



**THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS**

NATIONAL BOARD INSPECTION CODE SUBCOMMITTEE REPAIRS & ALTERATIONS

MINUTES

**Meeting of January 10th, 2024
San Antonio, TX**

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 1055 Crupper Avenue
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1. Call to Order

Chair Moore called the meeting to order at 8:00 a.m. Central Time in the Iberian A and B rooms at the hotel.

2. Roll call of Members and introduction of Visitors

Members and visitors were introduced, and attendance taken.

3. Check for a Quorum

A quorum was established based on Attendance taken ([Attachment 1](#))

4. Announcements

- This meeting marks the end of Cycle C for the 2025 NBIC edition. The committees will have until the end of the July 2024 NBIC meeting to approve items for inclusion in the 2025 NBIC.
- The National Board will be hosting a reception on Wednesday evening from 5:30 p.m. to 7:30 p.m. in Veramendi (fourth level of the hotel).
- The National Board will be hosting breakfast and lunch on Thursday in Veramendi 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.
- Meeting schedules, meeting room layouts, and other helpful information can be found on the National Board website under the **NBIC** tab → NBIC Meeting Information.
- Remember to add any attachments that you'd like to show during the meeting (proposals, reference documents, power points, etc.) to the NBIC file share site (nbfileshare.org) **prior to the meeting**.
 - Note that access to the NBIC file share site is limited to committee members only.
 - ALL power point attachments/presentations must be sent to the NBIC Secretary prior to the meeting for approval.
 - Contact Jonathan Ellis (nbicsecretary@nbbi.org) for any questions regarding NBIC file share access.
- When possible, please submit proposals in Word format showing “strike through/underline”. Project Managers: please ensure any proposals containing text from the 2021 NBIC are updated to contain text from the 2023 NBIC.
- 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. If you are here in person, and did not register, please visit the National Board website to register now. Registering will make sure we have an accurate count for the reception, breakfast, and lunch. It is also a good way to make sure we have the most up-to-date contact information.

5. Awards and Special Recognition

Mr. Ray Miletti was presented an award for 10 Years on SC R&A.

6. Adoption of the Agenda

The Agenda was revised to add membership nominations and editorial corrections to items listed. The agenda was adopted as revised

7. Approval of the Minutes of the July 12, 2023, Meeting

The minutes were unanimously approved (UA) as posted.

8. Review of Rosters

a. Membership Nominations

- i. Mr. Johnathon Bates (Labor) was UA to be a member of the NR Task Group. – He was UA by the SC R&A Membership.**
- ii. Mr. Walter Sperko (General Interest) was UA to be a member of the NR Task Group. – He was UA by the SC R&A Membership.**

- iii. Mr. Bernard Hrubala (AIA)) was UA to be a member of the Interpretations Task Group. – He was UA by the SC R&A Membership.**

- iv. The following were UA to become members of Subgroup R&A by SC Membership:**
 - 1. Mr. Mark Vogt (Users)**
 - 2. Mr. Riley Collins (Users)**
 - 3. Mr. Matt Schaser (Cert. Holder)**

- v. Mr. Paul Davis (Manufacturer) was UA to become member of Subcommittee R&A.**

b. Membership Reappointments

- i. The following Subgroup R&A memberships will expire prior to the January 2024 NBIC meetings were UA reappointed by the SG and SC R&A Membership:**
 - 1. Mr. Frank Johnson (Users)**
 - 2. Mr. Tom White (Users)**

c. Officer Nominations

- i. INTERP TG have not selected a Vice Chair (D. Kinney resigning)**

d. Resignations

- i. Don Kinney will be stepping down form Interp TG, Subgroup R&A and Subcommittee R&A**
- ii. Kathy Moore will be letting her membership expire from Subgroup R&A**
- iii. Brian Moorelock will be letting his membership expire from Subgroup R&A**

9. Presentations

- Luis Ponce, NBIC Staff – Interpretations – patents/consulting (Attachment 2)**
- Melissa Wadkinson – presentation of the new NDE requirements in B31.1 (Attachment 3)**

10. Interpretations

New Interpretations Requests:

Item Number: I23-55	NBIC Location: Part 3, S6.8	Attachment 4
General Description: DOT Supplement 6 Intent Interpretation		
Subgroup: Repairs and Alterations		
Task Group: R. Underwood (PM)		
Explanation of Need: The current wording in S6.8 of the 2021 and 2023 Edition of Part 3 incorrectly requires the National Board Commissioned Inspector to ALSO be a DOT Registered Inspector. The 2025 Edition is removing reference to Registered Inspector (Item 20-67). This Intent Interpretation addresses the incorrect reference to Registered Inspector and the "answer" reflects the approved wording from the 2025 Edition of Supplement 6.		
Jan 2024 INTERP TG Action: B. Underwood presented. -The proposal was UA.		
January 2024 Meeting Action: T. Seime presented, and the proposal was UA. Update, This passed MC - UA		
Item Number: I23-63	NBIC Location: Part 3, 3.4.4 d)	No Attachment
General Description: Replacement of Heads with Different Types		
Subgroup: Repairs and Alterations		
Task Group: T. McBee (PM), M. Schaser		
Explanation of Need: 2023 NBIC revises 3.4.4 d) to effectively remove, as an "Example of Alteration", a change in dimension or contour of a pressure-retaining item that does not decrease an item's pressure retaining capability. Prior to revision, 3.4.4 d) would classify any such changes as "alterations".		
Jan 2024 INTERP TG Action: M Schaser presented. Motion to send a letter to inquirer referencing a Action Item has been opened to address this concern (A23-68) and to Close this Item was UA.		
January 2024 Meeting Action: T.Seime presented a motion to Close w/a Letter to Inquirer that a new Action Item has been opened to address this concern (A23-68). The motion was UA.		

Item Number: I23-64	NBIC Location: Part 3, 3.3.3 j)	Attachment 5
<p>General Description: Review of calculations for a new nozzle per 3.3.3 j)</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: T. McBee (PM), M. Schaser</p> <p>Explanation of Need: Example of repair 3.3.3 j) may allow for limits of reinforcement to over lap in some cases and as such is not conservative.</p> <p>Jan 2024 INTERP TG Action: M Schaser presented. The proposal was revised and UA.</p> <p>January 2024 Meeting Action: M Schaser presented. The proposal was UA.</p>		

Item Number: I23-65	NBIC Location: Part 3, 3.3.4.8 a) and 4.4	No Attachment
<p>General Description: Returning a vessel to service without repairing known defects</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: K. Moore (PM), J. Ferreira</p> <p>Explanation of Need: The vessel is located in the state of Texas whose laws do not address pressure vessels, and there are no jurisdictional inspection requirements. Repairs applied by the R Certificate holder to one part of the vessel are complete and acceptable. The R Certificate holder is not satisfied with leaving another part of the vessel with a known defect at the direction of the owner, who intends to return the vessel to operation in its current state. It has been explained to the repair organization that the owner is ultimately responsible for the condition and safety of the vessel and is accountable to the jurisdiction.</p> <p>Jan 2024 INTERP TG Action: K. Moore presented a recommendation to Close w/a Letter to Inquirer that this is outside the scope of the NBIC. The motion was UA.</p> <p>January 2024 Meeting Action: K. Moore presented a recommendation to Close w/a Letter to Inquirer that this is outside the scope of the NBIC. The motion was UA.</p>		

Item Number: I23-66	NBIC Location: Part 3, 3.2.7	No Attachment
<p>General Description: Applying PWHT to a vessel not previously PWHT for a change of service</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: C. Hopkins (PM), M. Carlson, G. Galanes</p> <p>Explanation of Need: The pressure vessel is to be installed and operated in the state of Texas. The Chief Inspector reports that Texas state laws do not address pressure vessels, and has directed the user to contact the National Board for assistance. The NBIC has issued an interpretation that applying PWHT to a vessel not previously subject to PWHT is an alteration, and we agree. The NBIC does not address whether applying PWHT to such a vessel makes it unsuitable for service since the original WPSs were not qualified with PWHT. The owner intends to apply PWHT and operate the vessel in its new service application by September 1, 2023.</p> <p>Jan 2024 INTERP TG Action: T. Seime presented a recommendation to Close w/a Letter to Inquirer that this Consulting. The motion was UA.</p> <p>January 2024 Meeting Action: T. Seime presented a recommendation to Close w/a Letter to Inquirer that this Consulting. The motion was UA.</p>		

Item Number: I23-71	NBIC Location: Part 3, 3.3 and 3.4	Attachment 6
<p>General Description: New method for tube replacement: is it a repair or alteration?</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: K. Moore (PM), D. Kinney, P. Becker</p> <p>Explanation of Need: The repair/alteration method shown is used for tube replacement. This method is being done in Texas, but there is confusion on whether this method of tube replacement should be classified as a repair or an alteration.</p> <p>Jan 2024 INTERP TG Action: R. Trout presented a proposal, which was revised. A vote was called for and 5 approved, 0 disapproved, 5 abstained (M. Toth, A. Triplet, T. Seime, B. Boseo, M. Schaser) – Item did not pass.</p> <p>January 2024 Meeting Action: T. Seime presented a proposal to Close w/a Letter to the Inquirer (R. Troutt), that this is addressed by Interpretation 13-10, Question 2 and Reply 2. The proposal was Approved with 2 abstentions (G. Galanes, P. Gilston) and 1 Not Voting (P. Becker).</p>		

Item Number: I23-75	NBIC Location: Part 3, 4.4.2 c)	Attachment 7
<p>General Description: NDE In Lieu of Pressure Testing for Alterations</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Toth (PM), L. Dutra</p> <p>Explanation of Need: The existing language in NBIC Part 3, Section 4, Paragraph 4.4.2.c – in concert with the new definition of “practicable” added in the 2023 Edition of the Code – may confuse Repair Organizations and owners about their options when it comes to verifying a successful alteration to a pressure-retaining item.</p> <p>Jan 2024 INTERP TG Action: M. Toth presented a proposal. The proposal was Approved. (1 abstention, A. Triplett).</p> <p>January 2024 Meeting Action: T. Seime presented a proposal that was UA.</p>		

Item Number: I23-79	NBIC Location: Part 3, 2.5.3 d) and 2.5.3.6	No Attachment
<p>General Description: Alternative Welding Method 6 - Controlled Fill</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Gilston (PM), R. Derby</p> <p>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.</p> <p>Jan 2024 INTERP TG Action: Due to lack of time, this proposal was not presented, as this proposal will go to LB.</p> <p>January 2024 Meeting Action:T. Seime presented this will this proposal will go to LB for the INTERP TG when ready. This was a PR.</p>		

Item Number: I23-82	NBIC Location: Part 3, 2.5.3 d) and 2.5.3.6	No Attachment
<p>General Description: Replacement of non-pressure retaining parts in Electrolyzer PEM Stack</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Toth (PM), E. Creaser, M. Quisenberry, R. Collins, P. Shanks</p> <p>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.</p> <p>Jan 2024 INTERP TG Action: New Item. Taskgroup to be selected. This was a PR.</p> <p>January 2024 Meeting Action: New Item. Taskgroup to be selected. This was a PR.</p> <p>Update at MC – Task Group selected - M. Toth (PM), E. Creaser, M. Quisenberry, R. Collins, P. Shanks</p>		

11. Action Items

a. Task Group Interpretations

Item Number: A23-73	NBIC Location: Section 10 and the NBBI Website	Attachment 8
<p>General Description: Revise Interp 21-05 to add later ASME Editions</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: T. Seime (PM), D. Kinney</p> <p>Explanation of Need: Interp 21-05 intended to require all alterations to vessels built to ASME Sect. VIII Div. 1, 2021 Edition AND ALL FOLLOWING EDITIONS , be done by design personnel meeting the requirements of Appdx 47.</p> <p>Jan 2024 INTERP TG Action: T. Seime presented a motion that was UA as proposed.</p> <p>January 2024 Meeting Action: T. Seime presented a proposal that was UA.</p>		

b. Task Group Graphite

Item Number: NB15-2208	NBIC Location: Part 3	No Attachment
<p>General Description: Investigate repair options for graphite block heat exchangers</p> <p>Subgroup: Graphite</p> <p>Task Group: Greg Becherer (PM)</p> <p>Explanation of Need: The last item in paragraph 3.3.2 e) reads, “5) Seal welding a mechanical connection for leak tightness where by design, the pressure retaining capability is not dependent on the weld for strength and requires no PWHT.” A repair organization used this paragraph as justification to document a seal welded tube plug on a watertube boiler as routine.</p> <p>July 2023 Meeting Action: A. Viet presented a PR. January 2024 Action: This was a PR.</p>		

Item Number: A23-45	NBIC Location: Part 3, S3.3	No Attachment
<p>General Description: Graphite plate replacement as Routine repair</p> <p>Subgroup: Graphite</p> <p>Task Group: J. Wince (PM)</p> <p>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.</p> <p>July 2023 Meeting Action: A. Viet presented a PR. January 2024 Action: This was a PR.</p>		

c. Task Group FRP

There are currently no open FRP items related to Part 3.

d. Task Group Historical

Item Number: A20-25	NBIC Location: Part 3, S2.13	No Attachment
<p>General Description: Repair Procedure for Fire Boxes</p> <p>Subgroup: SG Historical</p> <p>Task Group: M. Wahl (PM), Robin Forbes, T. Dillon, & F. Johnson</p> <p>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.</p> <p>SG Historical July Meeting Action: PROGRESS REPORT: Mr. Dillon spoke on this item stating they were still waiting on locomotive on this item. He said locomotive were close or had passed something and then they would refer to it or add it to the Historical section of NBIC Part 3.</p> <p>SC R&A Jan. 2023 Meeting Action: T. Seime presented a PR</p> <p>SG Historical Jan 2024 Meeting Action: PR, Mr. Wahl noted there were a lot of new questions that have come up and need to be discussed.</p> <p>January 2024 Action: This was a PR.</p>		

Item Number: 23-62	NBIC Location: Part 3, S2	No Attachment
<p>General Description: Reusing pressure retaining items under alteration</p> <p>Subgroup: SG Historical</p> <p>Task Group: Chris Jowett (PM), F. Johnson, J. Smith.</p> <p>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.</p> <p>SG Historical Jan 2024 Meeting Action: PR, Taskgroup created.</p> <p>January 2024 Action: This was a PR.</p>		

e. Task Group Locomotive

There are currently no TG Locomotive items open for Part 3.

