

**From:** [Rice, Rebecca M:\(Constellation Nuclear\)](#)  
**To:** [Jeff Kulp](#)  
**Subject:** [External\_Sender] FW: ASME XI requirements for insulation removal  
**Date:** Friday, September 30, 2022 2:22:07 PM  
**Attachments:** [image001.png](#)

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**From:** Weis, Mark E:(Constellation Nuclear) <Mark.Weis@constellation.com>  
**Sent:** Friday, September 30, 2022 1:40 PM  
**To:** Rice, Rebecca M:(Constellation Nuclear) <Rebecca.Rice@constellation.com>  
**Subject:** ASME XI requirements for insulation removal

Becca,

Below is a discussion of ASME XI and 10 CFR 50.55a requirements for insulation removal for general visual examinations.

Mark

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Examination requirements applicable to Class MC components are specified in ASME Section XI, Subsection IWE-2500 and Table IWE-2500-1. Table IWE-2500-1 (copied below for reference) indicates that a general visual examination of 100% of the accessible surface areas of the containment vessel pressure retaining boundary shall be performed each inspection period. Table IWE-2500-1, Note (1) clarifies the scope of this examination shall include "all accessible interior and exterior surfaces of Class MC components, parts, and appurtenances." Acceptance standards for Examination Category E-A, Item E1.11 general visual examinations are identified in IWE-3510. It is important to note that the acceptance standards of Subarticle IWE-3510 are only applicable to accessible surface areas.

Paragraphs IWE-1231 and IWE-1232 apply to operating nuclear power plants, however it is recognized that the accessibility requirements specified in these sections can only be addressed during design and construction. Most plants in the U.S. operating fleet were designed and constructed prior to the requirements of ASME Section XI, Subsection IWE being required by 10 CFR 50.55a. This is addressed by 10 CFR 50.55a(g)(4) which states "Components that are classified as Class MC pressure retaining components and their integral attachments, and components that are classified as Class CC pressure retaining components and their integral attachments, must meet the requirements, except design and access provisions and preservice examination requirements, set forth in Section XI of the ASME BPV Code and addenda that are incorporated by reference in paragraph (a)(1)(ii) of this section and the conditions listed in paragraphs (b)(2)(viii) and (ix) of this section, to the extent practical within the limitation of design, geometry, and materials of construction of the components."

a. 10 CFR 50.55a(g)(4)(v)(A) and (B) require the following:

A. *"Metal and concrete containments: First provision.* Metal containment pressure

retaining components and their integral attachments must meet the inservice inspection, repair, and replacement requirements applicable to components that are classified as ASME Code Class MC;”

- B. “*Metal and concrete containments: Second provision.* Metallic shell and penetration liners that are pressure retaining components and their integral attachments in concrete containments must meet the inservice inspection, repair, and replacement requirements applicable to components that are classified as ASME Code Class MC;”

- b. 10 CFR 50.55a(b)(2)(ix)(A)(2), (B), (J), and (K) apply when using the ASME Code, Section XI, 2007 Edition through the 2015 Edition.
- c. None of the provisions and conditions above address performance of examinations with, or without, the removal of insulation from containment surface areas.

Paragraph IWE-1231 does not specify examination requirements or accessibility requirements applicable to Examination Category E-A, Item E1.11. Paragraph IWE-1231 is intended to ensure that Owners do not make areas inaccessible for examination as a result of a plant modification that would violate these criteria. Subparagraph IWE-1232(c) states that “surface areas of Class MC containment vessels, parts and appurtenances...are considered inaccessible if visual access by line of sight from permanent vantage points is obscured by permanent plant structures, equipment, or components, provided these surface areas do not require examination in accordance with the inspection plan or IWE-1240.” Therefore, the starting point for accessible surface areas to be examined in accordance with Examination Category E-A, Item E1.11 are any areas that are accessible for examination following original plant construction that are not obscured by permanent plant structures, equipment, or components. Since the initial endorsement in 10 CFR 50.55a and throughout the life of the plant, an Owner must maintain accessibility of containment surfaces in accordance with the requirements of paragraph IWE-1231.

The requirements of Subarticle IWE-2310 apply when performing general visual examinations under Examination Category E-A, Item E1.11. Paragraph IWE-2310(c) states that “visual examinations shall be performed, either directly or remotely, by line of sight from floors, platforms, walkways, ladders, or other permanent vantage points, unless temporary access is required by the inspection plan.” Removal of thermal insulation to perform the Examination Category E-A, Item E1.11 general visual examinations is not required because removal of the insulation would be a temporary measure to permit examination of surfaces that would otherwise be inaccessible for examination in accordance with the requirement of IWE-2310(c). Temporary access requiring removal of insulation is not specified in the ISI Plan. ASME Interpretation XI-1-13-25 (copied below for reference) confirms the intent of the code with respect to accessibility of containment surfaces covered by thermal insulation. This is reflected in Constellation implementing procedures which state removal of thermal insulation is not required for Examination Category E-A, Item E1.11 general visual examinations. This interpretation also supports Constellations conclusion that the performed inspections comply with ASME Code Section XI Subsection IWE. As such, an alternative to the requirements of Subsection IWE in accordance with 10 CFR 50.55a(z) is not needed.

If containment surfaces covered by thermal insulation (of any type) have been classified by the

Owner as Category E-C, insulation removal would be required in order to perform the examinations specified in Table IWE-2500-1, *Examination Category E-C*, with the applicable acceptance standards referenced in the table. This aligns with the requirements of subparagraph IWE-1232(c), specifically as it refers to Subarticle IWE-1240 for augmented examination. This is also reflected in the Constellation implementing procedures.

ASME Section XI Subsection IWE does not provide any examination requirements or acceptance standards applicable to inaccessible containment surface areas. However, 10 CFR 50.55a(b)(2)(ix)(A) does provide requirements applicable to Class MC surfaces that have been categorized as inaccessible, including containment surface areas covered by thermal insulation. The acceptability of inaccessible areas must be evaluated when conditions exist in the accessible areas that could indicate the presence of or could result in degradation to inaccessible areas. This could include, but is not limited to, loss of coating, pitting, material loss, or other unacceptable conditions present in the accessible containment surface areas adjacent to inaccessible areas. This could also include signs of degraded thermal insulation, such as moisture intrusion/saturation, discoloration, rips, tears, etc. Final determination of conditions that could indicate the presence of or result in degradation to the inaccessible areas is made by the Responsible Individual for examinations under ASME Section XI Subsection IWE. Any such evaluations are required to be provided to the NRC with the Owner's Activity Report (Form OAR-1) following each refueling outage.

## Conclusion

It is the position of Constellation that containment surface areas covered by thermal insulation are not considered accessible for general visual examinations in accordance with Table IWE-2500-1, *Examination Category E-A*. This is supported by ASME Interpretation XI-1-13-25 which confirms that the position taken by Constellation is consistent with ASME's intent. This is also reflected in the Constellation implementing procedures. The acceptability of each inaccessible area (including those covered by thermal insulation) is evaluated when conditions exist in the accessible areas that could indicate the presence of, or result in, degradation to inaccessible areas in accordance with the requirements of 10 CFR 50.55a(b)(2)(ix)(A). Reasonable assurance of the structural integrity of the containment inaccessible surfaces is achieved by inspection of 100% of the containment accessible surfaces and evaluation of any inaccessible surfaces as required by 10 CFR 50.55a(b)(2)(ix)(A).

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