

10 CFR 50.55a

RS-21-001

January 4, 2021

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

Braidwood Station, Units 1 and 2  
Renewed Facility Operating License Nos. NPF-72 and NPF-77  
NRC Docket Nos. STN 50-456 and STN 50-457

Byron Station, Units 1 and 2  
Renewed Facility Operating License Nos. NPF-37 and NPF-66  
NRC Docket Nos. STN 50-454 and STN 50-455

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

Clinton Power Station, Unit 1  
Facility Operating License No. NPF-62  
NRC Docket No. 50-461

Dresden Nuclear Power Station, Units 2 and 3  
Renewed Facility Operating License Nos. DPR-19 and DPR-25  
NRC Docket Nos. 50-237 and 50-249

James A. FitzPatrick Nuclear Power Plant  
Renewed Facility Operating License No. DPR-59  
NRC Docket No. 50-333

LaSalle County Station, Units 1 and 2  
Renewed Facility Operating License Nos. NPF-11 and NPF-18  
NRC Docket Nos. 50-373 and 50-374

Limerick Generating Station, Units 1 and 2  
Renewed Facility Operating License Nos. NPF-39 and NPF-85  
NRC Docket Nos. 50-352 and 50-353

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

Peach Bottom Atomic Power Station, Units 2 and 3  
Renewed Facility Operating License Nos. DPR-44 and DPR-56  
NRC Docket Nos. 50-277 and 50-278

Quad Cities Nuclear Power Station, Units 1 and 2  
Renewed Facility Operating License Nos. DPR-29 and DPR-30  
NRC Docket Nos. 50-254 and 50-265

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

Subject: Revised Proposed Alternative to Utilize Code Cases N-878 and N-880 for  
Carbon Steel Piping

Reference: Letter from L. Regner (U.S. Nuclear Regulatory Commission) to B. Hanson  
(Exelon Generation Company, LLC), Proposed Alternative to Use Code Cases  
N-878 and N-880 (EPID L-2018-LLR-0077), dated July 18, 2019  
(ML19192A244)

In the Referenced letter, Exelon Generation Company, LLC (Exelon) received approval for 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 compliance with the code results in hardship without a compensating increase in quality. Specifically, this alternative approved the use of Code Case N-878 ("Alternative to QA Program Requirements of IWA-4142 Section XI, Division 1") and N-880 ("Alternative to Procurement Requirements of IWA-4143 for Small Nonstandard Welded Fittings Section XI, Division 1"), which address the procurement of material from a material supplier that does not possess ASME accreditation as a Quality System Certificate Holder or an NPT Certificate Holder. This approval was limited to stainless-steel piping systems.

Exelon is requesting approval of a revised version of this previously approved relief request that now includes the use of carbon steel piping.

Exelon requests approval of this relief request by August 1, 2021.

There are no regulatory commitments contained in this letter.

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

Respectfully,

*David T. Gudger*

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David T. Gudger  
Senior Manager - Licensing  
Exelon Generation Company, LLC

Attachment: Revised Proposed Alternative to Utilize Code Cases N-878 and N-880 for  
Carbon Steel Piping