f. NR Task Group

Item Number: A23-57	NBIC Location: Part 3, 1.6	No Attachment
<p>General Description: Rename Authorized Nuclear Inspector - NR TG Item</p> <p>Subgroup: NR TG</p> <p>Task Group: C. Dinic (PM)</p> <p>Explanation of Need: Endorsements required may need to be revised based on Category of work. Name of the Inspector may need to be revised.</p> <p>Jan 2024 NR TG Action: Presentation by C. Dinic. NBIC Proposals to be submitted to the NR TG for Rvw & Comment LB prior to CoQ meeting in March 2024 for consideration/direction.</p> <p>Intent Interp & supporting Action Item may need to be opened to clarify current ANI and ANIS qualifications/requirements for A23-60. – This was a PR.</p> <p>January 2024 Meeting Action: R. Spuhl provided a PR based on NR TG actions.</p>		

Item Number: A23-58	NBIC Location: Part 3, 1.6.7.1 s) 2)	Attachment 9
<p>General Description: Add the applicable requirements for Auditors</p> <p>Subgroup: NR TG</p> <p>Task Group: T. White (PM)</p> <p>Explanation of Need: Add the applicable requirements from ASME “Requirement 2” to the current requirements of audit personnel per 1.6.7.1 s) 2) for Cat. 2 or change it to be specific to Sect. XI</p> <p>Jan 2024 NR TG Action: T. White presented a proposal which was revised and UA.</p> <p>January 2024 Meeting Action: R. Spuhl presented a proposal which was UA.</p>		

Item Number: A23-60	NBIC Location: Part 3, 1.6	No Attachment
<p>General Description: Endorsements required for Nuclear Inspectors based on Category of work</p> <p>Subgroup: NR TG</p> <p>Task Group: C. Dinic (PM)</p> <p>Explanation of Need: Endorsements required for Nuclear Inspectors based on Category of work (1, 2, or 3)</p> <p>Jan 2024 NR TG Action: R. Spuhl will provide a proposal and Intent Interp based on this proposal. – This was a PR.</p> <p>January 2024 Meeting Action: R. Spuhl will provide a proposal and Intent Interp based on this proposal. – This was a PR.</p>		

g. Subgroup Repairs & Alterations

Item Number: A21-12	NBIC Location: Part 3, 3.3.3, 3.4.4, Section 9	Attachment 10
<p>General Description: Clarify the definitions and examples of “Repair” and “Alteration”</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Becker (PM), K. Moore, R. Underwood, , T. Seime, P. Shanks</p> <p>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.</p> <p>July 2023 Meeting Action: P. Becker presented a PR</p> <p>Jan. 2024 SG and SC R&A Meeting Action: P. Becker presented a PR and asked for any feedback from the group or visitors, as this will be submitted for a LB to SG R&A soon.</p>		

Item Number: A21-31	NBIC Location: NBIC Glossary	Attachment 11
<p>General Description: Revise definition of "Field"</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: R. Miletti (PM), P. Gilston, M. Toth, J. Walker</p> <p>Explanation of Need: A "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.</p> <p>July 2023 Meeting Action: P. Gilston presented a PR</p> <p>Update – Passed SG LB (22-0-2) in Dec. 2023</p> <p>Jan. 2024 SG R&A Meeting Action: R. Miletti presented a PR; as this is ready for SC.</p> <p>Jan. 2024 SC R&A Meeting Action: R. Miletti presented a proposal that was UA., and LB to Parts 1, 2, and 4</p>		

Item Number: A21-43	NBIC Location: Part 3, Glossary	No Attachment
<p>General Description: Defining and revising "Practicable" and "Practical" within the NBIC</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Toth (PM), B. Underwood, L. Dutra, R. Collins, P. Davis, T. White, L. Moedinger, A. Triplett</p> <p>Explanation of Need: Defining and revising Practicable and Practical within the NBIC and revising where applicable</p> <p>July 2023 Meeting Action: M. Toth presented a PR.</p> <p>Jan. 2024 SG and SC R&A Meeting Action: M. Toth presented a PR. Taskgroup updated to add: L. Dutra, R. Collins, P. Davis, T. White, L. Moedinger, A. Triplett</p>		

Item Number: A21-44	NBIC Location: Part 3, Glossary	No Attachment
<p>General Description: Defining "De-Rating" within Part 3</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Toth (PM), B. Underwood, M. Wadkinson, L. Dutra, J. Ferreira, M. Schaser, D. Kinney</p> <p>Explanation of Need: Defining de-rating within Part 3</p> <p>July 2023 Meeting Action: T. Hellman presented a PR.</p> <p>Jan. 2024 SG and SC R&A Meeting Action: M. Toth presented a PR. Taskgroup updated to remove B. Wielgoszinski and add: M. Wadkinson, L. Dutra, J. Ferreira, M. Schaser, D. Kinney</p>		

Item Number: A21-45	NBIC Location: Part 3, Supplements	No Attachment
<p>General Description: Engineered Repairs and Alterations Supplement</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: R. Underwood (PM), B. Boseo, B. Ray, D. Marek, M. Schaser</p> <p>Explanation of Need: In an effort to simplify the main body of NBIC Part 3, we are proposing a new Supplement called Engineered Repairs and Alterations which will import some existing, more complex activities from the main body and then eventually add new repair and alteration activities that are not currently addressed in the Part 3.</p> <p>July 2023 Meeting Action: B. Underwood presented the initial scope statement and plan for moving “engineered repairs” currently in the NBIC to the new supplement. The proposal in moving existing ‘engineered repairs’ to a new supplement was revised and UA.</p> <p>Update – Passed SG LB (20-2-0) in Dec. 2023</p> <p>Jan. 2024 SG R&A Meeting Action: R. Underwood presented a PR; this proposal is ready for SC.</p> <p>Jan. 2024 SC R&A Meeting Action: R. Underwood presented a PR; this proposal will be revised and sent to LB to SC R&A soon.</p>		

Item Number: A21-53	NBIC Location: Part 3, S8.5 a)	No Attachment
<p>General Description: Post Repair Inspection of weld repairs to CSEF steels</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Gilston (PM), E. Cutlip, A. Triplett</p> <p>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.</p> <p>July 2023 Meeting Action: P. Gilston presented a PR</p> <p>Jan. 2024 SG and SC R&A Meeting Action: P. Gilston presented a PR, and is working with Part 2.</p>		

Item Number: A21-67	NBIC Location: Part 3, 3.4.9	Attachment 12
<p>General Description: Add welding requirements to plugging firetubes</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Gilston (PM), K. Moore, M. Quisenberry, T. Seime</p> <p>Explanation of Need: The current NBIC does not have enough direction or requirements for welding tube plugs in firetubes.</p> <p>July 2023 Meeting Action: P. Gilston presented a proposal that was UA.</p> <p>***Note that this item was approved by MC in July and then re-opened to address a comment from Mr. George Galanes. This updated proposal has been approved by the SG and SC.***</p> <p>Update – Passed SC LB (14-2-0) in Dec. 2023</p> <p>Jan. 2024 SG and SC R&A Meeting Action: P. Gilston presented a PR; this proposal is ready for MC.</p>		
Item Number: A22-18	NBIC Location: Part 3, Glossary	No Attachment
<p>General Description: Definition of blowdown and blowoff</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: K. Moore (PM), M. Quisenberry, G. Scribner, M. Wadkinson</p> <p>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.</p> <p>July 2023 Meeting Action: K. Moore presented a PR.</p> <p>Jan. 2024 SG and SC R&A Meeting Action: K. Moore presented a PR.</p>		
Item Number: A22-19	NBIC Location: Part 3, 5.2.2	Attachment 13
<p>General Description: R Certificate Holders with Design Only Scope</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: J. Ferreira (PM), R. Valdez, G. Scribner, B. Schaefer, M. Schaser</p> <p>Explanation of Need: To add new paragraphs 5.2.2 d) and 5.2.2 e) which will provide guidance for R Certificate Holders with "Design Only" on which activities they are permitted to perform and how they and the Inspectors shall complete the R-2 Form.</p> <p>July 2023 Meeting Action: M. Schaser presented. UA as revised</p> <p>Update – Item has been revised and will be re-considered by SG and SC.</p> <p>Jan. 2024 SG R&A Meeting Action: J. Ferreira presented. The proposal was revised and UA.</p> <p>Jan. 2024 SC R&A Meeting Action: J. Ferreira presented a proposal that was UA.</p>		

Item Number: A22-41	NBIC Location: Part 3, 1.5	Attachment 14
General Description: Reference NB-415 in Quality System		
Subgroup: Repairs and Alterations		
Task Group: P. Davis selected as PM. Added M. Carlson and J. Walker, L. Ponce		
Explanation of Need: Requirements in the NB-415 should be included in the R Cert. Holder's QC Manual. Examples: a) Notifying the National Board when an organization changes scope, ownership, name, location, address, or Inspection Agreement and b) Return of the stamp.		
July 2023 Meeting Action: K. Moore presented a PR.		
Jan. 2024 SG R&A Meeting Action: P. Davis presented. The proposal was revised and UA.		
Jan. 2024 SC R&A Meeting Action: P. Davis presented. The proposal was UA		

Item Number: A23-04	NBIC Location: Part 3, 3.3.4.6 a) 2)	Attachment 15
General Description: Address Flush Patch Plate Weld NDT		
Subgroup: Repairs and Alterations		
Task Group: J. Ferreira (PM), K. Moore, M. Schaser, T. McBee, F. Johnson, M. Schaser		
Explanation of Need: Propose replacing, “a) ...The completed welds shall meet the requirements of the original code of construction.” with “The completed flush patch welds shall meet the requirements of the original code of construction. When this is not possible or practicable for volumetric examination, progressive surface NDT (PT or MT) is permitted with acceptance by the Inspector, and if required by the Jurisdiction.”		
July 2023 Meeting Action: T. McBee presented. The proposal was revised and ultimately was given as a PR for further revisions.		
Update – Passed SG LB (22-0) in Dec. 2023 and a Rvw and Comment LB to SC R&A		
Jan. 2024 SC R&A Meeting Action: J. Ferreira presented the proposal, and was UA.		

Item Number: A23-13	NBIC Location: Part 3, 3.3.3 s)	Attachment 16
<p>General Description: Consistent addressing of the term for weld metal</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Gilston (PM), W. Sperko, J. Siefert, T. Melfi, F. Johnson</p> <p>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.</p> <p>July 2023 Meeting Action: P. Gilston proposed to submit the proposal via LB to ALL SC.</p> <p>Update – Passed LB in all SGs EXCEPT for Part 4.</p> <p>Jan. 2024 SG R&A Meeting Action: P. Gilston presented. The proposal had been revised based on Part 4 comments. The proposal was UA.</p> <p>Jan. 2024 SC R&A Meeting Action: P. Gilston presented. The proposal was UA by SC R&A, and will need to be LB to Parts 1, 2 and 4.</p>		

Item Number: A23-14	NBIC Location: Part 3, Table S9.2	No Attachment
<p>General Description: Extension Instructions for Reports of Repair</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Quisenberry (PM)</p> <p>Explanation of Need: Additional text should be added to Instruction (29) of Table S9.2 of Supplement 9 (listing the "R" Cert. of Auth expiration date), to provide instructions on how to document if the "R" Cert. Holder is operating under an extension.</p> <p>July 2023 Meeting Action: M. Quisenberry presented a PR.</p> <p>Jan. 2024 SG and SC R&A Meeting Action: M. Quisenberry presented that Extension instructions are issued by NBBi Tech. Staff when issuing extensions. A motion to Close w/No Action was UA.</p>		

Item Number: A23-21	NBIC Location: Part 3, 3.3.4.9	No Attachment
<p>General Description: Boiler tube plug guidelines and inclusion or watertube boilers</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: E. Cutlip (PM), P. Gilston, K. Moore, A. Triplett</p> <p>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.</p> <p>July 2023 Meeting Action: K. Moore presented a PR. A. Triplett was added to the TG.</p> <p>Jan. 2024 SG and SC R&A Meeting Action: E. Cutlip presented a PR</p>		

Item Number: A23-24	NBIC Location: Part 3	No Attachment
<p>General Description: Repairs to quick actuating closures</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: T. McBee (PM), C. Becker, M. Schaser, A. Khssassi, R. Smith</p> <p>Explanation of Need: Put safe guidelines for repairs to quick actuating closures.</p> <p>July 2023 Meeting Action: T. McBee presented a PR, as this item is being worked in collaboration with Part 2.</p> <p>Jan. 2024 SG and SC R&A Meeting Action: T. McBee presented a PR.</p>		

Item Number: A23-29	NBIC Location: Part 3, 1.5.1 s)	No Attachment
<p>General Description: Clarification of Intent</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: A. Triplett (PM), P. Becker</p> <p>Explanation of Need: The sentence is unclear as it currently reads. With the new wording it clarifies the intent.</p> <p>July 2023 Meeting Action: A. Triplett presented a PR.</p> <p>Jan. 2024 SG R&A Meeting Action: A. Triplett presented that the origin of this proposal is unknown, and the sentence was determined to be clear by the SG. A motion to Close w/No Action was UA.</p> <p>Jan. 2024 SC R&A Meeting Action: P. Becker presented that the origin of this proposal is unknown, and the sentence was determined to be clear by the SG. A motion to Close w/No Action was UA.</p>		

Item Number: A23-35	NBIC Location: All Parts, 9.1	No Attachment
<p>General Description: Definition of "non-load bearing attachment" (All Parts)</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: T. White (PM), A. Khssassi, J. Walker, P. Lentzer</p> <p>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.</p> <p>July 2023 Meeting Action: T. White presented a PR.</p> <p>Update – Passed SG LB (17-1-5) in Dec. 2023</p> <p>Jan 2024 SC R&A Meeting Action: T. White presented. Based on conversation, this term may be defined in other codes already, and may need to be revised. This was a PR. Added J. Walker and P. Lentzer to taskgroup.</p>		

