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THE NATIONAL BOARD  
OF BOILER AND PRESSURE VESSEL INSPECTORS

# NATIONAL BOARD INSPECTION CODE COMMITTEE

## MAIN SESSION MINUTES

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Meeting of January 20<sup>th</sup>, 2022  
San Diego, CA

*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.*

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## 1. Call to Order

The Main Committee Chair, Mr. George Galanes, called the meeting to order at 8:30 AM local time.

## 2. Introduction of Members and Visitors ([Attachment Page 1](#))

All in person members and visitors went around the room stating their name and affiliation. Secretary Ms. Metzmaier read the names of the people joining through Zoom. The remote members & visitors then stated their name and their affiliation.

## 3. Check for a Quorum

Thirteen of the nineteen total voting membership for Main Committee were present for the meeting. This established a quorum for the meeting.

## 4. Awards/Special Recognition

None.

## 5. Announcements

Mr. Galanes gave the following announcements for the meeting:

- Ms. Jeanne Bock's has accepted a new position at the National Board. Ms. Michelle Vance will be taking over as secretary for both Part 1 Subgroup and Subcommittee.
- The National Board will be hosting lunch today at 11:30am to 12:30pm. Lunch will be served in the Le Fontainebleau.
- Mr. Galanes stated that Ms. Jodi Metzmaier will be the Secretary for this meeting, filling in for Jonathan Ellis.
- A task group will be formed to look at the feasibility for a new Part 5 or a new supplement. The new Part/Supplement will address advanced repair methods and capsulation, lap patch repair methods, and fitness for service guidelines. There will be five members on the TG. The TG charter is for a recommendation to be made to the NBIC Executive Committee and to the MC before January 2023.
- The leadership of the NBIC met earlier this week with Mr. Scribner to look at existing vacancies on the NBIC committee. According to the NB-240, Main Committee is not to have more than 26 members within the interest categories described within section 4.6 of the NB-240 procedure. The MC currently has 19 members, and the chair would like to bring the number of voting members up to 24. It is proposed to add 2 AIA representatives, 1 User, and two NB Certificate Holders.
- Mr. Troutt gave a medical update on Mr. Sansone and Committee Member Pat Becker's husband.

## 6. Adoption of the Agenda

The following items were requested to be included on the meeting agenda:

- Item 21-28 (R & A) – Missing on Agenda
- Item 21-35 (R & A) – Missing on Agenda
- Item 21-83 (PRD)
- 20-26 (Inspection) – Missing on Agenda
- Item 21-84 (PRD)
- Item 22-01 (Inspection)
- Presentation by Teresa Melfi

A motion was made to adopt the agenda as revised. The motion was seconded and unanimously approved.

**7. Approval of the Minutes of the July 15<sup>th</sup>, 2021 Meeting**

The minutes are available for review online at <https://www.nationalboard.org/Index.aspx?pageID=13&ID=18>. A motion was made to approve the minutes from the July 15, 2021 meeting. Motion was seconded and unanimously approved.

**8. Items Approved for 2023 NBIC**

See [Attachment Page 8](#) for a list of items approved for the 2023 NBIC.

Mr. Galanes stated these items can be found on Attachment Page 8 of the minutes.

**9. Report of Subcommittees**

Mr. Galanes noted that he wants to do each part separately, Errata, Interpretations, and then Action Items. He also stated he will be splitting the Chair duties with Vice Chair Ms. Wadkinson.

**a. Subcommittee Repairs & Alterations**

**i. Errata**

<b>NBIC Location of Error: Part 3, Table 2.3</b>	<b><a href="#">Attachment Page 10</a></b>
<b>General Description:</b> Inadvertent omission of two SWPSs in 2021 NBIC Part 3, Table 2.3	
<b>Task Group:</b> T. Hellman	
<b>Explanation of Need:</b> During the publication process, the SWPSs B2.1-1-207 and B2.1-1/8-228 were deleted from the table. Both SWPSs should still be in Table 2.3 as none of the approved Table 2.3 action items for the 2021 NBIC removed these SWPSs.	
<b>January 2022 Meeting Action:</b> Ms. Moore asked Mr. Hellman to present this item. Mr. Hellman explained the Errata to the MC. A motion was made to accept the revision. The motion was seconded and unanimously approved.	

**ii. Interpretations**

<b>Item Number: 20-78</b>	<b>NBIC Location: Part 3, 3.3.3 s) &amp; 3.4.4 d)</b>	<b>No Attachment</b>
<b>General Description:</b> Repairs and Alterations of Tube Bundles		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> P. Shanks (PM).		
<b>Explanation of Need:</b> Submission is for R Certificate Holders we provide Repair Inspection services for. NBIC Part 3, 3.3.3 s) seems to allow to be a repair, but under 3.4.4 d) where the dimensions change it might be classified as an alteration.)		
<b>January 2022 Meeting Action:</b> Ms. Moore asked Mr. Seime to present this item. He has stated that they will hold this item back until 21-12 is resolved.		

**General Description:** Subcontracted Weld-Overlay Repair

**Subgroup:** Repairs and Alterations

**Task Group:** Walter Sperko (PM), M. Quisenberry

**Explanation of Need:**

(1) To clarify whether it is permitted for an "R" Certificate of Authorization Holder to subcontract weld-overlay repair to another company who does not possess an "R" Certificate.

(2) To clarify whether a subcontractor's shop used on a regular basis may be considered as a field location to allow welding by and under the control of the "R" Certificate Holder at that shop.

**January 2022 Meeting Action:** Mr. Seime presented this item to the MC. He stated this item was unanimously approved at the SG & SC R & A Meetings. A motion was made to accept the proposal (Committee Question 1 & 2) as presented. The motion was seconded and unanimously approved.

**General Description:** NDE requirements when repairing defects in original weld metal

**Subgroup:** Repairs and Alterations

**Task Group:** R. Troutt (PM), M. Toth

**Explanation of Need:**

This provision will help clarify to "R" Stamp Certificate holders and owners of pressure vessels that are in need of minor repairs to existing welds. Due to the ambiguous wording of this clause any welding on a head to shell joint may be interpreted to require volumetric inspection when the name plate is stamped RT4.

**January 2022 Meeting Action:** Mr. Seime presented this item to the MC, stating this item needed to be discussed simultaneously with A21-27. Item I21-32 was reviewed first. Item A21-27 was then brought up for review prior to voting on item I21-32. After review of both items, a motion was made to approve item I21-32. The motion was seconded and unanimously approved.

