

May 5, 2003

Mr. John L. Skolds, President
and Chief Nuclear Officer
Exelon Nuclear
Exelon Generation Company, LLC
200 Exelon Way, KSA 3-E
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SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2 - RELIEF FROM THE REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL CODE, SECTION XI, CONCERNING CHECK VALVE INSERVICE TESTING PROGRAM (TAC NOS. MB4804 AND MB4805)

Dear Mr. Skolds:

By letter dated April 12, 2002, as supplemented by letter dated August 20, 2002, Exelon Generation Company (Exelon or the licensee), LLC, submitted proposed alternatives to the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, concerning the second 10-year inservice testing (IST) programs for Limerick Generating Station, Units 1 and 2.

Exelon submitted Relief Request GVRR-7 as an alternative testing frequency for performing IST of various safeguard piping fill system check valves. The check valves will be tested using a disassembly-and-inspection method every 2 years during any mode of operation in lieu of once during each refueling outage as currently allowed by the American Society of Mechanical Engineers, *Boiler and Pressure Vessel Code*. Additionally, a sample disassembly examination program will be implemented in accordance with the guidelines in Generic Letter 89-04, Position 2.

As a result of its review of the licensee's submittal, the U.S. Nuclear Regulatory Commission (NRC) staff identified certain areas where additional information was needed from the licensee. By letter dated August 20, 2002, the licensee provided additional information concerning the use of the proposed alternative.

Based on the information provided by the licensee, the NRC staff concludes that for GVRR-7, the proposed alternative will provide an acceptable level of quality and safety. Therefore, the use of the proposed alternatives is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the second 10-year IST interval at each unit. The NRC staff's safety evaluation is enclosed.

J. Skolds

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If you need clarification of this approval, please contact the project manager, Mr. Scott P. Wall, at (301) 415-2855.

Sincerely,

/RA/

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-352 and 50-353

Enclosure: Safety Evaluation

cc w/encl: See next page

J. Skolds

- 2 -

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PRESSURE RETAINING PIPING WELDS EXAMINATION

EXELON GENERATION COMPANY, LLC

LIMERICK GENERATING STATION, UNITS 1 AND 2

DOCKET NOS. 50-352 AND 50-353

1.0 INTRODUCTION

By letter dated April 12, 2002, Exelon Generation Company (Exelon or the licensee), LLC, submitted proposed alternatives to the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, concerning the second 120-month inservice testing (IST) programs for Limerick Generating Station, Units 1 and 2 (LGS-1 and 2).

Exelon submitted Relief Request GVRR-7 for LGS-1 and 2 in lieu of American Society of Mechanical Engineers, *Boiler and Pressure Vessel Code* (ASME Code) requirements for the selection and examination of Class 1, 2, and 3 pumps and valves. By letter dated August 20, 2002, the licensee further provided its response to the U.S. Nuclear Regulatory Commission (NRC or the Commission) staff's request for additional information concerning the use of the proposed alternative.

2.0 REGULATORY EVALUATION

Section 50.55a(f) requires that IST of the ASME Code, Class 1, 2, and 3 pumps and valves be performed in accordance with the ASME Code and applicable addenda, except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(f)(6)(i). According to 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraph (f) may be used, when authorized by the NRC, if an applicant demonstrates that the proposed alternatives would provide an acceptable level of quality and safety or if the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(f)(4), ASME Code, Class 1, 2, and 3 pumps and valves shall meet the requirements set forth in the ASME Code to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that IST of pumps and valves conducted during the first 120-month interval and subsequent intervals comply with the requirements in the latest edition and addenda of the ASME Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code) incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. For LGS-1 and 2, the applicable edition of the ASME OM Code for the second 120-month IST interval is the 1990 Edition.

Enclosure

Generic Letter (GL) No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides guidelines for meeting alternatives to ASME Code requirements. Further NRC guidance is given in GL 89-04, Supplement 1, and NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants." In cases where GL 89-04 or NUREG-1482 provide guidelines that conflict with ASME Code requirements, the licensee must obtain relief from the NRC prior to implementation of the guidelines.

3.0 TECHNICAL EVALUATION

3.1 Code Requirements

In lieu of only testing certain safeguard piping fill system check valves by disassembly and inspection during refueling outages, as required by the 1990 Edition of the ASME OM Code, paragraph ISTC 4.5.2, the licensee requested relief to allow testing during any mode of plant operation. GL 89-04, Position 2, "Alternative to Full Flow Testing of Check Valves," paragraph (c), provides guidelines for meeting alternatives to ASME Code requirements. GL 89-04 states that disassembly and inspection of check valves may only be performed during refueling outages. The licensee requested relief for the following check valves categorized according to their sample groupings:

	<u>Unit 1</u>	<u>Unit 2</u>	<u>Valve Size</u>
Group 1	51-1032A,B 51-1F090B,D	51-2032A,B 51-2F090A,C	4" 4"
Group 2	51-1115B,D 51-1116B,D 52-1045B 52-1046B	51-2115B,D 51-2116B,D 52-2045B 52-2046B	1-1/2" 1-1/2" 1-1/2" 1-1/2"
Group 3	52-1048A,B	52-2048A,B	1"
Group 4	52-1061	52-2061	1"
Group 5	52-1F030A,B	52-2F030A,B	2"

3.2 Licensee's Basis for Requesting Relief

In accordance with GL 89-04, Position 2, paragraph (c), a sample disassembly and inspection plan has been adopted for the check valves identified above. This plan groups the valves of identical construction, which are used in similar applications, and requires testing (at least) one valve in each group during each refueling outage. Input criteria to the group selections included valve design features and materials, service conditions, maintenance/failure history and piping arrangement considerations.

