Date Distributed:

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD INSPECTION CODE COMMITTEE

MAIN SESSION MINUTES

Meeting of July 17th, 2024
Louisville, KY

These minutes are subject to approval and are for committee use only. They are not to be duplicated or quoted for other than committee use.

The National Board of Boiler & Pressure Vessel Inspectors
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1. **Call to Order**
   The Chair called the meeting to order at 9:00 a.m. Eastern Time.

2. **Introduction of Members and Visitors**
   Mr. Galanes welcomed everyone to the meeting, and asked those present to introduce themselves, starting with the Main Committee members. When the in-person introductions concluded, he asked Mr. Ellis to hold a roll call for those attending the meeting virtually. A full list of meeting attendees can be found on **Attachment Page 1**.

3. **Check for a Quorum**
   Twenty-two of twenty-four Main Committee members were present for the meeting, which was enough to establish a quorum.

4. **Awards/Special Recognition**
   Mr. Galanes announced that Mr. Eddie Wiggins and Mr. Michael Richards would be recognized for their service as committee members. Mr. Gary Scribner first congratulated Mr. Wiggins for his ten years of service and presented him with a 10-year award pin. Mr. Scribner then congratulated Mr. Richards for twenty years of service, presenting him with a 20-year award pin.

5. **Announcements**
   - This meeting marks the end of Cycle D for the 2025 NBIC edition. This meeting marks the end of the 2025 NBIC development cycle and is the last opportunity for code revisions to be approved for the 2025 NBIC.
   - The National Board will be hosting breakfast and lunch on Thursday in Citation A/B for those attending the Main Committee meeting. Breakfast will be served from 7:00 a.m. to 8:00 a.m. and lunch will be served from 11:30 a.m. to 12:30 p.m.
   - If you'd like to request a new Interpretation or Action item, this should be done on the National Board Business Center.
     - Anyone, member or not, can request a new item.
   - As a reminder, anyone who would like to become a member of a group or committee:
     - Should attend at least two meetings prior to being put on the agenda for membership consideration. The nominee will be on the agenda for voting during their third meeting.
     - The nominee must submit the formal request along with their resume to the NBIC Secretary **PRIOR TO** the meeting. *nbicsecretary@nbbi.org*
     - If needed, we can also create a ballot for voting on a new member between meetings.
   - Thank you to everyone who registered online for this meeting. The online registration is very helpful for planning our reception, meals, room set up, etc. Please continue to use the online registration for each meeting. It is also a good way to make sure we have the most up-to-date contact information.

   Mr. Galanes read through the announcements listed above. He then took time to thank National Board staff for their work to ensure the week's meetings and events ran smoothly and efficiently. After this, he asked Mr. Rob Troutt to speak on membership updates for the NBIC Executive Committee.

   Mr. Troutt announced that the current NBIC Executive Committee membership will be changing in response to a review of Board of Trustees policies. The new committee membership will be finalized prior to the January 2025 NBIC meeting.

6. **Adoption of the Agenda**
Before entertaining a motion to adopt the agenda, Mr. Galanes asked if any additions or changes needed to be made. Ms. Wadkinson stated that Item 24-73 needs to be added to Subcommittee Installation's report. Mr. Getter announced that Item 24-71 and Item 24-74 need to be added to Subcommittee Inspection's report. Ms. Kathy Moore shared that Item I24-70 needs to be added to Subcommittee R&A's report. No further additions or changes were put forth. A motion was made, seconded, and unanimously approved to adopt the agenda with the suggested additions.

7. **Approval of the Minutes of the January 2024 Meeting**
The minutes are available for review online at https://www.nationalboard.org/Index.aspx?pageID=13&ID=18. A motion was made, seconded, and unanimously approved to accept the minutes from the January 2024 NBIC meeting.

8. **Items Approved for the 2025 NBIC**
See **Attachment Page 4** for a summary of items currently approved for the 2025 NBIC edition.

9. **Amending Main Committee Approved Item 23-05 (Clarify that stamping is required prior to signing R Form)**
Item 23-05 was approved by Main Committee at the January 2023 NBIC meeting. During a recent review of items approved for the 2025 NBIC, it was discovered that the item's proposal was using language from the 2021 NBIC and that one of the proposed changes applied to a paragraph that was rewritten in the 2023 NBIC. The rewritten section addresses the change proposed by Item 23-05, making that part of the proposal unnecessary. Mr. Ellis presented the proposed revision to Item 23-05 (see **Attachment Page 7**). The Committee reviewed the revision and agreed that it needed to be made. A motion was made, seconded, and unanimously approved to revise Item 23-05 as presented.

10. **Report of Subcommittees**

a. Subcommittee Repairs & Alterations

i. Old Interpretation Requests:

Item Number: I23-79	**NBIC Location: Part 3, 2.5.3 d) and 2.5.3.6**	**Attachment Page 9**

General Description: Alternative Welding Method 6 - Controlled Fill

Subgroup: Repairs and Alterations

Task Group: P. Gilston (PM), R. Derby

Explanation of Need: There is a lack of clarity as to the current requirement, need, and definition of controlled fill technique for application to Welding Method 6.

July 2024 Meeting Action: Mr. Ben Schaefer presented a proposal for this interpretation item. After reviewing the proposal, a motion was made, seconded, and unanimously passed to approve the proposal as presented.

Item Number: I23-82 **NBIC Location: Part 3, 3.3.2 e) 2)** **Attachment Page 10**

General Description: Replacement of non-pressure retaining parts in Electrolyzer PEM Stack

Subgroup: Repairs and Alterations

Task Group: M. Toth (PM), M. Quisenberry, E. Creaser, R. Collins, P. Shanks

Explanation of Need: Hydrogenics is a manufacturer of hydrogen electrolyzers which operate on PEM (Proton Exchange Membrane) technology. The PEM stack operates at 30 bar (435 PSIG) pressure and is rated for a MAWP of 40 bar (580 PSIG) and we perform pneumatic pressure tests to ensure structural integrity according to ASME Sec VIII-1. At times we see cell shortage faults occurring which is not a failure of the pressure-retaining components but of components within the pressure vessel failing due to normal wear and tear. Need to determine if our company requires the NB R Certificate holder status.

July 2024 Meeting Action: Mr. Trevor Seime presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

ii. New Interpretation Requests:

Item Number: I24-10 **NBIC Location: Part 3, 1.6.4 d), 1.6.6.2 t), 1.6.7.2 t), and 1.6.8.2 t)** **Attachment Page 11**

General Description: Qualification requirements for AIA Audit

Subgroup: NR TG

Task Group: C. Dinic (PM)

Explanation of Need: The 2023 Edition of the NBIC added the requirement for the ANI performing NR activities to have the N, R, and I endorsements. This raises the question as to the intent of the NBIC as to what endorsements are required for the Supervisor that oversees the ANI's work and performs the audit of the NR CH.

July 2024 Meeting Action: Mr. Schaefer presented the proposal for this item. After reviewing the proposal, a motion was made, seconded, and unanimously passed to approve the proposal as presented.

Item Number: I24-16 **NBIC Location: Part 3, 2.5.3 e)** **No Attachment**

General Description: Volumetric Examination when using alternative welding methods without PWHT

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), T. McBee

Explanation of Need: The existing language, in its current form, does not make it clear whether volumetric examination is required when using alternative welding methods. The last phrase in the sentence sends the user to paragraph 4.2 which in turn sends the user back to the original code of construction. If a weld greater than 3/8 in. did not require volumetric examination at construction, then what purpose does the last sentence serve? The phrase on the other side of "or" where volumetric examination was required at construction is self-explanatory, but 4.2 permits using alternative NDE methods, suggesting MT or PT. These two methods are currently mandated "shall be" requirements in the first sentence of 2.5.3 e). If the intent is to require volumetric examination for welds greater than 3/8 in., and welds that required volumetric examination at construction, then there should be a firm statement to this effect.

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-19 **NBIC Location: Part 3, 4.2** **No Attachment**

General Description: NB-23 2023 Part 3, section 4, article 4.2 - Volumetric NDE on weld

Subgroup: Repairs and Alterations

Task Group: L. Dutra (PM), M. Quisenberry

Explanation of Need: The inquirer has a corroded zone of about 3 feet by 6 feet on a shell and head, and the depth does not exceed the corrosion allowance. The corrosion zone included a weld that was 100% RT. Is it ok with just MT NDE or need also Volumetric NDE of all the buildup area include base metal?

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-25	NBIC Location: Part 3, 4.4.1 e) and 4.4.2 c)	No Attachment

General Description: 4.4.1 (e) and 4.4.2 (c) NDE Methods

Subgroup: Repairs and Alterations

Task Group: R. Derby (PM), P. Gilston, J. Ferreira

Explanation of Need: 4.4.1 (e) and 4.4.2 (c) permit the use of NDE to verify the integrity of the repair of alteration. NDE methods other than what is listed in the original code of construction are being used for repair and alterations in some locations throughout the US. For example, Acoustic Emission Testing (AE) in accordance with ASME Section V Article 12 has been used on power boiler (HRSG) repairs. Acoustic Emission Testing is not an NDE method that is addressed in ASME Section I or Section VIII Div.1, but it is an NDE method in the reference code ASME Section V. Some inspectors are questioning this as AE is not an NDE method used in the original code of construction.

July 2024 Meeting Action: Ms. Moore stated that a Review & Comment letter ballot will be sent to the Interpretations Task Group to gather additional feedback.

Item Number: I24-29	NBIC Location: Part 3, 4.2 a)	Attachment Page 12

General Description: Volumetric NDE requirements for welded repairs to pressure vessels

Subgroup: Repairs and Alterations

Task Group: M. Toth (PM), R. Derby, M. Quisenberry

Explanation of Need: Specific vessel currently in question is a refinery Coke Drum (1.5" plate thickness with 0.100" corrosion resistant clad. Vessel has highly localized corrosion due to cladding damage. Once excavated for repair the corroded locations will exceed the 4.2a size restrictions. Original welds were RT inspected. Weld repairs will be completed via temperbead procedure with elevated preheat.

July 2024 Meeting Action: Mr. Toth presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: I24-33 **NBIC Location: Part 3, 3.4.1 b)** **No Attachment**

General Description: Proof Testing by a non-manufacturing R Certificate Holder

Subgroup: Repairs and Alterations

Task Group: G. Galanes (PM), A. Triplett

Explanation of Need: Wrightspec LLC is planning to apply for an 'R' Certificate in order to support field & shop Repairs & Alterations (Rerating) of cast iron paper machine dryers. We hold an AIA service agreement with Arise Boiler Inspection & Insurance Company and are hopeful to have an R-stamp by end of summer 2024.

July 2024 Meeting Action: Mr. Toth presented on this item. He stated that the Interpretations Task Group and Subcommittee R&A both voted unanimously to close this item and send a letter to the inquirer stating that their inquiry is a consulting matter. A motion was made, seconded, and unanimously approved to close this item and send a letter to the inquirer stating that their question is a consulting question.

Item Number: I24-34 **NBIC Location: Part 3, 3.4.1** **No Attachment**

General Description: Rerating using OEM's design data to waive proof testing

Subgroup: Repairs and Alterations

Task Group: K. Moore (PM), B. Hrubala

Explanation of Need: A PV built in 1990 contains heads made of Class 40 cast iron. The heads were proof tested by the OEM and determined to be suitable for 160 psi MAWP. However, the OEM certified the vessel for only 125 psi due to customer requirements. Fast forward to present day, and the vessel owner now wants to Rerate the vessel to a higher pressure. The OEM is no longer in business, but the 'R' Holder is able to obtain a copy of the original proof test report by the OEM. Can it be acceptable for the 'R' Holder to Rerate the head above 125 psi, based on OEM records stating the design is good for higher pressure, without the 'R' Holder having to perform their own separate proof test?

The 'R' Holder would not be using the OEM proof test record for any new manufacturing, only for the purposes of altering an existing vessel or part within the confines of the original design.

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-36 **NBIC Location: Part 3, 3.4** **No Attachment**

General Description: Alteration of Plate Heat Exchanger

Subgroup: Repairs and Alterations

Task Group: T. Seime (PM)

Explanation of Need: This question is asked frequently by Repair firms that want to increase the number of heat transfer plates.

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-39 **NBIC Location: Part 3, 1.3.2 b)** **Attachment Page 13**

General Description: Certification of NR-1 without stamping

Subgroup: Repairs and Alterations

Task Group: M. Vogt (PM), R. Spuhl

Explanation of Need: Clarity is needed for NR work where the lack of NR stamping due to a practical matter, not necessarily a jurisdictional reason, may preclude certifying an NR-1.

July 2024 Meeting Action:
Ms. Moore announced that this was an intent interpretation item and requested to review the associated action item (A24-43) before voting on the interpretation. Mr. Schaefer presented the proposal for Item A24-43 first. A motion was made and seconded to approve the proposal as presented. Motion and second. A question was asked about receiving a waiver from the jurisdiction for certifying the NR-1 without stamping. Several committee members stated that the NBIC does not allow for that to happen. After discussion concluded, the committee voted unanimously to approve the motion. Mr. Schaefer then presented Item I24-39. A motion was made, seconded, and unanimously approved to accept the proposal for Item I24-39.

Item Number: I24-40 **NBIC Location: Part 3, 3.3.2 e)** **No Attachment**

General Description: Routine repair vs Alteration

Subgroup: Repairs and Alterations

Task Group: M. Carlson (PM), D. Kinney

Explanation of Need: Some people use rules of thumb outside of the NBIC definition to make decision, these rules of thumb do not align with the written rules and cause project delays and extended outages.

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-41 **NBIC Location: Part 3, 4.4.2 a)** **Attachment Page 14**

General Description: 4.4.2 (a) Pressure testing Connection Welds

Subgroup: Repairs and Alterations

Task Group: L. Dutra (PM), M. Toth

Explanation of Need: There seem to be some different opinions among inspectors and R certificate holders when 4.4.2 (a)(1&) refers to replacement parts. Some inspectors and R certificate holders have the opinion that those replacement parts referenced in 4.4.2 (a) are only welded replacement parts, while others have the opinion that the replacement parts are not limited to just welded parts, but apply to all replacement parts.

July 2024 Meeting Action: Mr. Toth presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: I24-44 **NBIC Location: Part 3, 2.5.3** **No Attachment**

General Description: Alternative weld methods and special services

Subgroup: Repairs and Alterations

Task Group: R. Derby (PM), P. Gilston

Explanation of Need: In section VIII Div.1 construction some special service conditions as described in UW-2 make mandatory PWHT when it is not otherwise required for the actual thickness of material and P-number. This subtlety leads some to believe that the use of the Alternative weld methods is either not allowed or that they can only be conducted as an alteration.

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-45 **NBIC Location: Part 3, 5.7.2 c)** **Attachment Page 15**

General Description: Correct method for reporting Date Repaired on R form

Subgroup: Repairs and Alterations

Task Group: T. Seime (PM)

Explanation of Need: Repair stampings are often encountered in the field with "Date Repaired" indicated by "month and year" as well as with "month, day and year." Repair Organizations and Inspectors occasionally disagree as to whether "month and year" is sufficient.

July 2024 Meeting Action: Mr. Toth presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: I24-50 **NBIC Location: Part 3, 2.2.1 and 2.2.3** **No Attachment**

General Description: Post Qualification of Welders and WPS/PQR

Subgroup: Repairs and Alterations

Task Group: K. Moore (PM), B. Hrubala

Explanation of Need: There are numerous instances in our organization where welders and WPS/PQR are being qualified after repairs have been done and the equipment were put back into service. The argument they give is that if the results pass then it's acceptable.

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-51 **NBIC Location: Part 3, 3.3.4.6** **Attachment Page 16**

General Description: NBIC Part 3, 3.3.4.6 Flush Patches that Intersect Existing Welds

Subgroup: Repairs and Alterations

Task Group: J. Ferreira (PM), B. Boseo, T. McBee, M. Schaser

Explanation of Need: NBIC Part 3 paragraph 3.3.4.6 details controls for flush patches but does not appear to address controls for flush patches that intersect a new or existing weld.

July 2024 Meeting Action:
It was announced that this item was an intent interpretation that pairs with Item A23-41. Mr. Galanes asked to review 23-41 before reviewing 24-51. Mr. Aziz Khssassi presented the proposal for Item 23-41. A motion and second was made to approve the proposal as presented. Mr. Underwood explained that Item 24-51 related to line 5) in Item 23-41. No further discussion was held, and the motion to approve the proposal passed unanimously. Mr. Toth presented the proposal for Item 24-51. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: I24-52 **NBIC Location: Part 3, 3.3.2 e) 5)** **Attachment Page 17**

General Description: Clarification of Routine Repair classification of welded in diaphragms.

Subgroup: Repairs and Alterations

Task Group: T. Seime (PM)

Explanation of Need: Clarification of Routine Repair classification of welded in diaphragms. Because of the confusion regarding this repair vs routine repair classification, we have faced multiple delays at different power plants over the past three years.

July 2024 Meeting Action: Mr. Toth presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: I24-53	NBIC Location: Part 3, 3.3.4	Attachment Page 18

General Description: NBIC Part 3, 3.3.4 in relation to ASME PCC-2 Article 212

Subgroup: Repairs and Alterations

Task Group: J. Ferreira (PM), M. Schaser, B. Boseo, T. McBee

Explanation of Need: As this sort of configuration is compliant with the original Code Of Construction and guidance is supplied by an industry-recognized document on repair of pressure equipment, it isn't clear why it would be prohibited. When properly engineered and correctly installed, this sort of alteration could extend the life of damaged vessels.

July 2024 Meeting Action: Mr. Toth presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: I24-70	NBIC Location: Part 3, 2.5.3.2 f)	No Attachment

General Description: 2.5.3.2(f) Waiving of hardness testing and carbon equivalency requirements

Subgroup: Repairs and Alterations

Task Group: G. Galanes (PM)

Explanation of Need: The inquirer works for a fertilizer plant and have multiple boilers where frequent repairs are needed in the superheater coils and manifolds.

July 2024 Meeting Action: Mr. Toth stated that the Interpretations Task Group and Subcommittee voted to close this item and send a letter to the inquirer saying that this is a consulting question. A motion was made, second, and unanimously approved to move forward with this action.

iii. Action Items

TG Graphite Items:

Item Number: NB15-2208	NBIC Location: Part 3	Attachment Page 19

General Description: Develop supplement for repairs and alterations based on international construction standards

Subgroup: Graphite

Task Group: Greg Becherer (PM)

July 2024 Meeting Action: Mr. Aaron Viet presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: A23-45	NBIC Location: Part 3, S3.3	Attachment Page 21

General Description: Graphite plate replacement as Routine repair

Subgroup: Graphite

Task Group: J. Wince (PM)

Explanation of Need: In many cases, replacing a plate in a graphite plate heat exchanger is something that can be considered routine, but it is not currently defined as such. This proposal seeks to add this procedure to the list of routine repairs for graphite pressure vessels.

July 2024 Meeting Action: Mr. Viet presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: A24-67	NBIC Location: Part 3, S3.3	No Attachment

General Description: Graphite plate replacement as Routine repair

Subgroup: Graphite

Task Group: A Viet, J. Wince, S. Mehrez

Explanation of Need: Clarifying requirements for use of graphite pressure vessel replacement parts for repairs or alterations.

July 2024 Meeting Action: Mr. Viet stated that the proposal is going back to the Graphite Task Group for additional work.

TG FRP Items:
There are currently no FRP items open for Part 3.

TG Historical Items:

Item Number: 20-25	NBIC Location: Part 3, S2.13	No Attachment

General Description: Repair Procedure for Fire Boxes

Subgroup: SG Historical

Task Group: M. Wahl (PM), R. Forbes, T. Dillon, L. Moedinger, C. Jowett, F. Johnson

Explanation of Need: In NBIC Part 3, S2.13.10.3, S2.13.11 do not define what to do at a riveted joint. On the tubesheet, or firedoor sheet, where it is flanged to rivet to the firebox, the repairs are silent on what to do at the riveted joint.

July 2024 Meeting Action: Mr. Seime stated that work is still being done on this item.

Item Number: 23-62	NBIC Location: Part 3, S2	Attachment Page 22

General Description: Reusing pressure retaining items under alteration

Subgroup: SG Historical
Task Group: C. Jowett (PM), F. Johnson, J. Smith, M. Wahl, R. Bryce, L. Moedinger, and D. Rupert

Explanation of Need: Addition to book explaining how a pressure retaining item can be reused on a historical boiler under the guidelines of an alteration.

July 2024 Meeting Action: Mr. Seime presented the proposal for this item. A motion was made and seconded to accept the proposal as presented. Mr. Tim Barker asked if paragraphs a) and b) conflicted with each other. Mr. Seime clarified that the paragraphs apply to different boilers. No further discussion was held. The motion to accept the proposal was unanimously approved.

TG Locomotive Items:

There are currently no Locomotive items open for Part 3.

NR Task Group Items:

Item Number: A23-57	NBIC Location: Part 3, 1.6	No Attachment

General Description: Rename Authorized Nuclear Inspector - NR TG Item

Subgroup: NR TG

Task Group: C. Dinic (PM)

Explanation of Need: Endorsements required may need to be revised based on Category of work. Name of the Inspector may need to be revised.

July 2024 Meeting Action: A motion was made and seconded to close this item with no action. Mr. Schaefer stated that some of this item will be addressed by 23-60, while the rest of the proposed changes are not needed. The motion to close this item was unanimously approved.

Item Number: A23-60	NBIC Location: Part 3, 1.6	No Attachment

General Description: Endorsements required for Nuclear Inspectors based on Category of work

Subgroup: NR TG

Task Group: C. Dinic (PM)

Explanation of Need: Endorsements required for Nuclear Inspectors based on Category of work (1, 2, or 3)

July 2024 Meeting Action: Ms. Moore stated that the proposal is still in development for this item.

Item Number: A24-06	NBIC Location: Part 3, 1.6.6.2 o)	Attachment Page 23

General Description: Owners vs NR Cert Holders stamping and certification criteria for Cat. 1

Subgroup: NR TG

Task Group: R. Spuhl (PM)

Explanation of Need: Stamping requirements for Category 2 and 3 (allowing for the waiving of applying the "NR" stamp or repair plate), will need to be addressed via Action Item and Intent Interp. Owners vs NR Cert Holders may have different criteria for NR-1 form alternatives and stamping reqs (ie. NIS-2 or RR-1 per Non-Mand. Appdx T per Sect. XI).

July 2024 Meeting Action: Mr. Schaefer presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal for this item.

Item Number: A24-07	NBIC Location: Part 3, 1.6.7.2 o)	Attachment Page 24

General Description: Owners vs NR Cert Holders stamping and certification criteria for Cat. 2

Subgroup: NR TG

Task Group: T. Roberts (PM)

Explanation of Need: Stamping requirements for Category 2 and 3 (allowing for the waiving of applying the "NR" stamp or repair plate), will need to be addressed via Action Item and Intent Interp. Owners vs NR Cert Holders may have different criteria for NR-1 form alternatives and stamping reqs (ie. NIS-2 or RR-1 per Non-Mand. Appdx T per Sect. XI).

July 2024 Meeting Action: Mr. Schaefer presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal for this item.

Item Number: A24-08	NBIC Location: Part 3, 1.6.8.2 o)	Attachment Page 25

General Description: Owners vs NR Cert Holders stamping and certification criteria for Cat. 3

Subgroup: NR TG

Task Group: A. Khssassi (PM)

Explanation of Need: Stamping requirements for Category 2 and 3 (allowing for the waiving of applying the "NR" stamp or repair plate), will need to be addressed via Action Item and Intent Interp. Owners vs NR Cert Holders may have different criteria for NR-1 form alternatives and stamping reqs (ie. NIS-2 or RR-1 per Non-Mand. Appdx T per Sect. XI).

July 2024 Meeting Action: Mr. Schaefer presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal for this item.

Item Number: A24-09	NBIC Location: Part 3, 1.6.1 – 1.6.5	No Attachment

General Description: Update and revise NR Scope in 1.6.1 - 1.6.5

Subgroup: NR TG

Task Group: R. Spuhl (PM)

Explanation of Need: Scope and update and revision to 1.6.1 - 1.6.5.

July 2024 Meeting Action: Ms. Moore reported that work is still being done on this item.

Item Number: A24-54	NBIC Location: Part 3, 1.6	No Attachment

General Description: Revise NR Section with QMS Verbiage

Subgroup: NR TG

Task Group: None assigned.

Explanation of Need: This proposal was deemed substantive by the Part 3 NR Editorial Advisory Group. Changes were initially proposed to match the verbiage QAI uses (QMS vs. quality system). See Gary Scribner for details.

July 2024 Meeting Action: A motion was made and seconded to close this item with no action. Mr. Schaefer stated that changing "quality system" to "quality management system" does not align with federal regulations. The motion to close this item was unanimously approved.

SG Repairs & Alterations Items:

Item Number: 21-12	**NBIC Location: Part 3, 3.3.3, 3.4.4, Section 9**	**Attachment Page 26**

General Description: Clarify the definitions and examples of "Repair" and "Alteration"

Subgroup: Repairs and Alterations

Task Group: P. Becker (PM), K. Moore, P. Shanks, R. Underwood, T. Seime

Explanation of Need: Clarify the definitions of "Repair" and "Alteration" in the Glossary and revise the list of examples of each to better define the allowable scope of activities.

History: This Item was created as a result of conversation regarding Interp. Item 20-78 and Action Item 20-54

July 2024 Meeting Action: Ms. Pat Becker spoke on the proposal for this item. She stated that the goal of this proposal is to improve user experience when deciding between repairs and alterations. A motion was made and seconded to approve the proposal as presented. A vote was taken, and the motion was approved with one disapproval vote. The reasons given for the disapproval vote were:

1. There was insufficient time given during the meeting to review the changes to make sure that a substantive change had not accidentally been made during creation of the flow chart.
2. "MAWP (maximum allowable working pressure)" should be "maximum allowable working pressure (MAWP)"

Item Number: 21-43	**NBIC Location: Part 3, Glossary**	**No Attachment**

General Description: Defining and revising "Practicable" and "Practical" within the NBIC

Subgroup: Repairs and Alterations

Task Group: M. Toth (PM), B. Underwood, L. Dutra, R. Collins, P. Davis, T. White, L. Moedinger, A. Triplett

Explanation of Need: Defining and revising Practicable and Practical within the NBIC and revising where applicable

July 2024 Meeting Action: A motion was made and seconded to close this item with no action. Ms. Moore stated that this item failed votes at subgroup and subcommittee, so it was decided instead to close the item. The motion to close this item passed unanimously.

Item Number: 21-44	NBIC Location: Part 3, Glossary	No Attachment

General Description: Defining "De-Rating" within Part 3

Subgroup: Repairs and Alterations

Task Group: M. Toth (PM), B. Underwood, J. Walker, M. Wadkinson, L. Dutra, J. Ferreira, M. Schaser, D. Kinney

Explanation of Need: Defining de-rating within Part 3

July 2024 Meeting Action: A motion was made and seconded to close this item with no action. The motion passed with one disapproval vote. The reason given for the disapproval was because there is huge need to have this in the NBIC, and that closing the item does not support the needs of end users.

Item Number: 21-45	NBIC Location: Part 3, Supplements	No Attachment

General Description: Add a supplement for engineered repairs and alterations

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), B. Boseo, B. Ray, D. Marek, R. Underwood, J. Siefert, P. Becker

Explanation of Need: There has been interest from companies operating with the Oil, Gas and Chemical industries to address certain types of repairs that may exist in ASME PCC-2 or API. NBIC does not have many of these repair methods within the book.

July 2024 Meeting Action: Ms. Moore gave a progress report for this item.

Item Number: 21-53	NBIC Location: Part 3, S8.5 a)	No Attachment

General Description: Post Repair Inspection of weld repairs to CSEF steels

Subgroup: Repairs and Alterations

Task Group: P. Gilston (PM), E. Cutlip, A. Triplett

Explanation of Need: The requirement for Inspector involvement in post-repair inspections to CSEF weld repairs is to ensure future safe operation of the boiler. This is a function of the inservice Authorized Inspection Agency, not the Repair Inspector, whose duties end with completion of repair documentation.

July 2024 Meeting Action: Ms. Moore stated that work is still being done on this item.

Item Number: 22-18	NBIC Location: Part 3, 9.1 (and all other Parts)	No Attachment

General Description: Definition of blowdown and blowoff

Subgroup: Repairs and Alterations

Task Group: K. Moore (PM), M. Quisenberry, G. Scribner, M. Wadkinson

Explanation of Need: These terms are not consistently used throughout the industry. This is to provide guidance to use the correct term when addressing the equipment or the action.

July 2024 Meeting Action: Ms. Moore stated that the task group is still working on a proposal for this item.

Item Number: 23-09	NBIC Location: Part 3, New Supplement	No Attachment

General Description: Scope and Rules for use of Additive Manufacturing Pressure Parts

Subgroup: Repairs and Alterations

Task Group: G. Galanes (PM), J. Siefert, B. Schaefer, W. Sperko, J. Ferreira, J. Getter, T. Seime, M. Wadkinson

Explanation of Need: Developing rules for the use of additive manufacturing pressure parts in alterations.

July 2024 Meeting Action: Ms. Moore announced that work is still being done on the item.

Item Number: A23-13	NBIC Location: Part 3, 3.3.3 s)	Attachment Page 32

General Description: Consistent addressing of the term for weld metal

Subgroup: Repairs and Alterations

Task Group: P. Gilston (PM), W. Sperko, J. Siefert, T. Melfi, F. Johnson

Explanation of Need: Item for addressing consistent addressing of the term for weld metal is being opened based on discussions on A21-82. Weld Metal vs Filler Metal vs Filler Material, etc.

July 2024 Meeting Action: Ms. Moore presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: A23-21	NBIC Location: Part 3, 3.3.4.9	No Attachment

General Description: Boiler tube plug guidelines and inclusion or watertube boilers

Subgroup: Repairs and Alterations

Task Group: E. Cutlip (PM), P. Gilston, K. Moore, A. Triplett, J. Ferreira

Explanation of Need: Currently both firetube and watertube boilers require a boiler tube be plugged when replacement of a tube is not practicable at the time the defective tube is detected.

July 2024 Meeting Action: Ms. Moore stated that the task group is still working on a proposal for this item.

Item Number: A23-24	NBIC Location: Part 3	No Attachment

General Description: Repairs to quick actuating closures

Subgroup: Repairs and Alterations

Task Group: T. McBee (PM), C. Becker, M. Schaser, A. Khssassi, R. Smith

Explanation of Need: Put safe guidelines for repairs to quick actuating closures.

July 2024 Meeting Action: Ms. Moore stated that the proposal for this item is ready to be letter balloted to the Main Committee.

Item Number: A23-35	NBIC Location: All Parts, 9.1	No Attachment

General Description: Definition of "non-load bearing attachment" (All Parts)

Subgroup: Repairs and Alterations

Task Group: T. White (PM), A. Khssassi, J. Walker, P. Lentzer

Explanation of Need: The term "nonload bearing attachment" is used as a basis for determining a routine repair but is not defined in the NBIC.

July 2024 Meeting Action: Ms. Moore stated that the task group is still working on a proposal for this item.

Item Number: A23-36	NBIC Location: Part 3, 4.2 a) and 4.4 b)	No Attachment

General Description: Clarifying Rules for Using Alternative NDE Methods

Subgroup: Repairs and Alterations

Task Group: T. White (PM), P. Miller, P. Lentzer

Explanation of Need: It has been determined that there may be some confusion regarding allowable NDE methods for repairs and alterations. The existing language of 4.2 a) tells the reader that alternative NDE methods acceptable to the Inspector and, where required, the Jurisdiction, may be used provided the requirements of Section 4 are met. However, it is possible that the reader is not familiarizing themselves with all of the requirements of Section 4 prior to proposing an alternative NDE method. This change should help clarify and reinforce the requirements for alternative NDE methods for repairs and alterations.

July 2024 Meeting Action: A motion was made and seconded to close this item, as it is being combined with Item 23-77. The motion was unanimously approved.

Item Number: A23-39	NBIC Location: Part 3, 3.3.1	No Attachment

General Description: Strengthening Prevention of Defect Recurrence

Subgroup: Repairs and Alterations

Task Group: J. Ferreira (PM), J. Walker, F. Johnson, P. Gilston, A. Henson, G. Galanes, B. Hrubala

Explanation of Need: The existing text recommends, but does not require an investigation of the cause, extent, and likelihood of recurrence of defects. The existing text also has no requirement for anyone to act to prevent the recurrence of defects. Where root and/or proximate causes of defects are known, or could be determined, someone needs to act to prevent catastrophic failure of equipment.

July 2024 Meeting Action: Mr. Underwood presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Discussion was held around when this guidance is applicable. Mr. Galanes asked how this will be enforced. Ms. Moore stated that she feels the proposed changes should be in Part 2. Additional concern was voiced because putting responsibility on the owner could cause confusion because they may not know who to contact. Mr. Adam Henson stated that this change was suggested to give repair firms a leg to stand on if owners don't take care of their equipment. Members supported the concept, but not the proposed wording. The motion to approve the proposal failed due to the concerns mentioned above. The item will go back to the subgroup and subcommittee for further work.

Item Number: A23-40	NBIC Location: Part 3, 3.3.4.1	No Attachment

General Description: Strengthening Requirements to Ensure Defect Removal

Subgroup: Repairs and Alterations

Task Group: L. Dutra (PM), E. Cutlip, A. Renaldo, R. Valdez, T. McBee, A. Henson

Explanation of Need: The existing text alludes to the potential need for nondestructive examination (NDE) to ensure complete removal of defects but does not require it. The means to ensure defects have been removed must be understood by all to ensure safety. There is an interpretation of the 2021 NBIC that compounds this issue permitting repair organizations to not follow the requirements of NBIC Part 3, 3.3.4.8 even when the characteristics of the defect cannot be fully established.

July 2024 Meeting Action: Ms. Moore shared that the task group is working on a proposal for this item.

Item Number: A23-41	NBIC Location: Part 3, 3.3.4.6 a) 2)	Attachment Page 34

General Description: Strengthening Requirements for Defect Removal When Patching

Subgroup: Repairs and Alterations

Task Group: A. Khssassi (PM), L. Dutra, A. Renaldo

Explanation of Need: The existing text requires the removal of defective material until sound material is reached but provides no requirements or guidance on means to employ to ensure complete removal of defective material. The means to ensure defects have been removed must be understood by all to ensure safety. There is an interpretation of the 2021 NBIC that compounds this issue permitting repair organizations to not follow the requirements of NBIC Part 3, 3.3.4.8 even when the characteristics of the defect cannot be fully established.

July 2024 Meeting Action: This item was approved during discussion for Item I24-51.

Item Number: A23-59 NBIC Location: Part 3, 4.2 a) and b) No Attachment

General Description: NDE Personnel Certifications for Repairs and Alterations

Subgroup: Repairs and Alterations

Task Group: A. Triplett (PM), P. Lentzer

Explanation of Need: The 2023 Edition revision to 4.2.a, which revises language about codes to be used for NDE on repairs/alterations (i.e., to codes other than the original construction code), is not reflected in 4.2.b. This creates conflicting requirements between 4.2.a and 4.2.b; in a case where use of the construction code is practicable, but NDE personnel certification to another Code/standard is desirable, 4.2.a would allow this but 4.2.b would not.

July 2024 Meeting Action: A motion was made, seconded, and unanimously approved to close this item and combine it with Item 23-77.

Item Number: A23-61 NBIC Location: Part 3, S9.3 No Attachment

General Description: Revise NBIC R-2 Report and guide

Subgroup: Repairs and Alterations

Task Group: B. Schaefer (PM), T. LeBeau

Explanation of Need: Updates to the R-2 Report and the guide for completing R Report.

July 2024 Meeting Action: Ms. Moore stated that the task group is still working on this item.

Item Number: A23-68 NBIC Location: Part 3, 3.4.4 c) and d) No Attachment

General Description: Changes to Examples of Alterations

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), T. McBee, P. Becker, L. Baker

Explanation of Need: The current wording of 3.4.4.d (2023) is open ended and may result in allowing significant design changes to a pressure vessel under the guise of a repair when an alteration is a more appropriate classification. Rewording is required to limit the scope of potential design changes.

July 2024 Meeting Action: Ms. Moore informed the Committee that the task group is still working on this item.

Item Number: A23-69 **NBIC Location: Part 3, 9.1** **Attachment Page 40**

General Description: Update definitions of Field, Shop, and add definition for Temporary Locations

Subgroup: Repairs and Alterations

Task Group: R. Miletti (PM), E. Cutlip, M. Toth, J. Walker

Explanation of Need: This is a definition change to align with the latest NB-415 revision adding definitions for "Shop", "Field Site", and "Temporary Location".

July 2024 Meeting Action: Ms. Moore presented the proposal for the item. A motion was made, seconded, and unanimously approved to accept the proposal for this item.

Item Number: A23-77 **NBIC Location: Part 3, 4.2 a)** **No Attachment**

General Description: Performance of Original NDE During Repairs and Alterations

Subgroup: Repairs and Alterations

Task Group: A. Triplett (PM), S. Frazier, J. Walker, R. Collins, P. Becker

Explanation of Need: The existing language in Part 3, Section 4, Paragraph 4.2.a does not provide enough guidance or flexibility for Repair Organizations and owners to prescribe appropriate NDE for repairs/alterations to existing welds. Based on the limited, often non-specific documentation typically available to these entities during NBIC repairs and alterations, additional allowances and direction should be provided.

July 2024 Meeting Action: Ms. Moore informed the Committee that the task group is still working on this item.

Item Number: A23-78 **NBIC Location: Part 3, S8** **Attachment Page 42**

General Description: Rev. NB-23 Part 3, Supplement 8 & Fig. S8.3-b

Subgroup: Repairs and Alterations

Task Group: P. Becker (PM)

Explanation of Need: Add ‘Step 5’ to FIGURE S8.3-b. (currently missing). Remove references to ‘B9’ and ‘B87’ weld filler metal including Notes A, B, and C in Table S8.2.1

July 2024 Meeting Action: Ms. Becker presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: A23-83	NBIC Location: Part 3, New Engineered Repairs and Alteration Supplement	Attachment Page 45

General Description: Relocating Existing Repairs to new Eng. Repair & Alteration Supplement

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), R. Underwood

Explanation of Need: In an effort to simplify the main body of Part 3, we are proposing to relocate some of the more complex repair methods to the new Engineered Repair & Alterations supplement. This item proposes to relocate three existing repair methods.

July 2024 Meeting Action: Mr. Underwood presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Mr. Eben Creaser asked about the potential impact of moving these methods into a new supplement. Mr. Underwood said that these are specific to repairs done by engineering firms. Another question was asked regarding references in the NBIC to make sure people know to where the methods are being moved. Mr. Scribner stated that National Board staff can add statements to direct users to the new supplement. After discussion concluded, a vote was taken. The motion was unanimously approved.