cc: Regional Administrator - NRC Region I  
Regional Administrator - NRC Region III  
NRC Senior Resident Inspector - Braidwood Station  
NRC Senior Resident Inspector - Byron Station  
NRC Senior Resident Inspector - Calvert Cliffs Nuclear Power Plant  
NRC Senior Resident Inspector - Clinton Power Station  
NRC Senior Resident Inspector - Dresden Nuclear Power Station  
NRC Senior Resident Inspector - James A. FitzPatrick Nuclear Power Plant  
NRC Senior Resident Inspector - LaSalle County Station  
NRC Senior Resident Inspector - Limerick Generating Station  
NRC Senior Resident Inspector - Nine Mile Point Nuclear Station  
NRC Senior Resident Inspector - Peach Bottom Atomic Power Station  
NRC Senior Resident Inspector - Quad Cities Nuclear Power Station  
NRC Senior Resident Inspector - R.E. Ginna Nuclear Power Plant  
NRC Project Manager - Braidwood Station  
NRC Project Manager - Byron Station  
NRC Project Manager - Calvert Cliffs Nuclear Power Plant  
NRC Project Manager - Clinton Power Station  
NRC Project Manager - Dresden Nuclear Power Station  
NRC Project Manager - James A. FitzPatrick Nuclear Power Plant  
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NRC Project Manager - Limerick Generating Station  
NRC Project Manager - Nine Mile Point Nuclear Station  
NRC Project Manager - Peach Bottom Atomic Power Station  
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NRC Project Manager - R.E. Ginna Nuclear Power Plant  
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A. L. Peterson, NYSERDA

**Attachment**  
**Revised Proposed Alternative to Utilize Code Cases N-878 and N-880 for Carbon Steel Piping**

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**Revised Proposed Alternative to Use Code Cases N-878 and N-880 for Carbon Steel Piping in Accordance with 10 CFR 50.55a(z)(1)**

**1. ASME Code Component(s) Affected:**

All ASME Class 1, 2, and 3 stainless-steel piping systems and carbon steel piping.

**2. Applicable Code Edition and Addenda:**

<u>PLANT</u>	<u>INTERVAL</u>	<u>EDITION</u>	<u>START</u>	<u>END</u>
Braidwood Station, Units 1 and 2	Fourth	2013 Edition	August 29, 2018 November 5, 2018	July 28, 2028 October 16, 2028
Byron Station, Units 1 and 2	Fourth	2007 Edition, through 2008 Addenda	July 16, 2016	July 15, 2025
Calvert Cliffs Nuclear Power Plant, Units 1 and 2	Fifth	2013 Edition	July 1, 2019	June 30, 2029
Clinton Power Station, Unit 1	Fourth	2013 Edition	July 1, 2020	June 30, 2030
Dresden Nuclear Power Station, Units 2 and 3	Fifth	2007 Edition, through 2008 Addenda	January 20, 2013	January 19, 2023
James A. FitzPatrick Nuclear Power Plant	Fifth	2007 Edition, through 2008 Addenda	August 1, 2017	June 15, 2027
LaSalle County Stations, Units 1 and 2	Fourth	2007 Edition, through 2008 Addenda	October 1, 2017	September 30, 2027
Limerick Generating Station, Units 1 and 2	Fourth	2007 Edition, through 2008 Addenda	February 1, 2017	January 31, 2027
Nine Mile Point Nuclear Station, Unit 1	Fifth	2013 Edition	August 23, 2019	August 22, 2029
Nine Mile Point Nuclear Station, Unit 2	Fourth	2013 Edition	August 23, 2018	August 22, 2028
Peach Bottom Atomic Power Station, Units 2 and 3	Fifth	2013 Edition	January 1, 2019	December 31, 2028
Quad Cities Nuclear Power Station, Units 1 and 2	Fifth	2007 Edition, through 2008 Addenda	April 2, 2013	April 1, 2023
R. E. Ginna Nuclear Power Plant	Sixth	2013 Edition	January 1, 2020	December 31, 2029

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**3. Applicable Code Requirements:**

Code Case N-878 (“Alternative to QA Program Requirements of IWA-4142 Section XI, Division 1”)

ASME Code, Section XI, IWA-4142 of the 2007 Edition with 2008 Addenda, and the 2013 Edition, provide requirements for procurement of materials to be used in repair/replacement activities.

Code Case N-880 (“Alternative to Procurement Requirements of IWA-4143 for Small Nonstandard Welded Fittings Section XI, Division 1”)

ASME Code, Section XI, IWA-4142 and IWA-4143, of the 2007 Edition with 2008 Addenda, and the 2013 Edition, provide requirements for procurement of materials by the Owner, and fabrication of non-Code-stamped parts by the Owner, when the Construction Code is Section III, to be used in repair/replacement activities.

