



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

May 5, 2021

Mr. David P. Rhoades  
Senior Vice President  
Exelon Generation Company, LLC  
President and Chief Nuclear Officer (CNO)  
Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2; BYRON STATION, UNIT NOS. 1 AND 2; CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2; CLINTON POWER STATION, UNIT NO. 1; LASALLE COUNTY STATION, UNITS 1 AND 2; LIMERICK GENERATING STATION, UNITS 1 AND 2; AND NINE MILE POINT NUCLEAR STATION, UNIT 2 — REQUEST FOR ADDITIONAL INFORMATION REGARDING PROPOSED ALTERNATIVE TO USE ASME CODE CASE N-893 (EPIDS L-2020-LLR-0147 AND L-2020-LLR-0148)

Dear Mr. Rhoades:

By application dated November 16, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20321A234), Exelon Generation Company, LLC (Exelon, the licensee) submitted a request for a proposed alternative to the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, "Codes and standards," and the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code for Braidwood Station, Units 1 and 2; Byron Station, Unit Nos. 1 and 2; Calvert Cliffs Nuclear Power Plant, Units 1 and 2; Clinton Power Station, Unit No. 1; LaSalle County Station, Units 1 and 2; Limerick Generating Station, Units 1 and 2; and Nine Mile Point Nuclear Station, Unit 2 (collectively, the facilities). The proposed alternative would allow the licensee to use ASME Code Case N-893, "Use of Alloy Steel Bar and Mechanical Tubing in Class 2 and 3 Patented Mechanical Joints and Fittings Section III, Division 1."

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the application and determined that it needs additional information to complete its review. The NRC staff informed Exelon personnel of the need for this additional information by e-mail dated April 29, 2021. A response to the enclosed request for additional information is to be provided within 60 days from the date of this letter.

The NRC staff also requests that the application be revised to limit the duration of the proposed alternative to the remainder of current 10-year inservice inspection (ISI) interval for each plant. The application requests to use the proposed alternative for the remainder of each plant's 10-year ISI interval and for the remainder of each plant's life. The regulations in 10 CFR 50.55a(z) allow the NRC staff to authorize alternatives to the requirements in paragraphs (b) through (h) of 10 CFR 50.55a, but do not allow the staff to approve alternatives to requirements not currently established by these paragraphs. The requirements for subsequent 10-year ISI

intervals are established by 10 CFR 50.55a(g)(4)(ii) 18 months prior to the start of the ISI interval. The application indicates that the next ISI intervals for the facilities start between July 16, 2025, and July 1, 2030. Therefore, the ISI requirements beyond the current ISI interval have not been established for the facilities. If Exelon would like to use the proposed alternative for future ISI intervals, then such requests should be submitted no more than 18 months prior to the start of the interval.

If you have any questions, please contact me at 301-415-1380 or via e-mail at [Blake.Purnell@nrc.gov](mailto:Blake.Purnell@nrc.gov).

Sincerely,

*/RA/*

Blake Purnell, Project Manager  
Plant Licensing Branch III  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-456, STN 50-457,  
STN 50-454, STN 50-455, 50-317, 50-318,  
50-461, 50-373, 50-374, 50-352, 50-353, and  
50-410

Enclosure:  
Request for Additional Information

cc: Listserv

REQUEST FOR ADDITIONAL INFORMATION

EXELON GENERATION COMPANY, LLC

ALTERNATIVE REQUEST TO USE ASME CODE CASE N-893

DOCKET NOS. STN 50-456, STN 50-457, STN 50-454, STN 50-455, 50-317, 50-318, 50-461,  
50-373, 50-374, 50-352, 50-353, AND 50-410

By application dated November 16, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20321A234), Exelon Generation Company, LLC (Exelon, the licensee) submitted a request for a proposed alternative to the requirements of Title 10 of the *Code of Federal Regulations*, Section 50.55a, "Codes and standards," and the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code for Braidwood Station, Units 1 and 2; Byron Station, Unit Nos. 1 and 2; Calvert Cliffs Nuclear Power Plant, Units 1 and 2; Clinton Power Station, Unit No. 1; LaSalle County Station, Units 1 and 2; Limerick Generating Station, Units 1 and 2; and Nine Mile Point Nuclear Station, Unit 2. The proposed alternative would allow the licensee to use ASME Code Case N-893, "Use of Alloy Steel Bar and Mechanical Tubing in Class 2 and 3 Patented Mechanical Joints and Fittings Section III, Division 1."

The U.S. Nuclear Regulatory Commission staff has reviewed the application and determined that the information below is needed to complete its review.

**Request for Additional Information (RAI) #1**

**Background**

Section 5 of the November 16, 2020, application states, in part:

... the typical applications in which the subject proprietary fittings will be used are generally limited to instrumentation, sampling, and cooling water piping lines. They exclude Class 1 systems and any systems containing boric acid. Design temperatures may be up to 650°F [degrees Fahrenheit]. Design pressures could be as high as 2000 psi [pounds per square inch] but will generally be less than 200 psi. The environmental conditions are anything in the nuclear power plant environment, including air, water, or steam systems, and possibly lube oil or fuel systems. They could be inside or outside containment. Prior operating experience for these fittings in these environments have shown successful performance, with no leaks or structural failures, as long as they are installed in accordance with the manufacturer's instructions. They have been successfully used in pipe schedules from 40 to 160, subject to the manufacturer's recommendations and limitations.

