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10 CFR 50.55a

March 22, 2016

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Renewed Facility Operating License Nos. DPR-53 and DPR-69
NRC Docket Nos. 50-317 and 50-318

Nine Mile Point Nuclear Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-63 and NPF-69
NRC Docket Nos. 50-220 and 50-410

R.E. Ginna Nuclear Power Plant
Renewed Facility Operating License No. DPR-18
NRC Docket No. 50-244

Subject: Proposed Alternative to Utilize Code Case N-789, "Alternative Requirements for Pad Reinforcement of Class 2 and 3 Moderate-Energy Carbon Steel Piping for Raw Water Service, Section XI, Division 1"

References:

1) Letter from J. Zimmerman (U.S. Nuclear Regulatory Commission) to M. Pacilio (Exelon Generation Company, LLC), Request to Use American Society of Mechanical Engineers Boiler and Pressure Vessel Code Case N-789, "Alternative Requirements for PAD Reinforcement of Class 2 and 3 Moderate-Energy Carbon Steel Piping for Raw Water Service, Section XI, Division 1," dated May 10, 2012

2) Letter from J. Barstow (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Proposed Alternative to Utilize Code Case N-789, 'Alternative Requirements for Pad Reinforcement of Class 2 and 3 Moderate-Energy Carbon Steel Piping for Raw Water Service, Section XI, Division 1'," dated October 28, 2015

3) Email from B. Purnell (U.S. Nuclear Regulatory Commission) to T. Loomis (Exelon Generation Company, LLC), "Calvert Cliffs, Nine Mile Point, and R.E. Ginna - Request to Use ASME Code Case N-789 as an Alternative to ASME Code Requirements (CAC Nos. MF7018-MF7022)," dated March 16, 2016

In the Reference 2 letter, in accordance with 10 CFR 50.55a(z)(2), Exelon Generation Company, LLC (Exelon) requested a proposed alternative to the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," on the basis that performing a Code repair would provide an acceptable level of quality and safety. Specifically, this proposed alternative concerns the use of Code Case N-789 for Class 2 and 3 moderate-energy raw water piping system repairs resulting from degradation mechanisms such as erosion, corrosion, cavitation, or pitting.

This relief request was approved for the Exelon fleet in the Reference 1 letter. Since that time, several plants have been added to the Exelon fleet. This relief request applies to those new Exelon reactors. Changes from the approved relief request are identified by revision bars.

In the Reference 3 letter, NRC requested additional information. Attached is our response to this request.

There are no regulatory commitments contained in this letter.

If you have any questions, please contact Tom Loomis (610) 765-5510.

Respectfully,

James Barstow
Director - Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachments: 1) Response to Request for Additional Information
2) Proposed Alternative to Utilize Code Case N-789

cc: Regional Administrator - NRC Region I
NRC Senior Resident Inspector - Calvert Cliffs Nuclear Power Plant
NRC Senior Resident Inspector - Nine Mile Point Nuclear Station
NRC Senior Resident Inspector - R.E. Ginna Nuclear Power Plant
NRC Project Manager - Calvert Cliffs Nuclear Power Plant
NRC Project Manager - Nine Mile Point Nuclear Station
NRC Project Manager - R.E. Ginna Nuclear Power Plant

Attachment 1
Response to Request for Additional Information

RAI-1:

Section 3.1(a)(1) of Code Case N-789 states: "Pressure pads are designed to retain pressure, and may be used only where the piping is predicted to retain full structural integrity until the next refueling outage assuming a corrosion rate of either 2 times the actual measured corrosion rate in that location, or 4 times the estimated maximum corrosion rate for the system."

For the pressure pad design, confirm that the higher of two times the actual measured corrosion rate or four times the estimated maximum corrosion rate will be used. Confirm that if the actual measured corrosion rate in the degraded location is unavailable, the estimated maximum corrosion rate for the system assumed in the design is calculated based on the same degradation mechanism as the degraded location. If this is not the case, describe how the corrosion rate will be determined and provide justification for not using the worst corrosion rate for the pressure pad design.

