 CFR 50.55a(f)(6)(i) and authorizing alternatives pursuant to 10 CFR 50.55a(a)(3)(ii) is authorized by law and will not endanger life or property, or the common defense and security and is otherwise in the public interest. In making this determination, the staff has considered the impracticality of performing the required testing and the burden on the licensee if the requirements were imposed.

Principal Contributor: K. Dempsey

Dated: December 8, 1995