The Committee then jumped to item 21-27 for a vote.



iii. New Interpretation Requests:

Item Number: 21-39	NBIC Location: Part 3, 3.3.2 e)	Attachment Page 17
<p><b>General Description:</b> Routine repair scope</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> P. Shanks (PM)</p> <p><b>Explanation of Need:</b> Some R-certificate holders and AIAs are making huge (100 square feet) weld metal buildup type routine repairs on the basis that the components being built up are only 5" tubes and 3.3.2 e) 1) says welded repairs to 5" tubes are routine. As 3.3.2 e) includes "shall be limited to" shouldn't exceeding any one of the listed limitations preclude the routine repair approach.</p> <p><b>January 2022 Meeting Action:</b> Mr. Seime presented this item to the MC. Stating it was approved at the SC with 2 abstentions (Marty Toth &amp; Mike Quisenberry). The MC reviewed the proposal, and then reviewed the reasonings for the abstentions. The rationale for the abstentions are both listed noted on the cloud. Mr. Toth spoke to the MC on why he voted as an abstention. A motion was made to approve the proposal as presented. The motion was seconded. During discussion there were some questions regarding M. Toth's abstention. Mr. Underwood suggested maybe opening a new item to address Mr. Toth's concerns. Mr. Scribner has concerns with this item, and stated he agreed with Mr. Toth, and that he thinks the item should be sent back. Mr. Troutt has also stated he'd like to see this go back to the SG for further work. Mr. Seime asked Mr. Shanks if he would like to take the item back for further work. After discussion Mr. Seime took his motion back and stated this will now be a progress report.</p>		

Item Number: 21-57	NBIC Location: Part 3, 3.3.2 a)	No Attachment
<p><b>General Description:</b> Routine Repairs of Section VIII Div 1 built to Appdx 46</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> T. Seime (PM)</p> <p><b>Explanation of Need:</b> Routine Repairs are not allowed for ASME Sect. VIII Div. 2 or 3 vessels. Routine Repairs should not be allowed for Div. 1 vessels built using the design considerations of Division 2 to establish the thickness and other design details of a component for a Section VIII, Division 1 pressure vessel.</p> <p><b>January 2022 Meeting Action:</b> Mr. Seime stated this item was closed with no action. A motion was made to close this item with no action. The motion was seconded and unanimously approved.</p>		

<b>Item Number: 21-60</b>	<b>NBIC Location: Part 3, 3.4.5.1 b)</b>	<b>No Attachment</b>
<p><b>General Description:</b> UDS requirements for repairs and alterations for Divisions 2 &amp; 3</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> G. Galanes (PM)</p> <p><b>Explanation of Need:</b> Is it the intent of interpretation 19-14 to prohibit the R-Certificate holder from recreating a UDS while still allowing the user to create the UDS? If yes, could the R-Certificate holder serve as the user's designated agent to recreate the UDS? Although this interpretation applies specifically to alterations, would this interpretation also be applicable to performing repairs (see 3.3.5.2(a))?</p> <p><b>January 2022 Meeting Action:</b> Progress Report given by Mr. Seime.</p>		

<b>Item Number: 21-64</b>	<b>NBIC Location: Part 3, 1.3.1</b>	<b><a href="#">Attachment Page 20</a></b>
<p><b>General Description:</b> Repair or Alteration activity allowed prior to Certification</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> M. Toth (PM)</p> <p><b>Explanation of Need:</b> Applicants for the "R" Certificate are unclear if the NBIC allows for any activities to be performed prior to certification, especially since ASME does allow it.</p> <p><b>January 2022 Meeting Action:</b> Mr. Seime presented &amp; reviewed the proposal for this item. A motion was made to accept the proposal as presented. The motion was seconded. Unanimously approved.</p>		

<b>Item Number: 21-74</b>	<b>NBIC Location: Part 3, 1.3.1</b>	<b><a href="#">Attachment Page 23</a></b>
<p><b>General Description:</b> ASME Sect VIII, Div 1 Design Personnel Requirements and NBIC Repairs/Alts</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> T. McBee (PM)</p> <p><b>Explanation of Need:</b> Many have asked what, if any, impact the new ASME VIII-1 Appendix 47 design personnel requirements will have on NBIC repairs and alterations.</p> <p><b>January 2022 Meeting Action:</b> Mr. Seime presented &amp; reviewed the proposal for this item. A motion was made to accept the proposal as presented. The motion was seconded. Ms. Wadkinson asked to view the paragraph that is being used for this reply. The Chair chose to table this item until the reference is located. The paragraph (NBIC, Part 3,3.2.4) that Ms. Wadkinson has asked to view was pulled up for review. Mr. Weilgoszinski stated there is an action item being open to address design and qualification criteria. After discussion, the item was unanimously approved.</p>		

<b>Item Number: 21-75</b>	<b>NBIC Location: Part 3, 3.3.2 e) 1)</b>	<b>No Attachment</b>
<b>General Description:</b> Routine Repairs		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> C. Hopkins (PM), S. Frazier		
<b>Explanation of Need:</b> The wording "but does not include nozzles to pressure-retaining items" could lead into interpreting the nozzle as a whole including the joint attaching the nozzle to the PRI.		
<b>January 2022 Meeting Action:</b> Progress Report – Neither TG members were present to report on this item.		

<b>Item Number: 21-79</b>	<b>NBIC Location: Part 3, 3.3.3 h)</b>	<b>No Attachment</b>
<b>General Description:</b> Mechanical Replacement of Shell or Head		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> None assigned		
<b>Explanation of Need:</b> This interpretation and corresponding Code revision would provide clarity to NBIC users and address whether mechanical replacement of these components is considered a repair.		
<b>January 2022 Meeting Action:</b> Mr. Seime stated that action item 21-80 may answer this interpretation. The MC has asked to review item 21-80 prior to discussion of this interpretation. Item 21-80 has been sent back to the SG/SC for further review. This item remains a progress report.		

<b>Item Number: 21-81</b>	<b>NBIC Location: Part 3, 3.3.6</b>	<b><a href="#">Attachment Page 26</a></b>
<b>General Description:</b> Repairs/Alterations of Impact Tested Vessels (Intent Interp)		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> None assigned		
<b>Explanation of Need:</b> There is an urgent need to address these concerns as the repair firms cannot comply with the existing wording in 3.3.6. The purpose of this Intent Interpretation is to take the approved revisions to the 2023 NBIC Part 3 and provide immediate guidance to users involved in the repair and alteration activities of impact tested vessels.		
<b>January 2022 Meeting Action:</b> Mr. Seime presented the proposal for this item. The interpretation was reviewed, and then Mr. Seime stated this item is tied to item A21-77. The Mc then reviewed item A21-77, and passed it unanimously. After review of Item A21-77, a motion was made to accept the proposal for Item I21-81 as presented. The motion was seconded, and unanimously approved.		

iv. Action Items – Old Business

<b>Item Number: NB15-2208</b>	<b>NBIC Location: Part 3</b>	<b>No Attachment</b>
<b>General Description:</b> Develop supplement for repairs and alterations based on international construction standards		
<b>Subgroup:</b> Graphite		
<b>Task Group:</b> Greg Becherer (PM)		
<b>January 2022 Meeting Action:</b> Progress Report – No one to report		

<b>Item Number: 17-167</b>	<b>NBIC Location: Part 3, S3.2 d)</b>	<b>No Attachment</b>
<b>General Description:</b> Clarify repair inspection requirements for machined only graphite parts.		
<b>Subgroup:</b> Graphite		
<b>Task Group:</b> Aaron Viet (PM)		
<b>January 2022 Meeting Action:</b> Progress Report – No one to report		

<b>Item Number: 18-94</b>	<b>NBIC Location: Part 3, S3.2 f), h); S3.4 a), b), c) etc.</b>	<b>No Attachment</b>
<b>General Description:</b> G-mark Requirements for Various Repairs/Alteration to Graphite		
<b>Subgroup:</b> Graphite		
<b>Task Group:</b> C. Cary (PM)		
<b>January 2022 Meeting Action:</b> Progress Report – No one to report		

<b>Item Number: 19-60</b>	<b>NBIC Location: Part 3, 1.5.1</b>	<b>No Attachment</b>
<b>General Description:</b> Quality System For Qualification For The National Board “R” Certificate		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> R. Miletti (PM), K. Moore, B. Boseo, M. Toth		
<b>Explanation of Need:</b> Part 3, 1.5.1 provides a good outline for a Quality Systems Manual. However, the remaining elements of a Quality System, outside of the one’s currently being addressed in Item 19-47 and 19-4 need to be embellished to provide a more auditable description of each element.		
<b>July 2021 Meeting Action:</b> Mr. Troutt introduced the item, and the proposal was presented by Ms. Kathy Moore. A motion was made and seconded to approve the proposal as presented. After discussion, this motion was rescinded, and instead the proposal will be sent out as a letter ballot to Main Committee.		
<b>January 2022 Meeting Action:</b> Ms. Moore proposed that this proposal be sent to LB to MC for vote.		