Item Number: A23-86	NBIC Location: Part 3, S6.5 and S6.6	Attachment Page 52

General Description: Revision to Part 3 DOT Supplement re-write (related to Interpretation I23-55)

Subgroup: Repairs and Alterations

Task Group: R. Underwood (PM)

Explanation of Need: There is a need to revise two sections of Item 20-67 (approved by Main Committee on 3/24/2023) to reflect DOT requirements and bring the sections in line with intent interpretation I23-55.

January 2024 Meeting Action:

July 2024 Meeting Action: Mr. Underwood presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. He clarified that the Registered Inspector is a DOT inspector. No discussion was held, and the motion passed unanimously.

Item Number: A24-01	NBIC Location: Part 3, 3.3.3 j)	Attachment Page 59

General Description: Changes to Examples of Repairs

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), R. Collins, C. Hopkins, K. Derrick, S. Lombardo

Explanation of Need: Revision to 3.3.3(j) is needed to establish a code-based nozzle-to-nozzle spacing requirement to cover nozzle installation for both ASME VIII-1 and ASME VIII-2 design requirements.

July 2024 Meeting Action: A proposal was presented for this item. A motion was made and seconded to approve the proposal as presented. Ms. Moore expressed that she felt the proposal needed more work. No further discussion was held. The motion passed with one disapproval vote. The reason for the disapproval was that it may be very difficult to generically try to define the repair parameters of nozzle replacements that meet all of the codes.

iv. New Items:

Item Number: A24-12	NBIC Location: Part 3, S7.5	Attachment Page 66

General Description: Reference to change of service for LPG vessels incorrectly uses "altered"

Subgroup: Repairs and Alterations

Task Group: M. Vogt (PM), S. Frazier, B. Hrubala

Explanation of Need: Conversion of service for LPG tanks (typically from above ground to underground service) typically involves changes to the vessel covered under Part 3, Paragraph 3.3.3 and, as such, are considered repairs. As such, the language referring to these conversions that uses the word "altered" may be confusing to an inspector or other user of NBIC. I suggest changing the word "altered" to "changed".

This action item was previously submitted requesting changes to both Part 2 and Part 3 under Item 23-30. The changes to Part 2 were reviewed and approved by SG Inspection, SC Inspection, and Main Committee in July 2023. However, a separate action item to address the changed needed in Part 3 was never opened. Therefore, I'm submitting this now as a new action item for Part 3. A similar language change has already been approved for Part 2. This change request is to synchronize the language in both parts.

July 2024 Meeting Action: Mr. Seime presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: A24-13 **NBIC Location: Part 3, 1.5.1** **Attachment Page 67**

General Description: Correction of wording errors in NBIC Part 3, 1.5.1

Subgroup: Repairs and Alterations

Task Group: T. Seime (PM), M. Vogt, J. Siefert

Explanation of Need: To provide clear guidance to Certificate Holders and Review Team Leaders of requirements to be included in the Quality System.

July 2024 Meeting Action: Ms. Moor presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: A24-15 **NBIC Location: Part 3, 4.2** **Attachment Page 68**

General Description: NDE requirements

Subgroup: Repairs and Alterations

Task Group: M. Quisenberry (PM), M. Wadkinson, S. Frazier, R. Spuhl

Explanation of Need: B31.1 has introduced very stringent requirements on the R-Certificate holders that will create an unnecessary burden on them.

July 2024 Meeting Action: Mr. Mike Quisenberry presented the proposal for this item. He stated that it is a response to new B31.1 requirements. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: A24-17 **NBIC Location: Part 3, 5.7.5 b)** **No Attachment**

General Description: Specific Requirements For Stamping And Nameplates

Subgroup: Repairs and Alterations

Task Group: E. Cutlip (PM), B. Schaefer, A. Khssassi

Explanation of Need: 2023 ASME Section VIII-Div 1 UG-119(c)(5) has been revised to allow for the use of mechanical etching or laser annealing on nameplates.

July 2024 Meeting Action: Ms. Moore stated that work is still being done on this item.

Item Number: A24-18 **NBIC Location: Part 3, 9.1** **No Attachment**

General Description: Definition of Controlled Fill

Subgroup: Repairs and Alterations

Task Group: P. Gilston (PM), A. Triplett, R. Collins, F. Johnson

Explanation of Need: Interpretation item I 23-79 addresses the use of the term 'controlled fill' in relation to welding method 6. The term is used in 2.5.3 d in relation to welding method 6 and more specifically in Supplement 8. Supplement 8 gives a lot of detail in schematics about a controlled fill in terms of weld bead placement, its use in controlling heat input etc., but in Welding Method 6 the term is not specifically used, but direction for welding is given, typically preheats are specified, electrode size for SMAW, and the use of stringer beads only.

July 2024 Meeting Action: Ms. Moore announced that a proposal for this item will be balloted to the subgroups between meetings.

Item Number: A24-20 **NBIC Location: Part 3, 9.1** **No Attachment**

General Description: Define "Engineered Repairs" and "Engineered Alterations"

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), B. Ray, R. Underwood, B. Boseo, D. Marek, J. Siefert, P. Becker

Explanation of Need: The new supplement dealing with "Engineered Repairs and Alterations" (A21-45) will impact Part 3 Section 1, the NB-415, QRRs, the application process for Certificate Holders, and other documents to be determined. Defining "Engineered Repairs" and "Engineered Alterations" clarify the intent for these new scopes.

July 2024 Meeting Action: Ms. Moore gave a progress report for this item.

Item Number: A24-21 **NBIC Location: Part 3, 9.1** **No Attachment**

General Description: Engineered Repairs and Alterations - Section 1 Scope and Manual reqs

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), B. Ray, R. Underwood, B. Boseo, D. Marek, J. Siefert, P. Becker

Explanation of Need: The scope of "Engineered Repairs and Alterations" (A21-45)needs to be clarified in 1.4.1 d) and reflected in the scope statement requirements for manuals in 1.5.1 a).

July 2024 Meeting Action: Ms. Moore stated that the task group is still working on a proposal for this item.

Item Number: A24-22 **NBIC Location: Part 3, 2.5.3** **Attachment Page 71**

General Description: Alternative Welding Methods without PWHT- Competent Technical Advice

Subgroup: Repairs and Alterations

Task Group: E. Cutlip (PM), J. Ferreira

Explanation of Need: The first sentence of 2.5.3 (b) requires the competent technical advice to be obtained for the use of every alternative welding method which can be impractical. In most cases, the R certificate firm that is making the determination to use alternative welding method. Most R-certificate holders do not retain a record of the component technical advice they may get.

Competent technical advice is used in paragraph 3.2.1 and 3.3.4.3 (d)(1) and the wording states competent technical advice should be obtained. But in 2.5.3 (b) states competent technical advice shall be obtained.

July 2024 Meeting Action: Ms. Moore presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: A24-43 **NBIC Location: Part 3, 1.3.2** **Attachment Page 73**

General Description: Certification of Reports of Repair without stamping - Action Item with I24-39

Subgroup: Repairs and Alterations

Task Group: M. Vogt (PM), R. Spuhl

Explanation of Need: Given INTERP 21-16 requirements, clarity is needed for R/NR work where the lack of stamping due to a practical matter, not necessarily a jurisdictional reason, may preclude certifying a Report of Repair. This Action Item is tied to Intent Interpretation I24-39.

July 2024 Meeting Action: This item was approved during discussion for Item I24-39.

Item Number: A24-60 **NBIC Location: Part 3, 3.3.5.2 a) and 3.4.5.1** **No Attachment**

General Description: Revise the repair and alteration Sect VIII Div 2 and 3 paragraphs

Subgroup: Repairs and Alterations

Task Group: R. Collins (PM)

Explanation of Need: A revision of Part 3, 3.3.5.2 a) and 3.4.5.1 a), b), and c) are needed to reconcile the NBIC to Divisions 2 and 3 of ASME Section VIII. The attached proposal includes the complete revision draft.

July 2024 Meeting Action: Ms. Moore provide a progress report for this item.

Item Number: A24-61	NBIC Location: Part 3, 2.5.3 e) and 4.2	No Attachment

General Description: Relocate Volumetric NDE requirement for Weld Repair Greater than 3/8-inch

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), M. Quisenberry, K. Derrick, B. Schaefer

Explanation of Need: Relocate the volumetric NDE requirement for weld repairs of 3/8-inch depth or greater from paragraph 2.5.3.e to paragraph 4.2.

July 2024 Meeting Action: Ms. Moore shared a progress report for this item.

Item Number: A24-65	NBIC Location: Part 3, Table 1.5.1 d)	Attachment Page 75

General Description: Applicability of Table 1.5.1 d)

Subgroup: Repairs and Alterations

Task Group: T. White (PM)

Explanation of Need: The term "administrative" appears 16 times in Part 3 but nowhere does the NBIC require or describe an administrative review of the "R" Certificate Holder's administrative processes. In addition, under the "Instructions" column, Supplement 6 should be Section 6 to include all the supplements if item d) is to be kept.

July2024 Meeting Action: Mr. White presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

b. Subcommittee Pressure Relief Devices

i. Interpretations

Item Number: 24-38	NBIC Location: Part 4, 2.5.4.2 & Part 1, 3.9.1.6 c)	No Attachment

General Description: T&P relief device installation on modular HWH supply header

Task Group: None assigned.

Explanation of Need: The NBIC does not address the installation or location of a common T&P valve for modular HWH's. Clarification is needed on whether the common supply header can be considered part of the HWH, and whether T&P valves can be installed in the horizontal position with the outlet pointed down, if installed directly to the header with no more than 4 in. maximum interconnecting piping.

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

Item Number: 24-46	NBIC Location: Part 4, 4.3.1 a)	No Attachment

General Description: Replacement of Bodies and Transfer of Nameplates During Repair

Task Group: None assigned.

Explanation of Need: Clarity on what defines "the valve". Is "the valve" the nameplate solely or the nameplate and serialized base; and subsequent ability to divorce the nameplate and base during repair when the base requires replacement.

July 2024 Meeting Action: Mr. Renaldo presented the proposal for this item. A motion was made and seconded to approve the proposal. A question was asked about concurrence from the original manufacturer to perform this nameplate transfer. Further discussion on this topic led to the decision to rescind the motion and wait for an action item to accompany this interpretation.

ii. Action Items – Old Business

Item Number: NB15-0305	NBIC Location: Part 4	No Attachment

General Description: Create Guidelines to address Overpressure Protection by System Design.

Task Group: B. Nutter, A. Renaldo, D. Marek (PM), D. DeMichael, J. Wolf, D. Schirmer

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

Item Number: NB15-0307	NBIC Location: Part 4	No Attachment

General Description: Create Guidelines for Repair of Pin Devices.

Task Group: D. McHugh (PM), A. Renaldo, T. Tarbay, J. Simms, C. Beair, C. Chernisky

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item, stating that it will be sent out as a letter ballot.

Item Number: NB15-0315	NBIC Location: Part 4, 2.5.6 and 2.6.6 and Part 1, 4.5.6 and 5.3.6	No Attachment

General Description: Review isolation Valve Requirements, and reword to allow installation of pressure relief devices in upstream piping.

Task Group: D. DeMichael (PM), B. Nutter, A. Renaldo, D. Marek

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

Item Number: 19-83	NBIC Location: Part 4, 4.7.5	No Attachment

General Description: Address Alternate Pressure Relief Valve Mounting Permitted by ASME CC2887-1

Task Group: D. Marek (PM), T. Patel, J. Ball

Explanation of Need: ASME Code Case 2887-1 permits the installation of pressure relief valves below a low mass water tube boiler or water heater under certain conditions. This set of conditions and alternate location should be addressed in the NBIC as the use of low mass water tube boilers and water heaters becomes more widespread.

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

Item Number: 21-08	NBIC Location: Part 4, S4.4	No Attachment

General Description: Additional guidance for tank vent repairs

Subgroup: PRD

Task Group: D. DeMichael (PM), B. Donalson, B. Nutter, K. Beise, J. Grace

Explanation of Need: The recently approved S4.4, "Weight Loaded Vents," provided new guidance for tank vent repairs. Several additional topics need to be addressed to enhance the guidance. These topics include: 1) Suggested test equipment and configuration for the prescribed tank vent testing. 2) Minimum requirements for replacement parts, 3) Guidance for painting tank vent components.

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

Item Number: 21-62	NBIC Location: Part 4, 4.8.5.4 i) 3)	No Attachment

General Description: Verification of existing spring during repair activities

Task Group: A. Donaldson (PM), B. Nutter, E. Creaser, P. Dhobi, T. Patel, J. Simms, J. Grace, D. Gonzales, T. Cardy

Explanation of Need: This requirement has created an administrative requirement that potentially prevents a VR Stamp holder from applying the "VR" stamp to valves they have repaired. The requirement is negatively impacting owners, and jurisdictions that enforce the NBIC Part 4. This clause introduces a unique requirement in the BPV industry to confirm that code material in a Code stamped item be verified and traceable at all time after the item is ASME code stamped but the verification can only be provided by the manufacturer. Historically, any valve received or worked on that was sealed by a VR Stamp holder or in the case of an initial repair the ASME assembler was deemed to be Code compliant, and no further verification was needed recognizing the validity and continuity of the ASME and VR quality programs. It is clearly understood that if a spring, or any other critical part is deemed necessary to be replaced during a repair the manufactures verification is required and justifiable.

July 2024 Meeting Action: A motion was made and seconded to close the item with no action. Mr. Renaldo stated that the proposal failed a vote, and the lack of consensus led to the decision to close. The motion to close this item passed unanimously.

Item Number: 22-08	NBIC Location: Part 4, 2.4.1.6 & 2.4.4.2; Part 1, 3.9.1.6 & 3.9.4.2	Attachment Page 76

General Description: Review and improve guidance for T&P valve installation relating to probe.

Subgroup: PRD

Task Group: D. Marek (PM), J. Ball, J. Wolfe, T. Clark

Explanation of Need: Existing text refers to location of valve connection and does not give guidance that the temperature probe needs to be located in the hottest water in the tank for the valve to actuate at the specified temperature.

July 2024 Meeting Action: Mr. Renaldo presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: 22-09	NBIC Location: Part 4, 4.6.1	No Attachment

General Description: Add language to NBIC Part for valves manufactured to Code Case 2787

Subgroup: PRD

Task Group: A. Donaldson (PM), H. Cornett, B. Nutter, T. Tarbay, J. Simms

Explanation of Need: There are no requirements to address valve repairs that were manufactured or assembled to Code Case 2787 (use of more than one certified capacity on the pressure relief valve or the nameplate).

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

Item Number: 22-20	NBIC Location: Part 4, 4.7.4	No Attachment

General Description: Inspection and testing of PRV's located above isolation valves.

Subgroup: PRD

Task Group: D. Marek (PM), K. Beise, J. Ball, E. Creaser, H. Cornett, A. Renaldo

Explanation of Need: Add requirement to make sure the internals of a PRV inlet and outlet are inspected when it is tested, and require tests to be done with a pressure vessel with volume.

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

Item Number: 23-32	NBIC Location: Part 4, 3.3 and Supp. 6	No Attachment

General Description: Rules for T/O activities related to Nuclear Class Valves

Subgroup: PRD

Task Group: E. Creaser (PM), P. Dhobi, D. McHugh, J. Simms

Explanation of Need: Nuclear facilities that perform repair and T/O activities would by allowing them to use T/O for nuclear class valves that were serviced but not in need of repair but need to be set and sealed again.

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

iii. New Items:

Item Number: 24-35	NBIC Location: Part 4, 4.6.2	No Attachment

General Description: Update Testing of UV-Designated Steam valves on Air to match ASME XIII

Subgroup: PRD

Task Group: T. Beirne (PM)

Explanation of Need: ASME Section XIII Table 3.6.3.1-1 Note 3 permits UV-designated steam valves to be tested using air when the valve is beyond the testing capabilities due to set pressure or capacity. The NBIC only permits steam valves to be tested on air by the owner/user. This should be permitted by any VR shop that has steam test equipment since it is permitted under the rules for new construction.

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

Item Number: 24-49	NBIC Location: Part 4, 4.7.3	No Attachment

General Description: Add words regarding maintaining converted PRV Type/Model Number

Subgroup: PRD

Task Group: None assigned.

Explanation of Need: When a conversion is performed, the Type/Model Number as converted is recorded on the VR Repair Nameplate. However, there is no requirement to indicate the Type/Model Number on the VR Nameplate during subsequent VR Repairs. This can result in losing track of the Type/Model Number as converted.

July 2024 Meeting Action: A motion was made and seconded to close this item because the proposed change is already addressed in the NBIC. This motion passed unanimously.

Item Number: 24-63	NBIC Location: Part 4, Table 3.2.6 and Part 2, Table 2.5.8	Attachment Page 77

General Description: Change to Note on Tables Regarding Replacement of T&P Valves

Subgroup: PRD

Task Group: None assigned.

Explanation of Need: Reword for clarity, and to remove references to cost of repair.

July 2024 Meeting Action: Mr. Renaldo presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: 24-64	NBIC Location: Part 4, 2.5.3 d) and Part 1, 3.9.3 d)	Attachment Page 78

General Description: PRV Set Pressure Requirements for HW Heating & Supply Boilers

Subgroup: PRD

Task Group: None assigned.

Explanation of Need: The current NBIC set pressure/capacity requirements for PRVs on HW heating and supply boilers are not consistent with the requirements in ASME Section IV.

July 2024 Meeting Action: Mr. Renaldo presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: 24-66	NBIC Location: Part 4, 2.5.1.5	No Attachment

General Description: Align Part 4, 2.5.1.5 with changes made in Part 1 Item 22-30

Subgroup: PRD

Task Group: None assigned.

Explanation of Need: Part 1's Item 22-30 passed MC in July 2023. Part of the item added paragraph f) to 3.9.1.5. But the same change was never posed for the parallel Part 4 section (2.5.1.5) and should have been.

July 2024 Meeting Action: A motion was made and seconded to close this item with no action. The PRD subgroup and subcommittee felt the change was not necessary. Discussion was held on the change made to Part 1, 3.9.1.5 f) and if it needed to be rescinded. The Committee determined that the change to Part 1 was fine, and that in this instance it did not need to be mirrored in Part 4. The motion to close this item passed unanimously.

c. Subcommittee Installation

i. Interpretations

Item Number: 24-14	NBIC Location: Part 1, 2.3.3	Attachment Page 80

General Description: 2015 NBIC Clearances for tube replacement

Subgroup: SG Installation

Task Group: T. Clark (PM), D. Patten, M. Richards, M. Downs, S. Konopacki

Explanation of Need: The 2015 NBIC Part 1, 2.3.3 a) states boiler installations must allow for maintenance. 2.3.3 b) specifically states installations must allow for removal and installation of tubes. Units are being installed with ducts, structural braces, etc. obstructing the area needed to replace economizer tubes.

July 2024 Meeting Action: Mr. Stan Konopacki presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

ii. Action Items – Old Business

Item Number: 20-86	NBIC Location: Part 1, 2.10.1 a)	No Attachment

General Description: Testing and Acceptance: Boiling-out Procedure

Subgroup: SG Installation

Task Group: E. Wiggins (PM), D. Patten, S. Konopacki, and R. Spiker.

July 2024 Meeting Action: Mr. Konopacki provided a progress report for this item.

Item Number: 22-28	NBIC Location: Part 1	No Attachment

General Description: Pool Heater definition and requirements

Subgroup: SG Installation

Task Group: J. Kleiss (PM), R. Spiker, T. Creacy, and M. Byrum

Explanation of Need: The NBIC Installation and Inspection Codes do not have a definition for pool heaters. There is potential for confusion regarding which NBIC requirements, if any, should apply to pool heaters.

July 2024 Meeting Action: Mr. Konopacki provided a progress report for this item.

Item Number: 22-32	NBIC Location: Part 1, 3.8.1.4 b)	No Attachment

General Description: High pressure limit control requirements for fired jacketed steam kettles

Subgroup: SG Installation

Task Group: R. Adams (PM), D. Patten, T. Clark, and T. Creacy

Explanation of Need: As a safeguard to over pressurizing the fired jacketed steam kettle, the pressure range of the actuated high pressure limit control should not exceed the MAWP of the vessel.

July 2024 Meeting Action: Mr. Konopacki stated that this item is ready for a Main Committee letter ballot.

Item Number: 23-52	NBIC Location: Part 1, 2.5.3.2 and 3.5.3	No Attachment

General Description: Harmonize electrical requirements for all types of boilers/water heaters

Subgroup: SG Installation

Task Group: T. Clark (PM), S. Konopacki, J. Kleiss, R. Spiker, and John Choitz

Explanation of Need: Electrical requirements for power boilers, heating boilers, and water heaters are inconsistent, particularly regarding remote emergency shutdown switches. In some cases the requirements are the same, but worded or ordered differently. In order to promote better understanding of code requirements and consistency in their application, I propose making sections 2.5.3 and 3.5.5 as uniform as possible.

July 2024 Meeting Action: Mr. Konopacki shared that work is still being done on this item.

Item Number: 24-05	NBIC Location: Part 1, New Supplement	No Attachment

General Description: Add heat pump water heater & heat pump hydronic heater requirements

Subgroup: SG Installation

Task Group: J. Kleiss (PM), B. Ahee

Explanation of Need: Heat pump water heating and hydronic heating are growing in prevalence. Guidance for installation and inspection of these products is needed.

July 2024 Meeting Action: Mr. Konopacki provided a progress report for the item.

iii. Action Items – New Business

Item Number: 24-26	NBIC Location: Part 1, 3.7.8	No Attachment

General Description: NBIC Requirements for ASME Modular Water Heaters

Subgroup: SG Installation

Task Group: R. Spiker (PM), M. Byrum, J. Kleiss

Explanation of Need: ASME Section IV added requirements in the 2023 Edition for modular water heaters. The NBIC currently includes requirements for modular steam heating and hot-water heating boilers, but not for modular water heaters.

July 2024 Meeting Action: Mr. Konopacki provided a progress report for the item.

Item Number: 24-30	NBIC Location: Part 1, Figure 3.7.5.1-c	Attachment Page 81

General Description: Revise Note 1 in Part 1, Figure 3.7.5.1-c for clarity

Subgroup: SG Installation

Task Group: R. Adams (PM)

Explanation of Need: This is being submitted on Gary Scribner's behalf: Please review and revise to clarify what Note 1 is trying to communicate. Consider rewriting the third sentence to be more specific.

July 2024 Meeting Action: Mr. Tom Clark presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: 24-31	NBIC Location: Part 1, S5.6.2	Attachment Page 84

General Description: Clarify requirements for opening drain valve

Subgroup: SG Installation

Task Group: M. Wadkinson (PM), R. Black, D. Patten

Explanation of Need: "when there is temperature on the system" is rather unclear. Please specify/clarify requirements.

July 2024 Meeting Action: Ms. Wadkinson presented the proposal for this item. A motion was made and seconded to approve the proposal. A question was asked about the reason for deleting safety guidance. Ms. Wadkinson stated that the subgroup and subcommittee felt the guidance it was related to operation instead of installation. No further discussion occurred, and the motion passed unanimously.

Item Number: 24-32	NBIC Location: Part 1, S8.3 e)	Attachment Page 85

General Description: PVHO Characteristics- review intent of list and potentially add requirement

Subgroup: SG Installation

Task Group: R. Smith (PM), M. Byrum

Explanation of Need: These changes started for editorial purposes/reviewing the use of "and/or." S8.3 e) 8) seemed incomplete and out of place, so the changes shown are to correct that. Someone with PVHO experience should review the changes and review for any other changes that may be necessary.

July 2024 Meeting Action: Ms. Wadkinson presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: 24-56	NBIC Location: Part 1, S3.6.1	No Attachment

General Description: LCDSV Systems: Add Table and Figure

Subgroup: SG Installation

Task Group: M. Byrum (PM), R. Black

Explanation of Need: In accordance with the NBIC Policy For Metrication, metric units need to be shown alongside US customary units. Table S3.6.1 and Figure S3.6.1-b both show only US customary units. I recommend adding a Table S3.6.1M and Figure S3.6.1-bM to show metric units. I've also included some additional editorial recommendations.

July 2024 Meeting Action: Mr. Konopacki presented the proposal for this item. A motion was made and seconded to approve the proposal. Some discussion was held, and the Committee decided to hold this item back until a similar Part 2 section can be amended.

Item Number: 24-57	NBIC Location: Part 1, S5.5.1	Attachment Page 86

General Description: Revise language to be more formal (Part 1, S5.5.1)

Subgroup: SG Installation

Task Group: M. Wadkinson (PM)

Explanation of Need: The current language is rather informal. It should be revised.

July 2024 Meeting Action: Ms. Wadkinson presented the proposal for this item. A motion was made and seconded to approve the proposal. A question was asked about the definition of "appropriate heat transfer characteristics." The Committee discussed the question and determined that the use of "appropriate" was appropriate. No further discussion was held, and the motion passed unanimously.

Item Number: 24-68	NBIC Location: Part 1, S3.3 c)	Attachment Page 87
General Description: CO2 is heavier than air; Part 1, S3.3 c) should say "above" not "below" **Subgroup:** SG Installation **Task Group:** M. Byrum (PM) **Explanation of Need:** CO2 is like the foam on a beer mug flowing over, it is heavier than air. being below and an air intake it goes down so should not be a issue, if it is above an air intake it will be dropping down and go into the air intake.		
July 2024 Meeting Action: Mr. Clark presented the proposal for this item. A motion was made and seconded to approve the proposal. This motion passed with one disapproval vote. The reason for the disapproval was that "the proposed wording is incorrect and misleading. It does not specify if the 10 ft above is a minimum or maximum. Per NFPA 55, the CO2 storage needs to be 10 ft from an air intake, regardless of elevation (above or below)."		

Item Number: 24-73	NBIC Location: Part 1, 1.6.6	Attachment Page 88
General Description: Requirements for Sealed Combustion Systems **Subgroup:** SG Installation **Task Group:** T. Clark (PM) **Explanation of Need:** Jurisdictional Chiefs provided feedback to the Installation Subgroup that guidance for sealed combustion systems should be provided.		
July 2024 Meeting Action: Mr. Clark presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.		

d. Subcommittee Inspection

i. Interpretations

Item Number: 23-70	NBIC Location: Part 2, 2.3.6.11	Attachment Page 89
General Description: Inspection of vessels at and above 10,000 PSI (c) & (d) "requalification" **Subgroup:** Inspection **Task Group:** None assigned. **Submitted by:** C. Bierl **Explanation of Need:** Isostatic Pressure Vessel manufacturers are currently "requalifying" pressure vessels through an engineering evaluation without the involvement of the NB Alteration process and therefore an Inspector. This leaves control of this process of a code vessel in the hands of the manufacturer and impairs the code integrity of the vessel.		
July 2024 Meeting Action: Mr. Getter presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.		

Item Number: 24-04	NBIC Location: Part 2, 4.4.7.2 h) and i)	Attachment Page 90

General Description: Thickness for determining corrosion rates for circumferential stress

Subgroup: Inspection
Task Group: B. Ray, J. Getter

Explanation of Need: It is unclear if the statement made in the NBIC Part 2, 4.4.7.2 i) also applies to 4.4.7.2 h). The statement reads, "The thicknesses used for determining corrosion rates at the respective locations shall be the most critical value of average thickness." Mr. Dominguez believes the statement applies to both paragraphs.

January 2024 Action:
Mr. Getter presented the proposal for this item. After spending some time discussing the item, the Committee requested that the item be put on hold until an action item to revise Part 2, 4.4.7.2 h) has been submitted.

July 2024 Meeting Action: Mr. Getter presented the proposal for this item. A motion was made and seconded to approve the proposal.

Item Number: 24-27	NBIC Location: Part 2, 5.2.1	No Attachment

General Description: Replacement of Repair Nameplate

Subgroup: Inspection
Task Group: None assigned.
Submitted by: T. Hellman

Explanation of Need: There is a lack of clarity for replacing an Repair Nameplate that has become lost, illegible, or detached, and the stamping/markings required.

July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

ii. Action Items – Old Business

TG FRP Items:

Item Number: NB16-1402	NBIC Location: Part 2, New Supplement	No Attachment

General Description: Life extension for high pressure FRP vessels above 20 years

Subgroup: FRP
Task Group: M. Gorman (PM)

Background:
In 2016, when this item was first opened, it was assigned as an item for Part 3. Recent discussions with SC R&A and the FRP Task Group have revealed that this item is better suited for Part 2. This item has been approved by the FRP Task Group.

Scope: The goal of this proposal is to provide a method to evaluate whether the service life of high-pressure fiber reinforced plastic pressure vessels can be extended for an additional lifetime.

July 2024 Meeting Action: Mr. Getter announced that the FRP Task Group is close to having a proposal ready for this item.

TG Historical Items:

Item Number: 23-74	**NBIC Location: Part 2, S2**	**No Attachment**
General Description: Certificate of compliance for new fusible plugs **Subgroup:** SG Historical **Task Group:** None assigned. **Explanation of Need:** To discuss the possibility of requiring a certificate of compliance on all new fusible plugs on historical boilers.		
July 2024 Meeting Action: Mr. Seime made a motion to close this item with no action because it is outside of the NBIC's scope. This motion was seconded and unanimously approved.		

Item Number: 23-85	**NBIC Location: Part 2, S2.14.7**	**No Attachment**
General Description: Review paragraphs to replace with proper verbiage **Subgroup:** SG Historical **Task Group:** M. Wahl (PM), K. Anderson **Explanation of Need:** There is some slang and second person (POV) verbiage throughout these paragraphs. Recommend rewording with proper terminology (such that it could be understood internationally) and changing point of view (e.g., changing "you're pulling water" to "water is being pulled"). Since I don't have the technical knowledge to know what is slang and what isn't, what I have proposed will still need to be reworded.		
July 2024 Meeting Action: Mr. Seime provided a progress report for this item.		

Item Number: 24-23	**NBIC Location: Part 2, S2.10.4.2**	**Attachment Page 91**
General Description: Review Verbiage in Part 2, S2.10.4.2 **Subgroup:** SG Historical **Task Group:** None assigned. **Submitted by:** Michelle Vance **Explanation of Need:** What is the meaning of "pillow/mattress-effects"? Is there a better way to describe this? Is this phrase normally understood outside of the US/by someone who may not speak English?		
July 2024 Action: Mr. Seime presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.		

Item Number: 24-47	NBIC Location: Part 2, S2.6.1 a)	No Attachment
General Description: Interpretation 23-05 inverted verbiage **Subgroup:** SG Historical **Task Group:** None assigned. **Explanation of Need:** The current published interpretation includes a term heritage boiler that is not present in the NBIC, further the interpretation says it is permissible to add pressure to a hydro test. whilst recognizing this is not an unusual or abhorrent process there are no words supporting adding pressure. changing the wording to is it prohibited (which it is not) and reversing the answer allows this to happen without an potential rule by interpretation conflict.		
July 2024 Action: Mr. Seime made a motion to close this item because the Historical Task Group felt the change was unnecessary. This motion was seconded and passed unanimously.		

TG Locomotive Items:
There are currently no Locomotive items open for Part 2.

SG Inspection Items:

Item Number: 21-47	NBIC Location: Part 2, 2.2.4 & 2.2.5	No Attachment
General Description: To provide better guidance as it relates to carbon monoxide **Subgroup:** Inspection **Task Group:** W. Hackworth (PM), J. Smith, D. Buechel, T. Barker, T. Bolden, M. Sansone, H. Henry, J. Castle, J. Morgan, J. Clark **Explanation of Need:** Need to provide more comprehensive items to be reviewed to guide the inspector on carbon monoxide and combustion air. **July 2024 Meeting Action:** Mr. Galanes began this item's presentation with a discussion on letter ballot responses. He felt that the feedback from the task group on the Main Committee ballot for this item did not address comments adequately. Several suggestions were made from Committee members on how some concerns could be addressed. Mr. Getter stated that the proposal will go back to the task group for further work.		

Item Number: 22-06	NBIC Location: Part 2, 3.4.9 e)	No Attachment
General Description: Part 2 task group to review Part 3 Item 21-53 **Subgroup:** Inspection **Task Group:** M. Horbaczewski (PM), J. Clark, B. Wilson, J. Mangas, P. Polick, H. Henry, P. Gilston, B. Ray, and T. Bolden **Submitted by:** D. Graf **Explanation of Need:** Part 2 task group to investigate further changes to Part 2/Part 3 that could be needed because of action item 21-53.		
July 2024 Meeting Action: Mr. Getter provided a progress report for this item.		

Item Number: 22-26	NBIC Location: Part 2, 2.3.6.8	No Attachment

General Description: Addition of cast acrylic as a pressure vessel material

Subgroup: Inspection
Task Group: J. Calvert (PM), V. Newton, D. Buechel, D. Rose
Submitted by: J. Calvert

Explanation of Need: Provide inspectors with the criteria necessary to competently inspect vessels like acrylic chromatography columns.

July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 22-39	NBIC Location: Part 2, 4.4.8.7 g)	Attachment Page 92

General Description: Recommended clarification of requirements for Evaluating Local Thin Areas

Subgroup: Inspection
Task Group: V. Newton (PM), T. Barker, J. Morgan, B. Wilson
Submitted by: L. Ponce

Explanation of Need: The existing text may lead to confusion due to a misplaced comma after 'specified' in the first sentence and no reference to what is being specified in the paragraph. The proposed text is a way to tie in the specified requirement in paragraph (f).

July 2024 Meeting Action: Mr. Getter presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: 23-08	NBIC Location: Part 2	No Attachment

General Description: Part 2 task group to review Part 3 Item 21-67

Subgroup: Inspection
Task Group: M. Horbaczewski (PM), J. Clark, B. Wilson, J. Mangas, P. Polick, H. Henry, P. Gilston, B. Ray, T. Bolden, T. LeBeau, and A. Triplett
Submitted by: D. Graf

Explanation of Need: Part 2 task group to investigate further changes to Part 2/Part 3 that could be needed because of action item 21-67.

July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 23-17	NBIC Location: Part 2, 2.3.6.4 and 4.4.8.7	Attachment Page 93

General Description: Steel-loss acceptance criteria for pressure-retaining items

Subgroup: Inspection
Task Group: D. Graf (PM), B. Ray, J. Roberts, T. Vandini, C. Becker, J. Sowinski, and J. Hadley
Submitted by: J. Hadley

Explanation of Need: (1) Resolve inconsistencies between the 2021 NBIC's air, ammonia, LPG, and general acceptance criteria.

(2) Provide screening criteria that, if met, would ensure that a pressure-retaining item also meets the conservative criteria in API 579-1/ASME FFS-1, Fitness-For-Service, 2021 edition, "ASME FFS-1", Part 3 Level 1 (brittle fracture) and either Part 4 Level 2 or Part 5 Level 1 (wall thinning). If not met, an owner/user could fall back on more complex, less conservative, ASME FFS-1 assessments.

(3) Describe steel-loss screening criteria in one location within NBIC, and reference this location when needed, to facilitate future revisions.

(4) Coordinate NBIC with ASME FFS-1. They have been referencing each other for some years, so coordinating them seems worthwhile.

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July 2024 Meeting Action: Mr. Getter presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: 23-27	NBIC Location: Part 2, 1.5.1	No Attachment

General Description: Addition of requirement for Inspector to be present for inspections.

Subgroup: Inspection
Task Group: V. Newton (PM), V. Scarcella, T. Bolden, J. Morgan, J. Smith, T. Barker, C. Becker, C. Hartford
Submitted by: D. Kinney

Explanation of Need: While it has always been standard industry practice for inspections to be performed in-person, and there are requirements for remote inspection, currently there is no language in Part 2 or RCI-1 requiring the Inspector to be present at the location of installation while performing an inspection. This requirement is implied, but not stated.

July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 23-81	NBIC Location: Part 2, 4.4.3 b)	No Attachment
General Description: Evaluate Inspector responsibilities relating to 4.4.3 FFS **Subgroup:** Inspection **Task Group:** M. Horbaczewski (PM), J. Clark, & B. Ray **Submitted by:** R. Underwood **Explanation of Need:** Currently, 4.4.3-b states the Inspector shall review the condition assessment methodology and ensure the inspection data and documentation are in accordance with Section 4. This proposal would redefine the role and responsibility of the Inspector.		
July 2024 Meeting Action: Mr. Getter provided a progress report for this item.		

Item Number: 24-03	NBIC Location: Part 2, S6	No Attachment
General Description: Wording Updates for Clarity **Subgroup:** Inspection **Task Group:** B. Wilson (PM), R. Kennedy, and J. Smith **Submitted by:** L. Ponce **Explanation of Need:** Part 2 Supplement 6 should be revised to align with Part 3, Suppl 6 and the DOT. A few references are S6.4.2 a), S6.4.2 c), S6.4.4, S6.4.5, S6.4.6, and S6.4.6.1. However, this may not be an all-inclusive list.		
. **July 2024 Meeting Action:** Mr. Getter provided a progress report for this item.		

iii. New Items:

Item Number: 24-28	NBIC Location: Part 2, S9.9 b) 4)	No Attachment
General Description: Applying PWHT to previously "as welded" item **Subgroup:** Inspection **Task Group:** None assigned. **Submitted by:** J. Swezy **Explanation of Need:** The NBIC clearly lists the application of PWHT to a PRI that was not previously PWHT by the original Manufacturer as an example of an alteration. I agree with that statement and believe it is appropriate to consider this to be an alteration. I do not under why the NBIC considers this as an acceptable alteration but does not provide its users with any guidance as to how they should address its implementation. It seems very clear to me that applying PWHT to such welds is rarely detrimental when properly applied and should not reduce their strength or toughness. If anything it should prove helpful rather than harmful under properly considered application. Good engineering practice mandates that a carbon steel vessel undergoing a change to wet H2S service should receive PWHT to provide an improved resistance to hydrogen cracking corrosion. Failing to do so would be irresponsible. The NBIC rules for a change of service even mention this as a factor to consider in Part 2, Table S-9.4.		
July 2024 Meeting Action: Mr. Getter provided a progress report for this item.		

Item Number: 24-37	NBIC Location: Part 2, 2.2.10	No Attachment

General Description: Add language in the event boiler can't be secured at the time of inspection

Subgroup: Inspection
Task Group: None assigned.
Submitted by: V. Scarcella

Explanation of Need: In some circumstances boilers cannot be shut down and a dead man switch is not allowed.

July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 24-42	NBIC Location: Part 2, 2.4.1 and 2.4.4	No Attachment

General Description: Add language to NBIC Part 2 in regards to piping inspections

Subgroup: Inspection
Task Group: None assigned.
Submitted by: V. Scarcella

Explanation of Need: Two fatal incidents resultant from radiator failure prompted an ask for these changes.

