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

April 28, 2017

Mr. Bryan C. Hanson
President and Chief Nuclear Officer
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3 – SAFETY EVALUATION OF RELIEF REQUEST NUMBER 01A-VRR-4 REGARDING THE FOURTH 10-YEAR INTERVAL OF THE INSERVICE TESTING PROGRAM (CAC NOS. MF9598 AND MF9599)

Dear Mr. Hanson:

By letter dated April 13, 2017, Exelon Generation Company, LLC (Exelon, the licensee) submitted Relief Request Number 01A-VRR-4 to the U.S. Nuclear Regulatory Commission (NRC). Exelon proposed an alternative to certain inservice testing (IST) requirements of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), Exelon requested to revise the main steam isolation valve partial stroke testing frequency on the basis that the proposed alternative provides an acceptable level of quality and safety. The subject relief request is for the fourth 10-year interval of the IST program at PBAPS, Units 2 and 3, which began on August 15, 2008, and is currently scheduled to end on August 14, 2018.

The NRC staff has completed its review of the subject relief request as documented in the enclosed safety evaluation. Our safety evaluation concludes that the proposed alternative will provide an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the proposed alternative for the remainder of the fourth 10-year IST interval at PBAPS, Units 2 and 3.

All other ASME OM Code requirements for which relief was not specifically requested and approved remain applicable.

If you have any questions, please contact the PBAPS Project Manager, Mr. Richard Ennis, at (301) 415-1420 or Rick.Ennis@nrc.gov.

Sincerely,

James G. Danna, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-277 and 50-278

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv

UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO RELIEF REQUEST NUMBER 01A-VRR-4 FOR THE

FOURTH 10-YEAR INTERVAL OF THE INSERVICE TESTING PROGRAM

EXELON GENERATION COMPANY, LLC

PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3

DOCKET NOS. 50-277 AND 50-278

1.0 INTRODUCTION

By letter dated April 13, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17103A114), Exelon Generation Company, LLC (Exelon, the licensee) submitted Relief Request Number 01A-VRR-4 to the U.S. Nuclear Regulatory Commission (NRC or the Commission). Exelon proposed an alternative to certain inservice testing (IST) requirements of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), Exelon requested to revise the main steam isolation valve (MSIV) partial stroke testing frequency on the basis that the proposed alternative provides an acceptable level of quality and safety.

The subject relief request is for the fourth 10-year interval of the IST program at PBAPS, Units 2 and 3, which began on August 15, 2008, and is currently scheduled to end on August 14, 2018.

2.0 REGULATORY EVALUATION

Section 50.55a(f), "Inservice testing requirements," of 10 CFR requires, in part, that IST of certain ASME Boiler and Pressure Vessel Code (Code) Class 1, 2, and 3 components must meet the requirements of the ASME OM Code and applicable addenda, incorporated by reference in the regulations, except where alternatives have been authorized by the NRC pursuant to 10 CFR 50.55a(z)(1) or (z)(2).

In proposing alternatives, a licensee must demonstrate that the alternatives provide an acceptable level of quality and safety in accordance with 10 CFR 50.55a(z)(1) or that compliance would result in hardship or unusual difficulty, without a compensating increase in the level of quality and safety, in accordance with 10 CFR 50.55a(z)(2). Section 50.55a of 10 CFR allows the NRC to authorize alternatives from the ASME OM Code requirements upon making necessary findings.

Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request, and the Commission to authorize, the alternative requested by the licensee.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Relief Request Number 01A-VRR-4

Components Affected

Alternative testing is requested for the following valves:

Table 1			
Valve Number	**Function**	**ASME Code Class**	**ASME OM Code Category**
AO-2(3)-01A-080A	MSIV	1	A
AO-2(3)-01A-080B	MSIV	1	A
AO-2(3)-01A-080C	MSIV	1	A
AO-2(3)-01A-080D	MSIV	1	A
AO-2(3)-01A-086A	MSIV	1	A
AO-2(3)-01A-086B	MSIV	1	A
AO-2(3)-01A-086C	MSIV	1	A
AO-2(3)-01A-086D	MSIV	1	A

Applicable Code Edition/Addenda

The applicable ASME OM Code edition and addenda for PBAPS, Units 2 and 3, are the 2001 Edition through the 2003 Addenda.

Applicable Code Requirements

ASME OM Code, ISTC-3520, "Exercising Requirements," Section ITSC-3521, "Category A and Category B Valves," paragraphs (b) and (c) state that:

(b) if full-stroke exercising during operation at power is not practicable, it may be limited to part-stroke during operation at power and full-stroke during cold shutdowns;

(c) if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns;

Licensee's Reason for Request

The licensee's letter dated April 13, 2017, provides the following reason for the request:

> Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (z)(1), relief is requested from the requirement of ASME OM Code ISTC-3521(b). The basis of the relief request is the proposed alternative would provide an acceptable level of quality and safety.
>
> An existing PBAPS Inservice Testing (IST) Program Cold Shutdown Justification (CSJ) 01A-VCS-2, for full stroke testing, under ISTC-3521(c), will be modified to remove the existing quarterly partial stroke exercise testing of the Main Steam Isolation Valves (MSIV), under ISTC-3521(b). This will be done to address the

potential for the valves to fully close inadvertently during the quarterly exercise testing. Full closure of the valves, at power, will cause a reactivity event and potential loss of power production of the affected unit. Challenges like these, and their potential consequence, have also been recognized in NUREG-1482, Revision 2. The NUREG discusses activities generating these challenges and states they should be considered impracticable, thereby supporting the CSJ principal arguments.