<b>Item Number: 19-61</b>	<b>NBIC Location: Part 3, 3.3.4</b>	<b>No Attachment</b>
<p><b>General Description:</b> Quality System For Qualification For The National Board “R” Certificate</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> P. Shanks (PM), J. Walker, T. McBee</p> <p><b>Explanation of Need:</b> Threaded insert are being used to fix a bolt that has broken off on certain types of boilers (autoclaves) which hold the heating elements in the water side of the boiler. When this happens, the technician correcting the problem will simply drill out the broken bolt with an over sized bit and inset a metallic insert. NBIC does address this this type of alteration.</p> <p><b>January 2022 Meeting Action:</b> Ms. Moore stated they would like to close this item with no action. A motion was made to close the item with no action. The motion was seconded and unanimously approved.</p>		

<b>Item Number: 19-73</b>	<b>NBIC Location: Part 3, S3</b>	<b>No Attachment</b>
<p><b>General Description:</b> Requirements for who can make hole plugging repairs on graphite blocks</p> <p><b>Subgroup:</b> Graphite</p> <p><b>Task Group:</b> C. Cary (PM), A. Viet, A. Stupica</p> <p><b>Explanation of Need:</b> Performing hole plugging repairs in graphite blocks is a common repair for graphite pressure vessels, but the NBIC currently has no formal requirements for this type of repair.</p> <p><b>January 2022 Meeting Action:</b> Progress Report – No one to report</p>		

<b>Item Number: 19-74</b>	<b>NBIC Location: Part 3, S3.3</b>	<b>No Attachment</b>
<p><b>General Description:</b> Routine repair requirements for partial nozzle replacement</p> <p><b>Subgroup:</b> Graphite</p> <p><b>Task Group:</b> A. Stupica (PM), M. Bost</p> <p><b>Explanation of Need:</b> Currently only nozzle replacement is addressed as a routine repair. The group is planning on defining the types of partial nozzle replacements and repairs that could be defined as routine.</p> <p><b>January 2022 Meeting Action:</b> Progress Report – No one to report</p>		

<b>Item Number: 19-79</b>	<b>NBIC Location: Part 3, S3.5.4 h)</b>	<b>No Attachment</b>
<b>General Description:</b> Re-word Part 3, S3.5.4 h) to clarify cementing procedure for plugs		
<b>Subgroup:</b> Graphite		
<b>Task Group:</b> A. Stupica (PM)		
<b>Explanation of Need:</b> Existing language includes unnecessary steps and is clunky to read. Text will be reworded to clarify the full procedure.		
<b>January 2022 Meeting Action:</b> Progress Report – No one to report		

<b>Item Number: 20-25</b>	<b>NBIC Location: Part 3, S2.13</b>	<b>No Attachment</b>
<b>General Description:</b> Repair Procedure for Fire Boxes		
<b>Subgroup:</b> SG Historical		
<b>Task Group:</b> M. Wahl (PM), Robin Forbes, T. Dillon, L. Moedinger, & F. Johnson		
<b>Explanation of Need:</b> 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.		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: 20-48</b>	<b>NBIC Location: Part 3, 1.6</b>	<b>No Attachment</b>
<b>General Description:</b> Compare 2015 NQA-1 revision to NR program (1.6) for consistency.		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> B. Wielgoszinski (PM).		
<b>Explanation of Need:</b> Latest NQA-1 revision to be compared to NR program (1.6) for consistency.		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: 20-52</b>	<b>NBIC Location: Part 3, 1.6.2 a) 2)</b>	<b>No Attachment</b>
<b>General Description:</b> Rvw NR requirements for ASME Section XI Div. 2 potential applications		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> T. Roberts (PM)		
<b>Explanation of Need:</b> This was created based on discussion from Item 20-47 dealing with ANIA requirements.		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: 20-53</b>	<b>NBIC Location: Part 3, 3.3.5.2 a) &amp; 3.4.5.1 b)</b>	<b>No Attachment</b>
<p><b>General Description:</b> Certification of Repair or Alteration Plans</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> S. Chestnut (PM), B. Schaefer</p> <p><b>Explanation of Need:</b> The Clarification of the Certifying Engineer requirements.</p> <p><b>January 2022 Meeting Action:</b> Ms. Moore proposed this item be closed with no action because they will be opening a new item with more information. A motion was made to close the item with no action. The motion was seconded and unanimously approved.</p>		

<b>Item Number: 20-60</b>	<b>NBIC Location: Part 3, 3.3.4.8</b>	<b>No Attachment</b>
<p><b>General Description:</b> Part 3 Supplement for FFS Guidelines</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> J. Siefert (PM)</p> <p><b>Explanation of Need:</b> The NBIC provides little guidance related to FFS activities and repairs in part 3.</p> <p><b>January 2022 Meeting Action:</b> Ms. Moore proposed this item be close with no action because they will be going down a different path for FFS. A motion was made to close the item with no action. The motion was seconded and unanimously approved.</p>		

<b>Item Number: 20-67</b>	<b>NBIC Location: Part 3, S6</b>	<b>No Attachment</b>
<p><b>General Description:</b> Revisions to Part 3, Supplement 6</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> R. Underwood (PM)</p> <p><b>Explanation of Need:</b> Supplement 6 was implemented into the 2007 Edition of the NBIC Part 3 to provide requirements and guidelines for repairs, alterations and modifications to DOT Transport Tanks using the National Board's "TR" Program (which was never implemented). S6 has been revised over the years to remove reference to the "TR" Program, but still contains many requirements that are not correct. This purpose of this proposal is to review the entire Supplement and make appropriate revisions that comply with NBIC Part 3 and DOT requirements.</p> <p><b>January 2022 Meeting Action:</b> Progress Report</p>		

<b>Item Number: 20-73</b>	<b>NBIC Location: Part 3, 4.4.2 a) 2)</b>	<b>No Attachment</b>
<b>General Description:</b> Pressure Testing of Connecting Welds (Part 3, 4.4.2(a)(2))		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> R. Underwood (PM)		
<b>Explanation of Need:</b> To clarify what the term "replacement part" as used in 4.4.2(a)(2) of Part 3 means.		
<b>January 2022 Meeting Action:</b> Ms. Moore proposed this item be close with no action because this information is included in item 21-12. A motion was made to close the item with no action. The motion was seconded and unanimously approved.		