July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 24-48	NBIC Location: Part 2, Table S9.4	Attachment Page 94

General Description: Part 2, Table S9.4 - clarify service condition changes

Subgroup: Inspection
Task Group: None assigned.
Submitted by: M. Vance

Explanation of Need: For Column 1, Row 7, please explain what gas services are being described. For Column 1, Row 10, please spell out what ICC is because the acronym is unclear (is this the manufacturer ICC or something else?)

July 2024 Meeting Action: Mr. Getter presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: 24-55	NBIC Location: Part 2, S9.3 a) and c)	Attachment Page 95

General Description: Overpressure protection considerations for a change in service.

Subgroup: Inspection
Task Group: None assigned.
Submitted by: L. Ponce

Explanation of Need: Overpressure protection can apply to both S9.3 a) Design Considerations and S9.3 c) Environmental. A change in design due to a change in service with regard to overpressure protection may be possible. In addition, S9.3 c) 2) could be explained in more detail to add considerations for a 'safe point of discharge' and 'environmental regulation compliance' if the change in service includes substances and applications that will be harmful to the environment.

July 2024 Meeting Action: Mr. Getter presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: 24-58	NBIC Location: Part 2, 4.4.3 b)	Attachment Page 97

General Description: Add requirements for the drain valve to be locked/tagged open.

Subgroup: Inspection
Task Group: None assigned.
Submitted by: L. Ponce

Explanation of Need: Currently, there is no requirement for the drain valve or cock to be locked/tagged in the open position when between the stop valves in a required double block and bleed configuration. This item is created for the committee to consider adding this requirement for safety purposes.

July 2024 Meeting Action: Mr. Getter presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: 24-59	NBIC Location: Part 2, 5.3.2	No Attachment

General Description: NB-6 and NB-7 forms

Subgroup: Inspection
Task Group: None assigned.
Submitted by: D. Buechel

Explanation of Need: Align fields with how data is entered in JRS.

July 2024 Meeting Action: Mr. Getter made a motion to close this item because the subgroup and subcommittee determined that National Board staff can make the proposed changes editorially. This motion passed unanimously

Item Number: 24-62	NBIC Location: Part 2, Section 2	No Attachment

General Description: Temporary Boiler Inspection

Subgroup: Inspection
Task Group: None assigned.
Submitted by: V. Scarcella

Explanation of Need: No guidance for inspectors for temporary boiler inspections.

July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 24-69	NBIC Location: Part 2, S12.4 c)	Attachment Page 98

General Description: CO2 is heavier than air; Part 2, S12.4 c) should say "above" not "below"

Subgroup: Inspection
Task Group: None assigned.
Submitted by: G. Scribner

Explanation of Need: CO2 is like the foam on a beer mug flowing over, it is heavier than air. being below and an air intake it goes down so should not be a issue, if it is above an air intake it will be dropping down and go into the air intake.

July 2024 Meeting Action: Mr. Getter presented a proposal for this item. A motion was made and seconded to approve the proposal. This motion passed with one disapproval vote. The reason for the disapproval was that “the proposed wording is incorrect and misleading. It does not specify if the 10 ft above is a minimum or maximum. Per NFPA 55, the CO2 storage needs to be 10 ft from an air intake, regardless of elevation (above or below).”

Item Number: 24-71	NBIC Location: Part 2, 5.3.3	Attachment Page 99

General Description: Changes to NB-136 Instructions

Subgroup: Inspection
Task Group: None assigned.
Submitted by: G. Scribner

Explanation of Need: Clarification.

July 2024 Meeting Action: Mr. Getter presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: 24-74	NBIC Location: Part 2, 2.3.6.5 b) 2) b.	Attachment Page 100
General Description: change "would be necessary" to "shall" **Subgroup:** Inspection **Task Group:** None assigned. **Submitted by:** G. Scribner **Explanation of Need:** Clarity.		
July 2024 Meeting Action: Mr. Getter presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.		

11. Liaison Activities

i. American Society of Mechanical Engineers BPV Code (ASME BPV)

a. Mr. Scribner provided a brief update on ASME activities. Mr. Brent Ray also spoke on the upcoming PCC-2 meeting and developments for the next edition of the code.

ii. American Welding Society (AWS)

a. Mr. Sekely provided an update on recent AWS activities. A summary of his report can be found on Attachment Page 101.

iii. American Petroleum Institute (API)

a. Mr. Ray spoke on recent API activities. He stated that the API committees may be looking for participation from NBIC committee members soon, as some upcoming projects will have some overlap.

12. Future Meetings

i. January 13th-16th, 2025 – Charleston, SC

ii. July 2025 – TBD

13. Adjournment

The meeting adjourned at 2:40 p.m. Eastern Time.

Respectfully submitted,

Jonathan Ellis

Jonathan Ellis
NBIC Secretary

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD INSPECTION CODE COMMITTEE

ATTACHMENTS

July 2024 Main Committee Meeting Attendance - Members

Last, First	Email	Company Name	In-Person	Remote	Did Not Attend
Galanes, George	ggalanes@diamondtechnicalservices.com	DTS Inc.	x		
Wadkinson, Melissa	melissa.wadkinson@fulton.com	Fulton Thermal Corp	x		
Ellis, Jonathan	jellis@nbbi.org	NBBI	x		
Barker, Tim	timothy.barker@fmglobal.com	FM Global	x		
Beise, Kim	kbeise@dowcovalve.com	Dowco Valve Company Inc			x
Getter, Jim	jmgetter57@gmail.com	Worthington Enterprises	x		
HOPKINS, CRAIG	CHOPKINS@SEATTLEBOILER.COM	Seattle Boiler Works, Inc.		x	
Kinney, Don	don.kinney@labor.nc.gov	North Carolina Boiler Safety Bureau	x		
Moore, Kathy	kathymoore@joemoorecompany.com	Joe Moore & Company, Inc.	x		
Morelock, Brian	Poppymorelock@gmail.com	Eastman Chemical Company			x
Newton, Venus	venus.newton@bpcllcga.com	BPC/XLIA	x		
Patel, Thakor	thakorpatel1@gmail.com	Consultant		x	
Patten, Donald	dpatten@baycityboiler.com	Bay City Boiler Co., Inc.		x	
Polick, Pat	patrick.polick@illinois.gov	State of Illinois	x		
Ray, Brent	bdray@marathonpetroleum.com	Marathon Petroleum Corporation	x		
Renaldo, Adam	ADAM.RENALDO@LINDE.COM	Linde	x		
Richards, H. Michael	Hmichaelrichards.pe@gmail.com	Southern Company	x		
Schaefer, Ben	bschaefer@aep.com	AEP	x		
Seime, Trevor	tsseime@nd.gov	State of ND	x		
Sekely, Jim	jsekely@comcast.net	Welding Services, Inc.		x	
Simmons, Tim	tsimmons@boilermakers.org	International Brotherhood of Boilermakers	x		
Toth, Marty	mtoth@boiscotraininggroup.com	ECS Consulting & the Boisco Training Group	x		
Underwood, Bob	robert_underwood@hsb.com	HSB	x		
Wiggins, Eddie	edward.wiggins@labor.alabama.gov	Alabama Dept of Labor	x		

July 2024 Main Committee Meeting Attendance - Visitors

Last, First	Email	Company Name	In-Person	Remote	Did Not Attend
Adams, Rodger	rodger.adams@zurichna.com	Zurich			x
Ahee, Bryan	bahee@bradfordwhite.com	BWC	x		
Ahmed, Shabbir	shabbirahmedpk@gmail.com	TUV Rheiland			x
Al-Shehri, Merai	shehrimf@sabic.com	SABIC			x
Amato, Joel	jamato@nationalboard.org	NBBI	x		
Anderson, Chris	canderson@lmce.solutions	Liquid Metal			x
Anderson, Rich	RAnderson@ICCSafe.org	International Code Council Inc			x
Baker, Lane	lbaker@us.tuv.com	TUV Rheinland	x		
Barr, Larry	lbarr@propanetank.com	Quality Steel Corporation		x	
Bates, Johnathon	bates@ibb026.org	Boilermakers	x		
Beauregard, Joseph	jbeauregard@lanl.gov	Los Alamos National Laboratory	x		
Becker, Charles	hggbecker@yahoo.com	Bureau Veritas			
Becker, Pat	pbecker3135@gmail.com	EPRI	x		
Bello, Jackson	jacksonbello34@yahoo.com	Province of manitoba			x
Berny, Howard	howard.j.berny@state.mn.us	State of Minnesota	x		
Black, Robert	rkjcblack@aol.com	Amercian Boiler Manufacturers Association (ABMA)	x		
Boseo, Brian	bmboseo@burnsmcd.com	Burns & McDonnel			
Burpee, John	john.h.burpee@maine.gov	State of Maine	x		
Burton, Lee	BURTONDL@AIRPRODUCTS.COM	Air Products & Chemicals	x		
Calderon, Benjamin	benjamin.calderon@libertymutual.com	Liberty Mutual Insurance			x
Carlson, Mike	camx235@lni.wa.gov	State of Washington	x		
Ceccarelli, Ray	raymond.ceccarelli@fmglobal.com	FM Global			
Chatham, Everett	echatham@becht.com	Becht	x		
Chiasson, Nancy	nancypchiasson@gov.pe.ca	Province of Prince Edward Island		x	
Clark, Tom	thomas.g.clark@dcbs.oregon.gov	State of Oregon, Building Codes Division	x		
Clemens, Mark	mclemens@nbbi.org	NBBI	x		
Collins, Riley	rileycollins@eastman.com	Eastman Chemical Company	x		
Creaser, Eben	eben.creaser@gmail.com	Province of New Brunswick		x	
Cruz Montoya, Gonzalo	gonzalo.cruz@smurfitkappa.com.co	Smurfit Kappa Colombia			x
Cummins, Keith	keith.cummins@mersen.com	Mersen	x		
Dacanay, Julius	julius.j.dacanay@hawaii.gov	State of Hawaii		x	
Davis, Paul	paul.davis22@woodplc.com	Wood Group	x		
Derrick, Kiwi	kiwi.derrick@chevron.com	Chevron	x		
Dexter, David	dexterde@dow.com	Dow Chemical			x

			In-Person	Remote	Did Not Attend
Dhobi, Prakash	prakash.dhobi@lakesidecontrols.com	Lakeside Process Controls			x
Dutra, Louis	dutra@baycityboiler.com	Bay City Boiler	x		
Eder, Karl	karl.eder@lrqa.com	LRQA		x	
Fadley, Karla	kfadley@nbbi.org	NBBI	x		
Ferreira, Jon	jonathan_ferreira@hsb.com	Hartford Steam Boiler			x
Frazier, Steve	steve.frazier@seattle.gov	City of Seattle		x	
Fumey, Devin	devin.fumey@fulton-pacific.com	Fulton Equipment Pacific	x		
Gilston, Philip	philip_gilston@hsb.com	Hartford Steam Boiler	x		
Goossens, Greg	ggoossens@nationalboard.org	NBBI	x		
Grace, Jeremy	Jeremy.Grace@Chemours.com	Chemours		x	
Graf, Darrell	darrellgraf@bellsouth.net	Retired	x		
Griffith, Wil	william.griffith@zurichna.com	Zurich			x
Hackworth, William	william.hackworth@tuvsud.com	ARISE Boiler Inspection Insurance Company, RRG			x
Haney, JR	clifford.haney@tuvsud.com	Arise	x		
Hartford, Christopher	christopher_hartford@cinfin.com	Cincinnati Insurance		x	
Hellman, Terrence	thellman@nationalboard.org	The National Board of Boiler and Pressure Vessel Inspectors	x		
Henson, Adam	adam.henson@csb.gov	U.S. Chemical Safety Board	x		
Horbaczewski, Mark	mhorbaczewski@diamondtechnicalservices.com	Diamond Technical Services	x		
Jones, David	david.jones@regoproducts.com	Engineered Controls International			x
Jordan, Mark	mark.jordan@ky.gov	Commonwealth of Kentucky	x		
Khssassi, Aziz	aziz.khssassi@rbq.gouv.qc.ca	Régie du Bâtiment du Québec	x		
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Kopp, Gavin	gavin@stateboilerinspectors.com	Arizona Boiler Inspectors		x	
LeBeau, Tim	tclebeau@southernco.com	Southern Company Services			x
Lynch, Daniel	danl@isbservices.com	ISB			
Mancovsky, Justin	justin.mancovsky@wthg.com	Worthington Enterprises			x
Marek, Daniel	daniel.t.marek@nasa.gov	Mainthia Technologies Inc		x	
Marks, Stacey	stacey.marks@bureauveritas.com	Bureau Veritas Inspection & Insurance	x		
McBee, Tim	Timothy.McBee@tuvsud.com	ARISE	x		
McGuire, Robert	robert.b.mcguire@ge.com	GE Steam Power Boilers, GE Vernova		x	
McHugh, David	dpmbstrg@outlook.com	D McHugh	x		
Merrill, Connor	cjmerri@Nppd.com	Nebraska Public Power District			x
Metzmaier, Jodi	jmetzmaier@nbbi.org	National Board	x		
Mirjalali, John	jmirjalali@intellihot.com	Intellihot		x	
Mooney, Mark	mmooney@nbbi.org	The National Board of Boiler and Pressure Vessel Inspectors	x		
Mosley, Darris	Darrismosley@yahoo.com	Occidental Petroleum Corporation		x	
Moultrie, Clay	cmoultrie@propanetank.com	Quality Steel Corporation		x	
Paige, Terence	terence.paige1@ge.com	GE Vernova		x	
Petersen, Jeff	petejc@inl.gov	Idaho National Laboratory (Battelle Energy Alliance)	x		
Ponce, Luis	lponce@nationalboard.org	National Board of Boiler and Pressure Vessel Inspectors	x		
Quisenberry, Michael	michael@spartan-mech.com	Spartan Boiler			
ramirez, ely	ely.ramirez@sharkytraining.com	Mechanical integrity consultants			x
Ray, Mark	aw90@epbfi.com	Tennessee Valley Authority			x
Roberts, James	james.roberts@triarccorp.com	TRIARC Tank	x		
Rogers, Christa	crogers@nationalboard.org	NBBI	x		
Ross, William	wross@pa.gov	Commonwealth of PA	x		
Schaser, Matt	mschaser@e2g.com	The Equity Engineering Group, Inc.	x		
Schirmer, Del	delrides@boilerproperty.com	XL Insurance America	x		
Scribner, Gary	gscribner@nationalboard.org	NBBI	x		
Selinger, Christopher	chris.selinger@tsask.ca	Technical Safety Authority of Saskatchewan		x	
Shanks, Paul	paul.shanks@onecis.com	BVI&I			x
Siefert, John	jsiefert@epri.com	Electric Power Research Institute	x		
Simms, Jay	jack.simms@bakerhughes.com	Baker Hughes			x
Speck-Kern, Edward	edward.speck-kern@fpl.com	Florida Power & Light Co.			
Spiker, Ronald	ronndj@gmail.com	State of South Carolina	x		
Spuhl, Raymond	raymond_spuhl@hsb.com	Hartford Steam Boiler			x
Steinhart, Brandon	brandon.steinhart@fmglobal.com	FM Global			x
Stimson, Rob	rob.stimson@ks.gov	State of Kansas		x	
Sullivan, Dave	dave@dksully.com	XL Insurance			x
Swezy, John	jswezy@becht.com	Becht Engineering			x
Troutt, Rob	rob.troutt@tdlr.texas.gov	State of Texas	x		

			In-Person	Remote	Did Not Attend
Vance, Michelle	mvance@nationalboard.org	NBBI	x		
Vandini, Tom	tvandini@propanetank.com	Quality Steel Corporation			x
Verderose, Ed	Ed@exithomepros.com	Miura America	x		
Viers, Bob	rviers@nationalboard.org	NBBI - Testing Laboratory	x		
Viet, Aaron	aaronmviet@gmail.com	CG Thermal LLC	x		
Wagner, Thomas	thomas.wagner@fmglobal.com	FM Global	x		
White, Thomas	thomas.white@nrg.com	NRG Enegy	x		
White, Wendy	wwhite@nbbi.org	NBBI	x		
Winters, Michael	michael@stateboilerinspectors.com	Arizona Boiler Inspectors			x

Title	Item Number	Cycle	Assigned Subgroup	Assigned Committee
Inspection of through stays and diagonal stays	21-03	A	Task Group Historical Boilers	Subcommittee Inspection
Align hot water boiler thermometer requirements with ASME Section IV	22-13	A	Subgroup Installation	Subcommittee Installation
Incorporate new repair methods for through and diagonal stays	21-09	A	Task Group Historical Boilers	Subcommittee Repairs/Alterations
Clarify that stamping is required prior to signing R Form	23-05	A	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Editorial change for Section 3, Para. 3.3.4.8 c) 5 and 6	23-06	A	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
2.2.4 updated to include not allowing combustibles	23-07	A	Subgroup Inspection	Subcommittee Inspection
Define "Fuel Loading" as it pertains to NR activities	21-02	A	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Create example inspection list	22-03	A	Subgroup Inspection	Subcommittee Inspection
Pressure Tests for Pressure Relief Valve Repair Parts	21-18	A	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
Lost or Destroyed UDS	22-12	A	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Parts used in NR Activities	21-37	A	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Update duplicate nameplate marking requirements in Supplement 6	22-34	A	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
Update reference of Section VIII steam valves to UV designated steam valves	22-35	A	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
Location of temperature controls	22-31	A	Subgroup Installation	Subcommittee Installation
Removal of the requirement of AIA audits from the NR program	22-29	A	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Deferral of inspection due dates (pressure relieving devices NBIC PART IV)	21-59	B	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
Revision to Part 3, S3.5.4 m)	23-44	B	Task Group Graphite	Subcommittee Repairs/Alterations
Requirements for Inlays as Routine Repairs	23-46	B	Task Group Graphite	Subcommittee Repairs/Alterations
Require separate waterside piping connections for multiple LWCO devices	23-50	B	Subgroup Installation	Subcommittee Installation
Replace "legal" with "company" in 1.5.1 a) Title Page	23-51	B	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
What is the meaning of "service limitations" as used in Part 4, 2.4.5?	22-15	B	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
Add Test Details to NBIC Part 4, 3.3.3.4 i) Valve Adjustment and Sealing	21-36	B	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
References to change of service for LPG vessels incorrectly use "altered"	23-30	B	Subgroup Inspection	Subcommittee Inspection
Revisions to Part 3, Supplement 6	20-67	B	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Examples of Repairs	21-82	B	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
DOT Transport Tank Pressure Testing (Part 2, Supplement 6)	23-19	B	Subgroup Inspection	Subcommittee Inspection
Changes to Part 3, 2.5.3.4 to clarify intent	23-22	B	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Name Plate replacement	23-25	B	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Update Table 2.3 to remove dates	23-33	B	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Gasket Surface Repair for Graphite Pressure Vessels	23-43	B	Task Group Graphite	Subcommittee Repairs/Alterations
Add language to Part 4, 3.2.6 to define test intervals for thermal fluid heater PRDs	20-85	B	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
Working Pressure Calculations for Curved Stayed Surfaces	21-34	B	Task Group Historical Boilers	Subcommittee Inspection
Drains in equipment rooms with heating boilers containing glycol.	22-30	B	Subgroup Installation	Subcommittee Installation
Add the applicable requirements for Auditors	23-58	C	Task Group NR	Subcommittee Repairs/Alterations
Requirements for who can make hole plugging repairs on graphite blocks	19-73	C	Task Group Graphite	Subcommittee Repairs/Alterations
R Certificate Holders with Design Only Scope	22-19	C	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Wording Updates	23-84	C	Subgroup Inspection	Subcommittee Inspection
Add welding requirements to plugging firetubes	21-67	C	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations

Revision and clarification of Part 4, 4.2.2 for use of ASME Code Cases	23-18	C	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
Add comment to further define responsability of the owner user	23-37	C	Subgroup Inspection	Subcommittee Inspection
Correction of duplicated words from approved A20-67 and A23-25	24-02	C	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Testing of liquid service valves to be water or other suitable liquid	23-31	C	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
Audit Requirements for the T/O holder	21-61	C	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
Revision to NB-136	23-28	C	Subgroup Inspection	Subcommittee Inspection
Adding requirements for Temporary Locations to Part 3, 1.4.1	21-31	C	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Reference NB-415 in Quality System	22-41	C	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Address Flush Patch Plate Weld NDT	23-04	C	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
New item for consistent addressing of the term for weld metal	23-13	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Change to Note on Tables Regarding Replacement of T&P Valves	24-63	D	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
Review Verbiage in Part 2, S2.10.4.2	24-23	D	Task Group Historical Boilers	Subcommittee Inspection
Alternative Welding Methods without PWHT- Competent Technical Advice	24-22	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Certification of Reports of Repair without stamping (Action Item with I24-39)	24-43	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Update definitions of Field, Shop, and add definition for Temporary Locations	23-69	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Correction of wording errors in NBIC Part 3, 1.5.1	24-13	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
NDE requirements	24-15	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Applicability of Table 1.5.1 d)	24-65	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
PRV Set Pressure Requirements for HW Heating & Supply Boilers	24-64	D	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
CO2 is heavier than air; Part 2, S12.4 c) should say "above" not "below"	24-69	D	Subgroup Inspection	Subcommittee Inspection
changing “Would be necessary” to “shall”	24-74	D	Subgroup Inspection	Subcommittee Inspection
Add requirements for the drain valve to be locked/tagged open.	24-58	D	Subgroup Inspection	Subcommittee Inspection
Autoclave/Quick Opening Device PP	21-25	D	Subgroup Inspection	Subcommittee Inspection
Owners vs NR Cert Holders stamping and certification criteria for Cat. 1	24-06	D	Task Group NR	Subcommittee Repairs/Alterations
Owners vs NR Cert Holders stamping and certification criteria for Cat. 2	24-07	D	Task Group NR	Subcommittee Repairs/Alterations
Owners vs NR Cert Holders stamping and certification criteria for Cat. 3	24-08	D	Task Group NR	Subcommittee Repairs/Alterations
Reference to change of service for LPG vessels incorrectly uses "altered"	24-12	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Allow the use of pressure relief valves on potable water heaters.	22-16	D	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices
Recommended clarification of requirements for Evaluating Local Thin Areas	22-39	D	Subgroup Inspection	Subcommittee Inspection
Steel-loss acceptance criteria for pressure-retaining items	23-17	D	Subgroup Inspection	Subcommittee Inspection
Revise language to be more formal (Part 1, S5.5.1)	24-57	D	Subgroup Installation	Subcommittee Installation
Clarify requirements for opening drain valve	24-31	D	Subgroup Installation	Subcommittee Installation
CO2 is heavier than air; Part 1, S3.3 c) should say "above" not "below"	24-68	D	Subgroup Installation	Subcommittee Installation
Updates to NB-136	24-71	D	Subgroup Inspection	Subcommittee Inspection
Rev. NB-23 Part 3, Supplement 8 & Fig. S8.3-b	23-78	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Change to Examples of Repairs	24-01	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Update the National Board Boiler Installation Report	20-62	D	Subgroup Installation	Subcommittee Installation
Requirements for Sealed Combustion Systems	24-73	D	Subgroup Installation	Subcommittee Installation
Review and improve guidance for T&P valve installation relating to probe.	22-08	D	Subgroup Pressure Relief Devices	Subcommittee Pressure Relief Devices

Relocating Existing Repairs to new Eng. Repair & Alteration Supplement	23-83	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Revision to Part 3 DOT Supplement re-write	23-86	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
PVHO Characteristics- review intent of list and potentially add requirement	24-32	D	Subgroup Installation	Subcommittee Installation
Changes and additions to align with part III with in service inspections	22-22	D	Subgroup Inspection	Subcommittee Inspection
Repair & Alterations definition	21-12	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations
Investigate repair options for graphite block heat exchangers	NB15-2208	D	Task Group Graphite	Subcommittee Repairs/Alterations
Graphite plate replacement as routine repair	23-45	D	Task Group Graphite	Subcommittee Repairs/Alterations
Revise Note 1 in Part 1, Figure 3.7.5.1-c for clarity	24-30	D	Subgroup Installation	Subcommittee Installation
Reusing pressure retaining items under alteration	23-62	D	Task Group Historical Boilers	Subcommittee Repairs/Alterations
Part 2, Table S9.4 - clarify service condition changes	24-48	D	Subgroup Inspection	Subcommittee Inspection
Overpressure protection considerations for a change in service.	24-55	D	Subgroup Inspection	Subcommittee Inspection
Strengthening Requirements for Defect Removal When Patching	23-41	D	Subgroup Repairs/Alterations	Subcommittee Repairs/Alterations

Original Proposal Text (used 2021 NBIC wording)	Amended Proposal Text (used 2023 NBIC wording)
1.3.2 Inspections and Certifications b) Before signing the appropriate NBIC Report Form, the Inspector shall review the drawings, ensure the repair or alteration was performed in accordance with the accepted code of construction or standard, witness any pressure test or any acceptable alternative test method applied, ensure that the required nondestructive examinations have been performed satisfactorily, verify the stamping or nameplate is correct and the nameplate has been properly attached where applicable, and that the other functions necessary to ensure compliance with the requirements of this code have been satisfactorily performed. ~~c) The Inspector shall verify the stamping or nameplate is correct and where applicable, the nameplate has been properly attached.~~	**1.3.2 Inspections and Certifications** b) Before signing the appropriate NBIC Form R Report, the Inspector shall verify all applicable Inspector duties have been performed as required in NB-263, RCI-1.
5.2 DOCUMENTATION a) Repairs that have been performed in accordance with the NBIC shall be documented on a Form R-1, *Report of Repair*, as shown in Supplement S9.2. A Form R-4, *Report Supplement Sheet*, as shown in Supplement S9.5, shall be used as needed to record additional data when the space provided on Form R-1 is not sufficient. b) Alterations performed in accordance with the NBIC shall be documented on a Form R-2, *Report of Alteration*, as shown in Supplement S9.3. A Form R-4, *Report Supplement Sheet*, as shown in Supplement S9.5, shall be used as needed to	**5.2 DOCUMENTATION** a) Repairs that have been performed in accordance with the NBIC shall be documented on a Form R-1, *Report of Repair*, as shown in Supplement S9.2. A Form R-4, *Report Supplement Sheet*, as shown in Supplement S9.5, shall be used as needed to record additional data when the space provided on Form R-1 is not sufficient. b) Alterations performed in accordance with the NBIC shall be documented on a Form R-2, *Report of Alteration*, as shown in Supplement S9.3. A Form R-4, *Report Supplement Sheet*, as shown in Supplement S9.5, shall be used as needed to record additional data when

record additional data when the space provided on Form R-2 is not sufficient.	the space provided on Form R-2 is not sufficient.
c) Form R reports shall not be certified until all applicable requirements of the NBIC, including the stamping requirements of 5.7, have been met.	c) Form R reports shall not be certified until all applicable requirements of the NBIC, including the stamping requirements of 5.7, have been met.
d) The organization performing repairs and alterations shall retain a copy of the completed Form “R” Report on file and all records and documentation substantiating the summary of work as described throughout Section 5, and as identified in the “R” Certificate Holder’s Quality System Manual.	~~c~~d) The organization performing repairs and alterations shall retain a copy of the completed Form “R” Report on file and all records and documentation substantiating the summary of work as described throughout Section 5, and as identified in the “R” Certificate Holder’s Quality System Manual. ~~d~~e) Unless otherwise required by the Jurisdiction, Form R Reports shall be completed and certified by the Certificate Holder and the Inspector no more than 90 days following the completion of construction activities or the completion of design activities when no construction work is performed.

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

PROPOSED INTERPRETATION

Item No.

I23-79 Rev 00

Subject/Title

Alternative Welding Method 6 - Controlled Fill

Project Manager and Task Group

P Gilston & R Derby

Source (Name/email)

Mark Kincs / mark.r.kincs@xcelenergy.com

Statement of Need

There is a lack of clarity as to the current requirement, need, and definition of controlled fill technique for application to Welding Method 6.

Background Information

In 2015 NBIC Part 3, 2.5.3.6 specifically mentions "controlled fill", but 2.5.3 d) calls for "temper bead" for 2.3.5.6. In 2017 NBIC Part 3, "temper bead" was changed to "controlled fill" in 2.5.3 d) for 2.5.3.6, but "controlled fill" was removed from 2.5.3.6 itself. Supplement 8, with specific controlled fill requirement for CSEF material was added in the 2017 NBIC Part 3.

Proposed Question

Does 2.5.3 d) require controlled fill bead placement for Welding Method 6 (2.3.5.6) similar to that described in S8.3?

Proposed Reply

No

Committee's Question 1

Does Welding Method 6 described in 2.5.3.6 require the use of a "controlled fill"?

Committee's Reply 1

Yes

Rationale

While 2.5.3.6 Welding Method 6 does not specifically call out a "controlled fill" technique, 2.5.3 d) states: 'Welding Method 6 as described in 2.5.3.6 requires use of a controlled fill technique.'

Committee's Question 2

Committee's Reply 1

Rationale

PROPOSED INTERPRETATION

Item No.

23-82

Subject/Title

Replacement of non-pressure retaining parts in Electrolyzer PEM Stack

Project Manager and Task Group

Source (Name/Email)

Kevin Choi / kevin.choi@accelerazero.com

Statement of Need

Need to determine if our company requires the NB R Certificate holder status.

Background Information

Hydrogenics is a manufacturer of hydrogen electrolyzers which operate on PEM (Proton Exchange Membrane) technology. The PEM stack operates at 30 bar (435 PSIG) pressure and is rated for a MAWP of 40 bar (580 PSIG) and we perform pneumatic pressure tests to ensure structural integrity according to ASME Sec VIII-1. At times we see cell shortage faults occurring which is not a failure of the pressure-retaining components but of components within the pressure vessel failing due to normal wear and tear.

Proposed Question

The engineers determine root cause and replace the damaged non-pressure bearing parts which requires disassembling the pressure vessel mechanically. Welding is not involved during the assembly process. Once the stack is assembled a combination of nuts and threaded rods are torqued to specification to “sandwich” the cells together and a 1.1x MAWP pneumatic test is performed. The non-pressure bearing parts are not described in the ASME U-1A form, but are part of the ITP package. Is this considered a Routine Repair? Is a R-1 form required to be filed for such activities?

Proposed Reply

This (is/ is not) considered a Routine Repair. As a result the R-1 form (is/ is not) required.

Committee's Question 1

Is the replacement of mechanically installed non-pressure parts not listed on the MDR within a mechanically assembled ASME Section VIII pressure-retaining item that does not affect the pressure parts considered a repair or routine repair by the NBIC?

Committee's Reply 1

No, the NBIC does not address the requirements for mechanical repairs to these types of components.

Rationale

Since the non-pressure parts are not attached to the PRI by welding, are not listed on the MDR, and do not affect the pressure parts of the PRI, it is not considered a repair or routine repair.

Committee's Question 2

Is the mechanical assembly of an ASME Section VIII pressure-retaining item after only mechanically installed non-pressure parts have been replaced required to be documented on Form R-1, Report of Repair.

Committee's Reply 2

No, this is beyond the scope of NBIC, Part 3.

Rationale

See rationale from Question 1.

PROPOSED INTERPRETATION

Item No.

24-10

Subject/Title

Qualification requirements for AIA Audit

Project Manager and Task Group

Source (Name/Email)

Raymond Spuhl / raymond_spuhl@hsb.com

Statement of Need

The 2023 Edition of the NBIC added the requirement for the ANI performing NR activities to have the N, R, and I endorsements. This raises the question as to the intent of the NBIC as to what endorsements are required for the Supervisor that oversees the ANI's work and performs the audit of the NR CH.

Background Information

RCI-1 contains specific requirements for the ANI and ANIS. Neither of which require the R or I endorsements. Since these endorsements have been added to the NR Quality Program requirements in the NBIC, the industry needs clarification on the Supervisor qualifications. A change to the NBIC to address the endorsements required for the Supervisor is being worked on under Record 23-58 and 23-60.

Proposed Question

Is the annual audit by the AIA of the NR CH required to be performed by the ANIS? If so, is the ANIS required to be qualified as an ANIS and ANII per RCI-1? Is the ANIS required to be qualified as an ANIIS per RCI-1?

Proposed Reply

Yes Yes No

Committee's Question 1
Does NBIC Part 3, 1.6.4 d) require the annual audit to be performed by the Authorized Nuclear Inspector Supervisor?

Committee's Reply 1

No.

Rationale

NBIC Part 3, 1.6.4 d)

Committee's Question 2

Committee's Reply 2

Committee's Question 3

PROPOSED INTERPRETATION

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Item No.

24-29

Subject/Title

Volumetric NDE requirements for welded repairs to pressure vessels

Project Manager and Task Group

Marty Toth (PM), Mike Quisenberry, Robert Derby

Source (Name/Email)

Michael Schultz / michael.w.schultz@exxonmobil.com

Statement of Need

Urgent - scheduled maintenance event upcoming

Background Information

Specific vessel currently in question is a refinery Coke Drum (1.5" plate thickness with 0.100" corrosion resistant clad. Vessel has highly localized corrosion due to cladding damage. Once excavated for repair the corroded locations will exceed the 4.2a size restrictions. Original welds were RT inspected. Weld repairs will be completed via temperbead procedure with elevated preheat.

Proposed Question

Part 3 Section 4 (4.2a) was amended in the 2023 edition including more restrictive NDE requirements than previous editions for vessels constructed with volumetric NDE. Please confirm the intent of this update. It is currently being interpreted to require volumetric NDE on all welds to a pressure vessel (original weld seam OR plate material away from weld seam) that do not meet the depth (<1\8") and length (<6") restrictions. Is this interpretation correct?

Proposed Reply

Inspector discretion is allowed when volumetric testing is not possible/practicable

Committee's Question 1

Are repairs and alterations to base metal and/or corrosion-resistant cladding of pressure-retaining items originally examined utilizing volumetric NDE subject to the conditional requirements outlined in 4.2 for nondestructive examinations?

Committee's Reply 1

Yes

Rationale

If the original code of construction calls for the volumetric NDE before or following corrosion-resistant cladding, then the repair and/or alteration must adhere to the requirement outlined in 4.2 – Nondestructive Examination.

Committee's Question 2

Committee's Reply 2

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Rationale

4.2. – Nondestructive Examination specifically states this allowance.

PROPOSED INTERPRETATION

Item No.

24-39

Subject/Title

Certification of NR-1 without stamping

Project Manager and Task Group

Source (Name/Email)

Terrence Hellman / thellman@nationalboard.org

Statement of Need

Given I21-16 requirements, clarity is needed for NR work where the lack of NR stamping due to a practical matter, not necessarily a jurisdictional reason, may preclude certifying an NR-1.

Background Information

I21-16 states that an Inspector shall not certify the R-1 if the Jurisdictional requirements do not meet the NBIC requirements. Would the lack of NR stamping due to a practical matter, not necessarily a jurisdictional reason, also preclude certifying an NR-1?

Proposed Question

Would repair or replacement work done remotely in a hot space that is too hot to allow the stamping of the NR mark on the item also preclude certifying the NR-1?

Proposed Reply

No, provided the NR-1 indicated the stamping was not possible, but all other parts of the NBIC were adhered to.

Committee's Question 1

Is it the intent of the NBIC to allow certification of the NR-1 or NVR-1 form without application of the NR stamp or nameplate when repair or replacement work is in a space that is dangerous due to radioactivity?

Committee's Reply 1

Yes, provided the Owner is also the “NR” Certificate Holder and application of the National Board Code Symbol is not possible because of personnel safety or potential contamination, and all other requirements of the NBIC have been met, stamping of or attachment of a nameplate may be waived with the acceptance of the Jurisdiction provided it is addressed in the NR Certificate Holder’s QA program. Justification shall be noted in the “Remarks” section of the Form NR-1 or Form NVR-1.

Rationale

Rationale

PROPOSED INTERPRETATION

Item No.

24-41

Subject/Title

4.4.2 (a) Pressure testing Connection Welds

Project Manager and Task Group

Source (Name/Email)

Steven Hoffmann / steven_hoffmann@hsb.com

Statement of Need

There seem to be some different opinions among inspectors and R certificate holders when 4.4.2 (a)(1&) refers to replacement parts. Some inspectors and R certificate holders have the opinion that those replacement parts referenced in 4.4.2 (a) are only welded replacement parts, while others have the opinion that the replacement parts are not limited to just welded parts, but apply to all replacement parts.

Background Information

Company A is performing an alteration where the only welding involved is attaching the new material directly to the pressure retaining item, there are no Code stamped parts. Company A is proposing to test the weld using a pressure test or NDE in accordance with paragraph 4.4.1 by referencing paragraph 4.4.2(a)(2).

Proposed Question

Do replacement parts as referenced in 4.4.2(a)(1 & 2) include those parts as defined in 3.2.2(a) and 3.2.2(b)?

Proposed Reply

Yes

Committee's Question 1

Do replacement parts as referenced in 4.4.2(a)(1 & 2) include those parts as defined in 3.2.2(a) and 3.2.2(b)?

Committee's Reply 1

Yes.

Rationale

Committee's Question 2

Committee's Reply 2

Rationale

PROPOSED INTERPRETATION

Item No.

24-45

Subject/Title

Correct method for reporting Date Repaired on R form

Project Manager and Task Group

Source (Name/Email)

Alexander Garbolevsky / alex_garbolevsky@hsb.com

Statement of Need

Repair stampings are often encountered in the field with "Date Repaired" indicated by "month and year" as well as with "month, day and year." Repair Organizations and Inspectors occasionally disagree as to whether "month and year" is sufficient.

Background Information

NBIC Part 3 [2023], 5.7.2(c) states: The date of each repair, corresponding with the date on associated Form R-1, shall be stamped on the nameplate. Since the subject of that subparagraph deals with multiple repairs, this is especially important. What if a firm does a repair on April 1, stamps the nameplate as "4/2024", and needs to come back for another repair on April 15? Although there are repair stampings encountered in the field that only indicate month / year, in my opinion, the instructions for the Form R-1 in Supplement 9, Table S9.2 suggest "date" means a specific "month, day, and year". See Circled Number (37): Indicate month, day, and year of final inspection by Inspector. For routine repairs this shall be the month, day, and year the Inspector reviews the completed routine repair package." also Circled Number (40): Indicate month, day, and year of Inspector signature.

Proposed Question

When "Date Repaired" is required on a Repair nameplate or stamping, must it include month, day and year?

Proposed Reply

Yes

Committee's Question 1

When "Date Repaired" is required on a Repair nameplate or stamping, must it include month, day and year?