Response:

The proposed alternative to utilize Code Case N-789 has been revised to include the following wording to Section 5.0, "Proposed Alternative and Basis for Use":

> For the pressure pad design, the higher of 2 times the actual measured corrosion rate or 4 times the estimated maximum corrosion rate for the system will be used. If the actual measured corrosion rate in the degraded location is unavailable, the estimated maximum corrosion rate for the system assumed in the design will be calculated based on the same degradation mechanism as the degraded location.

Additionally, the following wording has been included in Section 6.0, "Duration of Proposed Alternative":

> NRC Draft Guide DG-1296 proposes to approve Code Case N-789 with conditions. When Code Case N-789 is approved for use by the NRC this relief request will no longer be applied and the Code Case, including Regulatory Guide 1.147 conditions, will be used in lieu of this relief request.

The revised proposed alternative is contained in Attachment 2.

Attachment 2
Proposed Alternative to Utilize Code Case N-789

1. ASME Code Component(s) Affected:

All ASME Class 2 and 3 moderate energy carbon steel raw water piping systems. Raw water is defined as water such as from a river, lake, or well or brackish/salt water - used in plant equipment, area coolers, and heat exchangers. In many plants it is referred to as "Service Water." This Code Case applies to Class 2 and 3 moderate energy (i.e., less than or equal to 200°F (93°C) and less than or equal to 275 psig (1.9 MPa) maximum operating conditions) carbon steel raw water piping.

2. Applicable Code Edition and Addenda:

PLANT	INTERVAL	EDITION	START	END
Calvert Cliffs Nuclear Power Plant, Units 1 and 2	Fourth	2004 Edition	October 10, 2009	June 30, 2019
R. E. Ginna Nuclear Power Plant	Fifth	2004 Edition	January 1, 2010	December 31, 2019
Nine Mile Point Nuclear Station, Unit 1	Fourth	2004 Edition	August 23, 2009	August 22, 2019
Nine Mile Point Nuclear Station, Unit 2	Third	2004 Edition	April 5, 2008	April 4, 2018

3. Applicable Code Requirement:

ASME Code, Section XI, IWA-4400 of the 2004 Edition provides requirements for welding, brazing, metal removal, and installation of repair/replacement activities.

4. Reason for Request:

In accordance with 10 CFR 50.55a(z)(2), as discussed in the previous May 10, 2012 (ML12121A637) approval ("Compliance with Regulation") for the Exelon Generation Company LLC (Exelon) plants, Exelon is requesting a proposed alternative from the requirement for replacement or internal weld repair of wall thinning conditions resulting from degradation in Class 2 and 3 moderate energy carbon steel raw water piping systems in accordance with IWA-4000. Such degradation may be the result of mechanisms such as erosion, corrosion, cavitation, and pitting - but excluded are conditions involving flow-accelerated corrosion (FAC), corrosion-assisted cracking, or any other form of cracking. IWA-4000 requires repair or replacement in accordance with the Owner's Requirements and the original or later Construction Code. Other alternative repair or evaluation methods are not always practicable because of wall thinness and/or moisture issues.

The primary reason for this request is to permit installation of a technically sound temporary repair to provide adequate time for evaluation, design, material procurement, planning and scheduling of appropriate permanent repair or replacement of the defective piping, considering the impact on system availability, maintenance rule applicability, and availability of replacement materials.

Performing code repair/replacement in lieu of implementing this Relief Request would in some cases necessitate extending Technical Specification actions to install a permanent repair/replacement, putting the plant at higher safety risks compared with the short time

necessary to install a technically sound pad repair. Use of this Code Case may avoid a plant shutdown in situations where it may be necessary to shut the plant down for a code repair/replacement activity. This could result in an unnecessary plant transient and the loss of safety system availability as compared to maintaining the plant online.

Implementing this Relief Request during refueling outages will enable a greater number of scheduled corrosion inspections during the outages. The ability to install non-intrusive repair pads rather than scheduling contingency plans for piping replacement will enable longer corrosion inspection windows, increased scope of inspection, and improved overall plant safety.