<b>Item Number: 20-83</b>	<b>NBIC Location: Part 3, 1.5.1 s) &amp; 9.1</b>	<b>No Attachment</b>
<b>General Description:</b> Revision to Part 3, 3.2.2 e)		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> T. Hellman (PM)		
<b>Explanation of Need:</b> Action Item 19-60 is proposing revisions/additions to all of 1.5.1. This proposal is to move the definition of "Nonconformance" out of the current 1.5.1 s) paragraph and into the glossary.		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: 21-02</b>	<b>NBIC Location: Part 3, 1.6</b>	<b>No Attachment</b>
<b>General Description:</b> Define "Fuel Loading" as it pertains to NR activities		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> P. Edwards (PM)		
<b>Explanation of Need:</b> The NR TG would like to clarify "Fuel Loading" as used to determine Category 1, 2 or 3 NR activities.		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: 21-06</b>	<b>NBIC Location: Part 3, 4.4.2</b>	<b>No Attachment</b>
<b>General Description:</b> Concessions with pressure testing associated with replacement parts		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> D. Kinney (PM), R. Miletto, P. Becker, P. Davis, R. Underwood, M. Winters		
<b>Explanation of Need:</b> When replacement parts are manufactured and not tested as required by the original code of construction, there needs to be concessions or considerations associated with the pressure testing requirements as to not detrimentally effect the existing pressure retaining item.		
<b>January 2022 Meeting Action:</b> Progress Report		



<b>Item Number: 21-07</b>	<b>NBIC Location: Part 3, 1.3.2 a)</b>	<b>Attachment Page 27</b>
<p><b>General Description:</b> NBIC Report Form certification clarification.</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> D. Kinney (PM)</p> <p><b>Explanation of Need:</b> The intent is to clarify which Inspector must certify R forms, specifically when there are different AIA's signing the certifications on the R-2 Form.</p> <p><b>January 2022 Meeting Action:</b> Ms. Moore asked Mr. Kinney to present this item. Mr. Kinney reviewed the proposal with the MC. He stated this item passed through SG &amp; SC Unanimously. A motion was made to approve this proposal as presented. The motion was seconded. During discussion, an editorial change was made to the proposal, and the proposal was then unanimously approved.</p>		

<b>Item Number: 21-09</b>	<b>NBIC Location: Part 3, S2</b>	<b>No Attachment</b>
<p><b>General Description:</b> Incorporate new repair methods for through and diagonal stays</p> <p><b>Subgroup:</b> Historical</p> <p><b>Task Group:</b> D. Rose (PM), R. Bryce, R. Forbes, &amp; C. Jowett</p> <p><b>Explanation of Need:</b> The code is silent on the inspection of through stays and diagonal stays. Additionally new repair methods are available from ASME that can be incorporated.</p> <p><b>January 2022 Meeting Action:</b> Progress Report</p>		

<b>Item Number: 21-10</b>	<b>NBIC Location: Part 3, 5.2 &amp; 5.4</b>	<b>Attachment Page 28</b>
<p><b>General Description:</b> Add a time frame for R forms (for completion of and submittal of forms)</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> D. Kinney (PM), B. Schaefer, B. McGuire</p> <p><b>Explanation of Need:</b> Currently, the NBIC is silent on how much time may go by after work is completed before the applicable R Form is accepted by the inspector after work is completed. The NBIC is also silent on how much time may go by before the applicable R Form is submitted to the NB and Jurisdictions (as applicable).</p> <p><b>January 2022 Meeting Action:</b> Ms. Moore asked Mr. Kinney to report on this item. A motion was made to approve the proposal as presented. The motion was seconded. During discussion Mr. Troutt questioned the word "Construction" in the new language. Mr. Kinney stated this language is stated exactly as it is listed elsewhere in the NBIC. Mr. Newton questioned why the SC chose "90 Days", Ms. Moore was able to explain why they chose 90 days, and Mr. Newton was agreeable. The motion was unanimously approved</p>		

<b>Item Number: 21-12</b>	<b>NBIC Location: Part 3, 3.3.3, 3.4.4, Section 9</b>	<b>No Attachment</b>
<p><b>General Description:</b> Clarify the definitions and examples of "Repair" and "Alteration"</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> P. Becker (PM), K. Moore, P. Shanks, R. Underwood, M. Chestnut, T. Sieme</p> <p><b>Explanation of Need:</b> 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><b>History:</b> This Item was created as a result of conversation regarding Interp. Item 20-78 and Action Item 20-54</p> <p><b>January 2022 Meeting Action:</b> Progress Report</p>		

<b>Item Number: 21-14</b>	<b>NBIC Location: Part 3, 3.4.3</b>	<b>Attachment Page 30</b>
<p><b>General Description:</b> ASME PCC-2 article references are incorrectly formatted</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> P. Shanks (PM)</p> <p><b>Explanation of Need:</b> The 2018 edition of ASME PCC-2 has a different article numbering system than that used in the 2019 NBIC.</p> <p><b>January 2022 Meeting Action:</b> Ms. Moore asked Mr. Shanks to present this item. Mr. Shanks reviewed the proposal with MC. A motion was made to approve the proposal as presented. The motion was seconded and unanimously approved.</p>		

<b>Item Number: 21-15</b>	<b>NBIC Location: Part 3, Section 5</b>	<b>Attachment Page 40</b>
<p><b>General Description:</b> Corrections and revisions to "R" Forms.</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> D. Kinney (PM)</p> <p><b>Explanation of Need:</b> NBIC Part 3 is silent on controls for corrections or revisions to "R" Forms. The NBIC requires quality systems to provide revision controls, and I believe the NBIC should be clear on this as well.</p> <p><b>January 2022 Meeting Action:</b> Ms. Moore asked Mr. Kinney to present this item. Mr. Kinney reviewed this item with the MC. Mr. Weilgoszinski stated this information is stated elsewhere, and this is not new information it is more clarification. A motion was made to approve the proposal as presented. The motion was seconded, and unanimously approved.</p>		

<b>Item Number: 21-27</b>	<b>NBIC Location: Part 3, 4.2 a)</b>	<b>Attachment Page 41</b>
<p><b>General Description:</b> Provision of Exemption for original COC NDE requirements</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> W. Sperko (PM)</p> <p><b>Explanation of Need:</b> Repair organizations that perform shop refurbishment and repair of LPG storage tanks (ASME Section VIII Div 1) encounter repetitive, typical defects that require repair. Many of the typical defects requiring repair meet the definition and could be considered Routine Repair. This being the case one of the frequently observed issues requiring weld repair is defects in original manufacturing butt welds at the head to shell joint with defects that include cold lap, and pinholes. The typical repair involves the excavation of the defect and confirmation of removal via PT. Then the excavation is welded with a typical repair length being less than 6" long. While the CoC in many cases in LPG storage tanks requires a spot RT of the head to shell joint, performing RT on the minimal amount of welding typically performed on isolated defects serves no practical purpose in enhancing safety especially when the length of deposited weld metal would be less than the length of the radiographic film used capture the image.</p> <p><b>January 2022 Meeting Action:</b> This item was discussed alongside Item 21-32, and a motion was made to approve the proposal as presented. The motion was seconded and unanimously approved.</p>		