Committee's Reply 1

Yes

Rationale

NBIC Part 3, 5.7.2 states “The date of each repair, corresponding with the date on associated Form R-1, shall be stamped on the nameplate” and the supplement states the date includes Day, Month, and Year.

Committee's Question 2

Committee's Reply 2

Rationale

PROPOSED INTERPRETATION

Item No.

24-51

Subject/Title

NBIC Part 3, 3.3.4.6 Flush Patches that Intersect Existing Welds

Project Manager and Task Group

Source (Name/Email)

Zach Bachstein / zbachstein@cimarron.com

Statement of Need

NBIC Part 3 paragraph 3.3.4.6 details controls for flush patches but does not appear to address controls for flush patches that intersect a new or existing weld.

Background Information

A flush patch repair is planned to replace the bottom portion of a pressure vessel. The corners of the flush patch shall be rounded to meet the requirements of NBIC Part 3, 3.3.4.6(a)(2), but we feel the rounded tie-in to the girth seams creates a greater stress riser than if the corners were squared. ASME PCC-2 paragraph 201-3 provides rules for this situation, but since the corners contradict the requirements of NBIC Part 3, and NBIC Part 3, 3.2.6 says the NBIC rule take precedence, it cannot be considered a NBIC repair.

Proposed Question

Question 1: Does NBIC Part 3, 3.3.4.6 address flush patches that intersect existing welds. Question 2: May a “doghouse patch” described in ASME PCC-2 (2022) paragraph 201-4.4.1 and shown in Figure 201-3.8-2 be used in flush patch repairs that intersect new and existing welds provided it is acceptable to the Inspector and Jurisdiction, when required

Proposed Reply

Question 1: No Question 2: Yes

Committee's Question 1

Is it the intent of NBIC Part 3, 3.3.4.6 that square corners in flush patches that intersect existing weld seams are prohibited?

Committee's Reply 1

No

Rationale

Committee's Question 2

Committee's Reply 2

Rationale

PROPOSED INTERPRETATION

Item No.

24-52

Subject/Title

Clarification of Routine Repair classification of welded in diaphragms.

Project Manager and Task Group

Source (Name/Email)

Certificate Administrator / victor.kidwell@lge-ku.com

Statement of Need

Clarification of Routine Repair classification of welded in diaphragms. Because of the confusion regarding this repair vs routine repair classification we have faced multiple delays at different power plants over the past three years.

Background Information

LGE KU (R9646) has installed many welded in diaphragms on feedwater heaters and classified each as routine repairs under the guidance of the Kentucky Jurisdiction. During our renewal review in October 2020 the Team Leader wrote a Deficiency - "Many of the repairs were characterized as Routine Repairs, but were not. These repairs consisted of welding in replacement diaphragms located under the bolted manway. The team leader closed this with a corrective action stating these types of repairs would not be treated as routine.

Proposed Question

Does paragraph 3.3.2 e) 5 "Seal welding of a mechanical connection for leak tightness where by- design, the pressure retaining capability is not dependent on the weld for strength and requires no postweld heat treatment" apply to welded in diaphragms installed in feedwater heaters where the diaphragm is not the pressure retaining item? (A head is bolted on to the flange outside the seal welded diaphragm.)

Proposed Reply

Interpretation confirming an email response to this question on 4/4/2024 from Gary L. Scribner, Assistant Executive Director, Technical - as follows - It is my opinion that this is a routine repair in accordance with the NBIC Part 3, 3.3.2, e), 5, Seal welding of a mechanical connection for leak tightness where by- design, the pressure retaining capability is not dependent on the weld for strength and requires no postweld heat treatment.

Committee's Question 1
Does paragraph 3.3.2 e) 5 "Seal welding of a mechanical connection for leak tightness where by- design, the pressure retaining capability is not dependent on the weld for strength and requires no postweld heat treatment" apply to welded in diaphragms installed in feedwater heaters where the diaphragm is not the pressure retaining item? (A head is bolted on to the flange outside the seal welded diaphragm.)

Committee's Reply 1

Yes

Rationale

Committee's Question 2

Committee's Reply 2

Rationale

PROPOSED INTERPRETATION

Item No.

24-53

Subject/Title

NBIC Part 3, 3.3.4 in relation to ASME PCC-2 Article 212

Project Manager and Task Group

Source (Name/Email)

Roy Darby / roy.darby@chevron.com

Statement of Need

As this sort of configuration is compliant with the original Code Of Construction and guidance is supplied by an industry-recognized document on repair of pressure equipment, it isn't clear why it would be prohibited. When properly engineered and correctly installed, this sort of alteration could extend the life of damaged vessels.

Background Information

Legacy NBIC interpretations 93-02 and 95-06 suggest that installation of patches using fillet welds would not be permitted. These interpretations pre-date the publication of ASME PCC-2, Article 212 though. Also, lap joints with only fillet welds are permitted by ASME Section VIII Division 1 for all categories of joints. As this sort of configuration is compliant with the original Code Of Construction and guidance is supplied by an industry-recognized document on repair of pressure equipment, it isn't clear why it would be prohibited.

Proposed Question

May a wasted area on a vessel have a lap patch installed as an alteration provided that all rules and requirements of ASME PCC-2, Article 212 are met as well as rules and requirements of the original Code Of Construction are met including for the installation of lap joints and fillet welds (such as UW-36 of ASME Section VIII Division 1)?

Proposed Reply

Yes.

Committee's Question 1

May a fillet welded lap patch be installed on a pressure retaining item?

Committee's Reply 1

No.

Rationale

The weld must be a full penetration weld per 3.3.4.6 a) 1).

Committee's Question 2

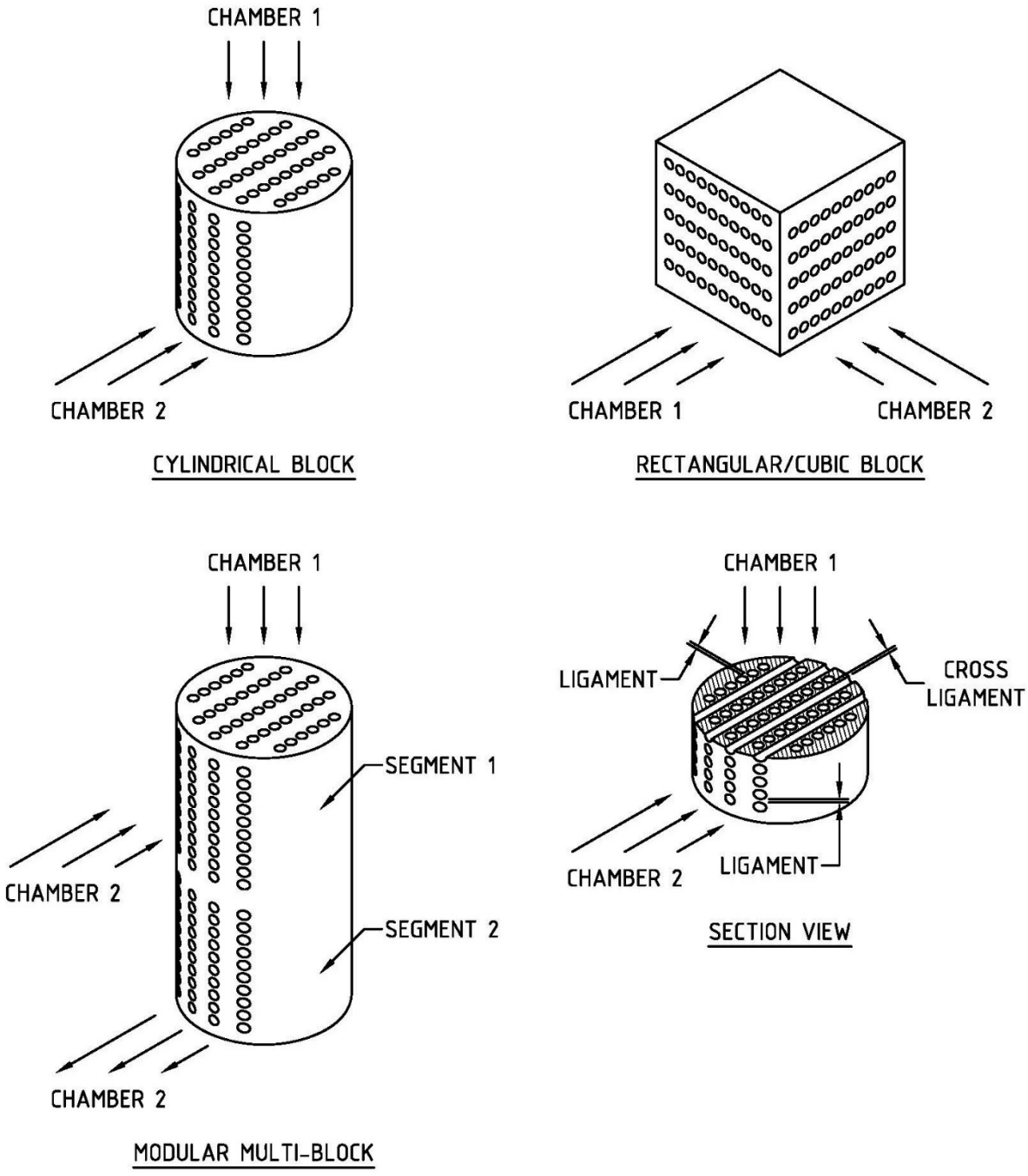
Committee's Reply 2

Rationale

S3.5.6 REPAIR OF CROSS-DRILLED ~~EXCHANGE~~ BLOCKS

Cross-drilled ~~exchange~~ blocks are solid impervious graphite forms~~,~~ drilled through in perpendicular patterns to isolate two different operating fluids~~/gases~~.

FIGURE S3.5.6



a) Cross-drilled blocks ~~may~~ can experience failure in a cross ligament~~,~~ due to ~~a~~ cracks or erosion~~,~~ that leads to fluid transfer between the opposing chambers. The general steps used to repair a cross-drilled block that is transferring fluid follow below.
   1) Isolate one chamber sufficiently to perform a pressure test.
   2) Test the isolated chamber.
   3) Check the opposing chamber for affected holes.
   4) Identify and mark any leaking holes.
   5) Plug all leaking holes per S3.5.4.

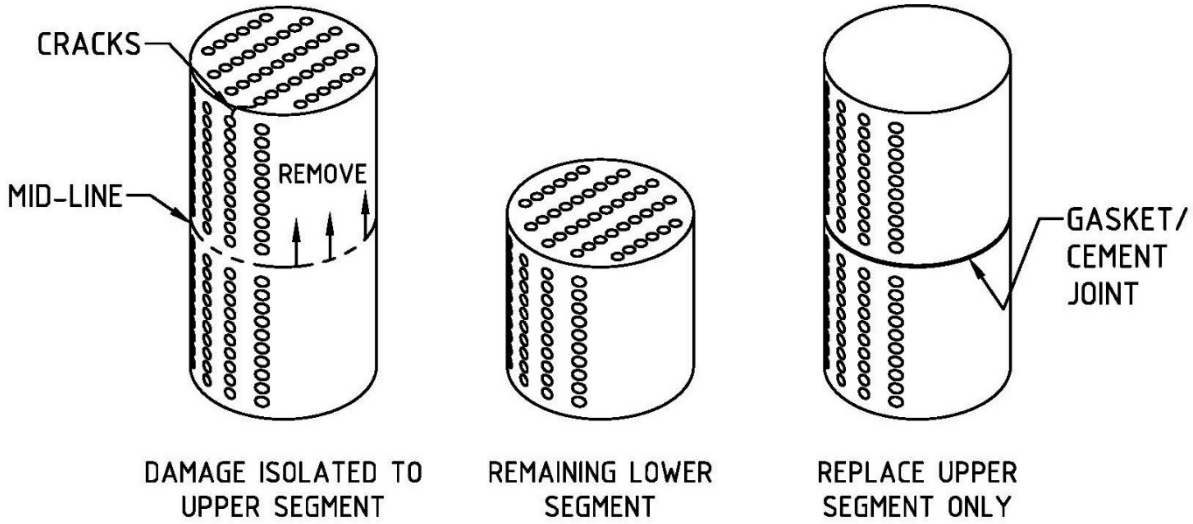
b) During visual inspection of a cross-drilled block, same chamber ligament cracking can~~may~~ be identified. To prevent crack propagation, the affected area can be repaired by material inlaying, or the affected holes can be plugged per S3.5.4

c) ~~Cross-drilled blocks may experience failure due to surface erosion.~~ Surface erosion may be repaired by material inlaying.

d) Damage to gasket surfaces may be repaired per S3.3 a) 2) or by material inlaying.

e) When a modular multi-block type of cross-drilled block is confirmed to be transferring fluid, is showing visible ligament cracking, or has visible surface erosion damage, it shall be tested as required~~according~~ in~~to~~ S3.5.6-a. ~~Once the location of all the damage is identified, if a single S~~segments ~~is~~ determined to be free of damage~~, that segment~~ may be re-used after cutting away the damaged~~affected~~ segment(s). The portion of the block that was removed shall be replaced.

FIGURE S3.5.6-d



Editors note: re-number Reimpregnation section to S3.5.7 and carry through.

Item 23-45

Part 3, S3.2 and S3.3 a)

S3.2 Repairs

…

k) Blind cracks and delaminations ~~may~~ shall not be repaired by cement injection only.

l) Cracks and porosity in tubes ~~may~~ shall not be repaired. Cracked and porous sections may be removed so that the remainder of the tube may be used. Individual tube sections shall not be less than 24 in. (610 mm) in length, and the number of segments in a tube shall not exceed the quantity listed in NBIC Part 3, Table S3.2.

~~r)~~m) Cracks and porosity in graphite plates used in plate and frame exchangers shall not be repaired.

S3.3 Routine Repairs

a) The following repairs shall be considered routine, and shall comply with NBIC Part 3, 3.3.2 a), b), and c).

1) Machining — routine repair shall not include the machining of pressure-retaining parts with the exception of minor machining for cleaning and joint preparation not to exceed 1/32 in. (0.8 mm) of material thickness.

2) Repair of Gasket Surfaces — re-machining of gasket surfaces, re-serrating, or flattening is permitted if the design thickness is maintained.

3) Replacing Individual Tubes — drilling out and replacing tubes with new tubes or repaired tubes. Only certified materials shall be used for this repair.

4) Nozzle Replacement — complete or partial replacement of nozzles by removing all or a length of the existing nozzle and cementing a new piece in place. This is applicable for nozzles with inside diameters not exceeding 6 inches (152 mm).

5) Plugging Tubes — plugging individual tubes using accepted procedures.

6) Surface Repair — surface repair by installation of plugs or inlay material shall not exceed 1 $in.^3$ (16 cm^3) of total volume.

7) Replacement or Addition of Non-Load Bearing Attachments to Pressure-Retaining Item — For attachment of non-load bearing attachments to pressure-retaining items, the cementing procedure specification need only be qualified for the pressure part and cement to be used.

8) Replacing graphite plate(s) with new plate(s) in a plate and frame exchanger.

S2.4.1 Limitations

a) Work performed on historical boilers which were not constructed to a recognized code of construction shall be considered an alteration and shall conform to a code of construction acceptable to the jurisdiction, where applicable.

b) Any pressure retaining part or attachment of a historical boiler constructed to a recognized code of construction can be replaced as a repair or alteration, acceptable to the jurisdiction, where applicable.

c) Work is to be performed using replacement material that:
   1. is acceptable per NBIC Part 3, S2.7.1;
   2. has a nominal composition that is equivalent to the original material;
   3. has strength equivalent to or greater than the original material; and
   4. is suitable for the intended service.

d) If the work being perform modifies the historical boiler from its original design or code of construction, the work shall be done as an alteration unless specified otherwise within Part 3 Supplement 2. Below is a list of some examples that are considered alterations.

   1. Construction of seams is modified from original design (e .g. changing from riveted to welded).
   2. Flanged corners are removed (e.g. changing firebox from flanged door sheet and rear tube sheet to a flat sheet).
   3. Replacement material thickness is less than the original material thickness.
   4. Riveted seam dimensions are changed from original construction (e.g. rivet spacing changed or rivet size changed).
   5. Braces are changed from original construction (e.g. changing from rivet braces to welded braces).
   6. The addition of new threaded connections, handholes, or openings.

1.6.6 o) Quality Assurance Records
The provisions identified in ASME NQA-1, Part 1, Requirement 17, shall apply, except Paragraphs 400, 500, and 600 are not applicable. The following requirements shall be followed:

1) Records shall be identifiable and retrievable;

2) Records shall be retained consistent with the owners requirements for duration, location and assigned responsibility;

3) Forms NR-1 and NVR-1 as applicable shall be completed by the "NR" Certificate Holder upon completion of all repair/replacement activities. Completion of forms, registrations and stamping of the "NR" symbol stamp shall meet the requirements of NBIC Part 3, Section 5. A log shall be maintained in accordance with NBIC Part 3, 5.6; When permitted by the Jurisdiction, the owner may use alternative forms containing all the information within the Form NR-1 and NVR-1.

4) Lifetime and non-permanent records shall be as specified in ASME Section III, NCA-4134, Tables NCA-4134.17-1, and 4134.17-2;

1.6.6
q) Inspection or Test Status (not to include operating status)
The provisions identified in ASME NQA-1, Part 1, Requirement 14 shall apply. Measures shall be established to indicate inspection and test status of parts, items, or components during the repair/ replacement activity. The system used shall provide positive identification of the part, item, or component by means of stamps, labels, routing cards, or other acceptable methods. The system shall include any procedures or instructions necessary to achieve compliance. Procedures shall be provided for the identification of acceptable and unacceptable items and for the control of status indicators. The authority for application and removal of status indicators shall also be specified. The Quality Assurance Program shall provide adequate control of the "NR" Symbol Stamp. In addition, the Quality Assurance Program shall make provisions for the Inspector acceptance prior to the application of the "NR" Symbol Stamp to the item or attachment of the stamped nameplate.

1.6.7 o) Quality Assurance Records
5) The original of the completed Form NR-1 or Form NVR-1, as applicable, shall be registered with the National Board and, if required, a copy forwarded to the Jurisdiction where the nuclear power plant is located. A log shall be maintained in accordance with NBIC Part 3, 5.6. When permitted by the Jurisdiction, the owner may use alternative forms containing all the information within the Form NR-1 and NVR-1.

q) Inspection or Test Status (not to include operating status)
Measures shall be established to indicate examination and test status of parts, items, or components during the repair/replacement activity. The system used shall provide positive identification of the part, item, or component by means of stamps, labels, routing cards, or other acceptable methods. The system shall include any procedures or instructions necessary to achieve compliance. Also, measures shall be provided for the identification of acceptable and unacceptable items. They shall also include procedures for control of status indicators, including the authority for application and removal of status indicators. The Quality Assurance Program shall provide adequate control of the “NR” Symbol Stamp. In addition, the Quality Assurance Program shall make provisions for the Inspector acceptance prior to the application of the “NR” Symbol Stamp to the item or attachment of the stamped nameplate.

1.6.8 o) Records

1) All quality related records shall be classified, identified, verified, maintained, distributed retrievable, and accessible. When the “NR” Certificate Holder is the owner, designated records and reports received by the owner, shall be filed and maintained in a manner to allow access by the Authorized Nuclear Inservice Inspector (ANII). Suitable protection from deterioration and damage shall be provided by the owner. These records and reports shall be retained as specified in the owner’s QAP for the lifetime of the component or system. Records to support evidence of activities affecting quality shall include as applicable:

a. Inspections and acceptance criteria/results;
b. Tests performed and supporting reports;
c. Procedures/instructions;
d. Qualification of personnel, procedures, and equipment;
e. Types of observations and results;
f. Audits;
g. Nonconformances; and
h. Corrective actions.

2) The original of the completed Form NR-1 or Form NVR-1, as applicable, shall be registered with the National Board and, if required, a copy forwarded to the Jurisdiction where the nuclear power plant is located. A log shall be maintained in accordance with NBIC Part 3, 5.6. When permitted by the Jurisdiction, the owner may use alternative forms containing all the information within the Form NR-1 and NVR-1.

q) Inspection or Test Status

Measures shall be established to indicate inspection and test status of parts, items or components during repair/replacement activity. Measures shall include identification, procedures, control indicators (acceptable, unacceptable) and responsibility of personnel. The Quality Assurance Program shall provide adequate control of the “NR” Symbol Stamp. In addition, the Quality Assurance Program shall make provisions for the Inspector acceptance prior to the application of the “NR” Symbol Stamp to the item or attachment of the stamped nameplate.

PROPOSED REVISION OR ADDITION

Item No.

A 21-12

Subject/Title

Revision to add an introductory paragraph to Part 3, Section 3 and to add guidance on classifying a repair vs alteration

NBIC Location

Part: Repairs and Alterations; Section: Section 3

Project Manager and Task Group

P. Becker (PM), K. Moore, B. Underwood, P. Shanks, S. Chestnut, T. Seime

Source (Name/Email)

Pat Becker, pbecker@epri.com

Statement of Need

Interpretations continue to be received based on confusion in current guidance given in Section 3, Part 3 of Repairs and Alterations. Of particular issue is the heavily relied upon 'List of Examples' of Repairs and Alterations. The lists are considered a 'shortcut' to understanding which activities should be classified as repairs and which should be alterations. However, the examples are not intended to be used without the understanding of the rest of the subject matter in Part 3, Section 3…nor are they all-inclusive or exclusive.

Experience levels can vary widely among all 'stakeholder' categories, i.e. Owner/User, Authorized Inspector, Certificate Holder, In-Service inspector, Jurisdictional Authority etc.

From the Forward: *The general philosophy underlying the NBIC is to parallel those provisions of the original code of construction, as they can be applied to post-construction activities. The NBIC does not contain rules to cover all details of post-construction activities. Where complete details are not given, it is intended that individuals or organizations, subject to the acceptance of the Inspector and Jurisdiction when applicable, provide details for post-construction activities that will be as safe as otherwise provided by the rules in the original code of construction.*

The Intent of any effort is to improve the user experience while being cognizant not to overly restrict. The task group is paying attention to industry concerns and suggestions including the potential impact of any changes to existing equipment and installations. Existing Interpretations are being 'walked thru' the decision tree and otherwise reviewed against the addition of any content. The goal is to provide clearer guidance with less conflicting or overlapping examples or information.

Background Information

Update of Part 3, Section 3 to improve the user experience and to add a decision tree logic diagram to aid in use of the list of examples of alterations in 3.4.4.

Existing Text

PART 3, SECTION 3
REPAIRS AND ALTERATIONS — REQUIREMENTS FOR REPAIRS AND ALTERATIONS

3.1 SCOPE

This section provides requirements and guidelines for materials, replacement parts, and methods used when performing repairs and alterations to pressure-retaining items. Specific repair or alteration methods for other types of pressure equipment are in NBIC Part 3, Section 6.

3.2 GENERAL REQUIREMENTS FOR REPAIRS AND ALTERATIONS

3.2.1 MATERIAL REQUIREMENTS FOR REPAIRS AND ALTERATIONS

Proposed Text

PART 3, SECTION 3
REPAIRS AND ALTERATIONS — REQUIREMENTS FOR REPAIRS AND ALTERATIONS

(NEW)
3.0 INTRODUCTION

This Section provides information on the requirements for repairs and alterations to pressure retaining items. Information on how to classify, perform, and document acceptable repair and alteration activities may be found throughout the Sections of Part 3 and in Supplement X, Figure SX.1. It is the intent that Section 3 be used in cooperation with local jurisdictional authorities and with an understanding of the applicable pressure vessel code regulations relevant to the scope of repair or alteration activity. Note that the guidance herein and the examples given in 3.3.3 *(Examples of Repairs)* and 3.4.4 *(Examples of Alterations)* are not all inclusive and are intended to be representative of cases and activities commonly considered either a repair or alteration.

3.1 SCOPE

This section provides requirements and guidelines for materials and methods used when performing repairs and alterations to pressure-retaining items. Specific repair or alteration methods for other types of pressure equipment are in NBIC Part 3,

	Section 6. **3.2 GENERAL REQUIREMENTS FOR REPAIRS AND ALTERATIONS**
	(NEW) SUPPLEMENT X CLASSIFYING REPAIRS AND ALTERATIONS SX.1 SCOPE FIGURE SX.1 DECISION TREE (LOGIC DIAGRAM) FOR DETERMINING REPAIR OR ALTERATION ACTIVITY CLASSIFICATION **(See Below , next page, for diagram)**

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

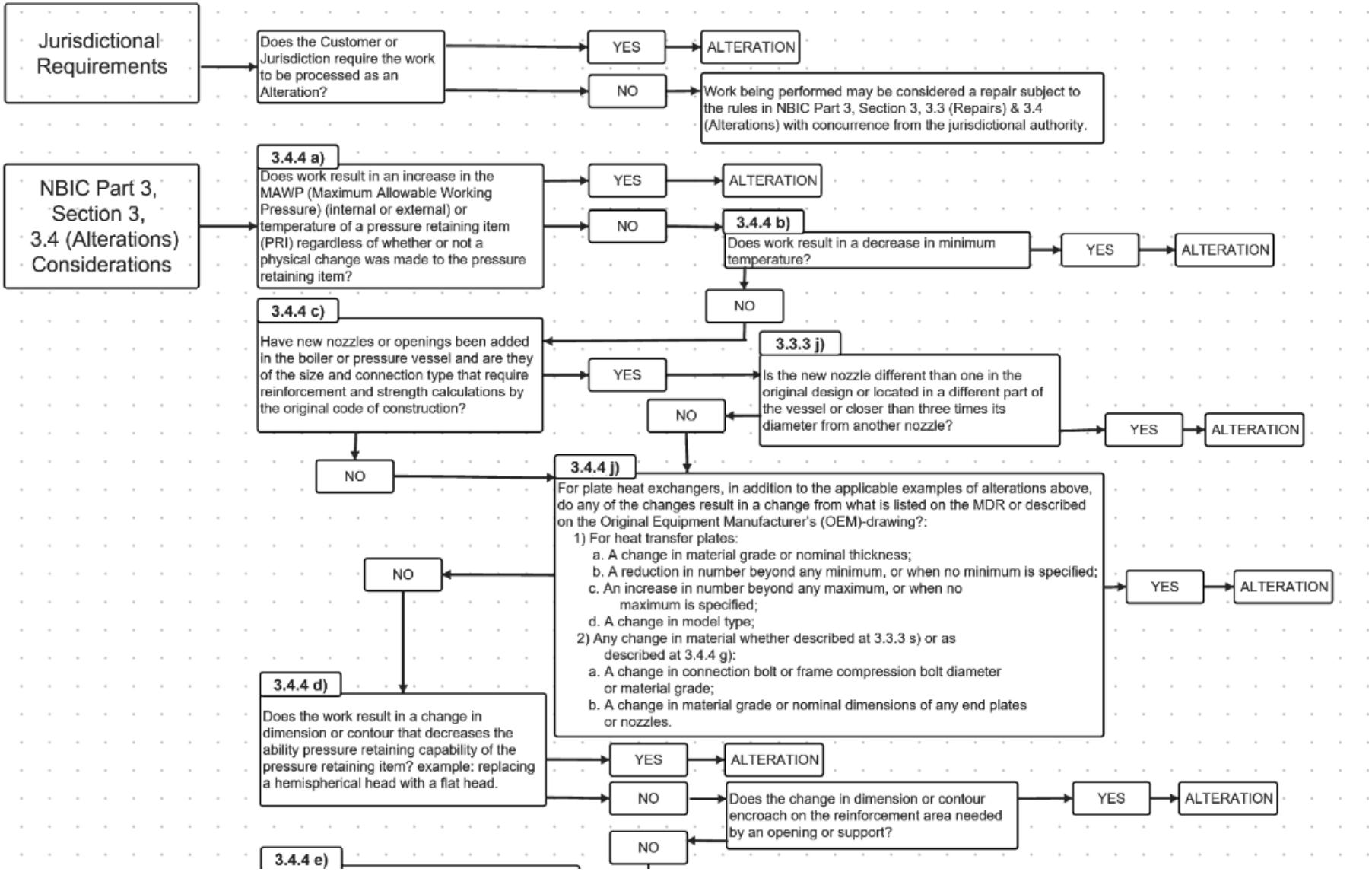
(NEW)

SUPPLEMENT X
CLASSIFYING REPAIRS AND ALTERATIONS

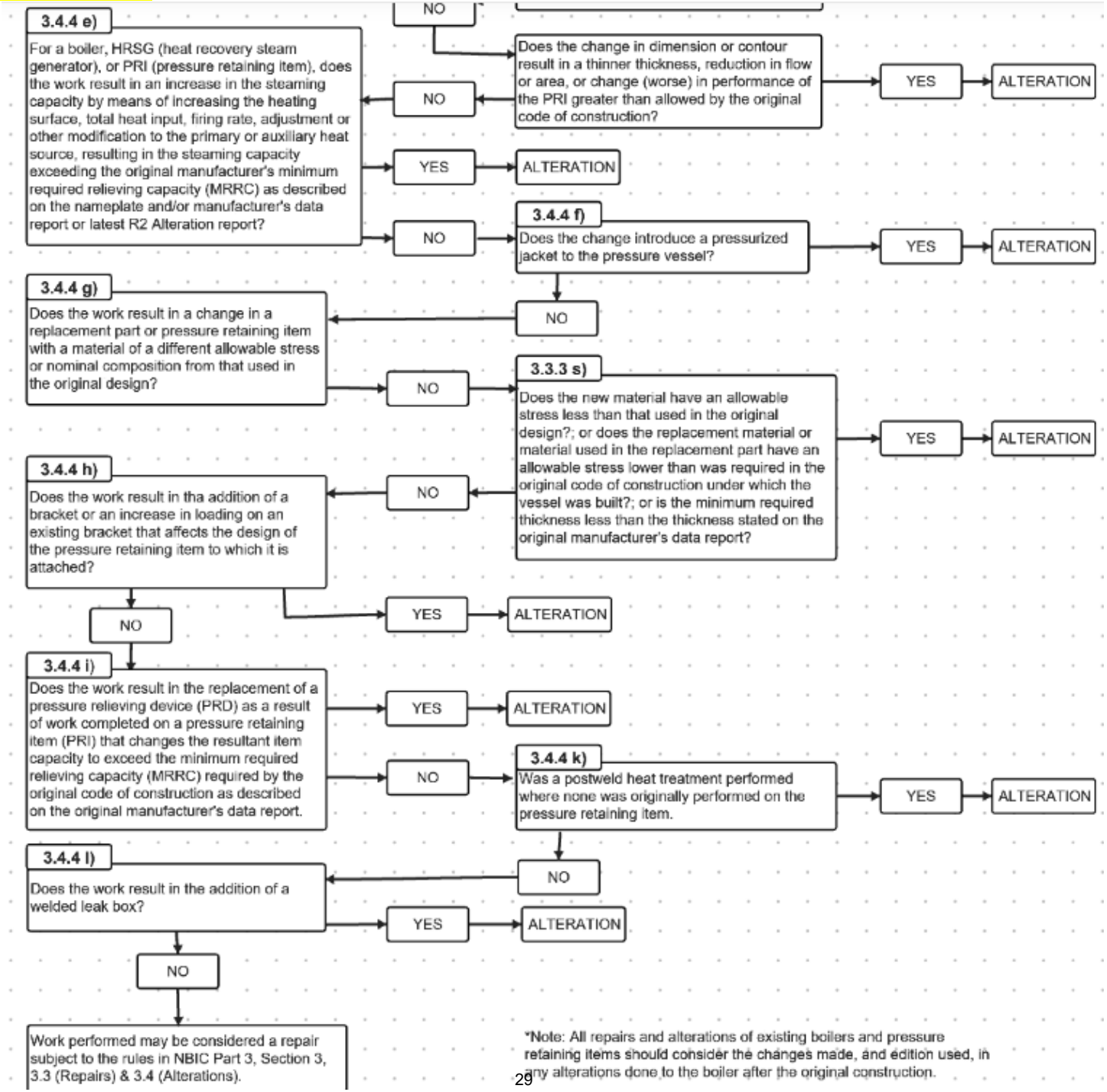
SX.1 SCOPE

FIGURE SX.1
DECISION TREE (LOGIC DIAGRAM) FOR DETERMINING REPAIR OR ALTERATION ACTIVITY CLASSIFICATION BASED ON PART 3, SECTION 3, 3.4.4, ALTERATION EXAMPLES

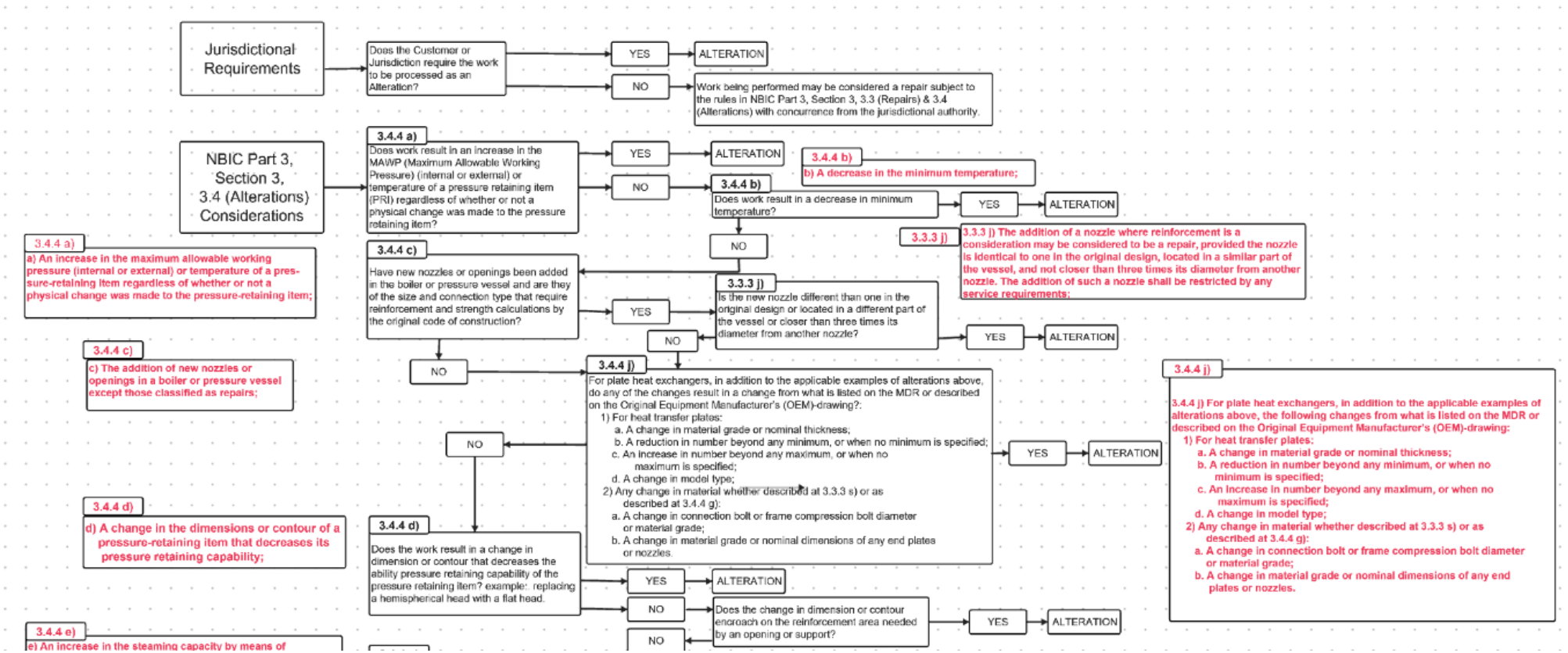
'Clean' copy without references



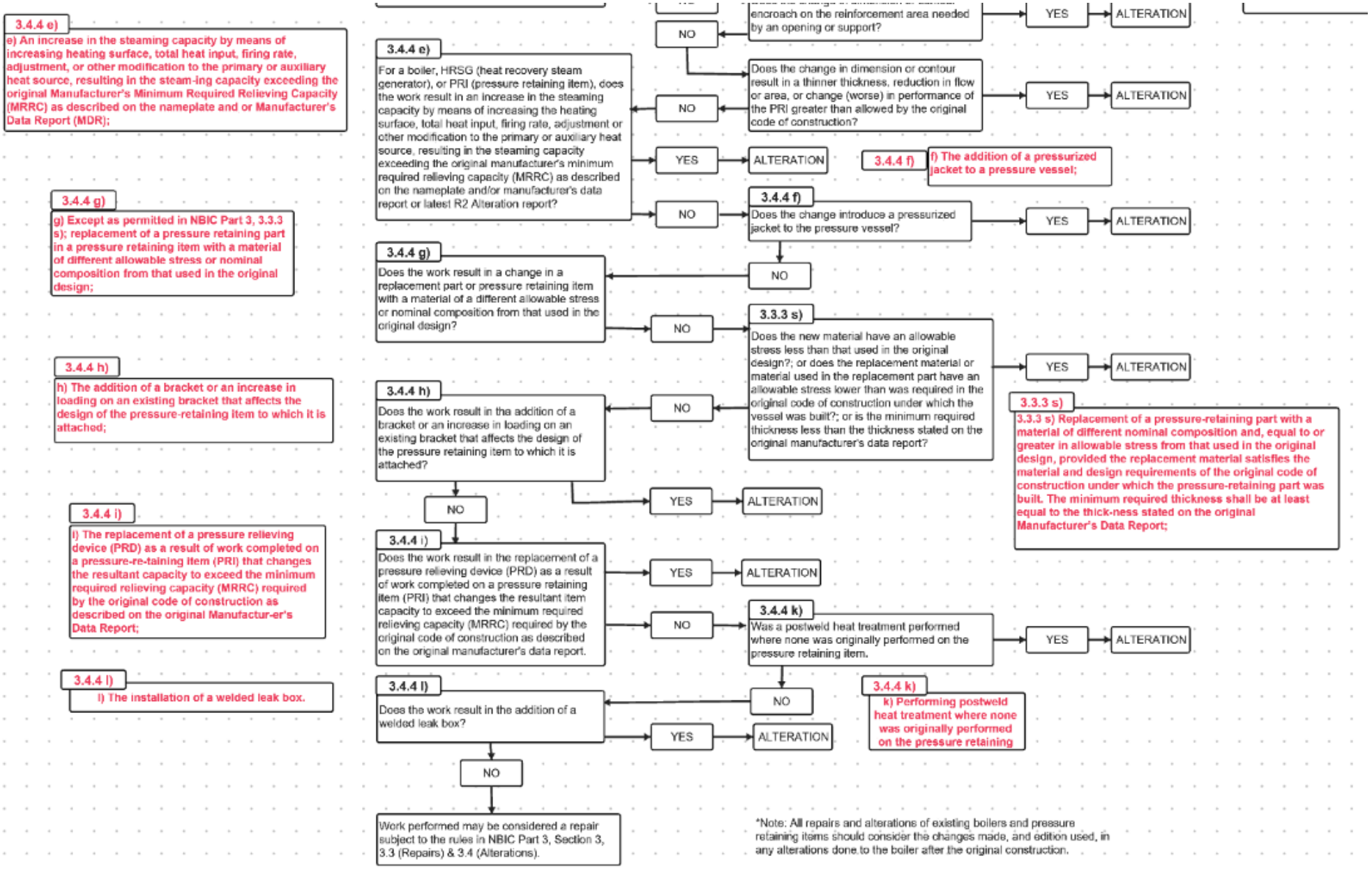
Clean copy without references contd.