**4. Reason for Request:**

In the Reference 1 letter (Section 7), the U.S. Nuclear Regulatory Commission approved the use of Code Case N-878 and N-880 for stainless steel piping. Exelon is requesting approval of these two Code Cases for carbon steel piping, in addition to the previously approved stainless steel piping.

It is noted that in the Reference 2 letter, the U.S. Nuclear Regulatory Commission approved the use of Code Case N-879 for ASME Code Class 2 and 3 carbon steel piping systems constructed in accordance with Section III of the ASME Code. To fully utilize the benefits of the Reference 2 relief request, approval for additional use of Cases N-878 and N-880 in carbon steel piping systems is requested. In addition, we would note that Exelon recently submitted a request for permission to use Case N-893, which covers alloy steel fittings, and which Exelon would also like to use, in carbon steel piping systems, in conjunction with Cases N-878 and N-880, subject to acceptance of Case N-893 by the U.S. Nuclear Regulatory Commission. No material changes are needed to this relief request other than adding applicability to carbon steel piping systems ~~in~~ constructed in accordance with ASME Section III Code Class 2 or 3, and revisions to the applicable Code editions (Sections 2 and 3) which have been updated since the approval of the original relief request.

**N-878**

In accordance with 10 CFR 50.55a(z)(1), Exelon Generation Company, LLC (Exelon) is requesting proposed alternatives from the ASME Section XI, IWA-4200 requirements for compliance with Section III, NA-3700 or NCA-3800, as applicable, for procurement of nonstandard, nonwelded, proprietary pipe fittings larger than NPS 1 or Reactor Coolant System (RCS) makeup capacity, supplied as material, installed in Section XI repair/replacement activities in applications where the Construction Code is ASME Section III Winter 1973 addenda or later. Section XI, IWA-4142.1 of the 2007 Edition or later, specifies alternative procurement requirements for the Owner, but these alternatives may not be used by a non-ASME-accredited contracted Repair/Replacement Organization.

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Section XI permits use of these fittings in ASME B31.1, B31.7, or pre-Winter 1973 applications.

### N-880

In accordance with 10 CFR 50.55a(z)(1), Exelon is requesting proposed alternatives from the ASME Section XI, IWA-4200 requirements for compliance with Section III, NA-8000 or NCA-8000, as applicable, for fabrication of nonstandard, proprietary welded pipe fittings larger than NPS 1 or RCS makeup capacity up to NPS 2, installed in Section XI repair/replacement activities in applications where the Construction Code is ASME Section III 1971 edition or later. Section XI, IWA-4143 permits fabrication of welded fittings at the Owner's facilities, but does not permit such fabrication to be performed in a facility owned by a Repair/Replacement Organization or other contractor or supplier.

### Both Cases

Exelon is requesting to use nonstandard, proprietary, welded or nonwelded pipe fittings in applications requiring compliance with ASME Section III, without having to comply with the administrative requirements imposed by ASME Section XI, IWA-4142, IWA-4143, and IWA-4200.

Nonstandard, proprietary welded or nonwelded pipe fittings can be proven, by testing, to comply with Section III design requirements. Exelon has a supplier of such fittings that does not possess ASME accreditation as a Quality System Certificate Holder or an NPT Certificate Holder. Exelon cannot find any supplier of equivalent products that possesses the accreditation required by ASME Section III. However, these products can be verified as having an acceptable level of safety by complying with the provisions specified in ASME Cases N-878 and N-880.