Item Number: A23-36	NBIC Location: Part 3, 4.2 a) and 4.4 b)	No Attachment
<p>General Description: Clarifying Rules for Using Alternative NDE Methods</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: Tom White (PM), P. Miller, J. Walker, P. Lentzer</p> <p>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.</p> <p>July 2023 Meeting Action: T. White proposed to CLOSE W/NO ACTION as this is addressed under A23-24. The proposal to Close was UA. This motion to close w/ no action was later Disapproved by Main Committee.</p> <p>Jan. 2024 SG R&A Meeting Action: T. White presented a proposal based on MC feedback. The proposal was revised and UA by the SG R&A.</p> <p>Jan 2024 SC R&A Meeting Action: Based on A23-04 (A. Triplett – PM) changing this paragraph, Mr. White submitted this as a PR and may combine this item with 23-77 (also dealing with paragraph 4.2). Added J. Walker and P. Lentzer to taskgroup.</p>		

Item Number: A23-38	NBIC Location: Part 3, 1.1 a)	No Attachment
<p>General Description: Scope Clarification for Part 3</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Quisenberry (PM), R. Spuhl, P. Davis, T. Seime, A. Henson</p> <p>Explanation of Need: The owner or user’s need to return equipment to service must never compromise the operational safety of the equipment or the process by which the operational safety of the equipment is assured. There is an interpretation that supports this notion by describing subjects permitted to be considered when determining whether a repair or alteration activity is practicable.</p> <p>July 2023 Meeting Action: M. Quisenberry presented a PR.</p> <p>Jan. 2024 SG and SC R&A Meeting Action: M. Quisenberry presented that this scope will need to be approved by the BOT, (not the NBIC Committee). A motion to Close w/No Action was UA.</p>		

Item Number: A23-39	NBIC Location: Part 3, 3.3.1	No Attachment
<p>General Description: Strengthening Prevention of Defect Recurrence</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: J. Ferreira (PM), J. Walker, F. Johnson, P. Gilston, A. Hanson, G. Galanes, B. Hrubala</p> <p>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.</p> <p>July 2023 Meeting Action: M. Quisenberry presented a PR.</p> <p>Jan. 2024 SG R&A Meeting Action: J. Ferreira presented a proposal that was revised during discussion. The revised proposal was Approved with 1 Disapproval (K. Moore), and 2 Abstentions (M. Toth, R. Spuhl).</p> <p>Jan. SC R&A Meeting Action: J. Ferreira presented. After much conversation, Mr. Ferreira submitted a PR and will revise and submit a LB soon. The following people were added to the taskgroup: P. Gilston, A. Hanson, G. Galanes, B. Hrubala.</p>		

Item Number: A23-40	NBIC Location: Part 3, 3.3.4.1	No Attachment
<p>General Description: Strengthening Requirements to Ensure Defect Removal</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: L. Dutra (PM), E. Cutlip, A. Renaldo, R. Valdez, T. McBee, A. Henson</p> <p>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.</p> <p>July 2023 Meeting Action: L. Dutra selected as PM. This was a PR.</p> <p>Jan. 2024 SG and SC R&A Meeting Action: L. Dutra presented a PR.</p>		

Item Number: A23-41	NBIC Location: Part 3, 3.3.4.6 a) 2)	No Attachment
<p>General Description: Strengthening Requirements for Defect Removal When Patching</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: A. Khssassi (PM), L. Dutra, A. Renaldo</p> <p>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.</p> <p>July 2023 Meeting Action: New PM selected - A. Khssassi (PM). This was a PR.</p> <p>Update – Failed SG LB (11-5-8) in Dec. 2023</p> <p>Jan. 2024 SG and SC R&A Meeting Action: A. Khssassi presented a PR</p>		

New Action Items:

Item Number: A23-56	NBIC Location: Part 3, 1.3.2	No Attachment
<p>General Description: Alternate Repair Inspectors</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: A. Triplett (PM), P. Lentzer</p> <p>Explanation of Need: The 2023 Edition revision to 1.3.2.a makes the use of alternate Inspectors applicable only to AIAs. The language should be revised to include OUIOs and FIAs that perform repairs/alterations on their own equipment, as allowed by 1.3.b.</p> <p>January 2024 SG R&A Meeting Action: A. Triplett presented that this definition is already addressed elsewhere. A motion to Close w/No Action was UA.</p> <p>January 2024 Meeting Action: K. Moore presented a motion to Close w/No Action and was UA.</p>		

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.		
January 2024 SG R&A Meeting Action: A. Triplett presented a proposal, which was revised multiple times. This was a PR to allow a revision of the proposal for NDE personnel requirements to be moved from 4.2 a) to 4.2 b).		
January 2024 Meeting Action: K. Moore presented a PR .		

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.		
January 2024 SG R&A Meeting Action: B. Schaefer presented a PR .		
January 2024 Meeting Action: B. Schaefer presented a PR . This is related to A22-19.		

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.		
January 2024 SG R&A Meeting Action: M. Schaser presented and the proposal, which was revised and taken back as a PR . P. Becker and L. Baker were added to the TG.		
January 2024 Meeting Action: K. Moore presented this is still at SG and is a PR .		

Item Number: A23-69	NBIC Location: Part 3, 9.1	Attachment 17
<p>General Description: Update definitions of Field, Shop, and add definition for Temporary Locations</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: R. Miletti (PM), E. Cutlip, M. Toth, J. Walker, P. Gilston</p> <p>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".</p> <p>Update - Failed SG LB (12-3-9) in Dec. 2023</p> <p>January 2024 SG R&A Meeting Action: R. Miletti presented that the previous proposal referring to NB-415 was rejected by the SG. A revised proposal from P. Gilston was submitted with definitions SIMILAR to what is in NB-415 to be incorporated into the NBIC Definitions. The proposal was UA.</p> <p>January 2024 Meeting Action: R. Miletti presented a proposal and was UA by the SC R&A. This will need to go to LB to Parts 1, 2, and 4.</p>		

Item Number: A23-76	NBIC Location: Part 3, 3.3.4.6 a)	No Attachment
<p>General Description: Revise paragraph 3.3.4.6 Patches for Clarity.</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: None assigned.</p> <p>Explanation of Need: Requirements do not include specific note to ensure sound metal meets minimum design thickness. Further the order of the rules is not logical, starts with finished weld, grinding and NDE, then addresses defect removal, preparation etc.</p> <p>January 2024 SG and SC R&A Meeting Action: T. Hellman presented that this itme is addressed by A23-41. A motion to combine W/A23-41 and CLOSE W/NO ACTION was UA.</p>		

Item Number: A23-77	NBIC Location: Part 3, 4.2 a)	No Attachment
<p>General Description: Performance of Original NDE During Repairs and Alterations</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: A. Triplett (PM), S. Frazier, J. Walker, R. Collins, P. Becker</p> <p>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.</p> <p>January 2024 SG R&A Meeting Action: A. Triplett will wait until A23-04 is considered at SC and MC and may combine with A23-36, as it deals with 4.2 a). This was a PR.</p> <p>January 2024 Meeting Action: K. Moore presented this as a PR.</p>		

Item Number: A23-78	NBIC Location: Part 3, S8	No Attachment
<p>General Description: Rev. NB-23 Part 3, Supplement 8 & Fig. S8.3-b</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Becker (PM)</p> <p>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</p> <p>January 2024 SG R&A Meeting Action: P. Becker presented. Several comments on revisions were made, and P. Becker intends to submit to LB once revisions are made. This was a PR.</p> <p>January 2024 Meeting Action: P. Becker presented a PR.</p>		

Item Number: A23-83	NBIC Location: Part 3, New Engineered repairs and Alteration Supplement	No Attachment
<p>General Description: Relocating Existing Repairs to new Eng. Repair & Alteration Supplement</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: R. Underwood (PM)</p> <p>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.</p> <p>Update - SG LB in Progress till 1/5/24</p> <p>January 2024 SG R&A Meeting Action: R. Underwood presented a PR as this item will be presented to SC R&A.</p> <p>January 2024 Meeting Action: R. Underwood presented a PR, as this item will go to SC R&A as a LB once some of the alternative welding methods have been moved back into the main part of the NBIC Part 3.</p>		

Item Number: A23-86	NBIC Location: Part 3, S6.5 & S6.6	No Attachment
<p>General Description: Revision to Part 3 DOT Supplement re-write</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: R. Underwood (PM)</p> <p>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.</p> <p>January 2024 SG R&A Meeting Action: R. Underwood presented a PR as this item will be go to SG R&A LB.</p> <p>January 2024 Meeting Action: R. Underwood presented a PR as this item will be go to SG R&A LB when ready.</p>		

Item Number: A24-01	NBIC Location: Part 3, 3.3.3 j)	No Attachment
<p>General Description: Changes to Examples of Repairs</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Schaser (PM), R. Collins, C.Hopkins, K. Derrick, S. Lombardo</p> <p>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.</p> <p>January 2024 SG R&A Meeting Action: M. Schaser presented and motioned for a vote. The vote failed the SG and the following people were added to the taskgroup: R. Collins, C.Hopkins, K. Derrick, S. Lombardo</p> <p>January 2024 Meeting Action: K. Moore presented this was a PR, as it is still at SG R&A.</p>		

Item Number: A24-02	NBIC Location: S6.18 & S6.18.3	Attachment 18
<p>General Description: Correction of duplicated words from approved A20-67 and A23-25</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Gilston (PM),</p> <p>Explanation of Need: This proposal is to DELETE the last sentence from DOT Supplement paragraph S6.18 (as approved to be in the 2025 Edition via A23-25) as the new paragraph "S6.18.3" created by the approved item A20-67 already will addresses this requirement in the 2025 Edition.</p> <p>January 2024 SG R&A Meeting Action: P. Gilston presented a proposal, which was UA.</p> <p>January 2024 Meeting Action: P. Gilston presented a proposal, which was UA.</p>		

Main Committee Item

Item Number: A23-09	NBIC Location: Part 3	Attachment 19
General Description: Developing Rules for 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, and M. Wadkinson.		
Explanation of Need: Determining appropriate rules and scope for the use of additive manufacturing pressure parts on pressure-retaining items.		
January 2024 SG R&A Meeting Action: G. Galanes presented a proposal that will be going to SG R&A as a RVW and Comment LB to SG R&A.		
January 2024 Meeting Action: G. Galanes presented a PR , as this will go to SG R&A as a Rvw and Comment LB.		

12. Future Meetings

- July 15-18, 2024 – The Brown Hotel in Louisville, KY
- January 2025 – TBD

13. Adjournment @ 12:56 PM by Chair Moore.

Respectfully submitted,

Terrence Hellman

Terrence Hellman

SC R&A Secretary

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Subcommittee Repairs and Alterations	raymond_spuhl@hsb.com	Raymond	Spuhl	Hartford Steam Boiler Inspection & Insurance Company	In-person
		Shawn	Styles		
Subcommittee Repairs and Alterations	A.thompson@dencoindustrial.com	James	Thompson	DenCo Industrial	Remote
Subcommittee Repairs and Alterations	mtoth@boisctraininggroup.com	Marty	Toth	ECS Consulting, LLC	In-person
Subcommittee Repairs and Alterations	Rob.troutr@tdlr.texas.gov	Rob	Troutr	TDLR	In-person
Subcommittee Repairs and Alterations	robert_underwood@hsb.com	Robert	Underwood	Hartford Steam Boiler	In-person
		Rick	Valdez		
Subcommittee Repairs and Alterations	jaga4021@hotmail.com	Jagadheesan	Vellingiri Muthukumaraswamy	APAVE SA	Remote
Subcommittee Repairs and Alterations	aaronv@cgthermal.com	Aaron	Viet	CG Thermal LLC	Remote
Subcommittee Repairs and Alterations	mark.vogt@vistracorp.com	Mark	Vogt	Luminant	In-person
Subcommittee Repairs and Alterations	dwmcgill@marathonpetroleum.com	Donald	W. McGill	MPC - Terminal Services	In-person
Subcommittee Repairs and Alterations	melissa.wadkinson@fulton.com	Melissa	Wadkinson	Fulton	In-person
		Jamie	Walker		
Subcommittee Repairs and Alterations	thomas.white@nrg.com	Tom	White	NRG Energy	In-person
Subcommittee Repairs and Alterations	michaelwinters@gmail.com	Michael	Winters	Boiler & Property Consulting	In-person
Subcommittee Repairs and Alterations	John@vikingvessel.com	John		Viking Vessel Services LLC	In-person

1. Summary

Meeting title	SC R&A - Part 3
Attended participants	21
Start time	1/10/24, 8:34:17 AM
End time	1/10/24, 2:49:59 PM
Meeting duration	6h 15m 42s
Average attendance time	3h 39m 35s