(Showing diagram with 'Example' references from 3.3.3 and 3.4.4)



(Showing diagram with 'Example' references from 3.3.3 and 3.4.4 Contd.)



THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

PROPOSED REVISION OR ADDITION

Item No.

A 23-13 Rev 05

Subject/Title

Referencing for Weld Metal, Filler Metal etc.

NBIC Location

Project Manager and Task Group

P Gilston (PM), J. Siefert, W. Sperko, M. Vance, T Melfi, F Johnson

Source (Name/email)

January 2023, Sub-Committee Discussion

Statement of Need

Within Part 3, welding consumables are referred to in several different ways e.g., filler metal(s) (52 times), weld metal (11 times), consumable (14 times), welding electrode (once) etc. This item is to review these references, create definitions and bring consistency for reference descriptions.

Background Information

When discussing weld metal, references can be made to the weld consumable itself, or the deposited weld metal. Often we describe the 'nominal composition' for the weld, this is normally based on the actual weld metal deposited in a weld joint. Various factors can influence the chemistry of a deposited weld metal, including, but not limited to dilution with the base metal, protective fluxes, shielding gas etc.

Revision 03 Notes

Added "consumable inserts" to the definition of "Weld Consumable" per comment from Mr. McBee (SG R&A).

Added "rods" to the definition of "Weld Consumable" per comment from Mr. Schaefer (SG R&A).

Added ", as defined in ASME Section IX, to the definition of "Weld Consumable" per comment from Mr. Nutter (SG PRD).

Added new definition for "Heat-Affected Zone (HAZ)" per comments from Mr. Marek and Mr. Nutter (SG PRD).

Definition of "Weld Metal" revised per comment from Mr. Nutter (SG PRD).

Definition of "Base Metal" added per comment from Mr. Nutter (SG PRD).

The term "or soldering" deleted from definition of "Filler Metal" per comment from Mr. Nutter (SG PRD).

Moved the reference to "autogenous weld" to the definition for "Weld" per Mr. Sperko's comment.

Revision 04 notes,

Editorial changes to "Weld Consumable".

"to produce a weld" deleted from the end of "Weld Metal"

Existing Text	**Proposed Text**
None	**9.1 DEFINITIONS** **Weld -** A weld consists of weld metal and heat-affected zones (HAZ). A weld may be made with or without the

	addition of filler metal. When no filler metal is added this is known as an autogenous weld. **Weld Metal** - Metal resulting from the melting together of filler metal and base metal or the melting of base metal only. ~~in a fusion weld consisting of that portion of the base metal and filler metal melted during welding. When no filler metal is added this is known as an autogenous weld.~~ **Filler Metal** - The metal that is added during a welding~~,~~ or brazing ~~or soldering~~ operation. **Weld Consumable** - Electrodes, rods, wires, ~~and~~ fluxes, and consumable inserts, as defined in ASME Section IX, that are melted during a welding operation. **Heat-Affected Zone (HAZ) -** that portion of the base metal which has not been melted but whose mechanical properties or microstructures have been altered by the heat of welding or cutting. **Base Metal** - The metal being welded, brazed, or cut.

	VOTE						
Committee	**Approved**	**Disapproved**	**Abstained**	**Not Voting**	**Passed**	**Failed**	**Date**

PROPOSED REVISION OR ADDITION

Item No.

A 23-41

Subject/Title

Strengthening Requirements for Defect Removal When Patching

NBIC Location

Part: Repairs and Alterations; Section: 3; Paragraph: 3.3.4.6 a) 1) & 2)

Project Manager and Task Group

PM - Aziz Khssassi, B.Schaefer, C.Hopkins, P.Shanks, A.Henson, P.Gilston & L.Ponce

Source (Name/Email)

Adam Henson / adam.henson@csb.gov

Statement of Need

The existing text requires the removal of defective material until sound material is reached but provides no requirements or guidance on means to employ to ensure complete removal of defective material. The means to ensure defects have been removed must be understood by all to ensure safety. There is an interpretation of the 2021 NBIC that compounds this issue permitting repair organizations to not follow the requirements of NBIC Part 3, 3.3.4.8 even when the characteristics of the defect cannot be fully established.

Background Information

On April 3, 2017, an explosion occurred at the Loy-Lange Box Company in St. Louis, Missouri. The incident occurred when the bottom head of a pressure vessel called a semi-closed receiver (SCR), which was used in the company's steam generation system, catastrophically failed. The SCR was launched in the air as the result of the explosion and landed on a neighboring business. One employee of the Loy Lange Box Company and three members of the public were fatally injured. The U.S. Chemical Safety and Hazard Investigation Board (CSB) investigated this incident and learned during the investigation that the SCR was repaired by an R stamp organization in 2012 five years prior to the incident. During the repair a wasted area of the bottom head of the SCR was flush patched. The cause of the defect was determined to be oxygen pitting corrosion. Evidence gathered during the investigation suggests that the defects in the head were not fully removed during the repair activity. The R stamp organization stated during the investigation that Loy-Lange requested an "emergency repair" following the discovery of a leak from the SCR. The R stamp organization stated further that they interpreted this to mean the repair needed to be completed immediately, presumably so production could resume as normal. To make the repair the R stamp organization cut the SCR shell from the bottom head, leaving the bottom head attached to the skirt. An employee who oversaw the repair stated that they observed pitting corrosion damage in the bottom head. They cut a hole in the center of the head where they believed the corrosion was isolated and applied a flush patch. They believed they removed all corrosion damage through this process. When asked what techniques they relied upon to determine the complete removal of defects the employee replied that they would have been able to see additional pitting and that with the hole cut in the head they were able to match up the patch with the existing metal to verify the thickness of the remaining metal of the head. Besides being able to see differences in the thickness of the patch and the remaining metal of the head, this employee also reported that they would have been able to feel the difference too. Another employee reported measuring the thicknesses of the two pieces with a tape measurer and verified the thickness of both pieces to be ¼ inch. The evidence the CSB gathered demonstrating the likeliness that repair did not remove all defective material from the SCR is discussed in Section 1.6 SCR Post-Failure Examination starting on page 26 of the report. Had all defective material been removed during this repair the incident may not have happened. Full details of the Loy-Lange Box Company Pressure Vessel Explosion are available at this link: https://www.csb.gov/loy-lange-box-company-pressure-vessel-explosion-/ INTERPRETATION 21-13 Subject: Repair of pressure-retaining items without complete removal of defect Edition: 2021 Question: If the characteristics of the defect cannot be fully established, would the provisions of NBIC Part 3, 3.3.4.8 be applicable? Reply: No.

Existing Text	New Proposed Text (09 Jan 2024)
3.3.4.6 PATCHES a) Flush Patches 1) The weld around a flush patch shall be a full penetration weld and the accessible surfaces shall be ground flush where required by the applicable original code of construction. Examples of welded flush patches are shown in NBIC Part 3, Figure 3.3.4.6-a. Nondestructive examination shall be performed in accordance with the requirements from NBIC Part 3, Section 4.2. 2) Before installing a flush patch, defective material shall be removed until sound material is reached. The patch shall be formed to the proper shape or curvature. The edges shall align without overlap. In stayed areas, the weld seams should come between staybolt rows or riveted seams. Patches shall be made from a material whose composition and thickness meet the intended service. Patches may be any shape or size. If the patch is rectangular, a minimum radius of not less than three times the material thickness shall be provided at the corners. Square corners are not permitted. The completed welds shall meet the requirements of the original code of construction. **Position – addition –**	**3.3.4.6 PATCHES** a) Flush Patches **1)** Examples of welded flush patches are shown in NBIC Part 3, Figure 3.3.4.6-a. **2)** Defects should be evaluated in accordance with 3.3.1 & 3.3.4.1. **3)** Before installing a flush patch, defective material shall be removed until sound material is reached. The area adjacent to the flush patch opening shall be measured to ensure it is at or above the required minimum thickness as per the original Code of construction. **4)** Patches shall be made from a material whose composition and thickness meet the intended service. **5)** Patches may be any shape or size. Square corners are not permitted except where the flush patch intersects with an existing weld seam ~~If the patch is rectangular.~~. A minimum radius of not less than three times the material thickness shall be provided at the corners. ~~Square corners are not permitted~~. **6)** The patch shall be formed to the proper shape or curvature. **7)** The edges of the opening and patch shall be prepared for welding to ensure full penetration welds. **8)** The ~~edges~~ patch shall ~~align~~ be fitted and aligned without overlap. The fit-up and tack welding shall be inspected in accordance with the original code of construction. In stayed areas, the weld seams should come between staybolt rows or riveted seams. **9)** The weld around a flush patch shall be a full penetration weld and the accessible surfaces shall be ground flush where required by the applicable original code of construction. **10)** Nondestructive examination shall be performed in accordance with the requirements from NBIC Part 3, Section 4.2. **11)** The completed welds shall meet the requirements of the original code of construction.

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

ASME PCC-2 articles:

Article 212 - Fillet Welded Patches

212-2 LIMITATIONS

….

(c) This repair method shall not be used where the damage mechanism, the extent of damage, or likely future damage cannot be characterized. This repair method may be used in certain cases on areas with local crack-like flaws, provided

(1) the growth has stopped, been arrested, or can be accurately predicted for all propagation modes

(2) the effect of the flaw is evaluated using detailed analyses

….

212-3 DESIGN

212-3.1 General

…

(b) In general, the patch material and welding filler metal should be the same or very similar (e.g., compositional, physical, and mechanical properties) to that of the pressure component's original construction. Repair material selection shall consider, as a minimum, characteristics such as chemistry, weldability, physical properties (such as coefficient of thermal expansion), mechanical properties (such as strength, ductility, notch toughness), and compatibility with the process medium.

(c) The thickness of the patch plate is dependent on material mechanical properties and the calculated attachment weld sizes.

(d) The size (length and width) of the patch plate is governed by the requirement that all attachment welds be located on sound base metal completely encompassing the damaged area(s) (see Figure 212-1-1). The repair plate shall also be large enough to encompass any additional area(s) anticipated to experience similar or related damage during the life of the repair. The patch plate should overlap sound base metal by at least 25 mm (1 in.).

….

212-4 FABRICATION

(a) Plate edges may be cut to shape and size by mechanical means such as machining, shearing, grinding, or by thermal means such as flame or arc cutting. If thermal means are used, a minimum of 1.5 mm (1⁄16 in.) additional material shall be removed by grinding or machining. If the repair plate is greater than 25 mm (1 in.) thick, and the fillet weld size is less than the plate thickness, the weld prep edges shall be examined by magnetic particle (MT) or liquid penetrant (PT) methods to check for laminations. Laminations shall be cause for rejection unless repaired or found acceptable by fitness-for-service analysis in accordance with API 579-1/ASME FFS-1.

(b) The patch plate may be formed to the required shape by any process that will not unduly impair the mechanical properties of the patch plate material.

Where required due to repair plate size or access/interference considerations, split sections may be used when joined by full penetration welds.

(c) Parts to be fillet welded shall be fit as tightly as practical to the surface to be welded and in no event shall be separated by more than 5 mm (3⁄16 in.). If the separation at the faying edge of the plate is 1.5 mm (1⁄16 in.) or greater, the size of the perimeter weld shall be recalculated by adding the amount of the separation to the eccentricity, e.

(d) Welding procedures, welders, and welding operators shall be qualified in accordance with the current requirements of the applicable construction code or postconstruction code. If not otherwise specified, ASME BPVC, Section IX may be used for procedure and performance qualification. Article 210 should be consulted for inservice welding issues; Article 214 should be consulted for field heat treating issues.

…

212-5 EXAMINATION

(a) Patch plate attachment welds shall be examined in accordance with the applicable construction code or postconstruction code by either the MT or PT methods if not temperature limited by the test methods. If not otherwise specified by the applicable construction code or postconstruction code, NDE shall be performed using procedures written and qualified in accordance with ASME BPVC, Section V.

….

(e) The examination acceptance criteria of the applicable construction code or post-construction code shall apply.

…

212-6 TESTING

(a) Testing shall be performed in accordance with the applicable post-construction code.

(b) The pressure component and installed patch plate(s) should be leak tested in accordance with the applicable post-construction code. Special safety precautions should be taken when pneumatic leak testing is performed.

(c) If permitted by the applicable post-construction code, nondestructive examination may be performed as an alternative to leak testing. Also, an initial service inspection may be performed of all weld joints after the pressure component has returned to normal operating pressure and temperature, if these were reduced while welding was performed.

…

Comments received in June 2024

Comments / Propositions	Contact
I appreciate your work on this item (and others) and your commitment to the NBIC. The new text in line 3 is a good addition in my opinion, I see these comments in some of the other Defect types but not in this one good catch.I don't think the new text in line 5 is necessary, requiring a minimum radius seems to eliminate the need for the new text about square corners not being permitted, I think square corners are not possible if a minimum radius is required. It seems the full penetration requirement is covered in line 9. Is it possible to massage the rest of line 7 into line 11, I realize one is for preparation and one is for the final weld but the essence of the point seems to be the same.Ben Schaefer	Benjamin Schaefer
Answer:	
Nice work on this item. If we make changes to the current wording, then I think we should try to update the method to be consistent with ASME PCC-2. Please reference the attachment for my specific comments.	Matt Schaser
Answer:	
The terminology "square corner" seems to imply a 90-degree corner. What about a triangular patch. I think the requirement that all corners are radius does address all corners.	Raymond Spuhl
Answer:	
For 9) "The weld around a flush patch shall be a full penetration weld." Consider - A full penetration weld is required to join the flush patch to existing base metal.	Tom White
Answer:	

*Comments received verbally during **January 2024** subgroup meeting from :*

- *Jonathan Ferreira*
- *George Galanes*
- *Matt Schaser*
- *Craig Hopkins*

*Comments received in **December 2023** (answers sent to all by email)*

Comments / Propositions	Contact
I like the proposal. My only comment is with #3) "and laminations and shall be verified through nondestructive examination suitable for providing meaningful results (e.g. MT or PT)." If I am looking for laminations in plate I have a ultrasonic lamination scan performed. PT/MT can only detect on the edges and that is not a certainty. I suggest removing the NDE examples and let the repair organization suggest a suitable NDE and obtain the repair inspector concurrence: 3) Before installing a flush patch, defective material shall be removed until sound material is reached. The remaining material shall be free of corrosion and defects such as cracks and laminations and shall be verified through nondestructive examination suitable for providing meaningful results (e.g. MT or PT). The remaining material shall be measured to ensure it is at or above the required minimum thickness.	Tom White Thomas.white@nrg.com +1 (281) 7824972
Answer: Agree with leaving the repair organization suggest an NDE method. **3)** Before installing a flush patch, defective material shall be removed ~~until sound material is reached.~~ The remaining material shall be free of corrosion and defects such as cracks and laminations and shall be verified through nondestructive examination suitable for providing meaningful results. The remaining material adjacent to the flush patch area shall be measured to ensure it is at or above the required minimum thickness.	
Many good comments. Here's a few more: change end of first sentence in Item 3) (e.g; MT or PT to (e.g; MT, PT, UT-T) and recorded, to ensure its acceptance for subsequent flush patch installation. Delete its second sentence entirely. 7) change beginning of first sentence from The edges to The prepped areas. Change second sentence to After VT acceptance a suitable Nondestructive Examination (MT/PT) shall be performed for acceptance of all weld preparation areas of remaining surfaces and the flush patch.	Jamie Walker jwalker@hayesmechanical.com +1 (773) 9105892
Answer: I don't feel the need to add here that NDE results must be recorded to ensure acceptance of flush patch installation. NDE must be performed according to an NDE procedure that should address records, examiners…etc. We need to keep the second sentence. The requirement of measuring the thickness of the remaining material is what triggered this request of change. **3)** Before installing a flush patch, defective material shall be removed ~~until sound material is reached.~~ The remaining material shall be free of corrosion and defects such as cracks and laminations and shall be verified through nondestructive examination suitable for providing meaningful results. The remaining material adjacent to the flush patch area shall be measured to ensure it is at or above the required minimum thickness. **Answer:** I agree that 7) needs some tweaking as suggest. My proposal would be: **7)** The edges of the opening and patch shall be prepared for welding to ensure full penetration welds. After VT acceptance, a suitable nondestructive examination shall be performed for acceptance of all weld preparation areas before assembly and welding.	
#7) I would recommend replacing "faces" with area. 7) The edges of the opening and patch shall be prepared for welding to ensure full penetration welds. A suitable nondestructive examination shall be used to examine the weld preparation area before assembly and welding.	Rick Valdez rvaldez@prim.com +1 (661) 3316024
Answer: I agree that 7) needs some tweaking as suggest. My proposal would be: **7)** The edges of the opening and patch shall be prepared for welding to ensure full penetration welds. After VT acceptance, a suitable nondestructive examination shall be performed for acceptance of all weld preparation areas before assembly and welding.	
There are a lot of good comments from others that need to be addressed. We probably should have sent this to Review and Comment instead of an up/down vote.	Robert Underwood robert_underwood@hsb.com +1 (618) 593.6231
Answer: Agree. Thank you. I answered Rob.	

I agree with the comments provided by Rick and Tom, and I have the following additional comments: - In (3), we should clarify that the "nondestructive examination suitable for providing meaningful results" is surface NDE, which I believe will speak to Tom's comment. In addition, I believe additional instruction should be given in the last sentence regarding thickness measurement, specifically the quantity/representativeness of measurements and how far out they extend from the flush patch cut edge. You may also want to refer to 3.3.4.1, as revised by Action Item 23-40, which is adding language specifically about material thickness measurement after defect removal. - In (5), I believe the wording should not be restricted to just rectangular shapes or square corners; it should encompass all shapes which have edges of 90 degrees or greater. While it's not exactly likely that someone will try cutting a triangular flush patch, it is possible, and those corners should be rounded as well. - In 11), I believe this wording is quite vague and should be revised to state precisely what construction code requirements are to be met (i.e., welding procedure/performance qualification, welding documentation, etc.). For instance, the existing statement could easily be read as requiring a hydrostatic test for all flush patches, due to the construction code requiring such testing for all pressure boundary welds; I don't believe that's the intent of this statement, but it reads that way.	Andrew Triplett triplettal@ornl.gov +1 (865) 241.5969

Answer: I double checked item 23-40. The addition being discussed in 23-40 is *After the defect has been removed, the thickness of the remaining base material shall be measured to confirm thickness complies with the original Code of construction. Measurement results shall be documented.* See below new proposition. I believe that documentation of thickness measurements is a must and should be present in the NDE result that will be produced by the examiner after applying a thickness measuring technique. Item 23-41 includes in 2) a reference to 3.3.4.1 & 3.3.1 for the evaluation of defects.

2) Defects should be evaluated in accordance with 3.3.1 & 3.3.4.1.

3) Before installing a flush patch, defective material shall be removed ~~until sound material is reached~~. The remaining material shall be free of corrosion and defects such as cracks and laminations and shall be verified through nondestructive examination suitable for providing meaningful results. The remaining material adjacent to the flush patch area shall be measured to ensure it is at or above the required minimum thickness as per the original Code of construction.

Answer: We didn't work on item 5. We kept the original text as is. Agree with the suggestion and proposing to rearrange the text of 5):

5) Patches may be any shape or size. ~~If the patch is rectangular,~~. Square corners are permitted. A minimum radius of not less than three times the material thickness shall be provided at the corners.

Answer: We didn't work on item 11. We kept the original text as is. I don't agree with the comment. The various requirements to be complied with are stated in few other articles (welding documentation and qualification is addressed in section 2 of NBIC Part-3. Testing and examination is addressed in Section 4…etc.). A flush patch repair may require a hydrotest or alternative NDE. I suggest to leave 11) as is if possible.

11) The completed welds shall meet the requirements of the original code of construction.

Item 5, the term rectangular, seem very limiting. What if the patch is a triangle or a pentagon. Do the corners need to be radius? Item 7, why is an additional exam required of the weld preparation faces? The remaining material is already examined for defects in item 3.	Raymond Spuhl raymond_spuhl@hsb.com +1 (314) 223.6603

Answer: We didn't work on item 5. We kept the original text as is. Agree with the suggestion and proposing to rearrange the text of 5):

5) Patches may be any shape or size. ~~If the patch is rectangular,~~. Square corners are permitted. A minimum radius of not less than three times the material thickness shall be provided at the corners.

Answer: 7) is for weld preparation of the pressure retaining item and the patch. 3) is only for the defects removal in the area to be repaired.

3) Before installing a flush patch, defective material shall be removed ~~until sound material is reached~~. The remaining material shall be free of corrosion and defects such as cracks and laminations and shall be verified through nondestructive examination suitable for providing meaningful results. The remaining material adjacent to the flush patch area shall be measured to ensure it is at or above the required minimum thickness as per the original Code of construction.

7) The edges of the opening and patch shall be prepared for welding to ensure full penetration welds. After VT acceptance, a suitable nondestructive examination shall be performed for acceptance of all weld preparation areas before assembly and welding.

While I approve this change, had the fabricator followed these rules, the Loy-Lang vessel still would have failed due to the incompetence of the owner.	Walter Sperko sperko@asme.org +1 (336) 674-0600

Answer: Agree. Thank you. I answered M.Sperko

Although I agree with Davis, Sperko, Walker and White; this item needs more work.	James Sekely jsekely@comcast.net +1 (412) 3895567

Answer: Agree. Thank you. I answered James.

I agree this should have went to review and comment before a vote as there are many good comments that need to be addressed	Trevor Seime tsseime@nd.gov +1 (701) 220.4723

Answer: Agree. Thank you. I answered Trevor.

In light of all the comments made as to changes needed I am abstaining	Michael Quisenberry michael@spartan-mech.com +1 (806) 316.7174

Answer: Agree. Thank you. I answered Michael.

I like this in theory, but #7 is confusing to me. What exactly are we going to be asking of the stamp holder?	Kathy Moore kathymoore@joemoorecompany.com +1 (919) 8321665

Answer: I agree that we should look at 3 & 7 one more time and see if we can simplify both. **My proposition?**

3) Before installing a flush patch, defective material shall be removed ~~until sound material is reached~~. The remaining material shall be free of corrosion and defects such as cracks and laminations and shall be verified through nondestructive examination suitable for providing meaningful results. The remaining material shall be measured to ensure it is at or above the required minimum thickness as per the original Code of construction.

7) The edges of the opening and patch shall be prepared for welding to ensure full penetration welds. After VT acceptance, a suitable nondestructive examination shall be performed for acceptance of all weld preparation areas before assembly and welding.

Abstaining due to the posted comments as I believe they should be addressed.	Donald Kinney don.kinney@labor.nc.gov +1 (919) 707.7911

Answer: Agree. Thank you. I answered Donald

Abstaining because of the comments made '	Frank Johnson fjkeck22@aol.com +1 (419) 386-8450

Answer: Agree. Thank you. I answered Frank.

While I like where we're trying to go with this change, I think the posted comments show that we need to do a lot more work on this proposal to reach consensus.	Steven Frazier steve.frazier@seattle.gov +1 (206) 684.8459
Answer: Agree. Thank you. I answered Steven.	
I agree with most of this. However, I will abstain as Action Item 23-39 has a proposal to revise 3.3.1 and I think that if 23-39 passes this may affect 23-41. I plan on presenting action item 23-39 during January's meeting.	Jonathan Ferreira jonathan_ferreira@hsb.com +1 (207) 745.6889
Answer: Thank you. Below is item 23-39. I believe it does give a general requirement of making sure making sure defects are dealt with. Item 23-41 brings more clarity and specific checks to be made when considering a patch. I think we can leave 23-41 as is for now and improve it possible in the future if we realize that overlapping does exist between articles 3.3.1 & 3.3.4.6. **3.3.1** ~~Before a repair is made to a defect in a welded joint or base metal, care should be taken to investigate its cause and to determine its extent and likelihood of recurrence.~~ When determining the repair plan for repairing a defect in a welded joint or base metal, a condition assessment to determine the cause, extent, and likelihood of recurrence of the defect is required depending on the complexity of the defect. The owner or user of the pressure-retaining item is responsible for the selection and application of the condition assessment methodology that is performed. When a condition assessment is performed, it shall be documented on the applicable R-form. Organizations or qualified individuals with experience in inspection, design, construction, repairs, or failure analysis of pressure-retaining items should be consulted to assist in identifying damage mechanisms and to evaluate the condition assessment results of the pressure-retaining item. NBIC Part 2, Section 4.4 should be used as a guide to aid in this assessment. When a condition assessment results in an increase in the inspection intervals of the pressure-retaining item, the owner or user shall notify the Jurisdiction, where required, of the new inspection interval and the new inspection intervals shall be documented on the applicable R-form. The owner/user has the responsibility to ensure that all items found during the condition assessment are addressed.	
I Feel this needs more work before we can vote on it.	Louis Dutra ldutra@baycityboiler.com +1 (925) 3482881
Answer: Agree. Thank you. I answered Louis.	
From new item: "3) Before installing a flush patch, defective material shall be removed until sound material is reached. The remaining material shall be free of corrosion and defects such as cracks and laminations and shall be verified through nondestructive examination suitable for providing meaningful results (e.g. MT or PT). The remaining material shall be measured to ensure it is at or above the required minimum thickness". I believe you need to limit (or define extent of) the remaining material to an area around the patch. As it is written, one might assume the entire remaining pressure part has to be examined and must be free of the defects you list. Also, you may need to perform an appropriate volumetric type of examination instead of just surface / slight subsurface to find internal laminations.	Paul Davis pappy329@charter.net +1 (412) 3277420
Answer: I agree. We removed the NDE examples and left NDE to be decided by the repair organization and the repair inspector as long as meaningful results can be obtained. For thickness measurements, the repair organization and the repair inspector will normally focus on the damaged areas or the pressure retaining item area that needs to be repaired (installation of a flush patch). An inspection normally already took place and articles such as 3.3.1 & 3.3.4.1 have been complied with. I don't think we can put a limitation on what areas of the pressure retaining items need thickness measurements. I know in my jurisdiction that when a pressure retaining item needs a flush patch, than it means it's not in a great shape and our repair inspector does indeed ask for thicknesses measurements in other areas to make sure the remaining parts of the vessel ae actually ok. **3)** Before installing a flush patch, defective material shall be removed ~~until sound material is reached.~~ The remaining material shall be free of corrosion and defects such as cracks and laminations and shall be verified through nondestructive examination suitable for providing meaningful results. The remaining material adjacent to the flush patch area shall be measured to ensure it is at or above the required minimum thickness as per the original Code of construction.	

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

PROPOSED REVISION OR ADDITION

Item No.

A 23-69 Rev 03

Subject/Title

Temporary Location

NBIC Location

Project Manager and Task Group

Ray Miletti (PM), Eric Cutlip, Marty Toth, Jamie Walker

Source (Name/email)

Statement of Need

"Field" site under the current definition could be multiple rented or leased spaces used for repairs/alterations, where there is no single or specific customer or job, but rather the locations(s) are used for conducting repair/alteration activities by personnel employed by the Certificate Holder on a continual basis.

Background Information

NB-415 has been revised and issued. Section 9.0 has added definitions for Shop Location, Temporary Location and Field Site. Shop Location and Field Site duplicate definitions already in Part 3, Temporary Location is a new definition.

Further Footnote 1 of section 2.2 in NB-415 states: '*A separate application is required for temporary locations (See Section 9.0 of this procedure) as permitted by National Board internal policies*.', and Section 6.4 requires requests for the use of temporary locations to be submitted to NB for approval, further the use of temporary locations not approved is prohibited.

This action proposes to revise the entries for the definitions of Field and Shop in Section 9.1 and add a new entry for Temporary Location. The definitions will reference NB-415 Section 9.

This action will require balloting for Parts 1, 2, 3 and 4.

Rev 02, replaced proposed words of "See NB-415, Accreditation of "R" Repair Organizations, Section 9.0." with the words as published in NB-415 Rev

Existing Text	**Proposed Text**
9.1 DEFINITIONS	**9.1 DEFINITIONS**
Field - A temporary location, under the control of the Certificate Holder, that is used for repairs and/or alterations to pressure-retaining items at an address different from that shown on the Certificate Holder's *Certificate of Authorization.*	**Field** Site - A ~~temporary~~ location~~, under the control of the Certificate Holder, that is used for repairs and/or alterations to~~ where a specific pressure-retaining item(s) is installed ~~at an address different from that shown on the~~and is being repaired or altered under the control of the Certificate Holder~~'s *Certificate of Authorization*~~.
Shop - A permanent location, the address that is shown on the *Certificate of Authorization*, from which a Certificate Holder controls the repair and/or alteration of pressure-retaining items.	**Shop** Location - A ~~permanent location~~ facility (e.g., shop, office, etc.)~~, the~~ whose physical address ~~that~~ is shown on the *Certificate of Authorization*~~,~~ and from which a Certificate Holder controls the repair and/or alteration of pressure-retaining items.

	Temporary Location – A location which is both different from the physical address shown on the Certificate of Authorization and a Field Site as defined in this section which is utilized to perform repair/alteration activities for a specific contracted period to extend Code shop capacity and/or support field site activities. Each temporary location shall be authorized by the National Board and shall not be utilized beyond the period specified nor outside the scope as listed on the Certificate of Authorization. For example, if a Certificate Holder has a contract with another business or utility for ongoing work and sets up a shop to perform NBIC activities at the location specified in the contract or maintenance agreement, such location would be considered a temporary location.

	VOTE						
Committee	**Approved**	**Disapproved**	**Abstained**	**Not Voting**	**Passed**	**Failed**	**Date**

PROPOSED REVISION OR ADDITION

Item No.

A 23-78

Subject/Title

Edits to NBIC Part 3, Supplement 8

NBIC Location

Part: Repairs and Alterations; Section: Supplement 8

Project Manager and Task Group

P. Becker (PM), J. Siefert

Source (Name/Email)

Pat Becker, pbecker@epri.com

Statement of Need

Clarifying editorial comments and recent updates to the ASME BVPC Section IIC filler metal designations

Background Information

N/A

Existing Text

TABLE S8.2.1

ALTERNATIVE WELD REPAIR METHODS, FILLER METALS AND WELDING PROCESSES FOR GRADE 91 STEEL.

Acceptable Weld Repair Method		Welding Process and Filler Metal AWS Classification
Filler Metal	Welding Procedure	
Matching (9Cr-1Mo-VNbN)	Controlled Fill + Low PWHT	• SMAW – E9015-B9, E9016-B9, E9018-B9 or E9015-B91$_A$, E9016-B91$_A$ or E9018-B91$_A$ • FCAW – E91T1-B9 or E91T1-B91$_A$ • GTAW – ER90S-B9 or ER90S-B91$_A$
9Cr-1Mo	Controlled Fill	• SMAW – E8015-B8, E8016-B8 or E8018-B8 • FCAW – E81T1-B8 • GTAW – ER80S-B8
Ni-base	Controlled Fill	• SMAW – EPRI P87^B, ENiCrFe-2, ENiCrFe-3 • FCAW – None available • GTAW – EPRI P87^C, ERNiCr-3

^{A}–B91 AWS classification is pending for the various Grade 91 filler metal product forms (currently –B9)

^{B}Incorporated by ASME B&PV Code as Code Case 2734 for classification as an F No. 43 filler material

^{C}Incorporated by ASME B&PV Code as Code Case 2733 for classification as an F No. 43 filler material

Proposed Text

TABLE S8.2.1

ALTERNATIVE WELD REPAIR METHODS, FILLER METALS AND WELDING PROCESSES FOR GRADE 91 STEEL.

Acceptable Weld Repair Method		Welding Process and Filler Metal AWS Classification
Filler Metal	Welding Procedure	
Matching (9Cr-1Mo-VNbN)	Controlled Fill + Low PWHT	• SMAW – ~~E9015-B9, E9016-B9, E9018-B9~~ or E9015-B91$_A$, E9016-B91$_A$ or E9018-B91$_A$ • FCAW – ~~E91T1-B9~~ or E91T1-B91$_A$ • GTAW – ~~ER90S-B9~~ or ER90S-B91$_A$
9Cr-1Mo	Controlled Fill	• SMAW – E8015-B8, E8016-B8 or E8018-B8 • FCAW – E81T1-B8 • GTAW – ER80S-B8
Ni-base	Controlled Fill	• SMAW – ~~EPRI P87^B~~, ENiCrFe-2, ENiCrFe-3 • FCAW- ~~ENiCrFe-4~~ ENiCr3Tx-y[1], ENiCrFe2Tx-y[1], or ENiCrFe3Tx-y[1] • GTAW – ~~EPRI P87^C~~, ERNiCr-3 , ~~ERNiCrFe-4~~

~~^{A}–B91 AWS classification is pending for the various Grade 91 filler metal product forms (currently –B9)~~

~~^{B}Incorporated by ASME B&PV Code as Code Case 2734 for classification as an F No. 43 filler material~~

~~^{C}Incorporated by ASME B&PV Code as Code Case 2733 for classification as an F No. 43 filler material~~

Notes to Table S8.2.1

^{A} –B91 AWS classification is pending for the various Grade 91 filler metal product forms (currently –B9)

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Notes to Table S8.2.1

~~^{A} –B91 AWS classification is pending for the various Grade 91 filler metal product forms (currently –B9)~~

~~^{B}Incorporated by ASME B&PV Code as Code Case 2734 for classification as an F No. 43 filler material~~

~~^{C}Incorporated by ASME B&PV Code as Code Case 2733 for classification as an F No. 43 filler material~~

[1]Clarification on the 'x-y' designators may be found in ASME BPVC Section IIC, SFA-5.34/SFA-5.34M Specification for Nickel-Alloy Flux Cored and Metal Cored Welding Electrodes.

S8.2.2

a) For repairs in P-No. 15E, Group 1, Grade 91, CSEF steel joined to either P-No. 8, P-No. 42, P-No. 43, or P-No. 45, as permitted for welded construction by the applicable rules of the original code of construction, the filler metal shall be limited to an austenitic, nickel-base filler metal having a designation F-No. 43 and limited to the following consumables: ERNiCr-3, ENiCrFe-3, ENiCrFe-2, UNS N08087. This weld repair option does not require PWHT.

S8.2.2

a) For repairs in P-No. 15E, Group 1, Grade 91, CSEF steel joined to either P-No. 8, P-No. 42, P-No. 43, or P-No. 45, as permitted for welded construction by the applicable rules of the original code of construction, the filler metal shall be limited to an austenitic, nickel-base filler metal having a designation F-No. 43 and limited to the following consumables: ERNiCr-3, ENiCrFe-3, ENiCrFe-2, ERNiCrFe-4, ENiCrFe-4, ENiCr3Tx-y, ENiCrFe2Tx-y, or ENiCrFe3Tx-y. ~~UNS N08087~~. This weld repair option does not require PWHT.

S8.2.2 b)

2) A martensitic, iron-base filler metal having a designation F-No. 4 or F-No. 6 and limited to the following consumables: E9015-B9, E9016-B9, E9018-B9, E9015-B91, E9016-B91, E9018-B91, E91T1-B9, E91T1-B91, ER90S-B9 or ER90S-B91. This weld repair option requires PWHT at a minimum temperature of 1250°F (675°C).

S8.2.2 b)

2) A martensitic, iron-base filler metal having a designation F-No. 4 or F-No. 6 and limited to the following consumables: ~~E9015-B9, E9016-B9, E9018-B9,~~ E9015-B91, E9016-B91, E9018-B91, E91T1-B9, E91T1-B91, ~~ER90S-B9~~ or ER90S-B91. This weld repair option requires PWHT at a minimum temperature of 1250°F (675°C).

S8.3

c) Figures S8.3-a through S8.3-d illustrate the types of acceptable weld joint details using the controlled fill technique for full or partial penetration weld repairs.

S8.3

c) Figures S8.3-a through S8.3-d illustrate the ~~types of acceptable weld joint details~~ deposition of weld passes using the controlled fill technique for full or partial penetration weld repairs. This supplement is not restricted to the repair of girth welds.

Figure S8.3b (inset image 6 – entire figure on following page)

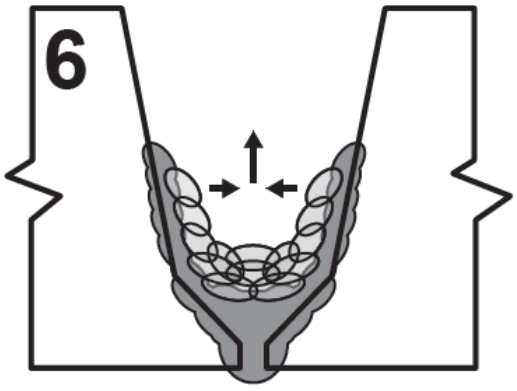


Figure S8.3b

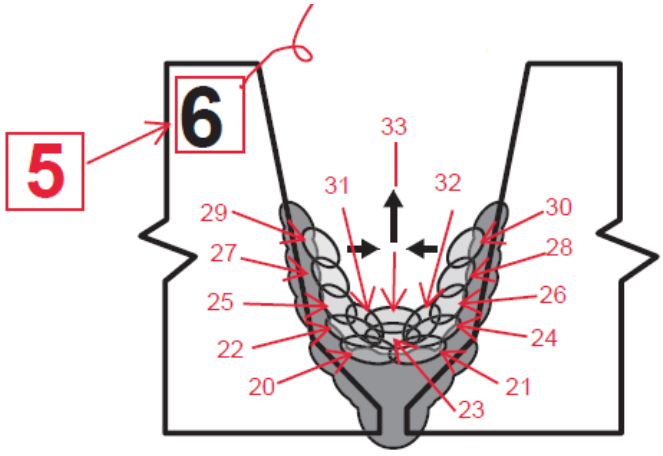
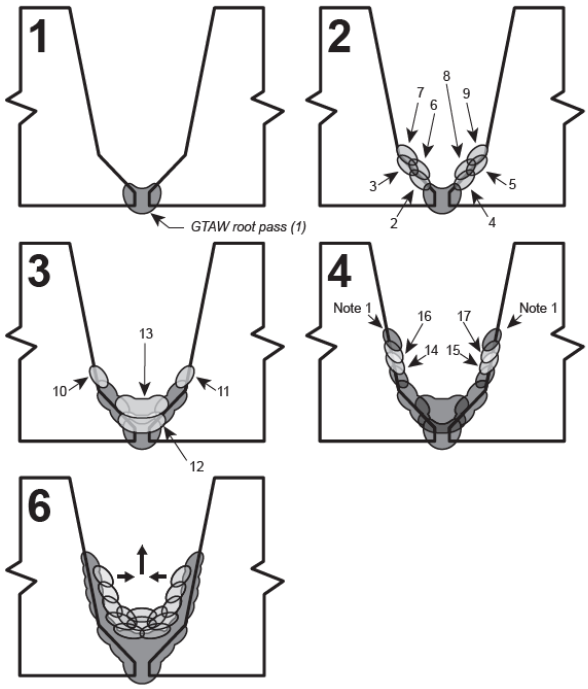


FIGURE S8.3-b.