<b>Item Number: 21-31</b>	<b>NBIC Location: NBIC Glossary</b>	<b>No Attachment</b>
<p><b>General Description:</b> Revise definition of "Field"</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> R. Miletti (PM), P. Gilston, M. Toth, J. Walker</p> <p><b>Explanation of Need:</b> 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><b>January 2022 Meeting Action:</b> Progress Report</p>		

<b>Item Number: 21-33</b>	<b>NBIC Location: Part 3, 1.2 f)</b>	<b>Attachment Page 42</b>
<p><b>General Description:</b> Use of code cases pertaining to repairs and alterations</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> R. Underwood (PM)</p> <p><b>Explanation of Need:</b> The NBIC Part 3 already references code cases in various paragraphs such as NR quality requirements, welding method 7, and R Form instructions, but there is no direct reference to acceptance of their use. I think it's always been an unwritten rule that they are permitted to be used with acceptance of the Inspector and Jurisdiction. This proposal will address this in a new paragraph 1.2(f).</p> <p><b>January 2022 Meeting Action:</b> Ms. Moore asked Mr. Underwood to present this item. Mr. Underwood reviewed the proposal with the MC. There was some discussion regarding the different revisions of Code cases and whether or not they needed to be referenced with the code case. The consensus was “yes” the code case revision level needs to be referenced. The proposal was revised during discussion. A motion was made to accept the revised proposal. The motion was seconded and unanimously approved.</p>		

<b>Item Number: A21-35</b>	<b>NBIC Location: Part 3, S1.1.3.1</b>	<b>No Attachment</b>
<p><b>General Description:</b> Part 3, Table S1.1.3.1, Threaded Staybolts and Patch Bolts is incorrect</p> <p><b>Subgroup:</b> TG Locomotive</p> <p><b>Task Group:</b> L. Moedinger (PM)</p> <p><b>Explanation of Need:</b> The wording in the 2017 NBIC was "Threaded Staybolts and Patch Bolts SA-31 Grade A SA-675 with a tensile strength of 47,000 psi to 65,000 psi inclusive" A change was made for the 2019 Edition to reflect the grades rather than tensile strength. Somehow the wrong grades were used and this was not caught until now.</p> <p><b>January 2022 Meeting Action:</b> Ms. Moore stated they would like this item to go to LB to MC</p>		

v. **New Items:**

<b>Item Number: 21-37</b>	<b>NBIC Location: Part 3, 1.6</b>	<b>No Attachment</b>
<p><b>General Description:</b> Parts used in NR Activities</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> B. Wielgoszinski (PM)</p> <p><b>Explanation of Need:</b> Clarification that parts used in NR activities are fabricated by NR Certificate Holders and inspected by appropriately endorsed National Board commissioned Inspectors.</p> <p><b>January 2022 Meeting Action:</b> Progress Report</p>		

<b>Item Number: 21-43</b>	<b>NBIC Location: Part 3, Glossary</b>	<b>No Attachment</b>
<p><b>General Description:</b> Defining and revising "Practicable" and "Practical" within the NBIC</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> M. Toth (PM)</p> <p><b>Explanation of Need:</b> Defining and revising Practicable and Practical within the NBIC and revising where applicable</p> <p><b>January 2022 Meeting Action:</b> Progress Report</p>		

<b>Item Number: 21-44</b>	<b>NBIC Location: Part 3, Glossary</b>	<b>No Attachment</b>
<p><b>General Description:</b> Defining "De-Rating" within Part 3</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> M. Toth (PM)</p> <p><b>Explanation of Need:</b> Defining de-rating within Part 3</p> <p><b>January 2022 Meeting Action:</b> Progress Report</p>		

<b>Item Number: 21-45</b>	<b>NBIC Location: Part 3, Supplements</b>	<b>No Attachment</b>
<p><b>General Description:</b> Add a supplement to address oil, gas and chemical repair &amp; alteration scope</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> R. Underwood (PM)</p> <p><b>Explanation of Need:</b> There has been interest from companies operating with the Oil, Gas and Chemical industries to address certain types of repairs that may exist in ASME PCC-2 or API. NBIC does not have many of these repair methods within the book.</p> <p><b>January 2022 Meeting Action:</b> Ms. Moore stated she would like everyone to go on the Cloud and read through this new supplement on this cloud to start getting familiar with it. Mr. Underwood stated the proposal is currently being worked on and reviewed after it was sent out for review and comment to SG R &amp; A.</p>		

<b>Item Number: 21-53</b>	<b>NBIC Location: Part 3, S8.5 a)</b>	<b>Attachment Page 44</b>
<p><b>General Description:</b> Post Repair Inspection of weld repairs to CSEF steels</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> P. Gilston (PM)</p> <p><b>Explanation of Need:</b> 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><b>January 2022 Meeting Action:</b> Ms. Moore asked Mr. Gilston to speak on this item. Mr. Gilston stated the item is being Letter Balloted to Part 2 and Part 3 SG simultaneously.</p>		

<b>Item Number: 21-67</b>	<b>NBIC Location: Part 3, 3.4.9</b>	<b>No Attachment</b>
<p><b>General Description:</b> Add welding requirements to plugging firetubes</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> None assigned.</p> <p><b>Explanation of Need:</b> The current NBIC does not have enough direction or requirements for welding tube plugs in firetubes.</p> <p><b>January 2022 Meeting Action:</b> Progress Report</p>		

<b>Item Number: 21-68</b>	<b>NBIC Location: Part 3, S9</b>	<b>No Attachment</b>
<p><b>General Description:</b> Removal of "final inspection" date from all Form R Report certifications.</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> D. Kinney (PM)</p> <p><b>Explanation of Need:</b> To remove the unnecessary date requirement and eliminate confusion regarding what is the "final inspection" as it relates to repairs and alterations. The term "final inspection" is not defined in the NBIC, and the corresponding date has no bearing on the act and intent of the form certification.</p> <p><b>January 2022 Meeting Action:</b> Ms. Moore stated this item was closed with no action, because there were 11 disapprovals and 1 abstention. They will be opening a new action item for further review. A motion was made to close this item with no action. The motion was seconded and unanimously approved.</p>		

<b>Item Number: 21-70</b>	<b>NBIC Location: Part 3, Table 2.3</b>	<b>No Attachment</b>
<p><b>General Description:</b> Updating Table 2.3 in Part 3 with newest SWPSs</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> J. Sekely (PM)</p> <p><b>Explanation of Need:</b> 13 SWPSs have been updated and approved by AWS, and the list of SWPSs in Table 2.3 will need to be updated to reflect these changes.</p> <p><b>January 2022 Meeting Action:</b> Progress Report</p>		

<b>Item Number: 21-71</b>	<b>NBIC Location: Part 3, 3.4.9</b>	<b>No Attachment</b>
<p><b>General Description:</b> Remove the mechanical portion of tube plugging from 3.3.4.9. Only address i</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> None assigned.</p> <p><b>Explanation of Need:</b> Removing the mechanical portion of the text. Many Jurisdictions are having a difficult time enforcing that part of the NBIC</p> <p><b>January 2022 Meeting Action:</b> Ms. Moore stated this item was closed with no action, they will be tabling this item and this will be incorporated in to 21-67. A motion was made to close this item with no action. The motion was unanimously approved and unanimously approved.</p>		