5. Proposed Alternative and Basis for Use:

In accordance with 10 CFR 50.55a(z)(2), Exelon proposes to implement the requirements of ASME Code Case N-789 ("Alternative Requirements for Pad Reinforcement of Class 2 and 3 Moderate-Energy Carbon Steel Piping for Raw Water Service, Section XI, Division 1") as a temporary repair of degradation in Class 2 and 3 moderate energy raw water piping systems resulting from mechanisms such as erosion, corrosion, cavitation, or pitting, but excluding conditions involving flow-accelerated corrosion (FAC), corrosion-assisted cracking, or any other form of cracking. These types of defects are typically identified by small leaks in the piping system or by pre-emptive non-code required examinations performed to monitor the degradation mechanisms.

The alternative repair technique described in Code Case N-789 involves the application of a metal reinforcing pad welded to the exterior of the piping system, which reinforces the weakened area and restores pressure integrity. This repair technique will be utilized when it is determined that this temporary repair method is suitable for the particular defect or degradation being resolved.

The Code Case requires that the cause of the degradation be determined, and that the extent and rate of degradation in the piping be evaluated to ensure that there are no other unacceptable locations within the surrounding area that could affect the integrity of the repaired piping. The area of evaluation will be dependent on the degradation mechanism present. A baseline thickness examination will be performed for a completed structural pad, attachment welds, and surrounding area, followed by monthly thickness monitoring for the first three months, with subsequent frequency based on the results of this monitoring, but at a minimum of quarterly. Areas containing pressure pads shall be visually observed at least once per month to monitor for evidence of leakage. If the areas containing pressure pads are not accessible for direct observation, then monitoring will be accomplished by visual assessment of surrounding areas or ground surface areas above pressure pads on buried piping, or monitoring of leakage collection systems, if available.

For the pressure pad design, the higher of 2 times the actual measured corrosion rate or 4 times the estimated maximum corrosion rate for the system will be used. If the actual measured corrosion rate in the degraded location is unavailable, the estimated maximum corrosion rate for the system assumed in the design will be calculated based on the same degradation mechanism as the degraded location.

The repair will be considered to have a maximum service life of the time until the next refueling outage, when a permanent repair or replacement must be performed. Additional requirements for design of reinforcement pads, installation, examination, pressure testing, and inservice monitoring are provided in Code Case N-789.

Based on the above justification, the use of Code Case N-789 as a proposed alternative to the requirements of ASME Section XI will provide an acceptable level of quality and safety that does not impose an undue hardship.

All other ASME Section XI requirements for which relief was not specifically requested and authorized by the NRC staff will remain applicable including third party review by the Authorized Nuclear Inservice Inspector.

Code Case N-789 was approved by the ASME Board on Nuclear Codes and Standards on June 25, 2011; however, it has not been incorporated into NRC Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI Division 1," and thus, is not available for application at nuclear power plants without specific NRC approval. Therefore, Exelon requests use of this alternative repair technique described in the Code Case via this relief request.

6. Duration of Proposed Alternative:

The proposed alternative is for use of the Code Case for the remainder of each plant's ten- (10) year inspection interval as specified in Section 2. NRC Draft Guide DG-1296 proposes to approve Code Case N-789 with conditions. When Code Case N-789 is approved for use by the NRC this relief request will no longer be applied and the Code Case, including Regulatory Guide 1.147 conditions, will be used in lieu of this relief request.

Any reinforcing pads installed before the end of the ten-year inservice inspection interval will be removed during the next refueling outage, even if that refueling outage occurs after the end of the ten-year interval.

7. Precedents:

Letter from J. Zimmerman (U.S. Nuclear Regulatory Commission) to M. Pacilio (Exelon Generation Company, LLC), Request to Use American Society of Mechanical Engineers Boiler and Pressure Vessel Code Case N-789, "Alternative Requirements for PAD Reinforcement of Class 2 and 3 Moderate-Energy Carbon Steel Piping for Raw Water Service, Section XI, Division 1," dated May 10, 2012 (ML12121A637)