SCHEMATIC OF THE CONTROLLED FILL WELDING PROCEDURE FOR GRADE 91 STEEL FOR A FULL PENETRATION WELD REPAIR USING A COMPOUND BEVEL.



Note 1 – Where the excavation may pose challenges with electrode access, it is recommended that the fill passes in immediate contact with the machined excavation be restricted in height as the weld repair is performed.

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

Item 23-83

This item proposes to **relocate** three **existing** repair methods and two existing alteration methods to a new Engineered Repairs and Alterations Supplement which was approved by the Main Committee last August.

Note: These are existing activities in the main body of Part 3 and will not, at this time, require an "Advanced Scope/Certificate" issued by the National Board. The "Advanced Scope/Certificate" will be addressed after the 2025 Edition is published. Additionally, these paragraphs have not been modified except for needed references to other relevant parts of Part 3.

The following paragraphs have been relocated to this proposed supplement:

3.3.4.3 WASTED AREAS ~~e) External Weld Metal Buildup~~ *All text in **3.3.4.3(e)**, including **Figure 3.3.4.3-c**, will be relocated to paragraph SXX.2.1 of the new Engineered Repairs and Alteration Supplement as indicated on page 2 of this proposal.*
~~**3.3.4.8 REPAIR OF PRESSURE-RETAINING ITEMS WITHOUT COMPLETE REMOVAL OF DEFECTS**~~ *All text in 3.3.4.8 will be relocated to paragraph SXX.2.2 of the new Engineered Repairs and Alteration Supplement as indicated on page 2 of this proposal.*
~~**3.3.5 REPAIR OF ASME SECTION VIII< DIVISION 2 OR 3, PRESSURE VESSELS**~~ *All text in 3.3.5 will be relocated to paragraph SXX.2.3 of the new Engineered Repairs and Alteration Supplement as indicated on page 2 of this proposal.*
~~**3.4.3 ENCAPSULATION**~~ *All text in 3.4.3 will be relocated to paragraph SXX.3.1 of the new Engineered Repairs and Alteration Supplement as indicated on page 2 of this proposal.*
~~**3.4.5 ALTERATION OF ASME CODE SECTION VIII, DIVISION 2 OR 3, PRESSURE VESSELS**~~ *All text in 3.4.5 will be relocated to paragraph SXX.3.2 of the new Engineered Repairs and Alteration Supplement as indicated on page 2 of this proposal.*

SUPPLEMENT XX – ENGINEERED REPAIRS AND ALTERATIONS

SXX.1 SCOPE

a) This supplement provides requirements and guidelines for engineered repairs and alterations to pressure retaining items. These requirements shall be used in conjunction with the applicable rules of the main Parts of the NBIC.

SXX.2 Engineered Repair Methods

SXX.2.1 EXTERNAL WELD METAL BUILDUP

a) Pressure-retaining items that have localized internal thinning due to erosion and/or corrosion and where the internal surface is not readily accessible may be weld repaired by depositing weld metal on the external surface of the item as shown in NBIC Part 3, Figure SXX.2.1-a. This method of repair is subject to approval by the Inspector and the Jurisdiction, where required.

b) All of the following conditions shall apply for this repair method to be permitted:

1) The component to be repaired shall be a ferrous material;

2) The maximum design temperature of the repaired component shall not exceed 650°F (340°C), and the minimum design temperature shall not be less than -20°F (-29°C);

3) The pressure-retaining item shall be volumetrically examined for cracks in the area to be weld repaired. If cracks are detected, this repair method shall NOT be used;

4) The WPS followed shall be qualified for weld metal buildup in accordance with ASME Section IX. The nominal chemical analysis of the deposited weld metal shall be equivalent to the base material that is to be repaired. In addition, the nominal tensile strength of the deposited weld metal shall be equal to or exceed the specified minimum tensile strength and shall be based on the requirements of the welding consumable. If butt welds in the component being overlaid required postweld heat treatment by the code of construction, the WPS followed for the weld buildup shall be qualified with PWHT;

5) The pressure-retaining item shall be taken out of service prior to performing the weld metal buildup. The owner of the pressure-retaining item shall evaluate the flammability, volatility, or potential reaction of the contents that were in the vessel to ensure safe working conditions during weld repair. When required by the results of this evaluation, the pressure-retaining item shall be drained of its contents to the extent necessary to make the repair;

6) This method may be used more than once in the same areas to repair locally thinned areas; however, the cumulative weld buildup for all repairs shall not exceed the thickness (t) of the component at any point; and

7) Repairs using this method shall not cover more than 25% of the circumference of the component.

c) External weld buildup shall be applied in accordance with the following requirements:

1) The area to be repaired shall be ultrasonically scanned for wall thickness, and the location and size of the thinned region shall be mapped;

2) The area requiring repairs and the boundaries of the weld buildup shall be marked on the external surface of the component;

3) The general design of the external weld buildup shall be in accordance with NBIC Part 3, Figure SXX.2.1-a. The finished weld buildup shall be circular, oval, or rectangular in shape;

4) The weld buildup shall extend, at full thickness, a minimum distance B in each direction beyond the boundaries of the thinned base metal area.

   a. $B = 3/4 \sqrt{(Rt_{nom})}$

   b. R = outer radius of the component, or D/2

   c. t_{nom} = nominal wall thickness of the component

   The thickness shall be sufficient to maintain the predicted life of the repair. Any corrosion allowance that is determined to be necessary shall be added to the value of B.

5) All edges of the weld buildup shall be tapered to the existing contour of the component, at a maximum angle (a) of 45°;

6) The thickness of the weld buildup shall be uniform except along tapered edges as welded surfaces are acceptable, provided they are free of coarse ridges and valleys and are suitable for any required nondestructive examinations;

7) All corners of the weld buildup shall have a minimum radius (r), not less than the overlay thickness;

8) Any corrosion allowance that is determined to be necessary shall be added to the thickness of the weld buildup;

9) The thickness (W) of the weld deposit plus the remaining wall thickness in the affected area (μ) of the component at its thinnest point shall not exceed the nominal wall thickness (t) of the component. This shall be verified by ultrasonic methods;

10) Final dimension and contour of the weld buildup may be achieved by grinding or machining. This work may be done before or after any PWHT;

11) The weld buildup shall be examined by liquid penetrant inspection or wet fluorescent magnetic particle inspection. If the buttwelds in the component being built up were required to be volumetrically examined during the original construction, the built-up area shall be similarly volumetrically examined;

12) For each repair, the maximum dimension (L, length along axis) compensated by a circular or oval weld buildup shall not exceed the lesser of 1/4 the nominal outside diameter or the component or 8 in. (200 mm). The length of a rectangular patch is not limited; and

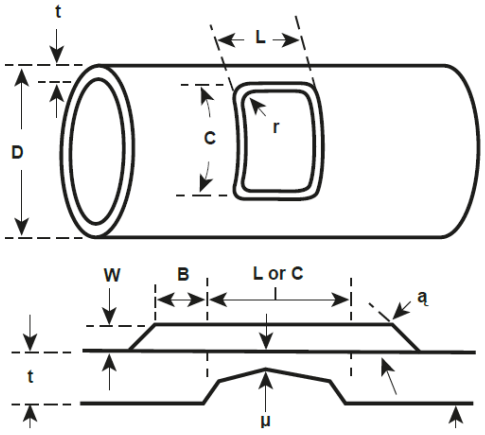
13) The distance between the weld toes of the multiple weld buildup regions on a component's outer diameter surface area shall not be less than $3/4 \sqrt{(Rt)}$.

14) Test and examination methods shall be in accordance with Part 3, Section 4.

15) Documentation and distribution requirements shall be in accordance with Part 3, Section 5.

FIGURE SXX.2.1-a

EXTERNAL OVERLAY TERMS AND DEFINITIONS



L = length of area to be repaired along the axis of the component

C = length of area to be repaired along outside circumference of the component

W = the completed thickness of the overlay

a = the angle between the component and the overlay (maximum 45°)

B = 3/4 $(Rt)^{0.5}$ minimum

R = nominal outside radius of the component

D = the nominal outside diameter of the component

t = nominal wall thickness of the component

μ = remaining wall thickness of the component shall be 1/16 in. (1.6 mm) or greater

r = minimum radius, not less than the overlay thickness

SXX.2.2 REPAIR OF PRESSURE-RETAINING ITEMS WITHOUT THE COMPLETE REMOVAL OF DEFECTS

a) There may be cases where removal of a defect in a pressure-retaining item is not practical at the time the defect is found. In such cases, with approval of the Inspector and, when required, the Jurisdiction, an engineering evaluation shall be performed to determine the scope of the repair and impact to safety prior to returning the pressure-retaining item to service for a specified period of time. The engineering evaluation shall be performed by an organization with demonstrated competency in defect (and flaw) characterization of pressure-retaining items. The method of defect evaluation and time interval for returning the pressure-retaining item back to service shall be as agreed upon by the Inspector, and when required, the Jurisdiction. The specified period of time the defect can remain in service after weld repair shall be based on no measurable defect growth during subsequent inspections, or a period of time as specified by the Jurisdiction, if applicable. This repair method is not permitted for vessels used in lethal service, vessels designed for high-cycle operation or fatigue service, compressed air storage, and in cases where high stress concentration cannot be reduced by weld repair. This repair method is not permitted for DOT vessels.

b) One or more fitness-for-service engineering evaluation methods as described in NBIC Part 2, 4.4 shall be used to determine whether the defect may remain, either in part or in whole, in the pressure-retaining item. If it is determined that the defect can remain in the item, a risk-based inspection program shall be developed as described in NBIC Part 2, 4.5 to assure inspection of the defect and monitoring of defect growth over time. This program shall be a controlled and documented inspection program that specifies inspection intervals as agreed upon with the Inspector and, when required, the Jurisdiction, and shall be maintained until the defect can be completely removed and the item repaired.

c) The following requirements shall apply to the weld repair of pressure-retaining items without complete removal of defects:

    1) Engineering evaluation of the defect in the pressure-retaining item shall be conducted using one or more fitness-for-service condition assessment method(s) as described in NBIC Part 2, 4.4. Engineering evaluation of the condition assessment results shall be performed by an organization

that has demonstrated industry experience in evaluating pressure-retaining items, if the fitness-for-ser- vice engineering evaluation requires finite element analysis (FEA), the requirements in NBIC Part 2, 4.6 and NBIC Part 2, Supplement 11 shall be met.

2) If engineering evaluation indicates a defect can remain in the pressure-retaining item, a risk-based inspection program shall be developed and implemented based on review and acceptance by the Inspector and, when required, the Jurisdiction. The risk-based inspection program shall be in accordance with the requirements in NBIC, Part 2, 4.4.

3) The fitness-for-service condition assessment and risk-based inspection programs shall remain in effect for the pressure-retaining item until such time that the defect can be completely removed and the item repaired. The fitness-for-service condition assessment method, results of assessment, and method of weld repair, if applicable, shall be documented on a Report of Fitness for Service Assessment (FFSA) Form as described in NBIC Part 2, 4.4.1 and shall be filed with the Jurisdiction, when required.

4) When weld repairs are performed without complete removal of the defect(s), this shall be noted on the Form R-1 in the description of the work. The “R” Stamp Holder performing the weld repairs shall provide detailed information on the Form R-1, describing the method, extent, and include the specific location of the weld repair on the item.

5) The interval to re-inspect or remove the item from service or perform weld repair shall be determined based on a risk-based inspection program developed and implemented as required by NBIC Part 2, 4.5. The inspection interval shall not exceed the remaining life of the item, and shall be documented on the Form NB-403 and in the Remarks section of the Form R-1. The Form NB-403 shall be affixed to the Form R-1. A National Board Commissioned Inspector holding an “R” endorsement as described in NB-263, RCI-1 shall sign both the Form R-1 and the attached Form NB-403.

6) A copy of the completed Form R-1 with the completed Form NB-403 attached may be registered with the National Board, and when required, filed with the Jurisdiction where the item was installed.

SXX.2.3 REPAIR OF ASME SECTION VIII, DIVISION 2 OR DIVISION 3 PRESSURE VESSELS

a) Scope

The following requirements shall apply for the repair of pressure vessels constructed to the requirements of Section VIII, Division 2 or 3 of the ASME Code.

b) Repair Plan

The user shall prepare or cause to have prepared, a detailed plan covering the scope of repair.

1) Engineer Review and Certification

The repair plan shall be reviewed and certified by an engineer meeting the criteria of ASME Section VIII, Division 2 or 3, as applicable, for an engineer signing and certifying a Manufacturer’s Data Report. The review and certification shall be such as to ensure the work involved in the repair is compatible with the User’s Design Specification and the Manufacturer’s Data Report. The certifying requirement may be waived for ASME Section VIII, Division 2, Class 1 vessels that did not require the Manufacturer’s Design Report to be certified during initial construction.

Note: The engineer qualification criteria of the Jurisdiction where the pressure vessel is installed should be verified before selecting the certifying repair.

2) Authorized Inspection Agency Acceptance

Following review and certification, the repair plan shall be submitted for acceptance to the Authorized Inspection Agency/Owner-User Inspection Organization whose Inspector will make the acceptance inspection and sign the Form R-1.

SXX.3 ENGINEERED ALTERATION METHODS

SXX.3.1 ENCAPSULATION

Encapsulation is a method used to maintain the pressure retaining capability of piping and valves (with the exception of firetube boilers) by fabricating a new pressure containing boundary over the item in the form of a “welded leak box” as described by ASME PCC-2, Article 204.

a) Except as required in SXX.3.1 c) 1), ASME PCC-2 should be used as a guideline for the design of the welded leak box and fabrication shall be in accordance with the original code of construction, when practicable. Design of the encapsulation shall consider original design conditions, taking into account current service conditions and damage mechanisms. Use of this method shall be acceptable to the inspector and when required, the jurisdiction.

b) The “R” Certificate Holder responsible for the design of the encapsulation shall ensure a Fitness for Service Assessment (FFSA) has been performed on the portion of the item being encapsulated in accordance with NBIC Part 2, 4.4.1, supporting the continued service of the item. The leak box shall not remain in place beyond the calculated remaining life of the encapsulated portion of the pressure retaining item.

   1) The remaining life of the encapsulated pressure retaining item shall be documented on the Report of FFSA in the Remarks section. The Report of FFSA Form shall be affixed to the Form R-2 and identified in the Remarks section.

   2) The leak box shall fully encapsulate the thinned or leaking area, as specified in the FFSA, to the distance where the minimum required metal thickness is verified. Wall thickness shall be verified in the area to be welded.

   3) A welded leak box shall not be used to encapsulate a crack unless it has been removed and repaired in accordance with Part 3, Paragraph 3.3.4.2 a).

c) Hazards associated with welding on degraded components should be addressed with the Owner-User by the use of engineering controls, administrative controls, and personal protective equipment.

   1) When the pressure retaining item will remain in service while implementing this method, the requirements and limitations described within ASME PCC-2, Part-1 shall be used in conjunction with the Welded Leak Box Repair article in ASME PCC-2, Part-2, Article 210.

   2) API RP-2201, “Safe Hot Tapping Practices in the Petroleum and Petrochemical Industries” may be used as a guideline for identifying hazards associated with welding to a component that is under pressure, including service restrictions.

d) Visual examination shall be in accordance with the NBIC Part 3, 4.4.1 e).

e) Completion of the Form R-2 shall follow the requirements for preparation, distribution, and registration as described in Part 3, Section 5.

SXX.3.2 ALTERATION OF ASME SECTION VIII, DIVISION 2 OR 3, PRESSURE VESSELS

a) Alteration Plan

1) Engineer Review and Certification

a. The alteration plan shall be reviewed and certified by an engineer meeting the criteria of ASME Section VIII, Division 2 or 3, as applicable, for an engineer signing and certifying a Manufacturer's Design Report. The review and certification shall be such as to ensure the work involved in the alteration is compatible with the User's Design Specification and the Manufacturer's Design Report.

b. Provided that the alteration does not introduce a condition that would require an engineer to sign the Manufacturer's Design Report for ASME Section VIII, Division 2, Class 1 vessels, the certifying requirement may be waived for vessels that did not require the Manufacturer's Design Report to be certified during initial construction.

Note: The engineer qualification criteria of the jurisdiction where the pressure vessel is installed should be verified before selecting the certifying engineer.

2) User's Design Specification

If the alteration is such that the work is not compatible with, or changes one or more requirement(s) of the original user's design specification, the user's design specification shall be revised by the user with the new parameters or changes. The revisions shall be certified by an engineer meeting the criteria of ASME Section VIII, Division 2 or 3, as applicable, for an engineer signing and certifying a Manufacturer's Design Report.

Note: The engineer qualification criteria of the Jurisdiction where the pressure vessel is installed should be verified before selecting the certifying engineer.

3) Manufacturer's Design Report

a. The "R" Certificate Holder shall prepare, or cause to have prepared a supplement to the Manufacturer's Design Report to reconcile the new parameters or changes with the User's Design Specification.

b. The supplement to the Manufacturer's Design Report shall be certified by an engineer meeting the criteria of ASME Section VIII, Division 2 or 3, as applicable, for an engineer signing and certifying a Manufacturer's Design Report.

Note: The engineer qualification criteria of the Jurisdiction where the pressure vessel is installed should be verified before selecting the certifying engineer.

4) Authorized Inspection Agency Acceptance

Following review and certification, the alteration plan shall be submitted for acceptance to the Authorized Inspection Agency/Owner-User Inspection Organization whose inspector will make the acceptance inspection and sign the Form R-2.

Background: The DOT is requesting that the below **two** changes be added to Item 20-67 which was approved by Main Committee and will be published in the 2025 Edition of the NBIC Part 3. These changes will address a proposed future revision to the DOT standard.

SUPPLEMENT 6
REPAIR, ALTERATION, AND MODIFICATION OF DOT TRANSPORT (CARGO) TANKS

S6.1 SCOPE

This supplement provides requirements and guidelines for repairs, alterations, or modifications to DOT Transport Tanks used for the transportation of dangerous goods via highway, rail, air, or water.

S6.2 DEFINITIONS

The definitions specified in NBIC Part 3, Section 9, *Glossary*, shall be used in conjunction with those specified in NBIC Part 2, S6.17. Where conflicts between definitions exist, those identified in NBIC Part 2, S6.17 shall take precedence.

S6.3 CONSTRUCTION STANDARDS

When the standard governing the original construction is the ASME Code or other regulations of the Competent Authority, repairs, alterations, or modifications shall conform, insofar as possible, to the edition of the construction standard or specification most applicable to the work. Where this is not possible or practicable, it is permissible to use other codes, standards or specifications, including the ASME Code provided the "R" Certificate Holder has the concurrence of the Inspector and if required, the Competent Authority.

S6.4 ACCREDITATION AND REGISTRATION

Organizations performing repairs, alterations, or modifications shall be accredited in accordance with the National Board “R” Accreditation Program. In addition repair organizations performing repairs, alterations, or modifications to transport tanks shall be registered with DOT as required by 49 CFR Part 180.

S6.5 AUTHORIZATION

The Inspector’s authorization to perform a repair, alteration, or modification shall be obtained prior to initiation of the work to be performed on a transport tank. When required by the Competent Authority, the Inspector providing the authorization shall be a Registered Inspector. Additional requirements are specified in NBIC Part 3, 1.3.1 and 1.3.2.

S6.6 INSPECTION

Inspection and certification shall be made by an Inspector holding an appropriate National Board Commission as required by NBIC Part 3, 1.3, and when required by the Competent Authority, the Inspector shall also be a Registered Inspector.

S6.7 MODIFICATIONS

All modifications, as defined in NBIC Part 2, Supplement 6, to the pressure-retaining item shall meet the requirements of NBIC Part 3 for alterations and 49CFR180.413(b).

S6.8 DRAWINGS AND CALCULATIONS

a) Design requirements for repairs, alterations and modifications shall comply with the requirements of NBIC Part 3, 3.2.4.

b) As appropriate, drawings or instructions shall be prepared to describe the repair, alteration, or modification. Drawings shall include sufficient information to satisfactorily perform the activity.

c) The design of alterations and modifications shall be completed by an organization experienced in the design portion of the standard used for the construction of the item and certified by a Design Certifying Engineer as defined in NBIC Part 2, S6.17. Design documents shall be completed prior to the start of any physical work and be available for review by the Inspector accepting the design.

S6.9 MATERIALS

The materials used in making repairs, alterations, or modifications shall conform to the original code of construction including the material specification requirements. Carbon or alloy steel having a carbon content of more than 0.35% (0.30% for ton tanks) shall not be welded unless permitted by the original code of construction. The “R” Certificate Holder is responsible for verifying the identification of existing materials from original data, drawings, or unit records and identification of the material to be installed. Materials that have previously been in service, as described in Part 3, 3.2.1 c), are not permitted for alterations or modifications of DOT Transport Tanks per 49 CFR Part 180. Additional material requirements are provided in NBIC Part 3, Section 3.

S6.10 REPLACEMENT PARTS

Replacement parts to be used in repairs, alterations, and modifications of DOT Transport Tanks shall comply with the requirements provided in NBIC Part 3, 3.2.2.

S6.11 WELDING

a) Welding, including procedure specification qualification, performance qualification, qualification records, qualified personnel identification, continuity of qualified personnel, and process continuity records shall be in accordance with the requirements of the original code of construction used for the fabrication of the pressure retaining item and Part 3, Section 2.

b) For hydrogen control when low alloy steel filler metals are used, the filler metal classification shall include an H4 supplemental diffusible hydrogen designator (maximum 4 ml [H2]/100 g deposited metal) for each of the following welding processes:

   1) electrodes for shielded metal arc welding (SMAW) conforming to SFA-5.5;

   2) electrodes and fluxes for submerged arc welding (SAW) conforming to SFA-5.26;

   3) electrodes and rods for gas shielded metal arc welding (GMAW) conforming to SFA-5.28;

   4) electrodes for flux-cored arc welding (FCAW) conforming to SFA 5.29.

c) Practices used for controlling storage and exposure of filler metals shall be those developed by the “R” Certificate Holder or those recommended by the filler metal manufacturer.

S6.12 HEAT TREATMENT

S6.12.1 PREHEATING

Preheating may be employed during use of a process to assist in completion of the joint Preheating shall comply with the requirements in NBIC Part 3, 2.5.1.

S6.12.2 POSTWELD HEAT TREATMENT (PWHT)

Postweld heat treatment used in repairs, alterations, and modifications of DOT Transport Tanks shall comply with the requirements provided in NBIC Part 3, 2.5.2 and the Competent Authority.

S6.12.3 ALTERNATIVES TO POSTWELD HEAT TREATMENT

a) Under certain conditions, postweld heat treatment in accordance with the original code of construction may be inadvisable or impractical. In such instances, alternative methods of postweld heat treatment or special welding methods in accordance with NBIC Part 3, 2.5.3, and acceptable to the Inspector and Competent Authority may be used.

b) When the standard governing the original construction is the Code of Federal regulation for DOT/MC 331 transport tanks for propane, butane, anhydrous ammonia, and other DOT permitted commodities, and the tanks are made to the ASME Code, Section VIII, Division 1, Part UHT, repairs, alterations, or modifications shall conform insofar as possible, to the edition of the construction standard or specification most applicable to the work. Where this is not possible or practicable, it is permissible to use other codes, standards, or specifications provided the “R” Certificate Holder has the concurrence of the DOT. Shells and heads of MC 331 transport tanks were made from quenched and tempered alloy steel plate, SA517, Grade E (originally Code Case 1298) and Grade F (originally Code Case 1204) prior to 1994.

c) The 1994 ASME Code Addenda revised UHT-5(b) to permit the joining of UHT materials to UCS or UHA materials in head and shell sections. Propane, butane, and anhydrous ammonia are the most common transported commodities and the shipper is required by DOT to comply with certain composition limitations. Propane and butane transported must have sufficiently low hydrogen sulfide content so as not to exceed the limitations for Classification One of the ASTM D1838-74 copper strip test, and the anhydrous ammonia transported must be inhibited with a minimum water content of 0.2% by weight. In addition, such transport tanks made for propane, butane, and anhydrous ammonia service must be postweld heat treated, unless specifically exempted by a DOT special permit that exempts PWHT.

S6.13 REPAIRS OF DEFECTS

a) Before a repair is made to a defect in a welded joint or base metal, care should be taken to investigate its cause and to determine its extent and likelihood of recurrence. This information shall be made available to the Inspector.

b) For MC 330 and MC 331 transport tanks, when a repair is made to defects revealed by the wet fluorescent magnetic particle examination, including those repaired by grinding, the affected area of the transport tank must again be examined by the wet fluorescent magnetic particle method after hydrostatic testing to assure that all defects have been removed.

S6.14 NONDESTRUCTIVE EXAMINATION

a) The nondestructive examination (NDE) requirements, including qualification of NDE personnel shall comply with the requirements in NBIC Part 3, 4.2 and the Competent Authority.

S6.15 MEASUREMENT, EXAMINATION, AND TEST EQUIPMENT

The calibration of pressure gages, measurement, examination, and test equipment, and documentation of calibration shall be performed, as required, by the applicable standard used for construction. This system shall be documented.

S6.16 PRESSURE TESTS FOR REPAIRS AND ALTERATIONS

The following requirements shall apply to all repairs, alterations, or modifications to DOT Transport Tank pressure-retaining items:

a) The integrity of repairs alterations, modifications, and replacement parts used in repairs, alterations, or modifications shall be verified by a pressure test;

b) Pressure testing shall be conducted in accordance with the original code of construction and the regulations of the Competent Authority.

c) The “R” Certificate Holder is responsible for all activities relating to the pressure testing of repairs, alterations, or modifications;

S6.16.1 PRESSURE TEST METHODS APPLICABLE TO REPAIRS

a) Liquid Pressure Test

Liquid pressure testing of repairs to DOT Transport Tanks shall comply with NBIC Part 3, 4.4.1(a) and the following requirements:

1) Liquid pressure tests shall be conducted in accordance with the requirements of the original code of construction and the regulations of the Competent Authority at pressures established in Table S6.16-a. When the original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance;

TABLE S6.16-a
TEST PRESSURE REQUIREMENTS FOR REPAIRS PER 49CFR180.413 and 49CFR180.407.

Transport Tank Specification	Test Pressure
MC 300, 301, 302, 303, 305, 306	The test pressure on the name plate or specification plate, 20.7 kPa (3 psig) or design pressure, whichever is greater.
MC 304, 307	The test pressure on the name plate or specification plate, 275.8 kPa (40 psig) or 1.5 times design pressure, whichever is greater.
MC 310, 311, 312	The test pressure on the name plate or specification plate, 20.7 kPa (3 psig) or 1.5 times design pressure, whichever is greater.
MC 330, 331	The test pressure on the name plate or specification plate, 1.5 times either MAWP or the re-rated pressure, whichever is applicable. DOT Transport Tanks

	constructed in accordance with Part UHT in Section VIII, Division 1 of the ASME Code shall be tested at a pressure at least twice the design pressure.
MC 338	The test pressure on the name plate or specification plate, 1.25 times either MAWP or the re-rated pressure, whichever is applicable.
DOT 406	The test pressure on the name plate or specification plate, 34.5 kPa (5 psig) or 1.5 times the MAWP, whichever is greater.
DOT 407	The test pressure on the name plate or specification plate, 275.8 kPa (40 psig) or 1.5 times the MAWP, whichever is greater.
DOT 412	The test pressure on the name plate or specification plate, 1.5 times the MAWP, whichever is greater.

b) Pneumatic Test

A pneumatic test may be conducted in accordance with the requirements of the original code of construction and the regulations of the Competent Authority at pressures established in Table 6.16-a. Concurrence of the owner shall be obtained in addition to that of the Inspector and the Competent Authority, where required. Precautionary requirements of the original code of construction and NBIC Part 2, S6.13.6.1(c) shall be followed.

S6.16.2 PRESSURE TEST METHODS APPLICABLE TO ALTERATIONS AND MODIFICATIONS

a) Liquid Pressure Test

Liquid pressure testing of alterations and modifications to DOT Transport Tanks shall comply with NBIC Part 3, 4.4.2(a) and the following requirements:

1) Liquid pressure tests shall be conducted in accordance with the requirements of the original code of construction and the regulations of the Competent Authority at pressures established in Table S6.16-b. When the original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance;

TABLE S6.16-b
TEST PRESSURE REQUIREMENTS FOR ALTERATIONS AND MODIFICATIONS PER 49CFR180.413 AND THE APPLICABLE DOT TRANSPORT TANK SPECIFICATION

Transport Tank Specification	Test Pressure
MC 300, 301, 302, 303, 305, 306	The test pressure on the name plate or specification plate, 20.7 kPa (3 psig) or design pressure, whichever is greater.
MC 304, 307	The test pressure on the name plate or specification plate, 275.8 kPa (40 psig) or 1.5 times design pressure, whichever is greater.
MC 310, 311, 312	The test pressure on the name plate or specification plate, 20.7 kPa (3 psig) or 1.5 times design pressure, whichever is greater.
MC 330, 331	The test pressure on the name plate or specification plate, 1.5 times either MAWP or the re-rated pressure, whichever is applicable. DOT Transport Tanks constructed in accordance with Part UHT in Section VIII, Division I of the ASME Code shall be tested at a pressure at least twice the design pressure.
MC 338	The test pressure on the name plate or specification plate or 1.5 times the design pressure, plus static head of lading, plus 101.3 kPa (14.7 psi) if subjected to external vacuum. DOT Transport Tanks constructed in accordance with Part

	UHT in Section VIII, Division 1 of the ASME Code shall be tested at a pressure at least twice the design pressure.
DOT 406	The test pressure on the name plate or specification plate, 34.5 kPa (5 psig) or 1.5 times the MAWP, whichever is greater.
DOT 407	The test pressure on the name plate or specification plate, 275.8 kPa (40 psig) or 1.5 times the MAWP, whichever is greater.
DOT 412	The test pressure on the name plate or specification plate, 1.5 times the MAWP, whichever is greater.

c) Pneumatic Test

A pneumatic test may be conducted in accordance with the requirements of the original code of construction and the regulations of the Competent Authority at pressures established in Table 6.16-b. Concurrence of the owner shall be obtained in addition to that of the Inspector and the Competent Authority, where required. Precautionary requirements of the original code of construction and NBIC Part 2, S6.13.6.1(c) shall be followed.

S6.17 ACCEPTANCE INSPECTION

The Inspector making the acceptance inspection shall be the same Inspector who authorized the repairs, alterations, or modifications. Where this is not possible or practicable, another Inspector may perform the acceptance inspection; however, in all cases, the Inspector who performs the acceptance inspection shall be an employee of the same organization as the Inspector who authorized the repairs, alterations, or modifications.

S6.18 GENERAL STAMPING REQUIREMENTS

The stamping of or attaching of a nameplate to a pressure-retaining item shall indicate that the work was performed in accordance with the requirements of this code and any requirements of the Competent Authority. Such stamping or attaching of a nameplate shall be done only with the knowledge and authorization of the Inspector. The “R” Certificate Holder responsible for the repair or the construction portion of the modification/alteration shall apply the stamping. For a re-rating where no physical changes are made to the pressure-retaining item, the “R” Certificate Holder responsible for the design shall apply the stamping. Requirements for stamping and nameplate information are shown in NBIC Part 3, Section 5.

S6.18.1 SPECIFIC “R” STAMPING AND NAMEPLATE REQUIREMENTS

The holder of a “R” *Certificate of Authorization* is required to affix a stamping or nameplate on the Transport Tank that indicates, the repair, alteration, or modification has been performed in accordance with the requirements of NBIC Part 3, Supplement 6 and the additional requirements of the code of construction. All repairs, alterations, and modifications, after acceptance by the Inspector, shall have the “R” Symbol affixed to the stamping or the nameplate. The stamping or nameplate information shall satisfy the requirements of NBIC Part 3, 5.7.

S6.18.2 REMOVAL OF ORIGINAL STAMPING OR NAMEPLATE

Removal of the original stamping or nameplate shall comply with the requirements of NBIC Part 3, 5.11.

S6.18.3 REPLACEMENT OF STAMPING OR NAMEPLATE

Replacement of indistinct stamping or lost, illegible, or detached nameplates shall comply with the requirements provided in NBIC Part 2, 5.2.

S6.19 FORM “R” REPORTS

S6.19.1 DOCUMENTATION OF FORM “R” REPORTS

Repairs, alterations, or modifications that have been performed in accordance with the NBIC shall be documented on Form R-1, *Report of Repair* or Form R-2, *Report of Alteration* as shown in NBIC Part 3, Section 5. Form R-4, *Report Supplementary Sheet*, shall be used to record additional data when space is insufficient on Form R-1 or R-2.

S6.19.2 PREPARATION OF FORM “R” REPORTS

Preparation of “R” Forms shall be the responsibility of the “R” Certificate Holder performing the repairs, alterations, or modifications and shall comply with the requirements provided in NBIC Part 3, 5.2.1, 5.2.2 and 5.2.4.

S6.19.3 DISTRIBUTION OF FORM “R” REPORTS

Distribution of Form “R” Reports shall comply with the requirements provided in NBIC Part 3, 5.3 and 5.4

S6.19.4 REGISTRATION OF FORM ”R” REPORTS

a) Repair organizations performing repairs, alterations, or modifications required by this supplement shall submit the completed “R” Form, meeting the requirements of the NBIC, to the National Board.

b) The repair organization shall maintain a sequential Form Registration Log as described in Part 3, 5.6.

PROPOSED REVISION OR ADDITION

Item No.

A 24-01

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject/Title

Change to Examples of Repairs

NBIC Location

Part: Repairs and Alterations; Section: 3; Paragraph: 3.3.3(j)

Project Manager and Task Group

Source (Name/Email)

Matt Schaser / mschaser@e2g.com

Statement of Need

Revision to 3.3.3(j) is needed to establish a code-based nozzle-to-nozzle spacing requirement to cover nozzle installation for ASME design requirements.

Background Information

A recent interpretation request (I23-64) has identified a potential nonconservative design requirement in the example of a repair, paragraph 3.3.3(j), "addition of identical nozzles". The caveat regarding nozzle spacing appears arbitrary and may be nonconservative if a new nozzle is installed close to a larger nozzle. Revision to 3.3.3(j) is needed to establish a code-based spacing requirement to cover ASME design requirements. Justification provided below.

Existing Text

The addition of a nozzle where reinforcement is a consideration may be considered to be a repair, provided the nozzle is identical to one in the original design, located in a similar part of the vessel, and not closer than three times its diameter from another nozzle. The addition of such a nozzle shall be restricted by any service requirements.

Proposed Text

j) The addition of a nozzle (or opening) where reinforcement is ~~a consideration may be~~required is considered to be a repair, provided all the following are satisfied:

1) ~~–T~~the nozzle is identical to one in the original design (including orientation).~~,~~

2) The nozzle is ~~–~~located in a similar part of the vessel.

~~,~~3) The spacing between the nozzle and any adjacent nozzles is no ~~and not~~ closer than three times ~~its~~ the average finished opening diameter ~~from another~~of the nozzle and the adjacent nozzle, measured from the nozzles' centerlines.

4) Material within the nozzle's limits of reinforcement, measured parallel to the vessel wall, as defined in the applicable code of construction is available in its entirety for reinforcement.

5) The ~~addition of such a~~ nozzle ~~shall be~~is not restricted by any service requirements.

Current Text

j) The addition of a nozzle where reinforcement is a consideration may be considered to be a repair, provided the nozzle is identical to one in the original design, located in a similar part of the vessel, and not closer than three times its diameter from another nozzle. The addition of such a nozzle shall be restricted by any service requirements;

Clean Version of Proposed Text

j) The addition of a nozzle (or opening) where reinforcement is required is considered a repair, provided all the following are satisfied:

1) The nozzle is identical to one in the original design (including orientation).
2) The nozzle is located in a similar part of the vessel.
3) The spacing between the nozzle and any adjacent nozzles is no closer than three times the average finished opening diameter of the nozzle and the adjacent nozzle, measured from the nozzles' centerlines.
4) Material within the nozzle's limits of reinforcement, measured parallel to the vessel wall, as defined in the applicable code of construction is available in its entirety for reinforcement.
5) The nozzle is not restricted by any service requirements.

Code Synopsis:

This current revision does not require calculations by the R-Certificate holder. As written, it is referenced to the centerline of two adjacent nozzles; however, it can be re-phrased to reference the ODs of two adjacent nozzles, i.e. ($d_1 + d_2$). This revision would provide a conservative spacing requirement with respect to the reinforcement requirements of Section 1, B31-1, B31-3, Section VIII-1, and Section VIII-2. Note that the reinforcement limits for Section 1, Section IV, B31-1, B31-3, and Section VIII-1 are equivalent. However, as an upper bound they may encroach the upper-bound limits of VIII-2. Therefore, VIII-2 upper-bound limits of reinforcement are used to provide a conservative recommendation on spacing, see figure below. Note, if these spacing requirements are restrictive, code calculations can be performed to identify the specific code required spacing limit which will likely provide a more acceptable limit.