The application states that prior operating experience demonstrated successful performance of fittings from the material listed in Code Case N-893. However, the application does not provide specific details of the operating experience, such as fitting size, corrosion performance and failure rates, as it related to the environmental conditions.

Enclosure

## **Request**

Provide details related to prior operating experience in nuclear and non-nuclear applications. Include corrosion performance and failure rates for these fittings, up to nominal pipe size 4, in the environments which they will be used or similar environments.

## **RAI #2**

### **Background**

Section 5 of the November 16, 2020, application states, in part:

... Rather, the margins are based on the ratio between burst pressure and the design pressure of the coupled piping. The rated pressure is downrated from the burst pressure, based on elevated-temperature tensile testing, in the same manner as was used to rate the fittings made from the material in Code Case N-879.

The proprietary fittings that Exelon desires to use are designed in accordance with ASME Section III, NC/ND-3671.7, "Sleeve-Coupled and Other Patented Joints," using the option of prototype testing. All fittings sizes will be tested prior to installation.

The fittings Exelon desires to use have been extensively tested to demonstrate that the fittings will not fail before the pipe on which they are installed. The fittings have been tested by tensile (pull-out) testing, pressurization to burst, fatigue testing, and torsion testing. Fatigue analysis is not required for the requested applications but is performed for the purpose of establishing a stress intensification factor (SIF), for use by the piping system designer.

While the licensee's application states that all fitting sizes will be tested prior to installation, prototype testing is not specified in paragraphs NC/ND-3671.7 of the ASME BPV Code, Section III. Specifically, paragraphs NC/ND-3671.7 state, "Coupling-type, mechanical gland-type, and other patented joints may be used where experience or tests have demonstrated to the satisfaction of the designer that the joint is safe for the Design Loadings and when adequate provision is made to prevent separation of the joint." The application also indicates that tensile testing, pressurization testing to burst, fatigue testing, and torsion testing have been performed, and this testing is provided as a basis for the acceptability of fabricating fittings from the material listed in Code Case N-893. This testing appears similar to the prototype testing required by paragraph NB-3671.7 of the ASME BPV Code, Section III. However, paragraphs NC/ND-3671.7 do not require prototype testing and do not provide guidance on what types of testing should be performed.

## **Request**

Provide a summary of the qualification testing (with applicable testing specifications) that has been or will be performed for all Class 2 and 3 Lokring fittings made using Code Case N-893 material. Clarify if the specific sizes of all fittings used for repairs will be subject to tensile (pull-out) testing, pressurization to burst, fatigue testing, and torsion testing. If not, provide a technical basis for not performing tensile (pull-out) testing, pressurization to burst, fatigue testing, and torsion testing on all fitting sizes.

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2; BYRON STATION, UNIT NOS. 1 AND 2; CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2; CLINTON POWER STATION, UNIT NO. 1; LASALLE COUNTY STATION, UNITS 1 AND 2; LIMERICK GENERATING STATION, UNITS 1 AND 2; AND NINE MILE POINT NUCLEAR STATION, UNIT 2 — REQUEST FOR ADDITIONAL INFORMATION REGARDING PROPOSED ALTERNATIVE TO USE ASME CODE CASE N-893 (EPIDS L-2020-LLR-0147 AND L-2020-LLR-0148) DATED MAY 5, 2021

**DISTRIBUTION:**

PUBLIC	RidsNrrPMByron Resource
RidsNrrDorLpl1 Resource	RidsNrrPMClinton Resource
RidsNrrDorLpl3 Resource	RidsNrrPMLaSalle Resource
RidsNrrLAJBurkhardt Resource	RidsNrrPMLimerick Resource
RidsNrrLAKZelevnock Resource	RidsNrrPMNineMilePoint Resource
RidsNrrLASRohrer Resource	RidsNrrDnlnNphp Resource
RidsAcrsAcnw_MailCTR Resource	RidsNrrDexEmib Resource
RidsRgn1MailCenter Resource	RDavis, NRR
RidsRgn3MailCenter Resource	KHsu, NRR
RRichardson, EDO	JHarvey, NRR
RidsNrrPMExelon Resource	CBasavaraju, NRR
RidsNrrPMBraidwood Resource	

**ADAMS Accession No. ML21117A034**

OFFICE	NRR/DORL/LPL3/PM	NRR/DORL/LPL3/PM	NRR/DORL/LPL3/LA
NAME	BPurnell	JHarvey	SRohrer
DATE	04/28/2021	04/28/2021	04/28/2021
OFFICE	NRR/DNRL/NPHP/BC	NRR/DORL/LPL3/BC	NRR/DORL/LPL3/PM
NAME	MMitchell (SCumblidge for)	NSalgado (RKuntz for)	BPurnell
DATE	04/28/2021	04/29/2021	05/05/2021

**OFFICIAL RECORD COPY**