Exelon is currently permitted by ASME Section XI to install the following:

1. Welded or nonwelded fittings produced by a non-ASME-accredited supplier in safety-related applications in ASME B31.1 or B31.7 Class I, II, or III piping systems (IWA-4221).
2. Welded or nonwelded fittings produced by a non-ASME accredited supplier in Class 1 systems no larger than NPS 1 and no larger than RCS makeup capacity (IWA-4131).
3. Welded or nonwelded fittings produced by this supplier in Class 2 or 3 systems NPS 1 or smaller (IWA-4131).
4. Nonwelded fittings produced by a non-ASME accredited supplier in ASME Section III Class 1, 2, and 3 piping systems as permitted by the reference code year.
5. Nonwelded fittings NPS 2 and smaller produced by this supplier in ASME Section III Class 1, 2, and 3 piping systems, provided Exelon verifies material conformance with the reference code year.
6. Nonwelded fittings larger than NPS 2 produced by a non-ASME-accredited supplier



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in ASME Section III Class 1, 2, and 3 piping systems, with additional material testing by Exelon as permitted by the reference code year.

7. Welded fittings fabricated by a non-ASME-accredited supplier in Class 2 and 3 piping systems in plants with construction permits issued before the NRC made Section III compliance and Code Symbol Stamping of Class 2 and 3 systems mandatory in 10 CFR 50.55a on May 14, 1984 (49 FR 9711) (IWA-4221 and 10 CFR 50.55a).

Exelon is not currently permitted by ASME Section XI to install the following:

1. Nonwelded fittings larger than NPS 1, or RCS makeup capacity, fabricated by a non-ASME-accredited supplier, and purchased by a contractor without ASME accreditation without additional material testing by Exelon, in Section III, Class 1, 2, and 3 piping systems certified to the Section III Winter 1973 Addenda or later.
2. Welded fittings larger than NPS 1, or RCS makeup capacity, fabricated by a non-ASME accredited supplier in Section III, Class 1, 2, and 3 piping systems certified to the Section III 1971 Edition or later.

These two Cases will expand Exelon's ability to use these proprietary fittings in sizes larger than NPS 1, or RCS makeup capacity, in Section III, Class 1, 2, and 3 systems.

Most piping fabrication and installation joints have been traditionally fabricated by welding. Installation of pipe and piping subassemblies by mechanical means can save significant amounts of time, money, critical path time, and radiation exposure to plant personnel and installation and examination contractors. In systems containing radioactive materials, or in systems near irradiated components, personnel can be subjected to significant amounts of radiation during preparation for welding, welding, and nondestructive examination (NDE) of welds. Most of this exposure can be eliminated by use of mechanical connections. The amount of time to which mechanical installation personnel are exposed is a fraction of the time to which a welder or a nondestructive examiner would be exposed. Without installation welds, there is no associated installation NDE.

### **5. Proposed Alternative and Basis for Use:**

Exelon proposes to implement the requirements of ASME Code Cases N-878 for procurement of nonstandard, nonwelded, proprietary pipe fittings larger than NPS 1, or RCS makeup capacity, supplied as material, and N-880 for procurement of nonstandard, proprietary welded pipe fittings larger than NPS 1, or RCS makeup capacity, up to NPS 2.

ASME Section XI requires the fittings to be designed in accordance with the original Construction Code, which, for these applications, is ASME Section III. These fittings are typically designed in accordance with ASME Section III, NB-3671.7, "Sleeve Coupled and Other Patented Joints," using the option of prototype testing. Alternatively, NC/ND-3671.7 may be used for Class 2 or 3 fittings, as applicable.

Reconciliation and use of editions and addenda of ASME Section III will be in accordance with ASME Section XI, IWA-4220, and only editions and addenda of ASME Section III that have been accepted by 10 CFR 50.55a may be used. The Code of Record for the specific 10-year

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ISI interval at each nuclear unit as identified under Section 2 above, will be used when applying the various IWA paragraphs of Section XI, unless specific regulatory relief to use other editions or addenda is approved.

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.