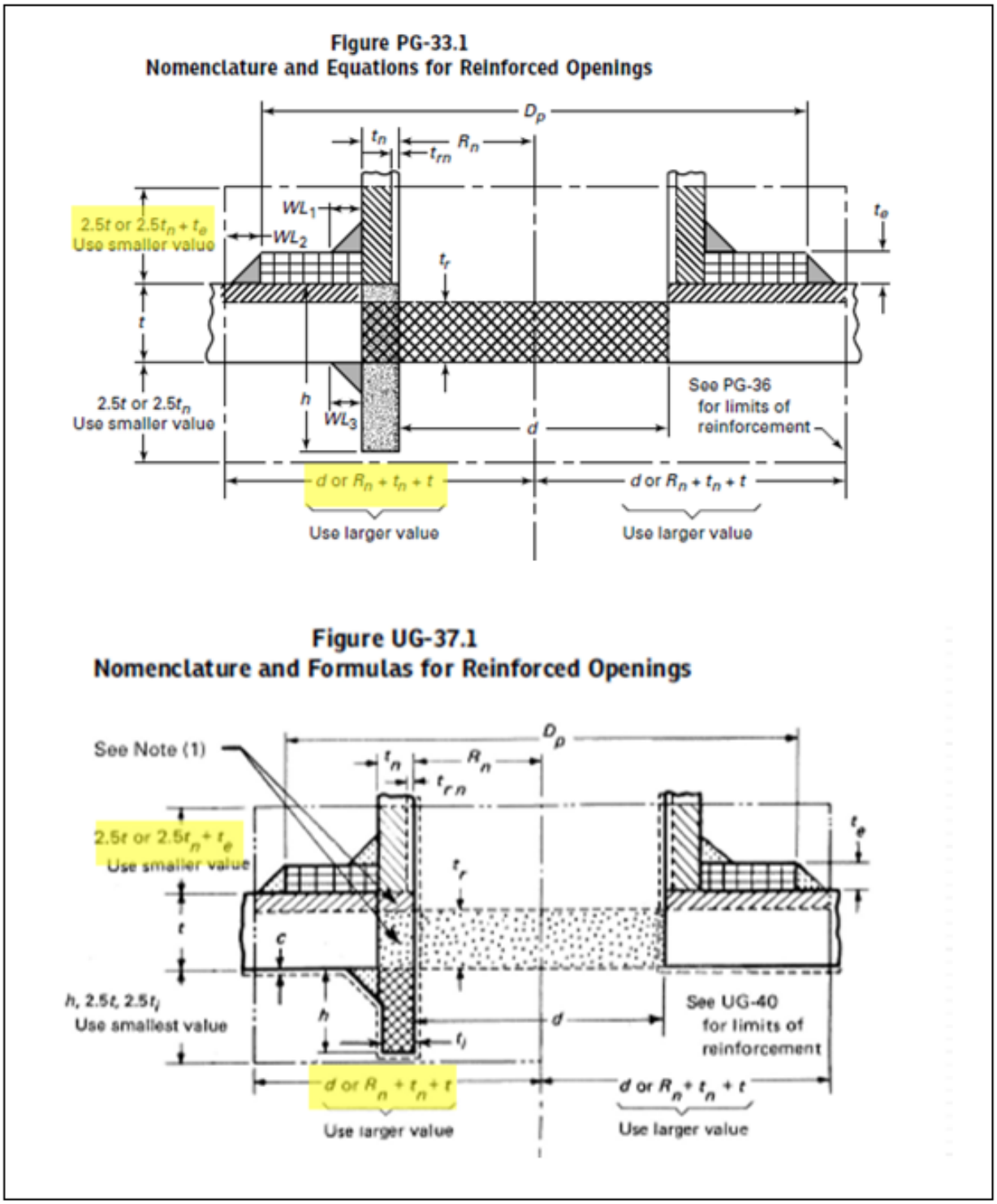


Figure 1. Section I vs. Section VIII, Division 1 limits of reinforcements

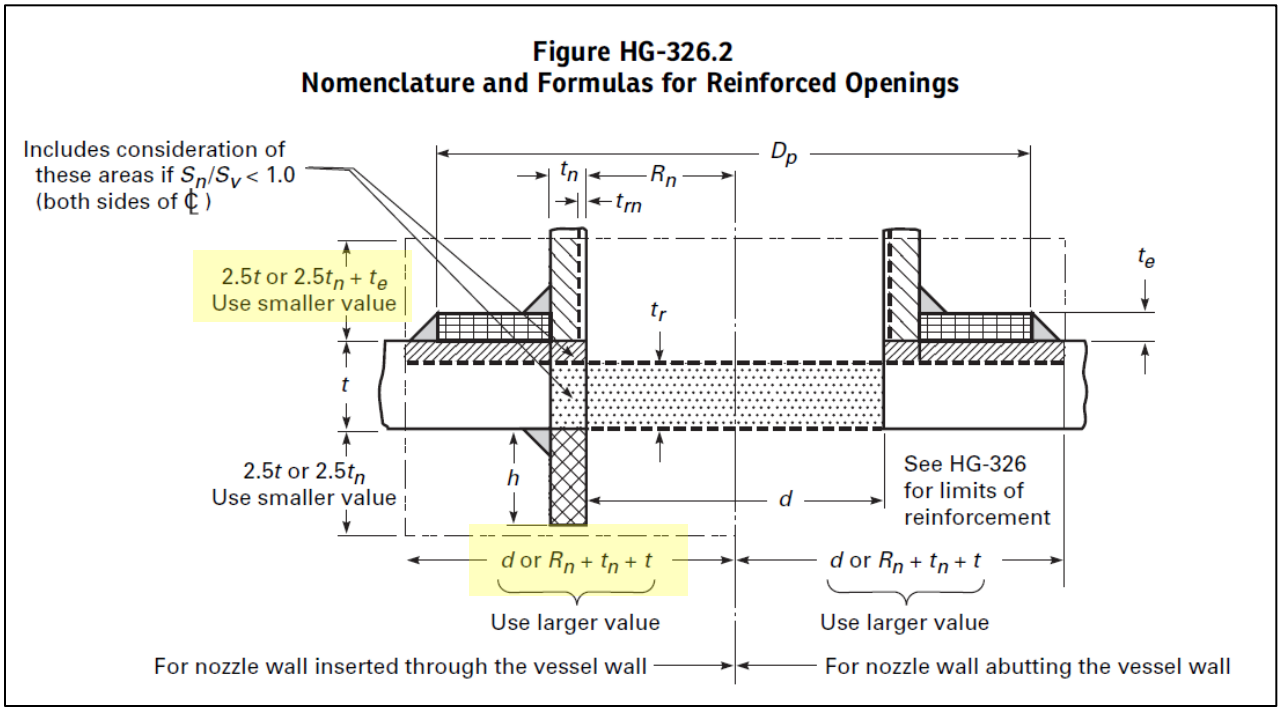


Figure 2. Section IV limits of reinforcements

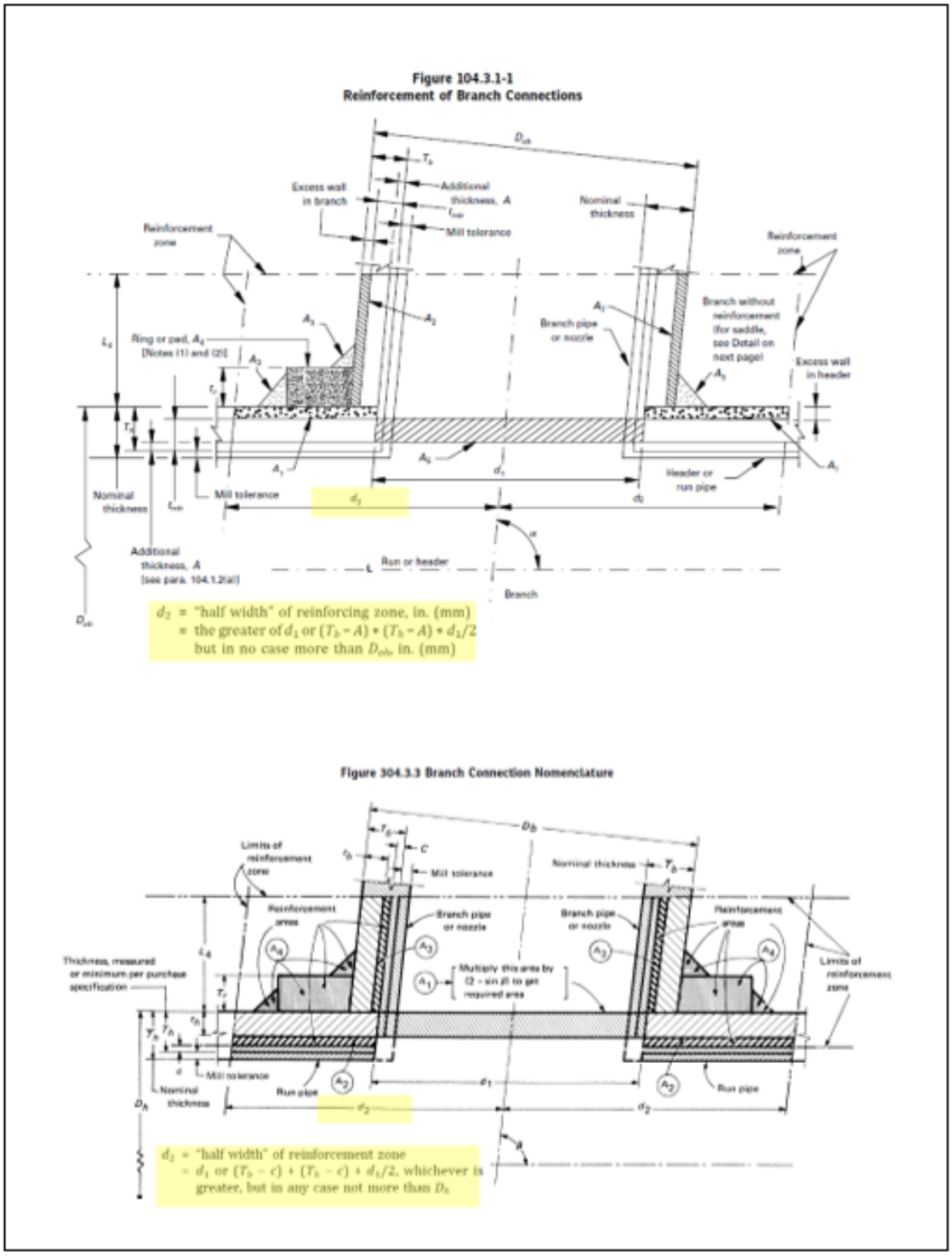
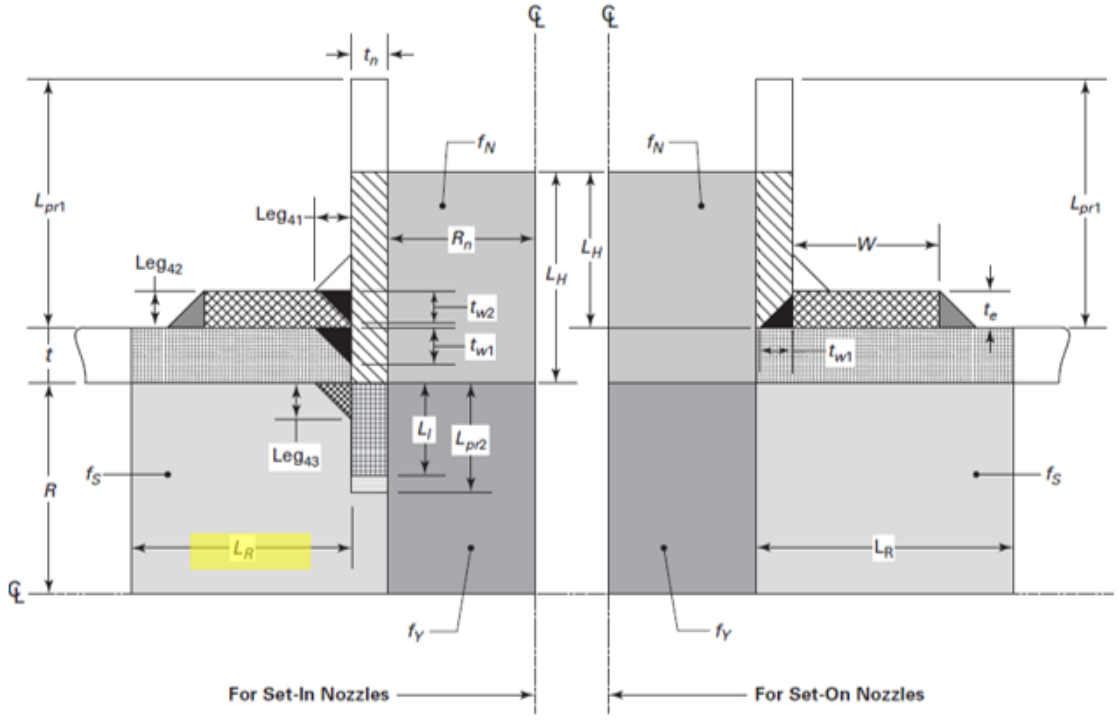


Figure 3. B31.1 vs. B31.3 limits of reinforcements

Figure 4.5.1
Nomenclature for Reinforced Openings



Step 2. Calculate the limit of reinforcement along the vessel wall.
(a) For integrally reinforced nozzles:

$$L_R = \min\left[\sqrt{R_{eff}t}, 2R_n\right] \quad \text{for set-in nozzles} \quad (4.5.4)$$

$$L_R = \min\left[\sqrt{R_{eff}t}, 2R_n\right] + t_n \quad \text{for set-on nozzles} \quad (4.5.5)$$

Figure 4. Section VIII-2 limits of reinforcements

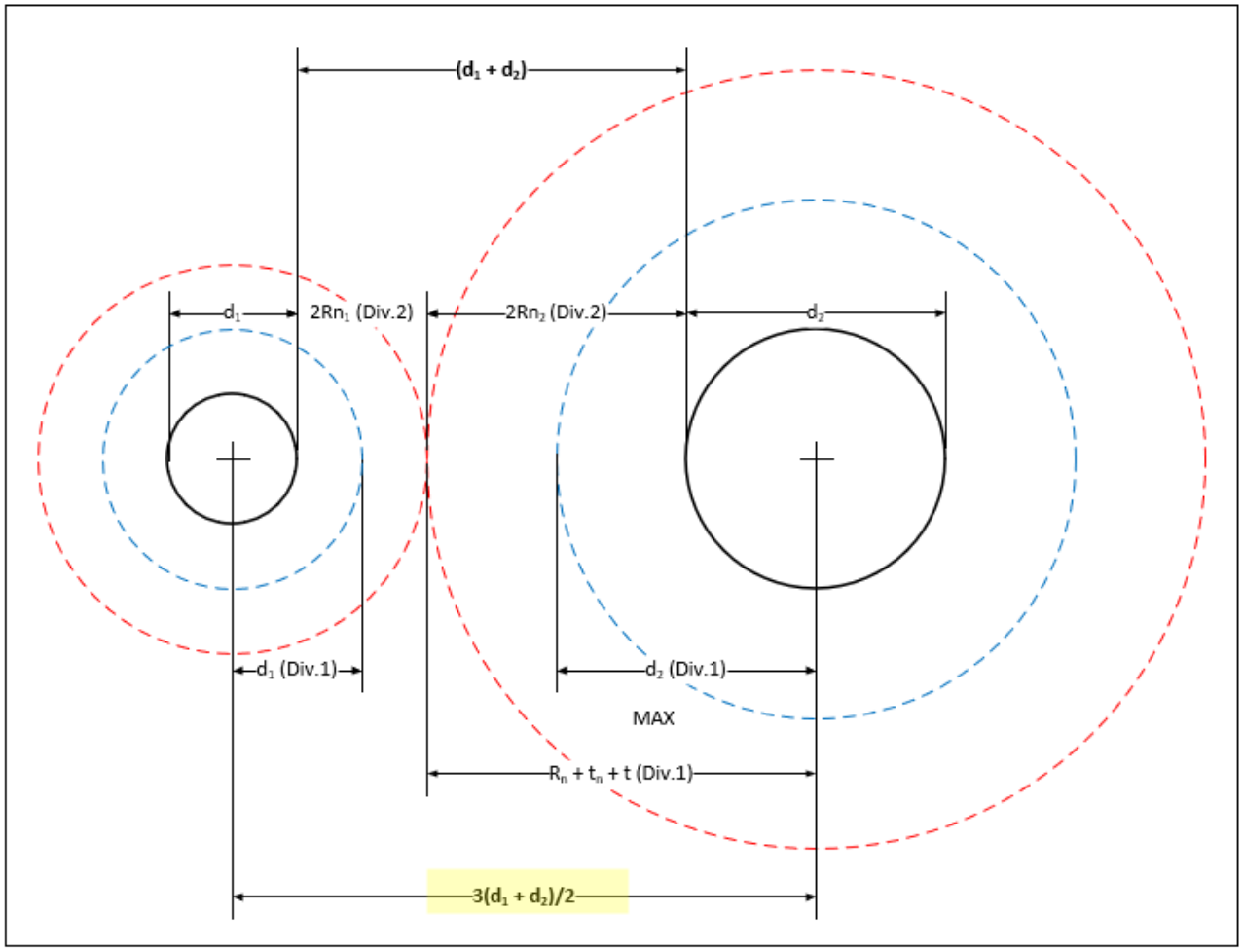


Figure 5. Section (I, IV, VIII-1, B31-1, B31-3) vs. VIII-2 limits of reinforcements

PROPOSED REVISION OR ADDITION

Item No.

A 24-12

Subject/Title

Reference to change of service for LPG vessels incorrectly uses "altered"

NBIC Location

Part: Repairs and Alterations; Section: Supplement 7; Paragraph: S7.5

Project Manager and Task Group

Source (Name/Email)

Thomas Vandini / tvandini@propanetank.com

Statement of Need

Conversion of service for LPG tanks (typically from above ground to underground service) typically involves changes to the vessel covered under Part 3, Paragraph 3.3.3 and, as such, are considered repairs. As such, the language referring to these conversions that uses the word "altered" may be confusing to an inspector or other user of NBIC. I suggest changing the word "altered" to "changed". This action item was previously submitted requesting changes to both Part 2 and Part 3 under Item 23-30. The changes to Part 2 were reviewed and approved by SG Inspection, SC Inspection, and Main Committee in July 2023. However, a separate action item to address the changed needed in Part 3 was never opened. Therefore, I'm submitting this now as a new action item for Part 3. A similar language change has already been approved for Part 2. This change request is to synchronize the language in both parts.

Background Information

This action item was previously submitted requesting changes to both Part 2 and Part 3 under Item 23-30. The changes to Part 2 were reviewed and approved by SG Inspection, SC Inspection, and Main Committee in July 2023. However, a separate action item to address the changed needed in Part 3 was never opened. Therefore, I'm submitting this now as a new action item for Part 3. A similar language change has already been approved for Part 2. This change request is to synchronize the language in both parts.

Existing Text	Proposed Text
ASME LPG storage vessels may be altered from above ground (AG) service to underground (UG) service subject to the conditions of NBIC Part 2, S7.10.	ASME LPG storage vessels may be ~~altered~~ changed from above ground (AG) service to underground (UG) service subject to the conditions of NBIC Part 2, S7.10.

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

PROPOSED REVISION OR ADDITION

Item No.

A 24-13

Subject/Title

Correction of wording errors in NBIC Part 3, 1.5.1

NBIC Location

Part: Repairs and Alterations; Section: 1.5.1; Paragraph: l) & n)1)

Project Manager and Task Group

Source (Name/Email)

Trevor Seime / tsseime@nd.gov

Statement of Need

To provide clear guidance to Certificate Holders and Review Team Leaders of requirements to be included in the Quality System.

Background Information

During the re-write of NBIC Part 3, 1.5.1 incorrect requirements were included to require personnel quals for PWHT which there are none and the "date calibrated" on the equipment which is documented on the "Calibration Record" and is an auditable document.

Existing Text	Proposed Text
l) Heat treatment The Quality System shall identify the title(s) of the individual(s) responsible to ensure that a proper heat treatment has been applied to the repair and/or alteration. The Quality System shall identify the title(s) of the individual(s) responsible for the review and acceptance of subcontracted heat treatment procedures and personnel. The use of alternative welding methods per NBIC, Part 3, shall be described in the Quality System. n) Calibration The Quality System shall describe a system for the calibration of examination, measuring, and test equipment used in the performance of repairs and alterations. At a minimum, it shall include: 1) Examination, measuring, and test equipment, subject to calibration, shall have a unique identification number and a calibration date as well as a specified next calibration due date;	l) Heat treatment The Quality System shall identify the title(s) of the individual(s) responsible to ensure that a proper heat treatment has been applied to the repair and/or alteration. The Quality System shall identify the title(s) of the individual(s) responsible for the review and acceptance of subcontracted heat treatment procedures ~~and personnel~~. The use of alternative welding methods per NBIC, Part 3, shall be described in the Quality System. n) Calibration The Quality System shall describe a system for the calibration of examination, measuring, and test equipment used in the performance of repairs and alterations. At a minimum, it shall include: 1) Examination, measuring, and test equipment, subject to calibration, shall have a unique identification number and ~~a calibration date as well as~~ a specified next calibration due date;

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

PROPOSED REVISION OR ADDITION

Item No. A 24-15
Subject/Title NDE requirements
NBIC Location Part: Repairs and Alterations; Section: 4; Paragraph: 4.2
Project Manager and Task Group Michael Quisenberry (PM), Melissa Wadkinson, Raymond Spuhl, Steve Frazier
Source (Name/Email) Kathy Moore / kathymoore@joemoorecompany.com
Statement of Need B31.1 has introduced very stringent requirements on the R-Certificate holders that will create an unnecessary burden on them.
Background Information During the Q&A period after the presentation was given, I asked the members of B31.1 committee what was the driving force behind the change? Were there any near misses of accidents that they were aware of to drive this change. The answer was "No. They are simply trying to align B31.1 and B31.3.

4.2 NONDESTRUCTIVE EXAMINATION

a) ~~The~~ All nondestructive examination (NDE) requirements, except for NDE personnel qualification requirements, ~~including technique, extent of coverage, procedures, personnel qualification, and acceptance criteria,~~ shall be in accordance with the Original Code of Construction, standard, or specification selected for the repair or alteration of the pressure-retaining item (see NBIC Part 3, 1.2). Weld repairs and alterations shall be subjected to the same nondestructive examination requirements as the original welds. Where this is not possible or practicable, or where there is insufficient information available to determine the original NDE requirements, alternative NDE methods that provide meaningful results to verify the integrity of the repair or alteration may be used if acceptable to the Inspector and, where required, the Jurisdiction where the pressure-retaining item is installed, provided all other requirements of this section are met.

Where the welds were subject to volumetric NDE during construction, repairs may be made to the base material and weld joints without volumetric examination under the following conditions:

1) The repair depth does not exceed the lesser of 1/8 inch (3 mm) or 25% of the nominal base material thickness;

2) The aggregate repair length is no longer than 6 inches (150 mm);

3) The repair cavity and each layer of deposited weld, including the final weld surface, have been examined by MT or PT.

b) When volumetric NDE is required by the original code of construction but is not possible or practicable, progressive liquid penetrant or magnetic particle examination as described in paragraph 4.2 (b)(1) may be used. This alternative NDE method is subject to the acceptance of the Inspector, owner and when required, the Jurisdiction where the pressure-retaining item is installed, provided that all other requirements of this section are met.

1) Progressive liquid penetrant or magnetic particle examination shall be performed on each layer of the weld to be examined, including the final weld. Prior to performing PT or MT the surface of each layer of weld shall be properly prepared for examination. The final weld may be examined with or without grinding. The NDE report shall include the number of layers examined. This alternative NDE method shall be documented in the remarks section of the applicable R-form.

c) NDE personnel utilizing volumetric examination methods shall be qualified and certified in accordance with the requirements of the original code of construction, standard, or specification selected for the repair or alteration of the pressure-retaining item (see NBIC Part 3, 1.2). When this is not possible or practicable, NDE personnel may be qualified and certified in accordance with their employer's written practice. ASNT SNT-TC-1A, *Recommended Practice Nondestructive Testing Personnel Qualification and Certification* (2006 edition), or ANSI/ASNT CP-189, *Standard for Qualification and Certification of Nondestructive Testing Personnel* (2006 edition), shall be used as a guideline for employers to establish their written practice. Provisions for training, experience, qualification, and certification of NDE personnel shall be described in the "R" Certificate Holder's written quality system.

d) NDE personnel utilizing NDE examination methods other than volumetric such as visual examination (VT), liquid penetrant (PT), or magnetic particle (MT) shall be qualified and certified in accordance with the requirements of the Original Code of Construction, standard, or specification selected for the repair or alteration of the pressure-retaining item (see NBIC Part 3, 1.2). Alternatively, NDE personnel may be qualified and certified in accordance with a written program established by the employer of the personnel being certified, which shall be based on the following minimum requirements:

1) Instruction in the fundamentals of the applicable NDE method.
2) on-the-job training to familiarize the NDE personnel with the appearance and interpretation of indications of weld defect. The length of time for such training shall be sufficient to ensure adequate assimilation of the knowledge required.
3) a visual acuity examination performed at least once each year to determine optical capability of NDE personnel to perform the required examinations.
4) upon completion of 1) and 2) above, the NDE personnel shall be given a written examination and performance examination by the employer to determine if the NDE personnel are qualified to perform the required examinations and interpretation of results.
5) certified NDE personnel whose work has not included performance of a specific examination method for a period of 1yr or more shall be recertified by successfully completing the examination of 4) and also passing the visual examination of 3).
6) Substantial changes in procedures or equipment shall require recertification of NDE personnel.

7) All documentation concerning the training, qualification, examination, and certification of NDE personnel in this program shall be described in the “R” Certificate Holder’s written quality system.

As an alternative to 1) through 5) above, the requirements of ASME BPVC, Section V, Article 1, T-120(e) or T-120(f) may be used for the qualification of NDE personnel. Personnel qualified to AWS QC1 may be used for the visual examination of welds provided they meet the annual visual acuity examination requirement of (c) and the Jaeger J1 visual acuity requirement of ASME BPVC, Section V, Article 9.

PROPOSED REVISION OR ADDITION

Item No.

A 24-22

Subject/Title

Alternative Welding Methods without PWHT- Competent Technical Advice

NBIC Location

Part: Repairs and Alterations & Repairs and Alterations; Section: 2 & 1; Paragraph: 2.5.3 (b) & Table 1.5.1

Project Manager and Task Group

E. Cutlip (PM), J. Ferreira, G. Galanes

Source (Name/Email)

Jonathan Ferreira / jonathan_ferreira@hsb.com

Statement of Need

The first sentence of 2.5.3 (b) requires the competent technical advice to be obtained for the use of every alternative welding method which can be impractical. In most cases, the R certificate firm that is making the determination to use alternative welding method. Most R-certificate holders do not retain a record of the component technical advice they may get. Competent technical advice is used in paragraph 3.2.1 and 3.3.4.3 (d)(1) and the wording states competent technical advice should be obtained. But in 2.5.3 (b) states competent technical advice shall be obtained.

Background Information

During a joint review, the review resulted in a 30-day follow-up as the R-certificate holder did not have written objective evidence that competent technical advice was obtained to use alternative welding method 1, even though the R-certificate hold was the actual OEM of the PRI being repaired. The way the current paragraph 2.5.3 (b) is worded, a record would have to retained for such technical advice. Which I think is fine if the alternative welding methods are being used in highly stressed areas, if service conditions are conducive to stress corrosion cracking, if materials are subject to hydrogen embrittlement, or are operating at temperatures in the creep range, or if the alternative is being considered for “on-stream” repairs or “hot tapping” on piping systems. If none of those conditions are applicable, then I think it should not be mandatory to obtain technical advice nevertheless retain such information.

Existing Text	**Proposed Text**
Competent technical advice shall be obtained from the manufacturer of the pressure-retaining item or from another qualified source, such advice being especially necessary if the alternative is to be used in highly stressed areas, if service conditions are conducive to stress corrosion cracking, if materials are subject to hydrogen embrittlement, or are operating at temperatures in the creep range, or if the alternative is being considered for “on-stream” repairs or “hot tapping” on piping systems. Selection of the welding method used shall be based on the rules of the original code of construction together with the above mentioned advice concerning the adequacy of the weld in the as-welded condition at operating and pressure test conditions.	Competent technical advice ~~shall~~ should be obtained from the manufacturer of the pressure-retaining item or from another qualified source, such advice being especially necessary if the alternative is to be used in highly stressed areas, if service conditions are conducive to stress corrosion cracking, if materials are subject to hydrogen embrittlement, or are operating at temperatures in the creep range, or if the alternative is being considered for “on-stream” repairs or “hot tapping” on piping systems. Selection of the welding method used shall be based on the rules of the original code of construction together with the above mentioned advice concerning the adequacy of the weld in the as-welded condition at operating and pressure test conditions.

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

PROPOSED REVISION OR ADDITION

Item No.

A 24-43

Subject/Title

Certification of Reports of Repair without stamping - Action Item with I24-39

NBIC Location

Part: Repairs and Alterations; Section: 1.3; Paragraph: 1.3.2

Project Manager and Task Group

Mark Vogt / mark.vogt@vistracorp.com

Source (Name/Email)

Terrence Hellman / thellman@nationalboard.org

Statement of Need

Given INTERP 21-16 requirements, clarity is needed for R/NR work where the lack of stamping due to a practical matter, not necessarily a jurisdictional reason, may preclude certifying an Report of Repair. This Action Item is tied to Intent Interp I24-39.

Background Information

I21-16 states that an Inspector shall not certify the R-1 if the Jurisdictional requirements do not meet the NBIC requirements. Would the lack of stamping the R or NR due to a safety matter, not necessarily a jurisdictional reason, also preclude certifying a Report of Repair, e.g. would repair or replacement work done in a space that is too unsafe to allow the stamping of the R or NR mark on the item, also preclude certifying the applicable Report of Repair?

Existing Text	**Proposed Text**
See next page.	See next page.

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

Existing Text

NBIC Part 3, Section 5.7 Stamping Requirements for Repairs and Alterations

5.7.1 General

The stamping of or attachment of a nameplate to a pressure-retaining item shall indicate that the work was performed in accordance with the requirements of this code. Such stamping or attaching of a nameplate shall be done only with the knowledge and authorization of the Inspector. The "R" Certificate Holder responsible for repair or the construction portion of the alteration shall apply stamping. For a re-rating where no physical changes are made to the pressure-retaining item, the "R" Certificate Holder responsible for design shall apply stamping.

Proposed Text

NBIC Part 3, Section 5.7 Stamping Requirements

5.7.1 General

a) The stamping of or attachment of a nameplate to a pressure-retaining item shall indicate that the work was performed in accordance with the requirements of this code. Such stamping or attaching of a nameplate shall be done only with the knowledge and authorization of the Inspector. The "R" Certificate Holder responsible for repair or the construction portion of the alteration shall apply stamping. For a re-rating where no physical changes are made to the pressure-retaining item, the "R" Certificate Holder responsible for design shall apply stamping.

b) Where the Owner is also the "NR" Certificate Holder and application of the National Board Code Symbol is not possible due to a practical matter (e.g., personnel safety, potential contamination, etc.) and all other requirements of the NBIC have been met, stamping of or attachment of a nameplate may be waived with the acceptance of the Jurisdiction provided it is addressed in the NR Certificate Holder's QA program. Justification shall be noted in the "Remarks" section of the Form NR-1 or Form NVR-1.

PROPOSED REVISION OR ADDITION

Item No.

A 24-65

Subject/Title

Applicability of Table 1.5.1 d)

NBIC Location

Part: Repairs and Alterations; Section: 1; Paragraph: Table 1.5.1 d)

Project Manager and Task Group

Thomas White

Source (Name/Email)

Luis Ponce / lponce@nationalboard.org

Statement of Need

The term "administrative" appears 16 times in Part 3 but nowhere does the NBIC require or describe an administrative review of the "R" Certificate Holder's administrative processes. In addition, under the "Instructions" column, Supplement 6 should be Section 6 to include all the supplements if item d) is to be kept. **Propose to delete item d) in Table 1.5.1 since most administrative requirements are now in NB-415 to which 1.1 references.**

Background Information

An inquiry was received by an ASME Designee (consultant) asking the meaning of item d) of Table 1.5.1. Typically, requirements are described in a paragraph and tables referenced by the paragraph highlight or expound on the paragraph requirement. Item d) seems to be on an island waiting for help.

Existing Text

Form "R" Reports, Records, or Documents	Instructions	Minimum Retention Period
d) Administrative record review of the "R" Certificate Holder's administrative processes.	Records supporting completed administrative reviews or audits of procedures or processes required by the "R" Certificate Holder's Quality System Manual, or in combination with the applicable part of the NBIC Part 3, Supplement 6 as it applies to the identified scope listed on the "R" *Certificate of Authorization*.	Subject to review during the triennial evaluation of the certificate holder's Quality System.

Proposed Text

Deleted

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

Item 22-08: Review and improve guidance for T&P valve installation relating to probe.

Part 4
2.5.1.6 TEMPERATURE AND PRESSURE RELIEF VALVES
Hot-water heating or supply boilers limited to a water temperature of 210°F (99°C) may have one or more National Board capacity certified temperature and pressure relief valve(s) installed. The requirements of 2.5.1.1 through 2.5.1.5 shall be met, except as follows:
a) A Y-type fitting shall not be used.
b) If additional valves are used, they shall be temperature and pressure relief valves.
c) When the temperature and pressure relief valve is installed directly on the boiler with no more than 4 in. (100 mm) maximum interconnecting piping, the valve may be installed in the horizontal position with the outlet pointed down.
d) The location of relief valve mounting shall ensure that the relief valve's temperature probe is constantly submerged at or near the hot water outlet.

Part 1
3.9.1.6 TEMPERATURE AND PRESSURE RELIEF VALVES
Hot-water heating or supply boilers limited to a water temperature of 210°F (99°C) may have one or more National Board capacity certified temperature and pressure relief valve(s) installed. The requirements of ~~NBIC Part 1,~~ 3.9.1.1 through 3.9.1.5 shall be met, except as follows:
a) A Y-type fitting shall not be used.
b) If additional valves are used, they shall be temperature and pressure relief valves.
c) When the temperature and pressure relief valve is installed directly on the boiler with no more than 4 in. (100 mm) maximum interconnecting piping, the valve may be installed in the horizontal position with the outlet pointed down.
d) The location of relief valve mounting shall ensure that the relief valve's temperature probe is constantly submerged at or near the hot water outlet.

Part 4, Table 3.2.6

Note 3:

The temperature probe shall be checked for the condition of the coating material and freedom of movement without the probe becoming detached~~ing~~. If the valve is damaged or fails the testing described in Table 3.2.6, above, it ~~probe pulls out or falls off during inspection, the valve~~ shall be repaired or replaced. ~~Due to the relatively low cost of temperature and pressure relief valves for this service~~valve's ~~design, it is recommended that a defective valve be replaced~~ instead of repaired ~~with a new valve if a repair or resetting is indicated.~~

Part 2, Table 2.5.8

Note 3:

The temperature probe shall be checked ~~(without detaching it)~~ for the condition of the coating material and freedom of movement without the probe becoming detached~~ing~~. If the valve is damaged or fails the testing described in Table 2.5.8, above, it ~~probe pulls out or falls off during inspection, the valve~~ shall be repaired or replaced. ~~Due to the relatively low cost of temperature and pressure relief valves for this service~~valve's design, it is recommended that a defective valve be replaced ~~instead of repaired with a new valve if a repair or resetting is indicated.~~

NBIC Part 1, 3.9.3 & Part 4, 2.5.3

Part 1, 3.9.3

a) Pressure relief valves shall be manufactured in accordance with a national or international standard and be certified for capacity by the National Board.

b) Each hot-water heating or hot-water supply boiler shall have at least one National Board capacity certified pressure relief valve~~,~~ of the automatic reseating type. Each pressure relief valve shall be set to relieve at or below the maximum allowable working pressure of the boiler.

c) Hot-water heating or hot-water supply boilers limited to a water temperature not in excess of 210°F (99° C) may have, in lieu of the valve(s) specified in b) above, one or more National Board capacity certified temperature and pressure relief valves of the automatic reseating type. Each temperature and pressure relief valve shall be set to relieve at or below the maximum allowable working pressure of the boiler.

~~d) When more than one pressure relief valve is used on either hot-water heating or hot water supply boilers, the additional valves shall be National Board capacity certified and may have a set pressure within a range not to exceed 6 psig (40 kPa) above the maximum allowable working pressure of the boiler up to and including 60 psig (414 kPa), and 5% for those having a maximum allowable working pressure exceeding 60 psig (414 kPa).~~

~~e)~~d) No pressure relief valve shall be smaller than NPS 3/4 (DN 20) nor larger than NPS 4 (DN 100), except that boilers having a heat input not greater than 15,000 Btu/hr (4.4 kW) should be equipped with a rated pressure relief valve of NPS 1/2 (DN 15).

~~f)~~e) The required relieving capacity, in lbs/hr (kg/hr), of the pressure relief valve(s) on a boiler shall be the greater of that determined by dividing the maximum output in Btu/hr (W) at the boiler nozzle obtained by the firing of any fuel for which the unit is installed by 1,000 Btu//hr/lb (645 W/kg), or shall be determined on the basis of lbs steam/hr/ft_2 (kg steam/hr/m_2) as given in Table 2.2.4. For cast-iron boilers, the minimum valve capacity shall be determined by the maximum output method. In many cases a greater relieving capacity of valves will have to be provided than the minimum specified by these rules. In every case, the requirements of ~~NBIC Part 1,~~ 3.9.3 g~~h~~) shall be met.

~~g)~~f) When operating conditions are changed, or additional boiler heating surface is installed, the valve capacity shall be increased, if necessary, to meet the new conditions and be in accordance with 3.9.3 g~~h~~). The additional valves required, on account of changed conditions, may be installed on the outlet piping provided there is no intervening valve.

~~h)~~g) Pressure relief valve capacity for each boiler with a single pressure relief valve shall be such that, with the fuel burning equipment installed and operated at maximum capacity, the pressure cannot rise more than 10% above the maximum allowable working pressure. When more than one pressure relief valve is used, the over pressure shall be limited to 10% above the set pressure of the highest set valve allowed by ~~Part 1,~~ 3.9.3 ~~d)~~b) or c).

REFERENCE

Part 4, 2.5.3 PRESSURE RELIEF VALVE REQUIREMENTS FOR HOT WATER HEATING OR HOT WATER SUPPLY BOILERS

a) Pressure relief valves shall be manufactured in accordance with a national or international standard and be certified for capacity by the National Board.

b) Each hot-water heating or hot-water supply boiler shall have at least one National Board capacity certified pressure relief valve~~,~~ of the automatic reseating type. Each pressure relief valve shall be set to relieve at or below the maximum allowable working pressure of the boiler.

c) Hot-water heating or hot-water supply boilers limited to a water temperature not in excess of 210°F (99° C) may have, in lieu of the valve(s) specified in (b) above, one or more National Board capacity certified temperature and pressure relief valves of the automatic reseating type. Each temperature and pressure relief valve shall be set to relieve at or below the maximum allowable working pressure of the boiler.