Testing of these valves during non-outages provides an acceptable level of quality and safety for the following reasons:

- 1) All OM Code - 1990 requirements, specifically, the disassembly and inspection, and the refueling outage (approximately two (2) year) frequency, are being met.
- 2) The test frequency of approximately every two (2) years is the same length of time between refueling outages.
- 3) Testing of these valves during plant operation will not lessen the quality of the tests as compared to testing during a refueling outage.
- 4) Performing these tests during any mode increases system availability during outages, and reduces manpower demands during outages.

3.3 Licensee's Proposed Alternative to Code Testing Requirements

Perform Code testing on Safeguard Valves approximately every two (2) years, with no restriction on plant mode. This relief is requested in accordance with 10 CFR 50.55a(a)(3)(i) in that the alternative testing provides an acceptable level of quality and safety.

3.4 NRC Staff's Evaluation

The ASME Code (1990 Edition), Section XI, ISTC 4.5 requires that category C check valves be exercised nominally every 3 months in a manner that verifies obturator travel to the closed, full-open, or partially open position as required to fulfill its function. If exercising is not practicable during plant operation or cold shutdowns, ISTC 4.5.2(e) permits the check valves to be full-stroke exercised during each plant refueling outage. The most common method to full-stroke exercise a check valve open is to pass the maximum required accident flow through the valve. However, for some check valves, the licensee cannot practically establish or verify sufficient flow to full-stroke exercise the valves open. In many cases, establishing design accident flow through these valves for testing could result in damage to major plant equipment. Under such conditions, valve disassembly and inspection may be used as a positive means of determining that a valve's disk will full-stroke exercise open or verifying valve closure capability. As an alternative to exercising check valves during plant operation or cold shutdowns, ISTC 4.5.4(c) permits check valves to be disassembled and inspected every refueling outage to verify operability.

GL 89-04, Position 2, provides additional NRC guidelines to develop a sample disassembly and inspection program when the licensee determines that it is burdensome to disassemble and inspect all applicable valves each refueling outage. The program involves grouping similar valves and testing at least one valve in each group during each refueling outage. A different valve of each group is required to be disassembled, inspected, and manually full-stroke exercised at each successive refueling outage, until the entire group has been tested. This guideline, as with ISTC 4.5.4(c) requirements, limits disassembly and inspection of check valves to refueling outages only.

The licensee requested to perform ASME Code testing, by disassembly and inspection, on certain safeguard system check valves approximately every 2 years, with no restriction on plant mode. The basis for the request is outlined in Section 3.2 above. Consistent with the surveillance intervals delineated in Surveillance Requirement (SR) 4.0.5, disassembly and inspection tests shall be conducted every 2 years, subject to the provisions of SR 4.0.2. SR 4.0.2 permits a 25% extension of the normal surveillance interval to facilitate surveillance scheduling and consideration of plant operating conditions that may not be suitable for conducting the surveillance. This extension authorized by Specification 4.0.2 is not intended to be used repeatedly as a convenience to extend the disassembly and inspection test frequencies.

The licensee categorizes the safeguard fill system check valves with regard to their sampling groups and size. All of the check valves are ASME Code, Class 3 components. The design criteria for LGS-1 and 2 requires component isolation from reactor coolant system (RCS) pressure for all Class 3 valves covered in the relief request. All of the identified valves are relatively small-diameter valves, and located in 4-inch or smaller diameter lines. These check valves close to prevent a loss of inventory from the safeguard piping fill system, which is required to maintain the emergency core cooling system (ECCS) discharge headers filled. Those valves located in the discharge lines from safeguard piping fill pumps 1(2)AP256 and 1(2)BP256 are also required to open to maintain the ECCS discharge line filled.

The NRC staff based its evaluation on information provided by the licensee with consideration that 1) all the valves are ASME Code, Class 3; are relatively small (4 inches or smaller); have a low failure rate; and are provided with component isolation from the RCS; 2) all the valves are located in systems that could be isolated and scheduled for maintenance activities during normal power operation; 3) planned activities are evaluated utilizing risk insights to determine the impact on safety operation of the plant and the ability to maintain associated safety margins; and 4) all activities are performed with plant procedures that provide detailed instructions for disassembly, inspection, exercising, and considerations for corrective actions.

The staff finds that the licensee's proposed testing alternative does not reveal an unforeseen hazard or substantially greater potential for a known hazard to occur. Additionally, though not quantified, the NRC staff finds that any potential increase in risk associated with this relief request would be expected to be very small and within the acceptance guidelines of Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment In Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis."

4.0 CONCLUSION

The NRC staff concludes that the licensee's proposal to disassemble and inspect safeguard fill system check valves during any mode of operation provides an acceptable alternative to the ASME Code requirements in ISTC 4.5.2 and 4.5.4(c), and the guidelines in GL 89-04, Position 2. The staff also concludes that implementation of the sample disassembly examination program, in accordance with the guidelines in GL 89-04, Position 2, is an acceptable alternative method to test check valves. Therefore, the proposed alternatives of GVRR-7, subject to the change from "approximately every 2 years" to "every two years subject to the provisions of SR 4.0.2," are authorized for the second 120-month IST interval at LGS-1

and 2 pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that the alternatives will provide an acceptable level of quality and safety.

Principal Contributors: J. Strnisha
D. Harrison

Date: May 5, 2003