Case N-878 requires that non-welded fittings be supplied in accordance with the provisions of Section XI, IWA-4142.1(b)(4) or (5), except that the activities will be performed by a Repair/Replacement Organization qualified by the Owner in accordance with 10 CFR 50, Appendix B. These provisions are already permitted if applied by Exelon, rather than being subcontracted to an Exelon-approved Repair/Replacement Organization. These provisions are already permitted for the more than approximately 50% of U.S. nuclear plants built before Section III became mandatory for new piping systems, even when implemented by a non-ASME-accredited Repair/Replacement Organization. They are also currently permitted for piping smaller than NPS 1 and RCS makeup capacity. Because Exelon will control approval of the Repair/Replacement Organization that will apply these provisions, Exelon can and will ensure that 10 CFR 50, Appendix B Quality Assurance Program requirements are met for the supply of these fittings. Exelon will also ensure that the materials, design, fabrication, installation, and testing of these fittings complies fully with ASME Section III, as required by ASME Section XI.

Case N-880 imposes the same requirements as Case N-878, as well as additional requirements, over and above those of Case N-878, because, in the case of Case N-880, the fittings within the scope of Case N-878 are welded to standard pipe fittings. These standard fittings are permitted by all Editions and Addenda of Section III. As with Case N-878, these activities are currently permitted for U.S. nuclear plants built before Section III became mandatory for new piping systems, even when implemented by a non-ASME-accredited contractor. They are also currently permitted for piping smaller than NPS 1 and RCS makeup capacity. Because Exelon will control approval of the contractor that will apply these provisions, Exelon can and will ensure that 10 CFR 50, Appendix B Quality Assurance Program requirements are met for the supply of these fittings. Exelon will also ensure that the materials, design, installation, and testing of these fittings complies fully with ASME Section III, as required by ASME Section XI. Because the fitting-to-fitting welds will be made by a non-ASME-accredited fabricator, Exelon will perform additional verification, as prescribed by Case N-880, to ensure the quality of these welds. Exelon, or a Repair/Replacement Organization qualified by Exelon in accordance with 10 CFR 50 Appendix B, will verify the quality of the materials, the welding procedure and performance qualifications, the weld joint fit-up, the production welding, and all nondestructive examination required by Section III or the piping system Design Specifications. For fittings manufactured in accordance with Case N-880, ANII surveillance and monitoring of the materials, welding, and nondestructive examination will also be provided, consistent with the requirements of ASME Section XI that would apply if these welds were made by the Owner or Repair/Replacement Organization at the nuclear power plant site. The quality will therefore be consistent with all requirements that would be applied if the fitting-to-fitting welds were made at the plant, as currently permitted by ASME Section XI.

Accordingly, the proposed alternative to utilize Code Cases N-878 and N-880 will provide an acceptable level of quality and safety in accordance with 10 CFR, 50.55a(z)(1).

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Code Cases N-878 and N-880 were approved by the ASME Board on Nuclear Codes and Standards on April 18, 2017 and July 25, 2017, respectively. They have not yet been incorporated into NRC Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," and thus are not available for application at nuclear power plants without specific NRC approval. Therefore, Exelon requests use of the alternative procurement requirements described in these Cases via this relief request. Specifically, Exelon is requesting extension of NRC's approval, documented in Reference 1 letter for stainless steel piping, to include use of these Cases on carbon steel piping.

### **6. Duration of Proposed Alternative:**

The proposed alternative is for use of the Cases for the remainder of each plant's 10-year inspection interval as specified in Section 2.

### **7. References:**

- 1) Letter from L. Regner (U.S. Nuclear Regulatory Commission) to B. Hanson (Exelon Generation Company, LLC), Proposed Alternative to Use Code Cases N-878 and N-880 (EPID L-2018-LLR-0077), dated July 18, 2019 (ML19192A244)
- 2) Letter from N. Salgado (U.S. Nuclear Regulatory Commission) to B. Hanson, Proposed Alternative to Use Code Case N-879 (EPID L-2019-LLR-0037), dated February 4, 2020