~~d) When more than one pressure relief valve is used on either hot-water heating or hot water supply boilers, the additional valves shall be National Board capacity certified and may have a set pressure within a range not to exceed 6 psig (40 kPa) above the maximum allowable working pressure of the boiler up to and including 60 psig (414 kPa), and 5% for those having a maximum allowable working pressure exceeding 60 psig (414 kPa).~~

~~e)~~d) No pressure relief valve shall be smaller than NPS 3/4 (DN 20) nor larger than NPS 4 (DN 100), except that boilers having a heat input not greater than 15,000 Btu/hr (4.4 kW) should be equipped with a rated pressure relief valve of NPS 1/2 (DN 15).

~~f)~~e) The required relieving capacity, in lbs/hr (kg/hr), of the pressure relief valve(s) on a boiler shall be the greater of that determined by dividing the maximum output in Btu/hr (W) at the boiler nozzle obtained by the firing of any fuel for which the unit is installed by 1,000 Btu//hr/lb (645 W/kg), or shall be determined on the basis of lbs steam/hr/ft_2 (kg steam/hr/m_2) as given in Table 2.2.4. For cast-iron boilers, the minimum valve capacity shall be determined by the maximum output method. In many cases a greater relieving capacity of valves will have to be provided than the minimum specified by these rules. In every case, the requirements of 2.5.3 g~~h~~) shall be met.

~~g)~~f) When operating conditions are changed, or additional boiler heating surface is installed, the valve capacity shall be increased, if necessary, to meet the new conditions and be in accordance with 2.5.3 g~~h~~). The additional valves required, on account of changed conditions, may be installed on the outlet piping provided there is no intervening valve.

~~h)~~g) Pressure relief valve capacity for each boiler with a single pressure relief valve shall be such that, with the fuel burning equipment installed and operated at maximum capacity, the pressure cannot rise more than 10% above the maximum allowable working pressure. When more than one pressure relief valve is used, the over pressure shall be limited to 10% above the set pressure of the highest set valve allowed by 2.5.3 b) or c).

Interpretation No. 24-14
Subject/Title: 2015 NBIC Clearances for tube replacement

Statement of Need
The 2015 NBIC Part 1, 2.3.3 a) states boiler installations must allow for maintenance. 2.3.3 b) specifically states installations must allow for removal and installation of tubes. Units are being installed with ducts, structural braces, etc. obstructing the area needed to replace economizer tubes.

Background Information
2.3.3 CLEARANCES a) Boiler installations shall allow for normal operation, maintenance, and inspections. There shall be at least 36 in. (915 mm) of clearance on each side of the boiler to enable access for maintenance and/or inspection activities. Boilers operated in battery shall not be installed closer than 48 in. (1220 mm) from each other. The front or rear of any boiler shall not be located nearer than 36 in. (915 mm) from any wall or structure. Note: Alternative clearances in accordance with the manufacturer's recommendations are subject to acceptance by the Jurisdiction. b) Boilers shall be installed to allow for removal and installation of tubes. c) Boilers with a top-opening manhole shall have at least 84 in. (2135 mm) of unobstructed clearance above the manhole to the ceiling of the equipment room. d) Boilers without top-opening manholes shall have at least 36 in. (915 mm) of clearance from the top of the boiler or as recommended by the manufacturer. e) Boilers with a bottom opening used for inspection or maintenance shall have at least 12 in. (305 mm) of unobstructed clearance.

Proposed Question
Does the 2015 NBIC, Part 1, 2.3.3 a) and b) require boiler installations to keep the space unobstructed where firetubes and economizer tubes will be pulled? (i.e. no ducts or structural braces in the way that will require removal to pull the tubes.)

Proposed Reply
Yes.

Committee's Question 1

Does the 2015 NBIC, Part 1, 2.3.3 a) and b) require boiler installations to keep the space unobstructed (e.g., no ducts or structural braces in the way that will require removal to pull the tubes where they will be removed or installed)?

Committee's Reply 1

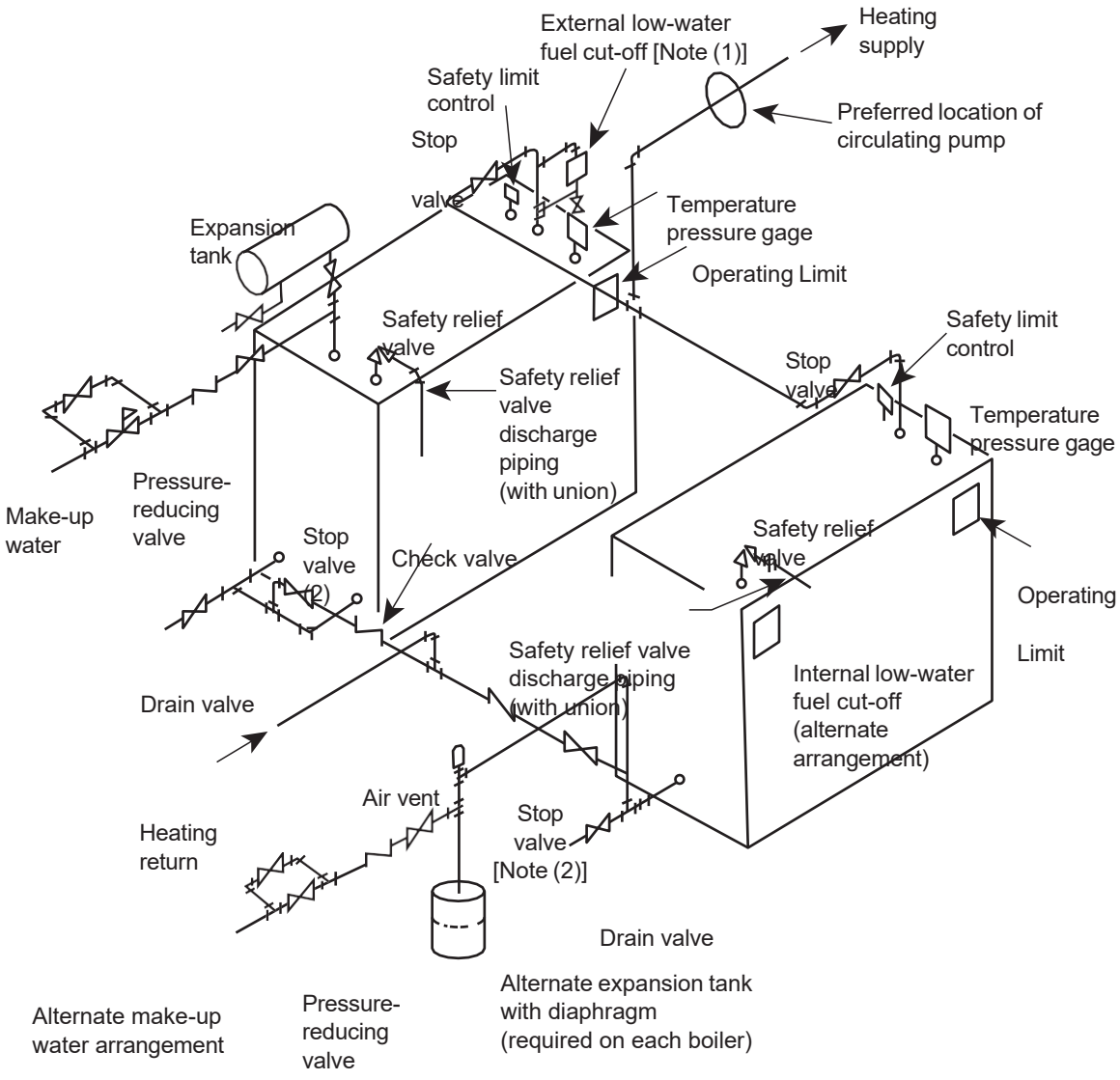
Yes.

Rationale
2.3.3 CLEARANCES a) Boiler installations shall allow for normal operation, maintenance, and inspections. b) Boilers shall be installed to allow for removal and installation of tubes. (Permanent or unmovable obstructions would not comply with these requirements for normal operation, maintenance, or inspections.)

Explanation of Need: Please review and revise to clarify what Note 1 is trying to communicate. Consider rewriting the third sentence to be more specific.

Part 1

FIGURE 3.7.5.1-c
HOT-WATER BOILERS IN BATTERY — ACCEPTABLE PIPING INSTALLATION



General Notes:
(1) Recommended control. See 3.8.2.4 d). ~~ASME Section IV, HG-614. Acceptable shutoff valve or cocks in the connecting piping may be installed for convenience or control testing and/or service.~~

(2) The common return header stop valves may be located on either side of the check valves.

of both liquids and gases and be temperature compensated.

(4) The gage shall have an operating temperature range of 32°F to 250°F (0°C to 120°C) unless otherwise required by the application.

(d) Piping or tubing for pressure- or altitude-gage connections shall be of nonferrous metal when smaller than NPS 1 (DN 25).

HG-612 Thermometers/Temperature Sensors

Each hot water heating or hot water supply boiler shall have a thermometer or temperature sensor with display so located and connected that it shall be easily readable. The thermometer or sensor shall be so located that it shall at all times indicate the temperature of the water in the boiler at or near the outlet.

HG-614 Low-Water Fuel Cutoff

(a) Each automatically fired hot water heating or hot water supply boiler with heat input greater than 400,000 Btu/hr (117 kW) shall have an automatic low-water fuel cutoff that has been designed for hot water service conforming to UL 353, Standard for Limit Controls, and accepted by a nationally recognized testing agency. This device shall be so located as to automatically cut off the fuel supply when the surface of the water falls to the level established in (b) below (see Figure HG-703.2).

(b) As there is no normal waterline to be maintained in a hot water boiler, any location of the low-water fuel cutoff above the lowest safe permissible water level established by the boiler manufacturer is satisfactory.

(c) A coil-type boiler or a watertube boiler with heat input greater than 400,000 Btu/hr (117 kW) requiring forced circulation to prevent overheating of the coils or tubes shall have a flow-sensing device installed in lieu of the low-water fuel cutoff required in (a) above to automatically cut off the fuel supply when the circulating flow is interrupted.

(d) A means shall be provided for testing the operation of the external low-water fuel cutoff without resorting to draining the entire system. Such means shall not render the device inoperable except as described as follows. If the means temporarily isolates the device from the boiler during this testing, it shall automatically return to its normal position. The connection may be so arranged that the device cannot be shut off from the boiler except by a cock placed at the device and provided with a tee or lever-handle arranged to be parallel to the pipe in which it is located when the cock is open.

(1) This system shall consist of the line, neutral, and equipment ground conductors. The control panel frame and associated control circuitry metallic enclosures shall be electrically continuous and be bonded to the equipment ground conductor.

(2) The equipment ground conductor and the neutral conductor shall be bonded together at their origin in the electrical system as required by the NEC.[13]

(3) The line side of the control circuit shall be provided with a time delay fuse sized as small as practicable.

(b) Two-Wire Nominal 120 V System Obtained By Using an Isolation Transformer

(1) The two-wire control circuit shall be obtained from the secondary side of an isolation transformer. One wire from the secondary of this transformer shall be electrically continuous and shall be bonded to a convenient cold water pipe. All metallic enclosures of control components shall be securely bonded to this ground

3.8.2.4 LOW-WATER FUEL CUTOFF

a) Each automatically fired hot-water boiler shall have an automatic low-water fuel cutoff with manual reset. The low-water fuel cutoff shall be designed for hot-water service, and it shall be so located as to automatically cut off the fuel supply when the surface of the water falls to the level established in b) below.

b) As there is no normal waterline to be maintained in a hot-water boiler, any location of the low-water fuel cutoff above the lowest safe permissible water level established by the boiler manufacturer is satisfactory.

c) In lieu of the requirements for low-water fuel cutoffs in paragraph a), boilers requiring forced circulation to prevent overheating of the tubes, coils, or vessel, shall have an accepted flow, and/or temperature-sensing device to prevent burner operation at a flow rate inadequate to protect the boiler unit against overheating at all allowable firing rates. This safety control(s) shall shut down the burner and prevent restarting until an adequate flow is restored and shall be independent of all other controls.

d) A means shall be provided for testing the operation of the external low-water fuel cutoff without resorting to draining the entire system. Such means shall not render the device inoperable except as follows. If the means temporarily isolates the device from the boiler during this testing, it shall automatically return to its normal position. The connection may be so arranged that the device cannot be shut off from the boiler except by a cock placed at the device and provided with a tee or lever-handle arranged to be parallel to the pipe in which it is located when the cock is open.

Title/Subject: Clarify requirements for opening drain valve

Explanation of Need: "when there is temperature on the system" is rather unclear. Please specify/clarify requirements.

Part 1, S5.6.2

S5.6.2 DRAINS

A suitable low-point drain fitted with a stop valve shall be provided in the heater or connecting piping to allow the heat transfer media to be drained out of the pressure vessel and piping when necessary. The valve may be locked in the closed position, or a blank flange may be installed downstream of the valve. ~~The valve should never be opened when there is temperature on the system.~~

Title/subject: PVHO Characteristics- review intent of list and potentially add requirement

Explanation of Need: S8.3 e) 8) seemed incomplete and out of place, so the changes shown are to correct that [now listed as e) 6) a.] Someone with PVHO experience should review the changes and review for any other changes that may be necessary.

Background Information: These changes started for editorial purposes/reviewing the use of "and/or." The Editorial Advisory members of Part 1 reviewed editorial changes and suggested a substantive change to 8) [now 6) a.]

Part 1, S8.3 e)

e) The following are ~~U~~unique PVHO ~~Characteristics~~characteristics:

1) Fire hazard due to oxygen~~-~~-enriched environment~~;~~

2) Fire hazard due to in~~-~~service hydrocarbon contamination~~;~~

3) Rapid decompression hazard~~;~~

4) Pressure boundary valves at PVHO penetrators

5) Cleanliness of gases inside the PVHO system

6) In~~-~~service life expectancy of flat disc acrylic windows in protected environments, including cylindrical windows, can be up to ~~twenty~~ 20 years with periodic inspections. Care shall be used to keep heat, ultraviolet light, and solvents away as they are harmful to acrylic windows.

7) Manual and/or pneumatic control systems

~~8) Heat, UV light, and solvents are harmful to acrylic windows~~

Part 1

S5.5.1 THERMAL LIQUIDS (HEAT TRANSFER FLUIDS)

~~It is extremely important that the p~~Proper heat transfer fluid shall be selected by competent personnel knowledgeable of the system. Heat transfer fluids should meet, at a minimum, the following ~~basic~~ requirements:

a) Resist deterioration at the temperatures involved to ensure long, useful life and a clean system.

b) Possess ~~good~~ appropriate heat transfer characteristics.

c) Have low vapor pressures at operating temperatures to permit operation at moderate pressures. Note: processes requiring thermal fluid temperatures higher than 650°F (340°C) will require the use of specialty fluids with high vapor pressures [~~(~~(e.g., 150 psi ~~(~~[1,030 kPa~~)~~]). These fluids also tend to have ~~special~~ specific environmental, safety, and health considerations.

d) Have low viscosities to decrease pumping losses (due to pipe friction) and the power required for circulation.

e) Be suitable for outside temperatures involved to prevent freeze~~-~~-up unless a means of heat trace has been implemented.

f) Meet environmental regulations.

The heat transfer fluid ~~must~~ shall be kept clean and in proper condition. The fluid manufacturer's approved laboratory shall conduct testing~~Tests~~ of the fluid ~~shall be conducted per~~in accordance with the fluid manufacturer's recommendations ~~by approved laboratories~~. Any heat transfer fluid that is added ~~must~~ shall be clean and of the proper specification.

Subject: CO_2 is heavier than air; Part 1, S3.3 c) should say "above" not "below"

Explanation of Need: CO_2 is like the foam in a beer mug flowing over—it is heavier than air. If it is below an air intake, it will go down and will not typically enter an intake above it. But if it is above an air intake, it will drop into the intake.

Background Information: Gary Scribner was the project manager on this item/supplement originally.

Item 24-68

Part 1

S3.3 FILLBOX LOCATION / SAFETY RELIEF / VENT VALVE CIRCUIT TERMINATION
Fill boxes and vent valve terminations shall be installed above grade, outdoors in an unenclosed, free airflow area. The fill connection shall be located so not to impede means of egress or the operation of sidewalk cellar entrance doors, including during the delivery process, and shall:

a) be at least 3 ft (0.9 m) from any door or operable windows;
b) be at least 3 ft (0.9 m) above grade;
c) not be located within 10 ft (3 m) above, or from side to side at the same level ~~or below~~, ~~from~~ of any air intakes; and
d) not be located within 10 ft (3 m) of stairwells that go below grade.

Note: Part 2 has a parallel paragraph in S12.4 with the same proposed changes (Item 24-69).

1.6.6 VENTILATION AND COMBUSTION AIR

a) The equipment room shall have adequate air supply to permit clean, safe combustion, minimize soot formation, and maintain a minimum of 19.5% oxygen in the air of the equipment room and sufficient to maintain ambient temperatures as recommended by the boiler, heater, or vessel manufacturer. The combustion and ventilation air should be supplied by either an unobstructed air opening or by power ventilation or fans.

b) When combustion air is supplied to the boiler, heater, or vessel by an independent duct, with or without the employment of power ventilators or fans, the duct shall be sized and installed in accordance with the manufacturer’ s recommendations. However, ventilation for the equipment room must still be considered.

c) Unobstructed air openings shall be sized on the basis of the manufacturer’s recommendations, or as specified by the NFPA standards for oil and gas burning installations for the particular job conditions, or 1 $in.^2$ (650 mm^2) free area per 2000 Btu/hr (586 W) maximum fuel input of the combined burners located in the equipment room. The equipment room supply openings shall be kept clear at all times.

d) Power ventilators or fans shall be sized on the basis of 0.2 cfm (0.0057 m^3/min) for each 1000 Btu/ hr (293 W) of maximum fuel input for the combined burners of all boilers and heaters located in the equipment room. Additional capacity may be required for other fuel burning equipment in the equipment room.

e) When power ventilators or fans are used to supply combustion air, they shall be installed with interlock devices so that burners will not operate without an adequate number of ventilators/fans in operation.

f) The size of openings specified in c) above may be reduced when special engineered air supply systems approved by the Jurisdiction are used.

g) Care should be taken to ensure that steam, water and fluid lines are not routed across combustion air openings, where freezing may occur.

h) Air intakes for sealed combustion systems shall be installed in accordance with the manufacturer's recommendations. For additional requirements regarding condensing boilers, see S6.5.

Subject: Inspection of vessels at and above 10,000 PSI (c) & (d) "requalification"

Statement of Need: Isostatic Pressure Vessel manufacturers are currently "requalifying" pressure vessels through an engineering evaluation without the involvement of the NB Alteration process and therefore an Inspector. This leaves control of this process of a code vessel in the hands of the manufacturer and impairs the code integrity of the vessel.

Background:

2.3.6.11 INSPECTION OF VESSELS FOR PRESSURES AT AND ABOVE 10,000 PSI

c) Vessels constructed for a set number of cycles, as defined by the code of construction, which have reached the end of those cycles, must be removed from service or requalified for continued use. Any requalification for continued service must be completed in accordance with the requirements of the jurisdiction where applicable. The Inspector shall verify that documentation of any requalification is retained.

d) Requalification of any vessel shall either be completed by the original manufacturer or a manufacturer familiar with the construction of pressure vessels at and above 10,000 PSI (68.95 MPa). Guidance for completing requalification can be found in ASME PCC-3, Inspection Planning and Using Risk-Based Methods.

It is not clear in the new Part 2 guidance, and I have already had a manufacturer question this. I would like this interpretation to also consider the prior interpretation:

19-15 INTERPRETATION
Subject: PV Cycles of operations change as an alteration (Part 3, 3.4.4). Edition: 2019
Question: When the design of a pressure retaining item (PRI) includes cyclic loading data, should an adjustment, modification or change in analysis of the original design data be considered an alteration?
Reply: Yes.

Proposed Question: Is the “requalification for continued service” of a vessel constructed for a set number of cycles, as defined by the code of construction, which has reached the end of those cycles, required to be completed as an alteration?

Proposed Reply: Yes, requalification of a pressure vessel requires an alteration.

Committee’s Question: Is the “requalification for continued service” of a vessel constructed for a set number of cycles, as defined by the code of construction, which has reached the end of those cycles, required to be completed as an alteration?

Committee’s Reply: Yes.

Rationale: As per the original interpretation 19-15.

Subject: Thickness for determining corrosion rates for circumferential stress

Location: Part 2; Section: 4; Paragraph: 4.4.7.2 h) & 4.4.7.2 i)

Statement of Need: It is unclear if the statement made in the NBIC Part 2, 4.4.7.2 i) also applies to 4.4.7.2 h). The statement reads, "The thicknesses used for determining corrosion rates at the respective locations shall be the most critical value of average thickness." Mr. Dominguez believes the statement applies to both paragraphs.

Background:
This inquiry was received from Mr. Alejandro Domingues, Eng. National Institute of Industrial Technology (INTI), Argentina. Mr. Domingues has led the effort for the adoption of the NBIC Parts 1 and 2 in several provinces in Argentina and Uruguay.

S7.8.5 CORROSION
c) General Corrosion
For a corroded area of considerable size, the thickness along the most damaged area may be averaged over a length not exceeding 10 in. (250 mm). The thickness at the thinnest point shall not be less than 75% of the required wall thickness, and the average shall not be less than 90% of the required wall thickness.

So, the intent could be
1- limit the average thickness (as in SUPPLEMENT 7)
2- The thicknesses used for determining corrosion rates at the respective locations shall be the most critical value of average thickness (as in 4.4.7.2 i))

Proposed Question: For the purposes of determining PRI corrosion rates when circumferential stresses govern, it is the intent of the NBIC that the statement in 4.4.7.2 i), "The thicknesses used for determining corrosion rates at the respective locations shall be the most critical value of average thickness" also applies to 4.4.7.2 h)?

Proposed Reply: Yes

Committee's Question: For the purposes of determining PRI corrosion rates when circumferential stresses govern, does the statement in 4.4.7.2 i), "The thicknesses used for determining corrosion rates at the respective locations shall be the most critical value of average thickness" also apply to 4.4.7.2 h)?

Committee's Reply: No.

Rationale: 4.4.7.2 h) and 4.4.7.2 i) are stand-alone paragraphs.

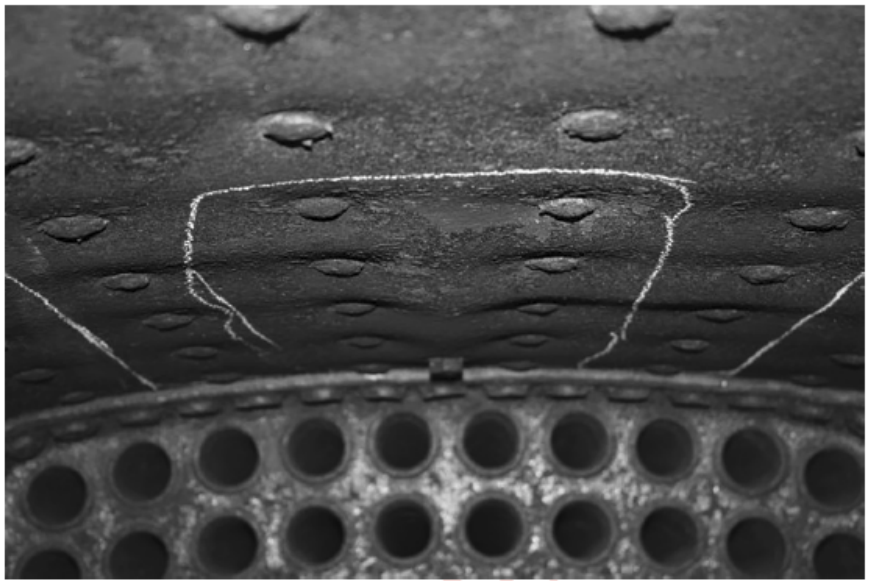
Subject: Review Verbiage in Part 2, S2.10.4.2

Statement of Need
What is the meaning of "pillow/mattress-effects"? Is there a better way to describe this? Is this phrase normally understood outside of the US/by someone who may not speak English?

S2.10.4.2 BULGING
Stayed surfaces shall be examined and any deformations shall be measured and recorded. Deformations may be caused from freezing, localized overheating, broken staybolts, or extended use (cyclic activity). Deformations may by described as bulging, bagging, or continuous bulging (pillow/mattress-effects) see Figure S2.10.4.2-b. The bulged section depth is defined as the protrusion of the sheet beyond its original position.

e) The following guidelines apply where repair is required.
1) Plate may only be repaired using a flush patch, in accordance with NBIC Part 3, Supplement 2.
2) Where a deformation is to be repaired, all portions of the deformity shall be repaired. For example, for ~~contiguous~~ continuous bulging where only some bulges exceed allowable deformation, the entire bulged area shall be repaired (See Figure S2.10.4.2-b). Unrelated bulges separated by non-deformed plate shall be independently evaluated.

FIGURE S2.10.4.2-b
CONTINUOUS BULGING (PILLOW/MATTRESS-EFFECTS) WHERE ONLY SOME BULGES EXCEED ALLOWABLE DEFORMATION



Item Number: 22-39

NBIC Location: Part 2, 4.4.8.7 g)

General Description: Recommended clarification of requirements for Evaluating Local Thin Areas

Subgroup: Inspection

Task Group: V. Newton (PM), T. Barker, J. Morgan, B. Wilson

Submitted by: L. Ponce

Explanation of Need: The existing text may lead to confusion due to a misplaced comma after 'specified' in the first sentence and no reference to what is being specified in the paragraph. The proposed text is a way to tie in the specified requirement in paragraph (f).

4.4.8.7 EVALUATING PRESSURE-RETAINING ITEMS CONTAINING LOCAL THIN AREAS

f) Widely scattered corrosion pits may be left in the pressure-retaining item in accordance with the following requirements:

1. Their depth is not more than one-half the required thickness of the pressure-retaining item wall (exclusive of corrosion allowance);
2. The total area of the pits does not exceed 7 $in.^2$ (4,500 mm^2) within any 50 $in.^2$ (32,000 mm^2); and
3. The sum of their dimensions (depth and width) along any straight line within this 50 $in.^2$ (32,000 mm^2) area does not exceed 2 in. (50 mm).

g) If metal loss is less than the specified~~,~~ corrosion/erosion allowance and adequate thickness is available for future corrosion, then monitoring techniques should be established. If metal loss is greater than the specified corrosion/erosion allowance and repairs are not performed, ~~and~~ a detailed engineering evaluation shall be performed to ensure continued safe operation.

Typos and Clarifications to Part 2

1.3i) American Petroleum Institute/American Society of Mechanical Engineers - *API 579-1/ASME FFS-~~1~~ 1* (Fitness-For-Service)

2.3.6.4f)3)b. ~~Dents~~ Bulges in Heads

4.4.1b) Various assessment methods (see NBIC Part 2, 1.3), including those mentioned in this section (an example of guidelines for performing fitness for service assessments are referenced in ~~API recommended practice API 579 "Fitness for Service"~~ API 579-1/ASME FFS-1), can be used to establish the next inspection interval of a pressure-retaining item and to ensure safe operation. Condition assessment methods shall be subject to review and acceptance by the Jurisdiction.

S6.9d) American Petroleum Institute: ~~—~~API 579-1/ASME FFS-1, *Fitness for Service*.

S9.3a)6) Compliance to product or industry standards, such as ~~ANSI K61~~CGA G-2.1, API 579-1/ASME FFS-1, or NFPA 58.

S11.4.2.7d) ~~ASME/API 579;~~API 579-1/ASME FFS-1

Subject: Part 2, Table S9.4 - clarify service condition changes

Statement of Need: For Column 1, Row 7, please explain what gas services are being described. For Column 1, Row 10, please spell out what ICC is because the acronym is unclear (is this the manufacturer ICC or something else?)

Background: N/A

TABLE S9.4

EXAMPLES OF CHANGE OF SERVICE CONDITIONS

Change	Some Factors to Consider
LP Gas to Ammonia	• PWHT of Vessel During Construction Wet-fluorescent magnetic particle testing (WFMT) on all internal surfaces • Internal access of vessel is necessary, may need to install manhole • NFPA 58 should be consulted
Ammonia to LP gas	• NFPA 58 should be consulted for restrictions. • Wet-fluorescent magnetic particle testing (WFMT) on all internal • surfaces • Internal access of vessel is necessary., may need to install manhole • Also see, NBIC Part 2, 2.3.6.4, S7.8.6, S7.9
LP gas service: from above ground to underground	• Requires alterations (additional nozzles) • Corrosion protection • See NFPA 58
LP gas to air receiver	• Assurance of vessel cleanliness, i.e. removal of mercaptan • Appropriateness and number of inspection and drain openings • Corrosion allowance
Boiler Service: steam to hot water	• Nozzles may require modification for water inlet and outlet • Change of Pressure Relief Device
Boiler Service: High-Pressure to Low-Pressure	• Controls required by the LP boiler code • Safety Valve Change • Need for larger openings for steam outlets and safety relief valves
Sulfur Dioxide Service Sweet to Sour Gas Service	• Concern Over Hydrogen Cracking
Inert to Oxidizing or Reducing Atmosphere	• Inspection for Damage ~~mechinisims~~mechanisms that may be present from previous service life that is detrimental to the vessel in the new environment • Cleanliness of Hydrocarbons
Lethal Service to Non-Lethal	• Design Conditions and suitability for service
DOT Railcars and ~~of ICC~~ Transport Tanks to Stationary Service	• Prohibited by DOT regulations for permanent service • Temporary stationary service prohibited as per NFPA • Inspection or damage mechanisms that may be present from previous service life that is detrimental to the vessel in the new environment

Subject: Overpressure protection considerations for a change in service.

Statement of Need: Overpressure protection can apply to both S9.3 a) Design Considerations and S9.3 c) Environmental. A change in design due to a change in service with regard to overpressure protection may be possible. In addition, S9.3 c) 2) could be explained in more detail to add considerations for a 'safe point of discharge' and 'environmental regulation compliance' if the change in service includes substances and applications that will be harmful to the environment.

Background: A NBBI staff review of Part 2 for any applicable editorial changes revealed some possible improvements to S9.3 a) and S9.3 c).

PROPOSAL

S9.3 FACTORS TO CONSIDER

Before a change of service is to be made, the owner or user shall consider and evaluate the effects of the new operating conditions or environment on the existing condition and suitability for service of the pressure-retaining item. Various factors will have an impact on the reliability of the pressure-retaining item in its new service environment. Changes can be successfully adopted providing there is an understanding of the effect on the pressure-retaining item. However, there are some cases where changes are detrimental to the existing pressure-retaining item. The owner or user should seek technical guidance of experienced personnel in appropriate areas affected by the change of service (e.g. design, metallurgy, or operations of the pressure retaining item).

The following is a listing of criteria that should be evaluated as appropriate. The criterion is not limited to that listed herein. Other factors may be considered as necessary~~:~~.

a) Design Consideration:
   1) Thickness of existing vessel material.
   2) Vessel or system flow rate or pressure.
   3) Weight of vessel with new contents.
   4) Existing or additional loads imposed on nozzles and highly stressed areas.
   5) Change in pressure or temperature~~,~~ and cycling.
   6) Compliance to product or industry standards, such as ~~ANSI K61~~CGA G-2.1, API 579, or NFPA 58.
   7) Overpressure protection requirements as applicable.

b) Material Consideration:
   1) Chemical and mechanical properties of existing material or any new material to be added or replaced to ensure it has the required strength and toughness to withstand the pressure and temperature effects of the new environment.
   2) Effects of erosion or corrosion.
   3) Time dependent effects on service life - creep or fatigue, or both effects combined.

c) Environment
   1) Physical condition of the pressure-retaining item.
   2) ~~Overpressure protection needs~~Considerations for safe point of discharge and environmental regulation compliance.
   3) Regulatory environment – Verification of compliance to new or existing jurisdictional rules or regulations.

4) Vessel cleanliness – When changing lading fluids or contents consideration should be given to cleaning or decontaminating the vessel as appropriate.

Subject: Add requirements for the drain valve to be locked/tagged open.

Statement of Need: Currently, there is no requirement for the drain valve or cock to be locked/tagged in the open position when between the stop valves in a required double block and bleed configuration. This item is created for the committee to consider adding this requirement for safety purposes.

Background: I conducted an investigation where a welder working on an offline boiler was severely burned because the drain valves were shut and not included in the lockout/tagout procedure. The reason the drain valves were shut was because the two stop valves leaked at their seats causing condensation to form in the desuperheater piping of the offline boiler. The welder was working several feet above this piping and eventually enough energy in the condensate caused a "steam burp" that reached and burned the welder.

PROPOSAL

2.2.6 INTERNAL INSPECTION

a) When a boiler is to be prepared for internal inspection, the water shall not be withdrawn until the setting has been sufficiently cooled at a rate to avoid damage to the boiler as well as additional preparations identified in NBIC Part 2, 1.4.1 and 1.5.3.

b) The owner or user shall prepare a boiler for internal inspection in the following manner:

1) Before opening the manhole(s) and entering any part of the boiler that is connected to a common header with other boilers, the required steam or water system stop valves (including bypass) ~~must~~ shall be closed, locked ~~out,~~ and/or tagged out ~~in accordance with the owner or user's procedures~~, and drain valves or cocks between the two closed stop valves shall be opened, locked and/or tagged out in accordance with the owner or user's procedures. After draining the boiler, the blowoff valves shall be closed, locked ~~out,~~ and/or tagged out in accordance with the owner ~~-~~ or user's procedures. Alternatively, lines may be blanked, or sections of pipe removed. Blowoff lines, where practicable, shall be disconnected between pressure parts and valves. All drains and vent lines shall be open.
2) The Inspector shall review all personnel safety requirements as outlined in NBIC Part 2, 1.4 prior to entry.

Note: If a boiler has not been properly prepared for an internal inspection, the Inspector shall decline to make the inspection.

Subject: CO2 is heavier than air; Part 2, S12.4 c) should say "above" not "below"

Explanation of Need: CO2 is like the foam on a beer mug flowing over, it is heavier than air. being below and an air intake it goes down so should not be an issue, if it is above an air intake it will be dropping down and go into the air intake.

Background Information: I was the project manager on this item originally

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Part 2

S12.4 FILL BOX LOCATION / SAFETY RELIEF / VENT VALVE CIRCUIT TERMINATION
The inspection should verify that fill boxes and vent valve terminations are installed above grade, outdoors in an unenclosed, free airflow area, and that the fill connection is located so not to impede means of egress or the operation of sidewalk cellar entrance doors, including during the delivery process and that they are:

a) at least 3 ft (0.9 m) from any door or operable windows;
b) at least 3 ft (0.9 m) above grade;
c) not located within 10 ft (3 m) above, or from side to side at the same level ~~or below~~, ~~from~~ of any air intakes; and
d) not located within 10 ft (3 m) of stairwells that go below grade.

Note: Many systems installed prior to January 1, 2014, do not meet the above requirements and the local jurisdiction should be consulted for guidance.

NOTE: Part 1 is making this same change in S3.3

5.3.3 INSTRUCTIONS FOR COMPLETING THE FORM NB-136, REPLACEMENT OF STAMPED DATA FORM

~~14.~~ Item 14 shall ~~To~~ be completed by the ~~jurisdiction or Authorized Inspection Agency's authorized representative~~Authorized Jurisdictional Representative or Inspector.

14. If the original manufacturer is currently in business, concurrence shall be obtained by the owner or user.

The requester shall submit the form, along with any attachments, to the jurisdiction where the pressure-retaining item is installed for approval. If there is no jurisdiction or the pressure-retaining item is a stock item, the requester shall submit the form (and any attachments) to a National Board Commissioned Inspector for approval.

After the form is authorized, it ~~will~~ shall be returned to the owner, user, original manufacturer, or "R" Certificate Holder who made the request. The requester is required to contact the jurisdiction or an Authorized Inspection Agency to provide a National Board Commissioned Inspector to witness the re-stamping or installation of the new nameplate. If the nameplate is being welded to the pressure-retaining boundary of the vessel, the welding shall be performed by an "R" Certificate Holder. The requester ~~will~~ shall provide the new nameplate or have on hand the tools to do the re-stamping in accordance with the original code of construction.

Items 15-17 shall be completed by the responsible party as indicated.

15. Once the re-stamping is completed, or the new nameplate is attached, the requester shall provide a true facsimile of the replacement stamping.

16. The owner, user, original manufacturer, or "R" Certificate Holder shall fill in their name (and "R" Certificate Number if an "R" Certificate Holder), signature, and the date of completion.

17. To be completed by the National Board Commissioned Inspector who witnessed the re-stamping or installation of the new nameplate.

~~**Note:** Once the form is completed, t~~The requester shall file a copy of the completed form with:

- ~~-~~the jurisdiction where the pressure-retaining item is installed (if applicable)~~,~~;
- the National Board~~, ~~: ~~and~~
- the owner or user of the pressure-retaining item (if the request was made by the original manufacturer or the "R" Certificate Holder); and
- ~~a copy of the form shall furthermore be provided upon request to~~ the Authorized Inspection Agency who witnessed the re-stamping or attachment of the new nameplate (upon request).

Part 2

2.3.6.5b)2)b. (a. was deleted so c. has become b.)

b. Pressure gages intended to measure the operating pressure in the vessel are not usually sensitive or easily read at low pressures approaching atmospheric. It may be advisable to install an auxiliary gage that reads inches of water (millimeters of mercury) and measures pressure from atmospheric to low pressures. This ensures there is zero pressure in the vessel before opening. ~~It would be necessary to protect the auxiliary low-pressure gage from the higher operating pressures.~~If installed, the auxiliary low-pressure gage shall be protected from the higher operating pressures.

The B2 committee recently completed updating all existing SWPSs adopted by the NBIC.

Item A33-23 was successfully balloted in 2023 and the revised Part 3, Clause 2.3 will be published in the 2025 edition. This item deletes the dates associated with each SWPS as shown in Part 3, Table 2.3. Rationale: The use of previous versions of the listed SWPSs is permitted. Previous versions include Amended, Reaffirmed, Revised or Superseded SWPSs regardless of the publication date.

The long-range plan for the updated SWPSs is to group them into the ANSI approved "Stabilized Maintenance" program" changing from the traditional ANSI 5-year revision / reaffirmation cycle to a 10-year revision/re-reaffirmation cycle.

As in the past, as newly developed SWPS's are approved by the various committees, they will be offered to the NBIC for adoption.

The B2 committee recently approved SWPS B2.1-23-2024; Aluminum SWPSs with the GMAW process on M/P 23 materials. This SWPS is currently being balloted at both TAC and Standards Council and is destined for adoption later this year. Additional SWPSs using both the GMAW and GTAW processes on M/P 22, M/P 23 and M/P 25 materials for both Piping Applications and Plate and Structural Applications are currently being developed by the B2D Subcommittee on SWPSs'.

The committee is also actively soliciting the donation of PQRs from industry to support the development of P91/P92 SWPSs in the near future.

Regards,

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