<b>Item Number: 21-77</b>	<b>NBIC Location: Part 3, 3.3.6</b>	<b>Attachment Page 43</b>
<p><b>General Description:</b> Repairs/Alterations of Impact Tested Vessels</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> None assigned.</p> <p><b>Explanation of Need:</b> There is an urgent need to address these concerns as the repair firms cannot comply with the existing wording in 3.3.6. The plan is to incorporate this item into the 2023 Edition of Part 3 and propose a corresponding Intent Interpretation that would provide guidance to NBIC users as soon as possible.</p> <p><b>January 2022 Meeting Action:</b> After review of the interpretation A21-81, Mr. Seime presented the proposal for this item to the MC. A motion was made to approve the proposal as presented. The motion as seconded and unanimously approved.</p>		

<b>Item Number: 21-80</b>	<b>NBIC Location: Part 3, 3.3.3 h) 2)</b>	<b>Attachment Page 46</b>
<p><b>General Description:</b> Mechanical Replacement of Shell or Head</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> None assigned.</p> <p><b>Explanation of Need:</b> This Code revision (corresponding to interpretation item 21-79) would provide clarity to NBIC users and address whether mechanical replacement of these components is considered a repair.</p> <p><b>January 2022 Meeting Action:</b> Mr. Seime asked Mr. Underwood to speak &amp; present the proposal to the MC. Mr. Toth stated that if this item passes Item I21-79 should be good to send to LB to SG/SC R &amp; A. Mr. Scribner questioned if this item is just going to raise more questions, stating he thinks this may be better served as an interpretation and not a code change. Mr. Underwood stated he believe that the code change answers the interpretation. Mr. Troutt agreed with Mr. Scribner's statement that this may be better served as an interpretation and not a code change. After further discussion, Mr. Underwood stated he would be ok with taking this back for further review and discussion with the SG/SC. The motion was pulled back and this will now be a progress report.</p>		

<b>Item Number: 21-78</b>	<b>NBIC Location: Part 2, S2.13.9.5 e)</b>	<b>No Attachment</b>
<p><b>General Description:</b> Alternative Weld Joint For Historical Boiler Barrel Replacement</p> <p><b>Subgroup:</b> Historical</p> <p><b>Task Group:</b> None assigned</p> <p><b>Background:</b> Historical boilers were manufactured with riveted joints, however in many cases it's more practical to use welded joints when restoring historical boilers. However, ASME Section I does not allow fillet welded lap joints when connecting replacement barrels to the wrapper sheet. The strength of a double fillet welded lap joint has proven to be equal, if not greater in strength than riveted joint designs and this proposal will introduce this type of joint as an alternative to riveted lap joints.</p> <p><b>January 2022 Meeting Action:</b> Progress Report</p>		

<b>Item Number: 21-82</b>	<b>NBIC Location: Part 3, 3.3.3 s)</b>	<b>No Attachment</b>
<p><b>General Description:</b> Examples of Repairs</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> R. Underwood (PM).</p> <p><b>Explanation of Need:</b> Adding "repair" to 3.3.3(s) would then address use of different weld material. Currently 3.3.3(s) only addresses replacement of the part, not repair (Repair is addressed in 3.3.3(r)).</p> <p><b>January 2022 Meeting Action:</b> Progress Report</p>		



**b. Subcommittee Pressure Relief Devices**

Mr. Galanes asked Ms. Wadkinson to take the Chair roll for this portion of the agenda.

Mr. Tom Beirne stated his Chair and Vice Chair are not present today and he will be presenting the PRD items.

**i. Errata**

<b>NBIC Location of Error: Part 4, 2.4.4.3 b)</b>	<b>Attachment Page 47</b>
<b>General Description:</b> Last sentence in Part 4, 2.4.4.3	
<b>Task Group:</b> T. Beirne	
<b>Explanation of Need:</b> Item 17-128 was approved for the 2021 NBIC and included identical changes for Parts 1 and 4. However, in the publishing process the last sentence of Part 4, 2.4.4.3 was not deleted and does not match Part 1, 3.9.4.3 b).	
<b>January 2022 Meeting Action:</b> Mr. Beirne presented this item stated there was an error in publication. He reviewed the proposal with the MC. A Motion was made to accept the changes as presented. The motion as seconded and unanimously approved.	

**ii. Interpretations**

<b>Item Number: 21-62</b>	<b>NBIC Location: Part 4, 4.8.5.4 i) 3)</b>	<b>No Attachment</b>
<b>General Description:</b> Verification of existing spring during repair activities		
<b>Task Group:</b> None assigned		
<b>Explanation of Need:</b> This requirement has created an administrative requirement that potentially prevents a VR Stamp holder from applying the "VR" stamp to valves they have repaired. The requirement is negatively impacting owners, and jurisdictions that enforce the NBIC Part 4. This clause introduces a unique requirement in the BPV industry to confirm that code material in a Code stamped item be verified and traceable at all time after the item is ASME code stamped but the verification can only be provided by the manufacturer. Historically, any valve received or worked on that was sealed by a VR Stamp holder or in the case of an initial repair the ASME assembler was deemed to be Code compliant, and no further verification was needed recognizing the validity and continuity of the ASME and VR quality programs. It is clearly understood that if a spring, or any other critical part is deemed necessary to be replaced during a repair the manufactures verification is required and justifiable.		
<b>January 2022 Meeting Action: Progress Report - Changed to an Action item and assigned TG.</b>		