In PBAPS Technical Specification (TS) 3.3.1.1 – Reactor Protection System (RPS) Instrumentation, Surveillance Requirement (SR) 3.3.1.1.9 – Channel Functional Test (CFT), the frequency of testing is stated as "In accordance with the Surveillance Frequency Control Program (SFCP)." The only practical method to perform the Reactor Protection System CFT for the MSIV position switch input into the RPS logic is to actually stroke the MSIV. There are no other Technical Specification compliant methods available without reducing reactor power and entering the normally inerted primary containment. This would result in unwarranted power reductions and personnel radiation exposures.

PBAPS has elected, due to recent documentation describing MSIV industry test failures, to utilize the SFCP for the CFT to extend the test frequency of the CFT in increments, over a period of time, up to two years. A two year test frequency would coincide with refueling outages and eliminate stroking of MSIVs during power operation of the units.

In order to utilize the SFCP for this MSIV testing, the valves will have to be partial stroke exercised at power, for a number of years, to achieve the final goal of stroking at a two year frequency. This methodology will allow for a progressively longer test interval until the final biennial testing interval is achieved. This test frequency change cannot be done with the CSJ in the IST Program, as the stroking of the valves in accordance with the SFCP would be in contradiction with the CSJ, which would not permit stroking of the valves during normal power operation (except for emergent issues such as post maintenance testing).

Licensee's Proposed Alternative and Basis for Use

The licensee's letter dated April 13, 2017, proposes the following alternative and basis for its use:

> PBAPS proposes to continue partial stroke exercising the MSIVs for the sole purpose of supporting the requirements of the SFCP testing intervals that would require progressively longer surveillance intervals until the final biennial testing frequency is achieved. The CSJ would restrict any other stroking of the MSIVs, except for emergent issues such as post maintenance testing. Both the CSJ and the SFCP are needed together to address the removal of the challenges of partial stroke exercising, as defined in the CSJ, to support safer and more reliable continued operation of the units.

Duration of Proposed Alternative

The proposed alternative would apply to the remainder of the fourth 10-year IST interval at PBAPS, which is currently scheduled to end on August 14, 2018.

3.2 NRC Staff Evaluation

The licensee has proposed an alternative in lieu of the requirements found in 2001 Edition through 2003 Addenda of the ASME OM Code for the MSIVs listed in Table 1 above. The valves listed in Table 1 have been determined to be active Category A type. ASME OM Code Section ISTC-3510, "Exercising Test Frequency," states, in part, that "Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months, except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3560, ISTC-5221, and ISTC-5222." The licensee has been testing these valves in accordance with Section ISTC-3521(b) which states "if full-stroke exercising during operation at power is not practicable, it may be limited to part-stroke during operation at power and full-stroke during cold shutdowns."

Due to recent operating experience concerning partial stroking of MSIV causing plant transients and/or plant trips, the licensee changed their IST program plan for the fourth 10-year IST interval, which began on August 15, 2008, to exercise the MSIVs in accordance with ASME OM Code, Section ISTC-3521(c), which states "if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns." The licensee's justification for deferring the MSIV exercise test to cold shutdowns is in accordance with the guidance detailed in NUREG-1482, Revision 2, "Guidelines for Inservice Testing at Nuclear Power Plants," published October 2013 (ADAMS Accession No. ML13295A020), Section 2.4.5, "Deferring Valve Testing to Cold Shutdown or Refueling Outages." However, as stated by the licensee, the MSIVs continue to be partially stroked quarterly in order to meet a TS surveillance requirement. The frequency for this surveillance requirement is governed by the Surveillance Frequency Control Program (SFCP) described in PBAPS TS 5.5.14.

As noted in TS 5.5.14, the SFCP allows changes to surveillance frequencies in accordance with Nuclear Energy Institute (NEI) document NEI 04-10, Revision 1, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies, Industry Guidance Document," dated April 2007 (ADAMS Accession No. ML071360456). NEI 04-10 provides a risk-informed method to change surveillance frequencies by using probabilistic risk assessment methods in combination with plant performance data and other considerations. The use of the SFCP at PBAPS was approved by the NRC by Amendment Nos. 278 (Unit 2) and 281 (Unit 3), dated August 27, 2010 (ADAMS Accession No. ML102100388).

The licensee proposes to use the SFCP process to change the exercise frequency of the MSIVs such that it is in alignment with the desired IST requirement of deferring the valve exercise to a cold shutdown interval. The SFCP process incrementally steps out the exercise interval until there is enough data to support the new frequency. The SFCP process also requires performance monitoring and feedback of the components to assure that the change in test frequency has not resulted in degradation of the equipment performance and operational safety. The monitoring and feedback includes consideration of Maintenance Rule monitoring of equipment performance. Based on these considerations, the NRC staff finds that the proposed alternative provides an acceptable level of quality and safety.

4.0 CONCLUSION

As set forth above, the NRC staff finds that the proposed alternative provides an acceptable level of quality and safety for the components listed in Table 1. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the proposed alternative for the remainder of the fourth 10-Year IST interval at PBAPS, Units 2 and 3, which is currently scheduled to end on August 14, 2018.

All other ASME OM Code requirements for which relief was not specifically requested and approved remain applicable.

Principal Contributor: M. Farnan

Dated: April 28, 2017

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