2. Participants

Name	First Join	Last Leave	In-Meeting Duration	Email	Participant ID (UPN)	Role
Terrence Hellman	1/10/24, 8:34:18 AM	1/10/24, 1:57:08 PM	5h 22m 49s	THellman@nationalboard.org	thellman@nationalboard.org	Organizer
Mark Clemens	1/10/24, 8:34:48 AM	1/10/24, 2:06:36 PM	5h 31m 48s	mclemens@nationalboard.org	mclemens@nationalboard.org	Presenter
M - Linn Moedinger SRC	1/10/24, 8:45:06 AM	1/10/24, 1:56:44 PM	5h 11m 37s			Presenter
Larry Barr	1/10/24, 8:45:11 AM	1/10/24, 1:56:54 PM	5h 11m 43s			Presenter
Mcguire, Robert (GE Vernova)	1/10/24, 8:50:58 AM	1/10/24, 1:58:08 PM	5h 5m 44s	robert.b.mcguire@ge.com	212484782@ge.com	Presenter
Paul SHANKS	1/10/24, 8:53:31 AM	1/10/24, 1:56:48 PM	5h 3m 17s	Paul.Shanks@bureauveritas.com	Paul.Shanks@bureauveritas.com	Presenter
Frazier, Steve	1/10/24, 8:56:04 AM	1/10/24, 1:56:53 PM	5h 48s	Steve.Frazier@seattle.gov	steve.frazier@seattle.gov	Presenter
Jim Sekely - Member (Guest)	1/10/24, 8:57:32 AM	1/10/24, 12:03:13 PM	3h 5m 41s			Presenter
Stacey MARKS	1/10/24, 8:58:50 AM	1/10/24, 1:56:52 PM	4h 58m 2s	stacey.marks@bureauveritas.com	stacey.marks@bureauveritas.com	Presenter
LeBeau, Timothy C.	1/10/24, 9:01:39 AM	1/10/24, 11:52:52 AM	2h 4m 37s	TCLEBEAU@SOUTHERNCO.COM	TCLEBEAU@SOUTHERNCO.COM	Presenter
Teresa MELFI (Chair IIW C-XI)	1/10/24, 9:04:16 AM	1/10/24, 11:04:49 AM	2h 32s	Teresa.MELFI@iiewelding.net	Teresa.MELFI@iiewelding.net	Presenter
Dan Lynch	1/10/24, 9:07:30 AM	1/10/24, 1:57:07 PM	4h 49m 36s	danl@isbsservices.com	danl@isbsservices.com	Presenter
Pyndinski, Craig A.	1/10/24, 9:19:05 AM	1/10/24, 10:59:38 AM	1h 40m 33s	PYNDINCA@airproducts.com	PYNDINCA@airproducts.com	Presenter
M.A.Shah	1/10/24, 9:26:46 AM	1/10/24, 1:57:00 PM	4h 30m 14s			Presenter
Mcdaris, Charles (GE Vernova)	1/10/24, 9:42:29 AM	1/10/24, 1:54:07 PM	4h 11m 37s	Charles.McDaris@ge.com	212484396@ge.com	Presenter
Kevin Choi	1/10/24, 10:02:36 AM	1/10/24, 1:56:56 PM	3h 54m 20s	kevin.choi@accelerazero.com	vx751@cummins.com	Presenter
Teresa Melfi	1/10/24, 11:06:25 AM	1/10/24, 1:56:44 PM	2h 50m 19s			Presenter
Rob Stimson [KSFM]	1/10/24, 11:16:32 AM	1/10/24, 1:57:04 PM	2h 40m 31s	rob.stimson@ks.gov	rob.stimson@ksfm.ks.gov	Presenter
jim sekely (M)	1/10/24, 12:05:44 PM	1/10/24, 1:56:50 PM	1h 51m 5s			Presenter
Dacanay, Julius J	1/10/24, 1:29:30 PM	1/10/24, 2:49:59 PM	1h 20m 28s	julius.j.dacanay@hawaii.gov	julius.j.dacanay@hawaii.gov	Presenter
Burpee, John H	1/10/24, 1:31:01 PM	1/10/24, 1:56:48 PM	25m 46s	john.h.burpee_maine.gov#EXT#@nationalboard.onmicrosoft.com	john.h.burpee_maine.gov#EXT#@nationalboard.onmicrosoft.com	Presenter


3. In-Meeting Activities

Name	Join Time	Leave Time	Duration	Email	Role
Terrence Hellman	1/10/24, 8:34:18 AM	1/10/24, 1:57:08 PM	5h 22m 49s	THellman@nationalboard.org	Organizer
Mark Clemens	1/10/24, 8:34:48 AM	1/10/24, 2:06:36 PM	5h 31m 48s	mclemens@nationalboard.org	Presenter
M - Linn Moedinger SRC	1/10/24, 8:45:06 AM	1/10/24, 1:56:44 PM	5h 11m 37s		Presenter
Larry Barr	1/10/24, 8:45:11 AM	1/10/24, 1:56:54 PM	5h 11m 43s		Presenter
Mcguire, Robert (GE Vernova)	1/10/24, 8:50:58 AM	1/10/24, 10:40:05 AM	1h 49m 6s	robert.b.mcguire@ge.com	Presenter
Mcguire, Robert (GE Vernova)	1/10/24, 10:41:30 AM	1/10/24, 1:58:08 PM	3h 16m 38s	robert.b.mcguire@ge.com	Presenter
Paul SHANKS	1/10/24, 8:53:31 AM	1/10/24, 1:56:48 PM	5h 3m 17s	Paul.Shanks@bureauveritas.com	Presenter
Frazier, Steve	1/10/24, 8:56:04 AM	1/10/24, 1:56:53 PM	5h 48s	Steve.Frazier@seattle.gov	Presenter
Jim Sekely - Member (Guest)	1/10/24, 8:57:32 AM	1/10/24, 12:03:13 PM	3h 5m 41s		Presenter
Stacey MARKS	1/10/24, 8:58:50 AM	1/10/24, 1:56:52 PM	4h 58m 2s	stacey.marks@bureauveritas.com	Presenter
LeBeau, Timothy C.	1/10/24, 9:01:39 AM	1/10/24, 10:43:53 AM	1h 42m 14s	TCLEBEAU@SOUTHERNCO.COM	Presenter
LeBeau, Timothy C.	1/10/24, 11:30:29 AM	1/10/24, 11:52:52 AM	22m 23s	TCLEBEAU@SOUTHERNCO.COM	Presenter
Teresa MELFI (Chair IIW C-XI)	1/10/24, 9:04:16 AM	1/10/24, 11:04:49 AM	2h 32s	Teresa.MELFI@iiewelding.net	Presenter
Dan Lynch	1/10/24, 9:07:30 AM	1/10/24, 1:57:07 PM	4h 49m 36s	danl@isbsservices.com	Presenter
Pyndinski, Craig A.	1/10/24, 9:19:05 AM	1/10/24, 10:59:38 AM	1h 40m 33s	PYNDINCA@airproducts.com	Presenter
M.A.Shah	1/10/24, 9:26:46 AM	1/10/24, 1:57:00 PM	4h 30m 14s		Presenter
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Kevin Choi	1/10/24, 10:02:36 AM	1/10/24, 1:56:56 PM	3h 54m 20s	kevin.choi@accelerazero.com	Presenter
Teresa Melfi	1/10/24, 11:06:25 AM	1/10/24, 1:56:44 PM	2h 50m 19s		Presenter
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jim sekely (M)	1/10/24, 12:05:44 PM	1/10/24, 1:56:50 PM	1h 51m 5s		Presenter
Dacanay, Julius J	1/10/24, 1:29:30 PM	1/10/24, 2:49:59 PM	1h 20m 28s	julius.j.dacanay@hawaii.gov	Presenter
Burpee, John H	1/10/24, 1:31:01 PM	1/10/24, 1:56:48 PM	25m 46s	john.h.burpee_maine.gov#EXT#@nationalboard.onmicrosoft.com	Presenter

NBIC Inquiries

- Inquiry process open to everyone
- Incoming inquiries are received by the NBIC Secretary from Business Center
- Cover all four Parts and are specific to the Edition and references
- A tutorial has been added with instructions to navigate the Business Center

Welcome Luis Ponce (The National Board of Boiler and Pressure Vessel Inspectors)



Home Contact Us View/Edit My Profile Education Center **NBIC** Test Lab Commission Lookup

National Board Inspection Code

The *National Board Inspection Code* (NBIC) was first published in 1946 as a guide for chief inspectors. It has been adopted by most US and Canadian jurisdictions. The NBIC provides standards for the installation, inspection, pressure vessels, and pressure relief devices.

NBIC Requests

The NBIC Committee meets regularly to consider written requests for interpretations and revisions/additions. National Board staff before being submitted to the committees for their consideration. Any additional information in the online request form should be emailed to the NBIC Secretary at nbicsecretary@nbbi.org.

Basic tracking information is provided for all requests you submit for committee consideration. If you have any questions please contact the NBIC Secretary.

[Tutorial for Submitting Action Item Requests](#) ←

NBIC Committee Members

NBIC Action Items

View basic information for all open and closed action items and interpretation requests for each NBIC committee.

NBIC Balloting

All active ballots for committees of which you are a member, as well as an archive of all previous letter ballot items being balloted will view and respond to ballot comments here as well.

NBIC Requests

Request for

Submitted By:

Company:

Subject of Request (Characters 0 of 75):

Applicable NBIC Location:

Location 1

Part: Installation Inspection Repairs and Alterations Pressure Relief Devices

Section: Paragraph Reference:

Location 2

Part: Installation Inspection Repairs and Alterations Pressure Relief Devices

Section: Paragraph Reference:

If more than two references are required, please use the Background Information field.

Question:

Proposed Reply:

Statement of Need:

Background Information:

Do you plan on attending the next NBIC Committee Meeting to formally present your request?

Yes No

NBIC Inquiries

- The NBIC Secretary will consult with the Mgr of Technical Services whether to send to the Interpretations Task Group
- If the inquiry is considered consulting, or if the question seeks to “endorse”, “rate” or “approve” a proprietary product, design, construction type or activity, the inquirer will be notified as such
- If the decision is to send to the committee, it will be submitted to the Interpretations Task Group Chair to select a PM. The R&A subcommittee Chair, VC, and secretary are also copied.



NBIC Inquiries

- The NBIC lacks guidance on handling consulting type inquiries.
- ASME Code guidance on consulting:
 - “(c) ASME does not act as a consultant for specific engineering problems or for the general application or understanding of the Code requirements. If, based on the information submitted, it is the opinion of the committee that the inquirer should seek assistance, the request will be returned with the recommendation that such assistance be obtained.”



NBIC Inquiries

- Proposed NBIC text:
 - “The **National Board** does not act as a consultant for specific **repair or alteration** problems or for the general application or understanding of the Code requirements. **Inquiries asking how to meet a Code requirement or whether an activity is classified as a repair or alteration cannot be answered with a clarification.** If, based on the information submitted, it is the opinion of the committee that the inquirer should seek assistance **from another source**, the request will be returned with a **statement that consulting questions are not the responsibility of the committee, and a recommendation to seek assistance from the original equipment manufacturer or another qualified source.**”



QUALIFICATION OF NDE PERSONNEL
IN 2022 EDITION OF B31.1

ASME SECTION I BOILERS AND BOILER EXTERNAL PIPING (BEP)

- A Section I Power Boiler is not considered complete until it has been hydrostatically tested with the required boiler external piping (BEP).
 - The hydrostatic test is witnessed by an Authorized Inspector
 - BEP is documented on an ASME Manufacturer's Data Report Form
- BEP requirements are found in PG-58
 - Section I has administrative control over BEP
 - ASME B31.1, Power Piping, covers the materials, design, fabrication, installation and testing
- Table A-360 in ASME Section I documents the edition of B31.1 to be used.
 - The 2023 Edition of ASME Section I lists the 2022 Edition of B31.1

COMPARISON OF QUALIFICATION OF NDE PERSONNEL

B31.1 2020 EDITION (136.3.2)

- Personnel performing NDE of welds shall be qualified and certified in accordance with a program established by the employer which shall be based on the following minimum requirements:
 - Instruction in the fundamentals of the NDE examination method
 - On-the-job training to familiarize NDE personnel with the appearance and interpretation of indications of weld defects. Length of time for such training shall be sufficient to ensure adequate knowledge.
 - Visual acuity examination performed at least annually
 - Written examination and performance examination given by the employer to determine if the NDE personnel are qualified
- Recertification due to changes in procedures or equipment and if performance of a specific method of NDE has not been performed for a period of 1 yr or more
- Personnel qualified to AWS QC1 may be used for visual examination provide annual visual acuity examination of the J1 visual acuity requirements of ASME Section V article 9

B31.1 2022 EDITION (136.3.2)

- Personnel performing NDE shall be qualified per the employer's written practice.
- The written practice shall be based on one of the following:
 - ASME Section V, Article I
 - ASNT CP-189
 - ASNT SNT-TC-1A
 - ISO9712
 - Other national or international certification programs or standards
- Personnel qualified to AWS QC1 may be used for visual examination provide annual visual acuity examination of the J1 visual acuity requirements of ASME Section V article 9

WHAT IS THE IMPACT OF THIS CHANGE?

- The employer can no longer create their own program for certification of NDE personnel.
- Although SNT-TC-IA and CP-189 are recommended practices, once invoked the recommendations are mandatory.
- SNT-TC-IA (example)
 - Required to be NDT Level II to interpret results
 - 24 training hours with written exam
 - 210 hours of experience required in VT
 - 400 hours of experience in NDT
 - Experience and training etc. must be under the oversight of a NDT Level III

SECTION I CODE CASE

- A code case request was submitted to ASME Section I to permit qualification of NDE personnel for VT, PT and MT to the 2020 Edition of B31.1
- Code Case status
 - Standards Committee approved by ASME Section I
 - Currently out for a two week public review period ending 1/18/24
 - Submit for board approval after public review period ends
- Code Cases are not accepted by all Jurisdictions

NBIC CONSIDERATIONS

- How does the Code Case impact repairs and alterations to boilers/BEP certified to the 2023 Edition of ASME?
- Should NBIC Part 3 develop its own rules for qualification of NDE personnel?



**THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS**

PROPOSED INTERPRETATION

Item No. 23-55
Subject/Title DOT Supplement 6 Intent Interpretation
Project Manager and Task Group Robert Underwood, Subcommittee Repairs/Alterations
Source (Name/Email) Robert Underwood / robert_underwood@hsb.com
Statement of Need This intent interpretation will address the incorrect information in Part 3, Supplement 6, paragraph S6.8.
Background Information The current wording in S6.8 of the 2021 and 2023 Edition of Part 3 incorrectly requires the National Board Commissioned Inspector to ALSO be a DOT Registered Inspector. The 2025 Edition is removing reference to Registered Inspector (Item 20-67). This Intent Interpretation addresses the incorrect reference to Registered Inspector and the "answer" reflects the approved wording from the 2025 Edition of Supplement 6, paragraph S6.6.
Proposed Question When performing repair and alteration activities to DOT Transport Tanks in accordance with NBIC Part 3, Supplement 6, is it the intent that the inspection and certification be made by a Registered Inspector meeting the requirements of the Competent Authority?
Proposed Reply No. Inspection and certification shall be made by an Inspector holding an appropriate National Board Commission as required by NBIC Part 3, 1.3.
Committee's Question 1 When performing repair and alteration activities to DOT Transport Tanks in accordance with NBIC Part 3, Supplement 6, is it the intent that the inspection and certification be made by a Registered Inspector meeting the requirements of the Competent Authority?
Committee's Reply 1 No. Inspection and certification shall be made by an Inspector holding an appropriate National Board Commission as required by NBIC Part 3, 1.3.
Rationale
Committee's Question 2
Committee's Reply 2
Rationale

Relevant Revised Text for Reference:
Item 20-67 – Revisions to Part 3, Supplement 6
Approved by Main Committee in March of 2023

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 ~~practical~~ 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. 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.

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.

S6.95 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 ~~con-tent~~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.

S6.6-10 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.