iii. Action Items – Old Business

<b>Item Number: NB15-0305</b>	<b>NBIC Location: Part 4</b>	<b>No Attachment</b>
<b>General Description:</b> Create Guidelines for Installation of Overpressure Protection by System Design.		
<b>Task Group:</b> B. Nutter, A. Renaldo, D. Marek (PM), D. DeMichael, J. Wolf		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: NB15-0307</b>	<b>NBIC Location: Part 4</b>	<b>No Attachment</b>
<b>General Description:</b> Create Guidelines for Repair of Pin Devices.		
<b>Task Group:</b> D. McHugh (PM), A. Renaldo, T. Tarbay, R. McCaffrey, J. Simms, C. Bear		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: NB15-0315</b>	<b>NBIC Location: Part 4, 2.5.6 and 2.6.6 and Part 1, 4.5.6 and 5.3.6</b>	<b>No Attachment</b>
<b>General Description:</b> Review isolation Valve Requirements, and reword to allow installation of pressure relief devices in upstream piping.		
<b>Task Group:</b> D. DeMichael (PM), B. Nutter, A. Renaldo, D. Marek		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: 17-119</b>	<b>NBIC Location: Part 4, 2.2.5 and Part 1, 2.9.1.4</b>	<b>No Attachment</b>
<b>General Description:</b> States pressure setting may exceed 10% range. Clarify by how much.		
<b>Task Group:</b> T. Patel (PM), D. Marek		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: 19-37</b>	<b>NBIC Location: Part 4, 4.3.1 c) 4)</b>	<b>No Attachment</b>
<b>General Description:</b> Origin of Replacement Parts for Pressure Relief Devices		
<b>Task Group:</b> A. Cox (PM), T. Patel, P. Dhobi, J. Simms		
<b>Explanation of Need:</b> VR Holders are required to obtain a Certificate of Compliance when they purchase Replacement Critical Parts from longtime PRV Manufacturer's Representatives. This is prevalent in the Midstream Oil & Gas Sector. Several small VR Holders in this Sector of the Energy Industry have expressed their desire to make this issue less cumbersome because the Manufacturers of the majority of PRVs they repair do not have Assemblers.		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: 19-83</b>	<b>NBIC Location: Part 4, 4.7.5</b>	<b>No Attachment</b>
<b>General Description:</b> Address Alternate Pressure Relief Valve Mounting Permitted by ASME CC2887-1		
<b>Task Group:</b> D. Marek (PM), T. Patel, J. Ball		
<b>Explanation of Need:</b> ASME Code Case 2887-1 permits the installation of pressure relief valves below a low mass water tube boiler or water heater under certain conditions. This set of conditions and alternate location should be addressed in the NBIC as the use of low mass water tube boilers and water heaters becomes more widespread.		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: 20-85</b>	<b>NBIC Location: Part 4, 3.2.6</b>	<b>No Attachment</b>
<b>General Description:</b> Add language to Part 4, 3.2.6 to define test intervals for thermal fluid heater PRDs		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> B. Nutter (PM), T. Patel, D. Schirmer, J. Wolf		
<b>Explanation of Need:</b> The proposed language comes from work done on action item 19-88.		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: 21-05</b>	<b>NBIC Location: Part 4, 3.3 &amp; 4.8</b>	<b><a href="#">Attachment Page 49</a></b>
<b>General Description:</b> Mandatory Shop Audits for VR & T/O Certificate Holders		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> A. Donaldson (PM), A. Cox, J. Simms, P. Dhobi, T. Tarbay, D. Marek		
<b>Explanation of Need:</b> There has long been a requirement for an Annual Audit of Field Activities for VR and, more recently, T/O Activities. This same opportunity for improvement should be extended to Shop Activities that involve for T/O or VR Repair, as applicable, are properly performed and documented.		
<b>January 2022 Meeting Action:</b> Mr. Beirne presented this item to the MC and stated he would like this proposal to go to LB to MC for vote.		

<b>Item Number: 21-08</b>	<b>NBIC Location: Part 4, S4.4</b>	<b>No Attachment</b>
<b>General Description:</b> Additional guidance for tank vent repairs		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> D. DeMichael (PM), B. Donalson, B. Nutter, K. Beise, J. Grace		
<b>Explanation of Need:</b> The recently approved S4.4, "Weight Loaded Vents," provided new guidance for tank vent repairs. Several additional topics need to be addressed to enhance the guidance. These topics include: 1) Suggested test equipment and configuration for the prescribed tank vent testing. 2) Minimum requirements for replacement parts, 3) Guidance for painting tank vent components.		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: 21-18</b>	<b>NBIC Location: Part 4, 3.2.6</b>	<b>No Attachment</b>
<b>General Description:</b> Pressure Tests for Pressure Relief Valve Repair Parts		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> J. Simms (PM), T. Tarbay, A. Donaldson, D. DeMichael, T. Patel, B. Nutter		
<b>Explanation of Need:</b> Pressure relief valve manufacturers must produce valve parts that comply with ASME Code requirements to be able to apply the ASME Symbol Stamp and Designator to a new valve. These parts are the same that are sold as repair parts. The logistic issues to fabricate and maintain an inventory of spare parts not complying with ASME Code requirements is significant versus producing all parts in compliance with code. Consequently, why have a pressure test requirement for parts purchased from the valve manufacturer for those certificate holders who chose to buy parts produced by the manufacturer?		
<b>January 2022 Meeting Action:</b> Progress Report		

iv. **New Items:**

<b>Item Number: 21-36</b>	<b>NBIC Location: Part 4, 3.3.3.4 i)</b>	<b>No Attachment</b>
<b>General Description:</b> Add Test Details to NBIC Part 4, 3.3.3.4 i) Valve Adjustment and Sealing		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> None assigned		
<b>Explanation of Need:</b> There is no reference in the T/O requirements for Set Pressure Testing, use of proper Test Fluid or Seat Tightness unless and until a minor adjustment is required. This is surely the intent, but it is not clearly specified as it is in the current VR requirements.		
<b>January 2022 Meeting Action:</b> Progress Report		

<b>Item Number: 21-49</b>	<b>NBIC Location: Part 4, 3.3.3.4 l) 5)</b>	<a href="#">Attachment Page 52</a>
<b>General Description:</b> Change 3.3.3.4 l) 5) to be consistent with 4.8.5.4 n) 5)		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> None assigned		
<b>Explanation of Need:</b> The intent was that the changes to a certificate holder's QC Manual would be accepted prior to being implemented. This change in text clarifies the intent.		
<b>January 2022 Meeting Action:</b> Mr. Beirne presented this item to the MC. A motion was made to accept the changes as presented in the proposal. The motion was seconded. Mr. Scribner questioned if this information is administrative and should be pulled from the NBIC, this information is also listed in NB-514 & NB-415. Mr. Weilgoszinski stated this is more just clarification on the existing information. It was suggested to open a new item to look at the NBIC to see if the administrative sections with regards to the quality manual should be removed from the NBIC. The motion was changed to send this proposal to LB. The seconder has agreed.		

<b>Item Number: 21-51</b>	<b>NBIC Location: Part 4, Supplement 3</b>	<b>No Attachment</b>
<b>General Description:</b> Clarify relief valve term to be pressure relief valve in Supplement 3		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> None assigned		
<b>Explanation of Need:</b> Several places refer to relief valve or valve. Should be pressure relief valve to be consistent with the rest of the book.		
<b>January 2022 Meeting Action:</b> Progress Report – LB to SC		

<b>Item Number: 21-52</b>	<b>NBIC Location: Part 4, 2.5.3 a) &amp; Part 1, 4.5.3 a)</b>	<a href="#">Attachment Page 54</a>
<b>General Description:</b> Incorrect paragraph reference at end of Part 4 2.5.3 a) and Part 1 4.5.3 a)		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> None assigned		
<b>Explanation of Need:</b> Paragraph reference at end of Part 4, 2.5.3 a) and Part 1, 4.5.3 a) should be 2.5.6 e) and 4.5.6 e) not e)2) since all of the requirements of e apply to isolation valves not just e)2)		
<b>January 2022 Meeting Action:</b> Mr. Beirne presented this item to the MC stating this reference needed to be updated to include the full section. A motion was made to accept the proposal as presented. The motion was seconded and unanimously approved.		