- a) ~~Replacement parts that will be subject to internal or external pressure that consist of new material which may be formed to the required shape by spinning, forging, die forming, and on which no fabrication welding is performed shall be supplied as material. Such parts shall be marked with the material and part identification and the name or trademark of the parts manufacturer. In lieu of full identification marking on the material or part, the part manufacturer may use a coded marking system traceable to the original marking. Such markings shall be considered as the part manufacturer's certification that the part complies~~

~~with the original code of construction. Examples include seamless or welded tube or pipe, forged nozzles, heads or subassemblies attached mechanically.~~

- ~~b) Replacement parts that will be subject to internal or external pressure, that are preassembled by attachment welds, shall have the welding performed in accordance with the original code of construction. This certificate shall be supplied in the form of a bill of material or drawings with statement of certification.~~
- ~~c) Replacement parts subject to internal or external pressure fabricated by welding that require shop inspection by an Authorized Inspector shall be fabricated by an organization having an appropriate ASME *Certificate of Authorization*. The item shall be inspected and stamped as required by the applicable section of the ASME Code and DOT specification requirements. A completed ASME *Manufacturer's Partial Data Report* shall be supplied by the manufacturer.~~
- ~~d) When the original code of construction is other than ASME, replacement parts subject to internal or external pressure fabricated by welding shall be manufactured by an organization certified as required by the original code of construction. The item shall be inspected and stamped as required by the original code of construction. Certification as required by the original code of construction shall be supplied with the item. When this is not possible or practicable the organization fabricating the part may have a National Board *Certificate of Authorization*. Replacement parts fabricated by an "R" stamp holder shall be documented on Form R-3 and the "R" Stamp applied as described in NBIC Part 3, S6.15.~~

S6.7 — AUTHORIZATION

~~The Inspector's written authorization to perform a repair, alteration, or modification shall be obtained prior to initiation of the work to be performed on a transport tank. Additional requirements are specified in NBIC Part 3, 1.3.1 and 1.3.2.~~

S6.8 — 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 shall be a Registered Inspector meeting the requirements of the Competent Authority.~~

S6.8.1 — INSPECTOR DUTIES FOR REPAIRS, ALTERATIONS, AND MODIFICATIONS

- ~~a) Inspectors performing repair, alteration, or modification inspections under the requirements of this supplement shall satisfy the requirements of S6.8.1 to be authorized to sign the Form R-1, *Repairs* and Form R-2, *Alterations*.~~
- ~~b) For repairs, alterations, and modifications of transport tanks, the duties of the Registered Inspector performing inspections are detailed in Part 2, S6.10 through S6.15, as required by the Competent Authority.~~

- ~~e) The Registered Inspector shall meet the rules of NB-263, RCI-1, Rules for Commissioned Inspectors. Additional duties are summarized below:~~
- ~~1. Verify the organization performing the repair, alteration or modification activity is properly accredited and in possession of a current valid *Certificate of Authorization* to apply the "R" Stamp issued by the National Board and is working to an accepted Quality Control System;~~
 - ~~2. Verify that the design, if required, for the modification of the vessel is approved by a Design Certifying Engineer, or Designated Approval Agency or other applicable individual;~~
 - ~~3. Verify the materials to be used to make the repair, alteration, or modification are approved for use and comply with applicable code requirements;~~
 - ~~4. Verify the welding procedures and welders or welding operators are properly qualified;~~
 - ~~5. Verify that all heat treatments, if required, including PWHT have been performed in accordance with the applicable standards and that the results are acceptable;~~
 - ~~6. Verify that all NDE, impact tests, and other tests have been performed when required, and that they are acceptable;~~
 - ~~7. Make a visual inspection of the work performed to confirm there are no visible defects or deviations from code requirements;~~
 - ~~8. Perform external and internal visual inspections, if the vessel is equipped with a manway, and witness the hydrostatic or pneumatic pressure test and/or leak tightness test when they are required;~~
 - ~~9. Verify the correct nameplate is properly attached to the vessel and that the current test and inspection markings are properly attached and displayed on the proper vessel;~~
 - ~~10. Sign the Form R-1 and, as appropriate, form R-2 when work is completed.~~



PROPOSED INTERPRETATION

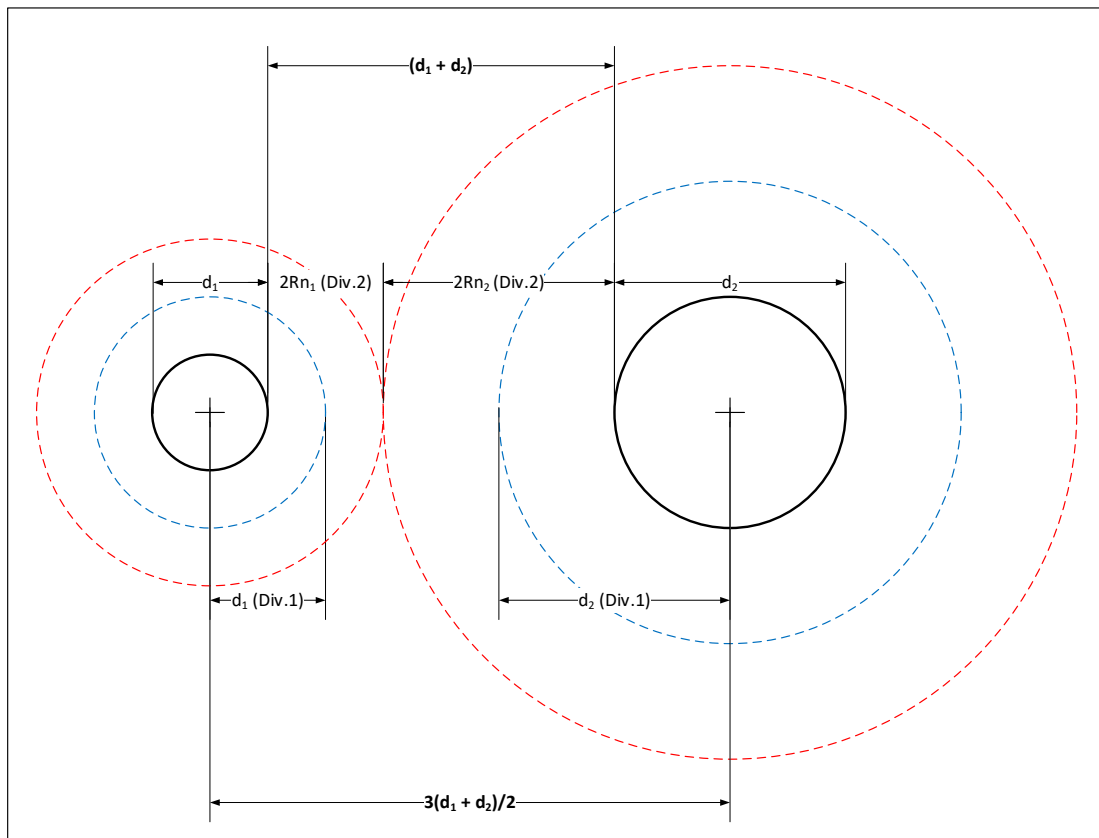
Item No. 23-64
Subject/Title Review of calculations for a new nozzle per 3.3.3 j)
Project Manager and Task Group
Source (Name/Email) Paul Shanks / paul.shanks@bureauveritas.com
Statement of Need Example of repair 3.3.3 j) may allow for limits of reinforcement to over lap in some cases and as such is not conservative.
Background Information Code case 2695, formerly and Mandatory Appendix 46, currently allow section VIII Div.1 certificate holders to use the opening reinforcement methods as listed in Section VIII Div.2 on Div.1 vessels. Section VIII div.2 stipulates that for a set through nozzle the limit of reinforcement is measure radially from the OD of a nozzle, Given that the limit of reinforcement is nominally equal to the inside diameter of the opening, two set through nozzle openings that have their centers 3 inside diameters apart may have unacceptable overlapping limits of reinforcement.
Proposed Question In 3.3.3 j) is diameter taken to mean outside diameter?
Proposed Reply Yes
Committee's Question 1 In 3.3.3 j) does the diameter refer to the outside diameter of the nozzle?
Committee's Reply 1 No, the diameter used shall be the diameter referenced in the original code of construction.
Rationale
Committee's Question 2
Committee's Reply 2
Rationale

Current wording (2023)

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 Revision:

3.3.3(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 (including orientation), located in a similar part of the vessel, and not spaced closer than three times the average diameter of the nozzle and any adjacent nozzle, measured from the nozzles' centerlines. The addition of such a nozzle shall be restricted by any service requirements.



CODE INTERPRETATIONS

Requests for code Interpretations shall provide the following:

a) Inquiry

Provide a condensed and precise question, omitting superfluous background information and, when possible, composed in such a way that a "yes" or a "no" reply, with brief provisos if needed, is acceptable. The question should be technically and editorially correct.

b) Reply

Provide a proposed reply that clearly and concisely answer the inquiry question. Preferably the reply should be "yes" or "no" with brief provisos, if needed.

c) Background Information

Provide any background information that will assist the committee in understanding the proposed Inquiry and Reply Requests for Code Interpretations must be limited to an interpretation of the particular requirement in the code. The Committee cannot consider consulting type requests such as:

A review of calculations, design drawings, welding qualifications, or descriptions of equipment or Parts to determine compliance with code requirements;

A request for assistance in performing any code-prescribed functions relating to, but not limited to, material selection, designs, calculations, fabrication, inspection, pressure testing, or installation; or

A request seeking the rationale for code requirements.



PROPOSED INTERPRETATION

Item No. 23-71
Subject/Title New method for tube replacement: is it a repair or alteration?
Project Manager and Task Group
Source (Name/Email) Robby Troutt / rob.troutt@tdlr.texas.gov
Statement of Need The repair/alteration method shown is used for tube replacement. This method is being done in Texas, but there is confusion on whether this method of tube replacement should be classified as a repair or an alteration.
Background Information This method of tube replacement allows for the use of using fillet welds to attach the collar (see attached pictures) to the tubes and header instead of requiring a full penetration weld to replace the tube. Further questions can be sent to Mr. Troutt if additional clarification is needed.
Proposed Question Question 1: Is the replacement of a boiler tube or tube pup using the attached design considered a repair or alteration? The attachment "Pic for interp question 1" and the 2nd page of attached "RH1 – Header Section" are for this question. Question 2: Is the installation of a replacement tube using the attached fitting considered a repair or alteration? The attachment "Pic for interp question 2" and the 1st page of attached "RH1 – Header Section" are for this question.
Proposed Reply Reply 1: This is a repair. Reply 2: This is a repair.
Committee's Question 1 <u>Is the replacement of a tube or part of a tube that includes the addition of material or a change in joint design that changes the pressure retaining capability from the original design considered an alteration per NBIC Part 3, 3.4.4?</u>
Committee's Reply 1 <u>Yes.</u>
Rationale
Committee's Question 2 If a tube pup or tube replacement as referenced above has been made as an alteration, and if the same tube (and ONLY the tube) is to be replaced in the future, would that be considered a repair?
Committee's Reply 2 Yes.
Rationale

CODE INTERPRETATIONS

Requests for code Interpretations shall provide the following:

a) Inquiry

Provide a condensed and precise question, omitting superfluous background information and, when possible, composed in such a way that a "yes" or a "no" reply, with brief provisos if needed, is acceptable. The question should be technically and editorially correct.

b) Reply

Provide a proposed reply that clearly and concisely answer the inquiry question. Preferably the reply should be "yes" or "no" with brief provisos, if needed.

c) Background Information

Provide any background information that will assist the committee in understanding the proposed Inquiry and Reply Requests for Code Interpretations must be limited to an interpretation of the particular requirement in the code. The Committee cannot consider consulting type requests such as:

A review of calculations, design drawings, welding qualifications, or descriptions of equipment or Parts to determine compliance with code requirements;

A request for assistance in performing any code-prescribed functions relating to, but not limited to, material selection, designs, calculations, fabrication, inspection, pressure testing, or installation; or

A request seeking the rationale for code requirements.

Action Item: 23-75

Date of Request: 10/17/2023

Requester: Andrew Triplett

Subject of Request: NDE In Lieu of Pressure Testing for Alterations

Location 1: NBIC Part 3, Section 4, Paragraph 4.4.2.c

Location 2: NBIC Part 3, Section 9, Paragraph 9.1, definition of “Practicable”

Existing Text from Location 1: “NDE may be conducted when contamination of the pressure-retaining item by liquids is possible or when pressure testing is not practicable.”

Existing Text from Location 2: “Practicable - Capable of being accomplished based on technical consideration of the nature and scope of activities, design, or arrangement.”

Statement of Need: The existing language in NBIC Part 3, Section 4, Paragraph 4.4.2.c – in concert with the new definition of “practicable” added in the 2023 Edition of the Code – may confuse Repair Organizations and owners about their options when it comes to verifying a successful alteration to a pressure-retaining item.

Background: The definition of “practicable” added to the 2023 Edition of NBIC potentially makes the use of NDE in lieu of a pressure test unjustifiable during alterations should a pressure test be physically possible on the altered component, even if NDE would actually do a better job of verifying the alteration’s integrity.

Question 1: Does the term “practicable” as used in NBIC Part 3, Paragraph 4.4.2.c prohibit the use of NDE in lieu of pressure testing if NDE will provide sufficient information to confirm alteration integrity, given concurrence of the owner, Inspector, and Jurisdiction (as applicable)?

Proposed Reply 1: No.

Committee Question: During alteration activities, may NDE be performed in lieu of a pressure test with the concurrence of the owner, Inspector, and Jurisdiction (as applicable) even though a pressure test is practicable?

Committee Reply: No



PROPOSED REVISION OR ADDITION

Item No. A 23-73	
Subject/Title Revise Interp 21-05 to add later ASME Editions	
NBIC Location Part: Repairs and Alterations & Repairs and Alterations; Section: INTERP 21-05 & Section 10; Paragraph: INTERP 21-05	
Project Manager and Task Group	
Source (Name/Email) Terrence Hellman / thellman@nationalboard.org	
Statement of Need Interp 21-05 intended to require all alterations to vessels built to ASME Sect. VIII Div. 1, 2021 Edition AND ALL FOLLOWING EDITIONS , be done by design personnel meeting the requirements of Appdx 47.	
Background Information The words, "or later" were intended to be in the text. This item is intended only to add these words to the existing interp 21-05.	
Existing Text INTERPRETATION 21-05 Subject: ASME Section VIII, Div. 1 Design Personnel Requirements and NBIC Repairs/Alterations Edition: 2021 Question: Are the 2021 ASME Section VIII, Division 1 Mandatory Appendix 47 design personnel requirements applicable to NBIC alterations to ASME Section VIII, Division 1 pressure-retaining items? Reply: Yes, for alterations to vessels built to the 2021 edition of the ASME Code Section VIII Division 1, or if the 2021 edition is used as the Code of Construction for the alteration, the design calculations shall be prepared and certified by design personnel meeting the criteria of ASME Section VIII Division 1 Mandatory Appendix 47.	Proposed Text INTERPRETATION 21-05 Subject: ASME Section VIII, Div. 1 Design Personnel Requirements and NBIC Repairs/Alterations Edition: 2021 Question: Are the 2021 ASME Section VIII, Division 1 Mandatory Appendix 47 design personnel requirements applicable to NBIC alterations to ASME Section VIII, Division 1 pressure-retaining items? Reply: Yes, for alterations to vessels built to the 2021 edition or later of the ASME Code Section VIII Division 1, or if the 2021 edition or later is used as the Code of Construction for the alteration, the design calculations shall be prepared and certified by design personnel meeting the criteria of ASME Section VIII Division 1 Mandatory Appendix 47.

COMMITTEE	VOTE:				Passed	Failed	Date
	Approved	Disapproved	Abstained	Not Voting			



PROPOSED REVISION OR ADDITION

Item No. A 23-58	
Subject/Title Add the applicable requirements for Auditors	
NBIC Location Part: Repairs and Alterations; Section: 1.6; Paragraph: 1.6.7.1 s) 2)	
Project Manager and Task Group	
Source (Name/Email) Terrence Hellman / thellman@nationalboard.org	
Statement of Need Add the applicable requirements from ASME "Requirement 2" to the current requirements of audit personnel per 1.6.7.1 s) 2) for Cat. 2 or change it to be specific to Sect. XI	
Background Information Add the applicable requirements from ASME "Requirement 2" to the current requirements of audit personnel per 1.6.7.1 s) 2) for Cat. 2 or change it to be specific to Sect. XI	
Existing Text s) Audits The provisions identified in ASME NQA-1, Part 1, Requirement 18 shall apply and shall include the following: A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Internal and Supplier Audit frequencies shall be specified in the organization's Quality Assurance Manual. Internal Audits shall be conducted at least annually (within 12 months) for any ongoing code activity to verify compliance with Quality Assurance Program requirements and/or performance criteria, and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the internal audit need only include those areas of responsibility required to be continually maintained, such as training, audits, organizational structure, and Quality Assurance Program revisions, etc. External audits (e.g., Supplier audits) of organizations with certification/accreditation permitted by ASME may not be required if acceptable to the Regulatory Authority. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with the current requirements of ASME NQA-1;	Proposed Text s) Audits The provisions identified in ASME NQA-1, Part 1, Requirement 18 shall apply and shall include the following: A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Internal and Supplier Audit frequencies shall be specified in the organization's Quality Assurance Manual. Internal Audits shall be conducted at least annually (within 12 months) for any ongoing code activity to verify compliance with Quality Assurance Program requirements and/or performance criteria, and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the internal audit need only include those areas of responsibility required to be continually maintained, such as training, audits, organizational structure, and Quality Assurance Program revisions, etc. External audits (e.g., Supplier audits) of organizations with certification/accreditation permitted by ASME may not be required if acceptable to the Regulatory Authority. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with imposed regulatory standards or NQA-1; Audit personnel shall be qualified in accordance with the current requirements of ASME NQA-1;



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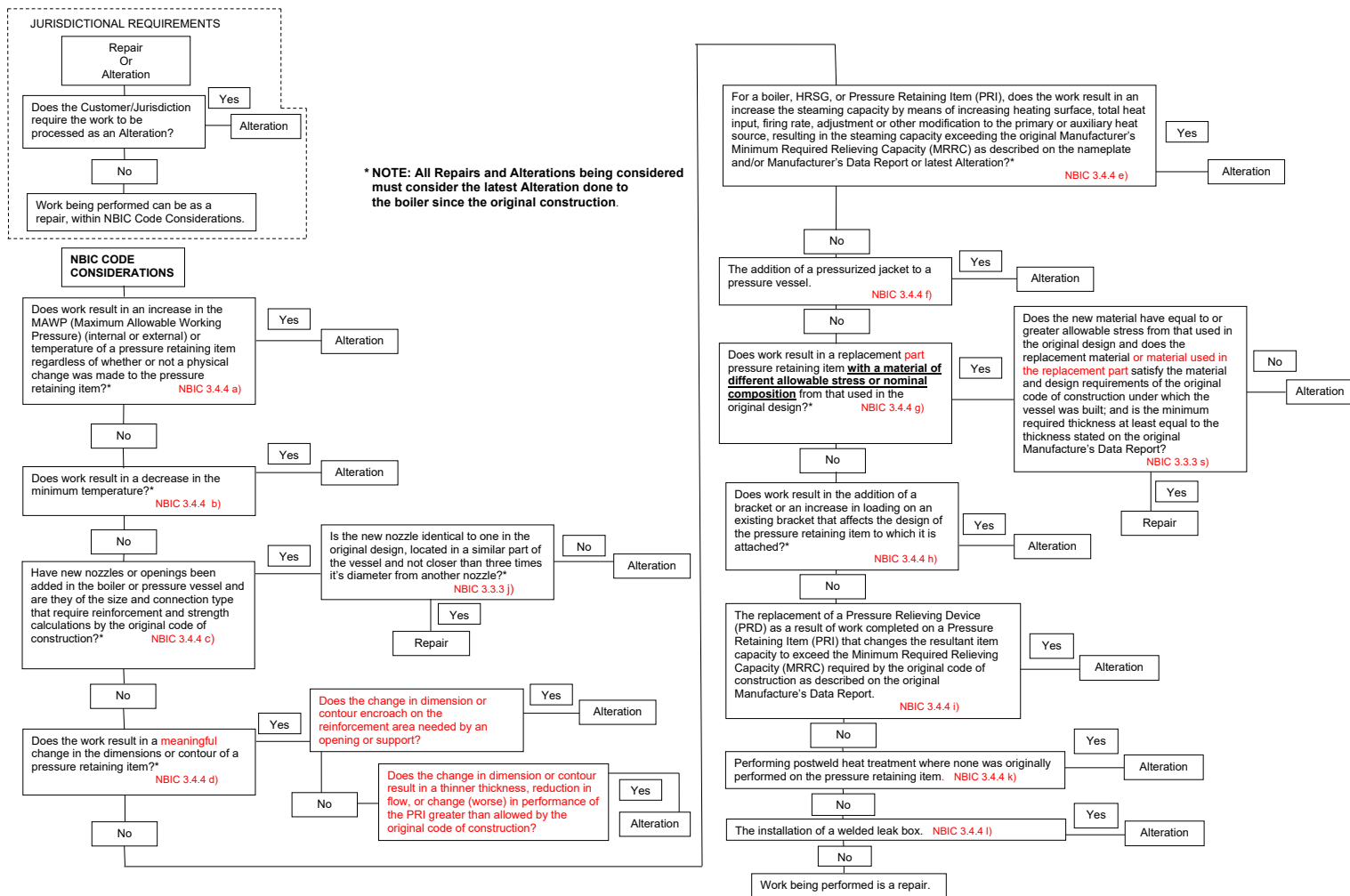
PROPOSED REVISION OR ADDITION

Item No. A 21-12	
Subject/Title Revision to modify Term 'Alteration' 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, pabecker@babcock.com	
Statement of Need <p>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.</p> <p>Experience levels can vary widely among all 'stakeholder' categories, i.e. Owner/User, Authorized Inspector, Certificate Holder, In-Service inspector, Jurisdictional Authority etc.</p> <p>From the Forward: <i>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.</i></p> <p>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.</p>	
Background Information Update of Part 3 Section 3 to improve User experience and clarify definition of 'Alteration'. Updated 'problematic' example lists to eliminate 'conflicting examples'.	
Existing Text	Proposed Text
<p style="text-align: center;">PART 3, SECTION 3 REPAIRS AND ALTERATIONS — REQUIREMENTS FOR REPAIRS AND ALTERATIONS</p> <p>3.1 SCOPE</p> <p>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.</p> <p>3.2 GENERAL REQUIREMENTS FOR REPAIRS AND ALTERATIONS</p> <p>(21) 3.2.1 MATERIAL REQUIREMENTS FOR REPAIRS AND ALTERATIONS</p>	<p style="text-align: center;">PART 3, SECTION 3 REPAIRS AND ALTERATIONS — REQUIREMENTS FOR REPAIRS AND ALTERATIONS</p> <p><u>3.0 INTRODUCTION</u></p> <p><u>This Section provides information on the requirements for repairs and alterations to pressure retaining items. Information on how to classify, perform, verify, and document acceptable repair and alteration activities may be found throughout Part 3 Sections and Supplements (Refer to the Table of Contents for detail on the location of relevant information). It is the intent that this Section 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 are not all inclusive and are intended to be representative of cases and activities commonly considered either a repair or alteration.</u></p> <p>3.1 SCOPE</p> <p>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.</p>

SUPPLEMENT X CLASSIFYING REPAIRS AND ALTERATIONS

SX.1 SCOPE

**FIGURE SX.1
DECISION TREE (LOGIC DIAGRAM) FOR DETERMINING REPAIR OR ALTERATION ACTIVITY CLASSIFICATION**





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PROPOSED REVISION OR ADDITION

Item No. A 21-31 Rev 02	
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: ' <i>A separate application is required for temporary locations (See Section 9.0 of this procedure) as permitted by National Board internal policies.</i> ', 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 add a new subparagraph h) in section 1.4.1 to provide guidance on making requests to NB for the use of a temporary location.	
Existing Text 1.4.1 ACCREDITATION PROCESS a) The National Board administers accreditation programs for authorization of organizations performing repairs and alterations to pressure-retaining items in accordance with NB-415, <i>Accreditation of "R" Repair Organizations</i> . b) Any organization may apply to the National Board to obtain a Certificate of Authorization for the requested scope of activities. A review shall be conducted to evaluate the organization's quality system. The individual assigned to conduct the evaluation shall meet the qualification requirements prescribed by the National Board. Upon completion of the evaluation, any deficiencies within the organization's quality system will be documented and a recommendation will be made to the National Board regarding issuance of a <i>Certificate of Authorization</i> .	Proposed Text 1.4.1 ACCREDITATION PROCESS a) The National Board administers accreditation programs for authorization of organizations performing repairs and alterations to pressure-retaining items in accordance with NB-415, <i>Accreditation of "R" Repair Organizations</i> . b) Any organization may apply to the National Board to obtain a Certificate of Authorization for the requested scope of activities. A review shall be conducted to evaluate the organization's quality system. The individual assigned to conduct the evaluation shall meet the qualification requirements prescribed by the National Board. Upon completion of the evaluation, any deficiencies within the organization's quality system will be documented and a recommendation will be made to the National Board regarding issuance of a <i>Certificate of Authorization</i> .

c) As part of the accreditation process, an applicant's quality system is subject to a review. National Board procedures provide for the confidential review resulting in recommendations to issue or not issue a *Certificate of Authorization*.

d) The accreditation programs provide requirements for organizations performing repairs and alterations to pressure-retaining items.

e) The organization may perform repairs or alterations in its plants, shops, or in the field, provided such operations are described in the organization's Quality System.

f) The Jurisdiction, as defined in Part 3, Section 9, may audit the Quality System and activities of an organization upon a valid request from an owner, user, inspection agency, or the National Board.

g) The NBIC Committee may at any time change the rules for the issuance of Certificates of Authorization and use of the "R" Symbol Stamp. These rules shall become binding on all certificate holders.

c) As part of the accreditation process, an applicant's quality system is subject to a review. National Board procedures provide for the confidential review resulting in recommendations to issue or not issue a *Certificate of Authorization*.

d) The accreditation programs provide requirements for organizations performing repairs and alterations to pressure-retaining items.

e) The organization may perform repairs or alterations in its plants, shops, or in the field, provided such operations are described in the organization's Quality System.

f) The Jurisdiction, as defined in Part 3, Section 9, may audit the Quality System and activities of an organization upon a valid request from an owner, user, inspection agency, or the National Board.

g) The NBIC Committee may at any time change the rules for the issuance of Certificates of Authorization and use of the "R" Symbol Stamp. These rules shall become binding on all certificate holders.

h) Temporary Locations

Per the requirements of NB-415, Accreditation of Repair ("R") Organizations, temporary locations shall not be used unless approved by the National Board. Request for authorization to use a temporary location shall be made to the National Board using Form NB-481, National Board "R" Certificate of Authorization Temporary Location Request.

The organization shall describe the use and control of a temporary location within the organization's Quality System.

The activities of the Inspector shall be the same as for the Repair Organization's plants, shops or field sites.

Committee	VOTE				Passed	Failed	Date
	Approved	Disapproved	Abstained	Not Voting			



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PROPOSED REVISION OR ADDITION

Item No. 21-67	
Subject/Title Removal of reference to mechanical portion and add additional information for welding	
NBIC Location Part 3 Repairs and Alterations, Section 3, Paragraph 3.3.4.9	
Project Manager and Task Group PM – Philip Gilston TG – Kathy Moore, Trevor Seime, Don Kinney and Steve Frazier	
Source (Name/email) Kathy Moore / kathy.moore@joemoorecompany.com	
Statement of Need Removing the mechanical portion of the text. Many Jurisdictions are having a difficult time enforcing that part of the NBIC. Additionally, cracking of ligaments in welded plug is a common issue, the current NBIC does not have enough direction or requirements for welding tube plugs in firetube boiler.	
Background Information Mr. Kinney wrote on the Chief's Forum and asked the Chiefs what they thought of 3.3.4.9. They wanted the mechanical portion dropped. Improper welding of tube plugs in firetubes often creates ligament cracks. Originally the part addressing mechanical plugs was action item 21-71, the item has been combined here to make for a clean proposal	
<u>Revision 12 Notes, summary of changes, and actions addressing comments made in the ballot:</u> 1. Second sentence of 'a' revised per Mr. Galanes comment. Highlighted below	
Existing Text 3.3.4.9 TUBE PLUGGING IN FIRETUBE BOILERS When the replacement of a tube in a firetube boiler is not practicable at the time the defective tube is detected, with the concurrence of the owner, Inspector, and when required, the Jurisdiction, the tube may be plugged using the following course of repair: a) The scope of work, type of plug and method of retention; whether welded or mechanical interface, shall be evaluated by the "R" Certificate Holder performing the repair and reviewed with the Inspector, and when	Proposed Text 3.3.4.9 TUBE PLUGGING <u>BY WELDING IN</u> FIRETUBE BOILERS When the replacement of a tube in a firetube boiler is not practicable at the time the defective tube is detected, with the concurrence of the owner, Inspector, and when required, the Jurisdiction, the tube may be plugged using the following course of repair: a) The scope of work, type of plug and method of retention; whether welded or mechanical

required, the Jurisdiction.

- b) When the method of plugging is by welding, strength calculations for the size of the weld shall be in accordance with the original code of construction. The "R" Certificate Holder performing this repair shall weld the plug to the tube, or to the tube sheet, or a combination of both.
- c) Plugging a tube in a firetube boiler is recognized as an alternative to the replacement of a firetube and may be further limited as a method of repair by the number of tubes plugged and their location; scattered or clustered. The operational effects on the waterside pressure boundary or membrane and the effects on the combustion process throughout the boiler should be considered prior to plugging.
- d) The boiler may be returned to service for a period of time agreed upon by the owner, the Inspector, and when required, the Jurisdiction.
- e) The Form R 1 shall be completed for the plugging of firetubes, identifying the means of plug retention; mechanical or by welding.

~~interface, shall be evaluated by the "R" Certificate Holder performing the repair and reviewed with the Inspector, and when required, the Jurisdiction.~~

- ~~b) Plugging a tube in a firetube boiler is recognized as an alternative to the replacement of a firetube and the repair may be further limited as a method of repair by the number of tubes plugged and their location; scattered or clustered. The operational effects on the waterside pressure boundary or membrane and reduced heat transfer (e.g. potential for over-heating of remaining tubes), the effects on the combustion process throughout the boiler should be considered prior to plugging. Competent technical advice should be obtained from the manufacturer of the pressure-retaining item or from another qualified source.~~
- ~~e) Strength calculations for the size of the weld shall be in accordance with the original code of construction. The "R" Certificate Holder performing this repair shall weld the plug to the tube, or to the tube sheet, or a combination of both.~~
- ~~c) Cracking of ligaments due to the use of welded plugs is a common issue. To mitigate this possible occurrence the "R" Certificate Holder performing the repair shall consider actions including but not limited to the following:

 - ~~1) For P-No. 1 and 3 materials, preheating to 200°F (95°C) minimum.~~
 - ~~2) Limiting the maximum weld size to 3/8" (10 mm).~~
 - ~~3) Limiting electrode size to 1/8" (3 mm) maximum diameter.~~
 - ~~4) Using a stringer bead technique.~~
 - ~~5) Using a minimum of two passes.~~~~
- ~~d) NDE in lieu of pressure testing is not permitted.~~
- ~~The boiler may be returned to service for a period of time agreed upon by the owner, the Inspector, and when required, the Jurisdiction.~~
- ~~e) The Form R 1 shall be completed for the plugging of firetubes, identifying the means of plug retention; mechanical or by welding.~~

For Information, Clean Copy of Proposed Text, *changes from Rev 11 only highlighted*

3.3.4.9 TUBE PLUGGING BY WELDING IN FIRETUBE BOILERS

When the replacement of a tube in a firetube boiler is not practicable at the time the defective tube is detected, with the concurrence of the owner, Inspector, and when required, the Jurisdiction, the tube may be plugged.

- a) When installing a welded firetube plug, the repair may be limited by the number of tubes plugged and their location. The operational effects on the waterside pressure boundary and reduced heat transfer (e.g. potential for overheating of remaining tubes) ~~the effects on the combustion process~~ should be considered prior to plugging. Competent technical advice should be obtained from the manufacturer of the pressure-retaining item or from another qualified source.
- b) Strength calculations for the size of the weld shall be in accordance with the original code of construction. The

“R” Certificate Holder performing this repair shall weld the plug to the tube, or to the tube sheet, or a combination of both.

- c) Cracking of ligaments due to the use of welded plugs is a common issue. To mitigate this possible occurrence the “R” Certificate Holder performing the repair shall consider actions including but not limited to the following:
 - 1) For P-No. 1 and 3 materials, preheating to 200°F (95°C) minimum.
 - 2) Limiting the maximum weld size to 3/8” (10 mm).
 - 3) Limiting electrode size to 1/8” (3 mm) maximum diameter.
 - 4) Using a stringer bead technique.
 - 5) Using a minimum of two passes.
- d) NDE in lieu of pressure testing is not permitted.

VOTE							
Committee	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

5.2.2 PREPARATION OF FORM R-2 (REPORT OF ALTERATION)

- a) Using the instructions found in Table S9.3 of Supplement 9, initial preparation of Form R-2, including gathering and attaching supporting documentation, shall be the responsibility of the "R" Certificate Holder responsible for the design portion of the alteration. The design organization shall complete and sign the "Design Certification" section of the Form R-2. An Inspector shall indicate acceptance of the design by signing the "Certificate of Design Change Review" section of the Form R-2.
- a)b) "R" Certificate Holders whose scope is "Design Only" can perform code calculations for re-rating and alterations as defined in this Part but are prohibited from performing physical work (construction work) to the pressure retaining item except for the "R" Stamping, NDE, and/or final pressure testing; as applicable, provided the controls are included in the Quality System. "R" Certificate Holders who perform physical the above work in the field shall have the scope for field activities on their "R" Certificate of Authorization.
- c) The information describing an alteration to a pressure-retaining item shall be identified on Form R-2 with a complete description of the scope of work for physical or non-physical changes.
1. ~~When the scope of work represents a change that will increase the Minimum Required Relieving Capacity (MRRC) of a pressure-retaining item, such as a change in heating surface, Maximum Designed Steaming Capacity (MDSC), or BTU/hr (W) heating capacity, the new MRRC shall be documented on Form R-2 and indicated on the appropriate nameplate of NBIC Part 3, Figure 5.7.5-b or NBIC Part 3, Figure 5.7.5-c.~~
- d) Final preparation of Form R-2, including gathering and attaching supporting reports, shall be the responsibility of the "R" Certificate Holder that performed the construction portion of the alteration. The construction organization shall complete the Form R-2 provided by the design organization, including the "Construction Certification" section of the form. An Inspector shall indicate that the work complies with the applicable requirements of this code by completing and signing the "Certificate of Inspection" section of the form. ~~When no construction work is performed (e.g., a re-rating with no physical changes), the "R" Certificate Holder responsible for the design shall prepare the Form R-2, including gathering and attaching of supporting documentation.~~
- b)e) The Construction Certificate section of the form shall only be completed when construction work has been performed.
- e)f) The following shall be attached to and become a part of completed Form R-2:
1. For ASME boilers and pressure vessels, a copy of the original Manufacturer's Data Report, when available.
 2. Form R-3, Report of Parts Fabricated by Welding, Manufacturer's Partial Data Reports, or Certificates of Compliance, if applicable; and
 3. For other than ASME, the manufacturer's reports (i.e., reports required by the original code of construction, etc.), when available.

Item 22-41 – Addressing NB-415 Changes to Organization

Existing Text	Proposed Text
<p>1.5.1 d) Quality System Control</p> <p>The Quality System shall define how revisions of individual sections, exhibits or documents will be identified, and how distribution and retrieval will be achieved to ensure only the latest accepted revisions are available for use. In addition, the following shall be documented:</p> <p>1) The title of the individual responsible for the preparation and approval of the Quality System including review of code editions, standards, and jurisdictional requirements.</p> <p>2) Acceptance from the Authorized Inspection Agency prior to issuance and implementation of the Quality System.</p>	<p>1.5.1 d) Quality System Control</p> <p>The Quality System shall define how revisions of individual sections, exhibits or documents will be identified, and how distribution and retrieval will be achieved to ensure only the latest accepted revisions are available for use. In addition, the following shall be documented:</p> <p>1) The title of the individual responsible for the preparation and approval of the Quality System including review of code editions, standards, and jurisdictional requirements.</p> <p>2) Acceptance from the Authorized Inspection Agency prior to issuance and implementation of the Quality System.</p> <p><u>3) The process of handling changes to scope, primary contact information (company's primary contact name, phone, or email), ownership, or their Inspection Agreement with an AIA, and.</u></p> <p style="padding-left: 40px;"><u>a. shallThis process shall include notification in writing to the National Board Technical Department – Accreditation.</u></p>

Item 22-41 – Addressing NB-415 Handling Multiple Stamps and Return of Stamps

Existing Text	Proposed Text
<p data-bbox="71 310 149 337">1.5.1</p> <p data-bbox="71 354 615 386">q) Control of the “R” Symbol Stamp</p> <p data-bbox="71 443 993 659">The Quality System shall provide adequate control of the “R” Symbol Stamp. In addition, the Quality System shall make provisions for Inspector acceptance for the application of the “R” Symbol Stamp to the pressure retaining item or nameplate.</p> <p data-bbox="71 716 930 792">The accepted abbreviation of the “R” Certificate Holder’s name shall be included in the manual.</p>	<p data-bbox="1037 310 1115 337">1.5.1</p> <p data-bbox="1037 354 1581 386">q) Control of the “R” Symbol Stamp</p> <p data-bbox="1037 443 1959 519">The Quality System shall provide adequate control of the “R” Symbol Stamp. In addition:</p> <ol data-bbox="1037 576 1980 1421" style="list-style-type: none"> <li data-bbox="1037 576 1980 706">1) The Quality System shall make provisions for Inspector acceptance for the application of the “R” Symbol Stamp to the pressure retaining item or nameplate; <li data-bbox="1037 755 1938 831">2) The accepted abbreviation of the “R” Certificate Holder’s name shall be included in the <u>Quality System manual</u>; <li data-bbox="1037 896 1881 1068"><u>3) If more than one “R” symbol stamp is obtained and maintained by the organization, the use and control of multiple stamps shall be included in the Quality System manual;</u> <li data-bbox="1037 1125 1980 1421"><u>4) The manual-Quality System shall contain provisions and timeframe for the “R” symbol stamp(s) to be returned to the National Board if the organization discontinues its use of the “R” Certificate of Authorization, if it no longer holds an Inspection Agreement with an AIA (if applicable), or if the Certificate of Authorization has expired and a new certificate has not been requested by the organization.</u>

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Item A-23-04

[New proposed 2025 changes](#)

4.2 NONDESTRUCTIVE EXAMINATION

- a) The nondestructive examination (NDE) requirements, including technique, extent of coverage, procedures, personnel qualification, and acceptance criteria, shall be in accordance with the Original Code of Construction for the pressure-retaining item. Where this is not possible or practicable, alternative NDE methods acceptable to the Inspector and the Jurisdiction where the pressure-retaining item is installed, where required, may be used. 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 shall be qualified and certified in accordance with the requirements of the original code of construction. 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.



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

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



THE NATIONAL BOARD
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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 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 <i>Certificate of Authorization</i> . Shop - A permanent location, the address that is shown on the <i>Certificate of Authorization</i> , from which a Certificate Holder controls the repair and/or alteration of pressure-retaining items.	Proposed Text 9.1 DEFINITIONS Field Site - A temporary location, under the control of the Certificate Holder, that is used for repairs and/or alterations to <u>where a specific</u> pressure-retaining item(s) <u>is installed at an address different from that shown on</u> the <u>and is being repaired or altered under the control of the</u> Certificate Holder's Certificate of Authorization . 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



THE NATIONAL BOARD
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PROPOSED REVISION OR ADDITION

Item No. A 24-02 Rev 00	
Subject/Title Revision to S6.18 approved for 2025 under item A 23-25	
NBIC Location	
Project Manager and Task Group Philip Gilston	
Source (Name/email) Philip Gilston (philip_gilston@hsb.com)	
Statement of Need Elimination of duplicate wording between S6.18.3 approved for 2025 in item A 20-67 and S6.18 approved for 2025 under item A 20-25.	
Background Information Verbiage approved for the 2025 Edition via A20-67 created a new S6.18.3 paragraph: "S6.18.3 REPLACEMENT OF STEMPING OR NAMEPLATE Replacement of indistinct stamping or lost, illegible, or detached nameplates shall comply with the requirements provided in NBIC Part 2, 5.2." Verbiage approved for the 2025 Edition via A23-25 included a new last sentence in S6.18: "For application of new replacement stamping or the attachment of a new or duplicate nameplate when the original is lost, illegible, or a duplicated is desired, see NBIC Part 2, 5.2 requirements." This proposal is to delete the last sentence in S6.18 to remove redundancy. Also deleted word "governing" from "Competent governing Authority" in the opening sentence. The use of "governing" is not made anywhere else in Part in relation to the Competent Authority.	
Existing Text (approved item A 23-25 for 2025) 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 governing 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. For application of new replacement stamping or the attachment of a new or duplicate nameplate when the original is lost,	Proposed Text 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 governing 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. For application of new replacement stamping or the attachment of a new or

illegible, or a duplicated is desired, see NBIC Part 2, 5.2 requirements.

~~duplicate nameplate when the original is lost, illegible, or a duplicated is desired, see NBIC Part 2, 5.2 requirements.~~

VOTE							
Committee	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

Engineered Alterations

NB23-09 Rev 564Supplement SXX??

Pressure Parts fabricated using Additively Manufactured Material

Section XX.1 Scope

Additively Manufactured (AM) pressure containing parts are parts that have been fabricated using material made by the direct energy deposition (DED) process. The method of welding using DED shall be limited to the GMAW process and are referred to as AM parts. AM parts replicate pressure retaining parts that were previously made using wrought or cast product forms. The requirements listed for installation of AM parts are based on references to other known international Codes and Standards (e.g., ASME Boiler and Pressure Vessel Code).

Section XX.2 Installation of AM Pressure Retaining Parts

AM parts manufactured by the DED process that are being installed by an R-Certificate holder shall be considered an alteration. AM parts that are installed shall be limited to service temperatures below the creep range (e.g. time independent). In addition to the requirements for an alteration, the following documents shall be provided for the AM part and attached to the NBIC Form R-2;

- (a) copy of the Additive Manufacturing Specification (AMS) .

As a minimum the following information shall be included in the AMS:

- 1) The governing Construction Code for the AM component.
 - 2) File names with current revision for all model data describing the geometry and build strategy needed to build the physical component.
 - 3) The applicable Material Specification listed in ASME BPVC Section II, Part A or Part B.
 - 4) The applicable Filler Metal Specification and AWS Classification listed in ASME BPVC Section II, Part C.
 - 5) Allowable ranges of process variables from ASME BPVC Section IX, Part QW, Article VI, "Material Manufacturing using Wire Additive Welding".
 - 6) The nondestructive evaluation and testing requirements being applied to the AM Material from the applicable ASME BPV Construction Code.
 - 7) Supplemental examination requirements identified by the Additive Manufacturer or the User.
- 8) Post-processing requirements identified by the Additive Manufacturer or the User.

____ 9) Thermal treatment requirements for the AM Material identified by the Additive Manufacturer
____ or the User.

____ 10) Supplemental requirements identified by the Additive Manufacturer or the User
____ (e.g., corrosion testing).

____ (11) The Additive Manufacturing Specification shall be reviewed and accepted by the Inspector.

(b) copy of the design calculations which shall be based on the original code of construction.

(c) copy of the ASME Section IX qualified welding procedure specification that was followed and weld qualification record(s).

(d) copy of the Additive Material Manufacturing Qualification Build Test Report.

(1) The Additive Manufacturer shall complete qualification builds prior to starting production builds.

____ (2) One qualification build is required for each F-Number (ASME BPVC Section IX, Table QW-
____ 432) that captures the geometric features for the production components.

____ (3) — The geometry produced for the qualification builds can be either:

____ (a) A specific component geometry being built for production.

____ (b) A generic component geometry containing geometric features that capture the bounding heat inputs and interpass temperature for multiple production components. Examples of geometric features can include but are not limited to thick wall sections, thin wall sections, tilted wall sections, nozzle sections, thickness transitions, and required joints (e.g., tees or cruciform).

____ (c) Additional qualification builds are not required for a F-Number unless the geometric features for the qualification build in paragraph 7(c) do not bound the heat inputs and interpass temperatures for additional production builds.

____ (4) — Sufficient AM Material for qualification testing shall be produced to complete all required material testing.

____ (5) — Test specimens shall be extracted from the AM Material produced during the qualification builds at bounding heat inputs and interpass temperatures (e.g., thick wall sections, thin wall sections, tilted wall sections, thickness transitions, and required joints, etc.).

____ (6) Test specimens shall be extracted from multiple locations as needed to define the bounding value of the material property of interest (i.e., the tensile strength and toughness may not be at a minimum at the same location).

____ (7) If less than 15 test specimens are produced the Additive Manufacturer shall complete a statistical analysis to support with 95% confidence that 99% of the produced material tensile properties are in accordance with the material specification.

____ (8) The statistical analysis shall be in accordance with ASTM E2586.

- (9) If 15 or more specimens are produced, and all the tensile properties meet the requirements of the material specification, the material is acceptable, and a statistical analysis is not required.
 - (10) The tensile data generated for the ASME BPVC Section IX, Part QW, Article VI Additive “Material Manufacturing Procedure Qualification Requirements” (Section 6) may be included in the calculation of the total number of test specimens.
 - (11) Chemical composition testing shall be performed in accordance with the requirements in Section (g).
 - (12) Mechanical property testing shall be performed in accordance with the requirements of Section (g).
 - (13) Metallographic testing shall be performed in accordance with the requirements of Section (h).
- (e) copy of Production (witness specimen) Test Reports.
- (1) AM Material witness specimens shall be manufactured and tested for each production build to measure and verify on-going process stability.
 - (2) At least one AM Material witness tension test specimen shall be manufactured and tested for each production build.
 - (3) When toughness testing is required by the Construction Code, at least one AM Material witness toughness test specimen shall be manufactured and tested for each production build.
 - (4) The AM Material witness toughness test specimen shall be of sufficient size to produce the number of toughness test specimens required by the Construction Code.
 - (5) When a production component requires the use of multiple heats of filler metal AM Material witness specimens for tension and toughness testing shall be manufactured and tested from each heat of filler metal.
 - (6) The witness specimens shall be extracted from the AM Material manufactured using bounding heat inputs and interpass temperatures that provides limiting values for tensile and toughness properties as determined by the Additive Manufacturer.
 - (7) The witness specimens shall be manufactured either immediately before, during, or immediately after each production build.
 - (8) All tension and toughness testing shall be performed in accordance with the requirements of Section (g).
 - (9) Following any production test non-compliance, components fabricated during the build shall be dispositioned using the Additive Manufacturers Quality Control Program.
 - (10) The results of the required witness specimen testing shall be documented in a Production Test Report certified by the Additive Manufacturer.

- (11) The Production Test Report shall be included in the Additive Manufacturer's Construction Records.

(f) Chemical Composition Testing~~HEMICAL COMPOSITION TESTING~~

- (1) One AM Material specimen from the qualification build shall be provided for chemical composition testing at a location determined by the Additive Manufacturer.
- (2) The analytical method for chemical composition testing shall be in accordance with the Material Specification.
- (3) The chemical composition of the specimens shall conform to the ASME filler metal specification identified in the Additive Manufacturing Specification.

(g) Mechanical Property Testing~~MECHANICAL PROPERTY TESTING~~

- (1) The build x, y, and z axes are defined in Figure 1.
- (2) The z axis is defined as normal to deposition layers (Parallel to Build Direction) as shown in Figure 1.

Tension Testing

- (1) All AM Material testing shall be performed on specimens in the final heat-treated condition identified in the Additive Manufacturing Specification.
- (2) Tension test specimens shall be constructed with their long direction parallel to the z-axis as shown in Figure 1.
- (3) All room temperature tension testing shall be in accordance with ASTM E8 (see Appendix A and B)
- (4) All elevated temperature tension testing shall be in accordance with ASTM E21 (see Appendix A and B).

Hardness Testing

- (1) Hardness testing shall be performed on AM Material extracted from the qualification build when required by the Material Specification, the Construction Code, or the Additive Manufacturing Specification.
- (2) The hardness testing shall be performed on the AM Material specimen in regions of the highest tensile strength.
- (3) Hardness testing shall comply with ASTM E10, ASTM E18 or ASTM E92.
- (4) The hardness values for the AM material shall comply with the Material Specification.

Toughness Testing

- (1) Toughness testing shall be performed when required by the Material Specification, Construction Code or the Additive Manufacturing Specification.
- (2) When toughness testing is required, toughness testing shall be performed on AM Material extracted from the qualification build and the witness specimens.
- (3) Toughness testing shall be performed in the AM Material specimen orientation as shown in Figure 1.
- (4) The acceptance criteria for toughness testing shall be as specified by the applicable Construction Code.

(h) ~~MMetallographic Examination~~ **ETALLOGRAPHIC EVALUATIONS**

- (1) Metallographic specimens shall be extracted from the AM Material produced during the qualification builds at bounding location of heat inputs and interpass temperatures as determined by the Additive Manufacturer.
- (2) Metallographic specimens shall be prepared using methods prescribed in ASTM E3, Standard Guide for Preparation of Metallographic Specimens and ASTM E407, Standard Practice for Microetching Metals and Alloys.
- (3) The microstructure shall be examined at magnifications ranging from 50X to 200X.

 (4) The microstructure shall be reasonably uniform and free of cracks and lack of fusion defects.

(i) ~~(i)~~ copy of nondestructive test reports as required by the original code of construction and Owner/User requirements, if applicable.

(j) **Examples of forms that could be used for document submittals with the Form R-2.**

(kj) results of the hydrostatic test as performed in accordance with the rules of the original code of construction

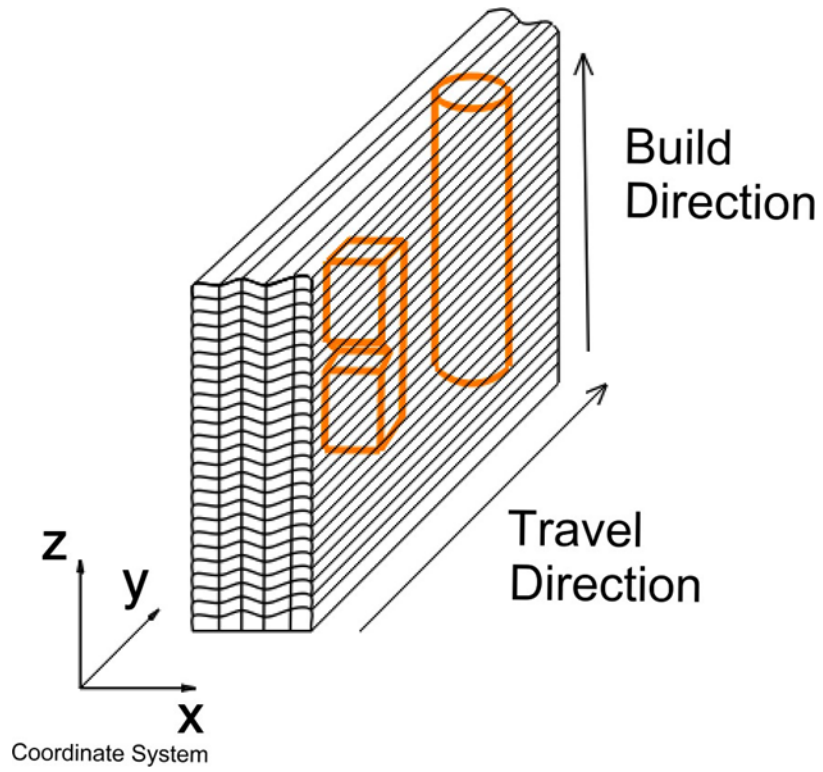


Figure 1 Material Manufacturing Coordinate System and Material Test Specimen Orientation

Appendix A Control Points and Data Point Definitions and Nomenclature

Point	Temperature	Strength	Description	Criteria
C1	Room	TS	Specified Minimum Tensile Strength	Specified Minimum Tensile Strength from the Material Specification
C2	Room	TS	The measured elongation from the tensile specimen is equal to the specified minimum elongation value in the Material Specification.	Specified Minimum Elongation from the Material Specification. Note: If the elongation in all the tensile specimens exceeds the specified minimum elongation it is not required that Control Point C2 be determined.
C3	Design	TS	Value from Table U at Design Temperature	Tensile Strength from ASME BPVC Section II, Part D, Table U at Design Temperature
C4	Design	TS	Minimum Acceptable Value of Tensile Strength for High Temperature Test	Point C3/1.1 (See Paragraph 6(e)(3)) Value from Table U at Design Temperature Divided by 1.1
C5	Room	YS	Specified Minimum Yield Strength	Specified Minimum Yield Strength from the Material Specification
C6	Room	YS	The measured elongation from the tensile specimen is equal to the specified minimum elongation value in the Material Specification.	Specified Minimum Elongation from the Material Specification. Note: If the elongation in all the tensile specimens exceeds the specified minimum elongation it is not required that Control Point C6 be determined.
C7	Design	YS	Minimum Acceptable Value of Yield Strength for High Temperature Test	Yield Strength from ASME BPVC Section II Part D Table Y-1 at Design Temperature
D1	Room	TS	Minimum value of tensile strength from ASME BPVC Section IX, Part QW, Article VI tension test data	Tensile strength and elongation from the ASME BPVC Section IX, Part QW, Article VI tension tests shall equal or exceed the specified minimum values in the Material Specification (Point C1) The elongation from the tension tests shall exceed the specified minimum elongation in the Material Specification
D2	Design	TS	Tensile strength value from elevated temperature tension test.	Tensile strength value from ASME BPVC Section IX, Part QW, Article VI tension test shall equal or exceed value calculated for Point C4
D3	Room	YS	Minimum value of yield strength from ASME BPVC Section IX, Part QW, Article VI tension test data	Yield strength and elongation from the ASME BPVC Section IX, Part QW, Article VI tension tests shall equal or exceed the specified minimum values in the Material Specification (Point C5) The elongation from the tension tests shall exceed the specified minimum elongation in the Material Specification
D4	Design	YS	Yield strength value from high temperature tension test	Yield strength value from ASME BPVC Section IX, Part QW, Article VI tension test shall equal or exceed value for Point C7

Appendix B Example Section IX, Part QW, Article VI Data Analysis

Given the test data shown below determined from a QW -600 bracketed weld qualification testing, calculate the allowable minimum yield and tensile strength values to be used for acceptance of the tensile test specimens for qualification and production witness specimens.

Target Material Specification - ASME SA-403 Grade 316L

Filler Material Specification - ER316LSi

Control Points - Example Data SA 403 Grade 316L (ksi)

C1	C2	C3	C4	C5	C6	C7
70	Elongation Controlled	59.7	59.7/1.1=54.3	25	Elongation Controlled	14.1

Example 1

Data Point D1 = 74 ksi

Data Point D2 = Control Point

C4 = 54.3 ksi

Data Point D3 =

30 ksi

Data Point D4 = Control Point C7= 14.1 ksi

Calculate the Minimum Allowable Tensile Strength and Yield Strength for the Qualification Build Specimen and the Production Witness Specimens Builds Specimen using Equation 1 and 2.

$$AMTS_{\text{Minimum}} = \text{Max} [C1, D1 \times C4/D2] = \text{Max} [70, 74 \times 54.3/54.3] = 74 \text{ ksi}$$

$$AMYS_{\text{Minimum}} = \text{Max} [C5, D3 \times C7/D4] = \text{Max} [25, 30 \times 14.1/14.1] = 30 \text{ ksi}$$

Example 2

Data Point D1 = 74 ksi

Data Point D2 = Control Point

C3 = 59.7 ksi Data Point D3 =

30 Ksi

Data Point D4 = 17 ksi

Calculate the Minimum Allowable Tensile Strength and Yield Strength for the Qualification Build Specimen and the Production Witness Specimens Builds Specimen using Equation 1 and 2.

$$AMTS_{\text{Minimum}} = \text{Max} [C1, D1 \times C4/D2] = \text{Max} [70, 74 \times 54.3/59.7] = 70 \text{ ksi}$$

$$AMYS_{\text{Minimum}} = \text{Max} [C5, D3 \times C7/D4] = \text{Max} [25, 30 \times 14.1/17] = 25 \text{ ksi}$$

|