<b>Item Number: 21-59</b>	<b>NBIC Location: Part 4, 3.2.6.1</b>	<b>No Attachment</b>
<b>General Description:</b> Deferral of inspection due dates (pressure relieving devices NBIC PART IV)		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> None assigned		
<p><b>Explanation of Need:</b> Since the code has clearly recommended inspection frequency intervals for the different classes of pressure relief devices, it shall have the requirements related to the deferral of due dates. The inspection due date deferrals are usually not considered but in exceptional cases where operating plant may not be able to handover the device due to some practical limitations or the turnaround frequency of the plant is extended due to stakeholders' requirements etc. The owner is usually ensuring that a deferment is not posing any significant EHSS risk by proper risk analysis but a clarity from code on the minimum or maximum duration the device can be deferred will add a great value in decision making. There are some codes which have added deferment clauses such as API 510 but the NBIC is always having precedence in this subject and shall have statement added to its code.</p>		
<p><b>January 2022 Meeting Action:</b> Progress Report – SG is unclear of what the submitter is requesting. They will be reaching out to him for further information.</p>		

<b>Item Number: 21-61</b>	<b>NBIC Location: Part 4, 3.3.4</b>	<b>No Attachment</b>
<b>General Description:</b> Audit Requirements for the T/O holder		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> A. Donaldson (PM), A. Cox, J. Simms, P. Dhobi, T. Tarbay, D. Marek		
<p><b>Explanation of Need:</b> Opened as a result of a Subgroup PRD ballot comment from item 21-05 (Shop audits for VR certificate holders). The comment recommended adding requirements specifically for organizations that are T/O only.</p>		
<p><b>January 2022 Meeting Action:</b> Progress report – TG assigned.</p>		

<b>Item Number: 21-63</b>	<b>NBIC Location: Part 4, 4.7.2</b>	<b>No Attachment</b>
<b>General Description:</b> Require unique identifier marked on Pilots in addition to main valves		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> B. Donaldson (PM), B. Nutter, D. Gonzales, J. Simms, T. Patel, D. Marek, T. Beirne		
<p><b>Explanation of Need:</b> The 2021 Edition of ASME BPVC Section XIII requires pilots of pilot operated pressure relief valves be marked with a unique identifier that matches the main valve (Section I has similar approved text for the 2023 Edition). This should be addressed for VR nameplates as well since pilots can be replaced as VR operation.</p>		
<p><b>January 2022 Meeting Action:</b> Progress report – TG assigned.</p>		

<b>Item Number: 21-72</b>	<b>NBIC Location: Part 4, 4.7.2 b)</b>	<b><a href="#">Attachment Page 55</a></b>
<b>General Description:</b> Remove reasons for changes in 4.7.2 b) 6) and 7)		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> T. Beirne (PM)		
<p><b>Explanation of Need:</b> Capacity could change for reasons other than set pressure or service fluid change (for example error or superimposed back pressure for liquid valve being introduced).  Type/Model numbers can change for reasons other than a conversion. Sometimes manufacturers include set pressure in the type or model number. A set pressure change is not considered a conversion. Also, error correction could be a reason.</p>		
<p><b>January 2022 Meeting Action:</b> Mr. Beirne presented this item to the MC. A motion was made to accept the proposal as presented. The motion was seconded and unanimously approved.</p>		

<b>Item Number: 21-73</b>	<b>NBIC Location: Part 4, 4.7.3</b>	<b>No Attachment</b>
<b>General Description:</b> Simplify paragraph 4.7.3		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> T. Beirne (PM)		
<p><b>Explanation of Need:</b> Subparagraphs a) through d) are repetitive and can be consolidated to simplify the overall requirement of if changes are made, they should be marked out and left legible.</p>		
<p><b>January 2022 Meeting Action:</b> Progress Report – LB to SG &amp; SC PRD, then MC</p>		

<b>Item Number: 21-76</b>	<b>NBIC Location: Part 4, 3.2.4.3 and Part 2, 2.5.5.3</b>	<b><a href="#">Attachment Page 56</a></b>
<b>General Description:</b> Update ASME paragraph reference in Part 4, 3.2.4.3 and Part 2, 2.5.5.3		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> T. Beirne (PM)		
<p><b>Explanation of Need:</b> ASME Section VIII Div. 1 updated pressure relief device paragraph references as a result of publishing Section XIII. UG-135 should now be UG-156</p>		
<p><b>January 2022 Meeting Action:</b> Mr. Beirne presented this item to the MC. A motion was made to accept the proposal as presented. The motion was seconded and unanimously approved.</p>		

<b>Item Number: 21-83</b>	<b>NBIC Location: Part 4, 4.4.1 b) 1)</b>	<a href="#">Attachment Page 57</a>
<b>General Description:</b> Incorrect paragraph reference in Part 4, 4.4.7 b) 1)		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> T. Beirne (PM)		
<b>Explanation of Need:</b> Paragraph reference is incorrect. Current reference points to Part 3, 2.2.2 which deals with SWPS. Part 3, 3.3.2 is the correct reference.		
<b>January 2022 Meeting Action:</b> Mr. Beirne presented this item to the MC. A motion was made to accept the proposal as presented. The motion was seconded. During discussion Mr. Toth stated there was some concern that the NBIC does not fully define “Valves”. Mr. Wielgoszinski also spoke to the MC stating this proposal is only an editorial change. When the referenced paragraph was reviewed, they realized the term “Valves” may need to be defined as well. After discussion the motion was unanimously approved.		

<b>Item Number: 21-84</b>	<b>NBIC Location: Part 4, 3.2.4.3 and Part 2, 2.5.5.3</b>	<b>No Attachment</b>
<b>General Description:</b> Update duplicate nameplate marking requirements to reflect new Section XIII		
<b>Subgroup:</b> PRD		
<b>Task Group:</b> A. Cox (PM), D. Sullivan, D. Marek, P. Dhobi, B. Nutter, T. Beirne		
<b>Explanation of Need:</b> With the new publication of Section XIII, valves that were previously constructed to Section IV or VIII Div. 1 are now constructed to Section XIII. The HV and UV designators still indicate the service, however.		
<b>January 2022 Meeting Action:</b> Progress report.		

**c. Subcommittee Installation**

Mr. Galanes resumed the Chair position for this section of the agenda.

**i. Interpretations**

**ii. Action Items – Old Business**

<b>Item Number: NB11-1901</b>	<b>NBIC Location: Part 1</b>	<a href="#">Attachment Page 58</a>
<b>General Description:</b> Add guidance for the safe installation of high pressure composite pressure vessels operating in close proximity to the public		
<b>Subgroup:</b> FRP		
<b>Task Group:</b> R. Smith (PM), M. Richards, S. Konopacki, D. Patten and E. Wiggins		
<b>January 2022 Meeting Action:</b> Mr. Wiggins presented this item to the MC. Mr. R. Smith has gone through the comments from a previous LB and commented to each one. A motion has been made to send the proposal to LB to MC for vote.		



<b>Item Number: 20-27</b>	<b>NBIC Location: Part 1, 1.6.9 &amp; S6.3</b>	<b>No Attachment</b>
<b>General Description:</b> Carbon Monoxide Detector/Alarm NBIC 2019		
<b>Subgroup:</b> SG Installation		
<b>Task Group:</b> E. Wiggins (PM), R. Spiker, R. Smith, G. Tompkins, S. Konopacki and R. Austin		
<b>Explanation of Need:</b> These codes are being enforced by some jurisdictions on existing installations. Inspectors need to know what codes we need to enforce. Do the detectors have specific levels of CO when an alarm is to go off? Is there a requirement for an audible alarm or decibel level of the alarm? Where in the boiler room should the alarm/monitor be mounted?		
<b>January 2022 Meeting Action:</b> Progress Report – Ms. Wadkinson stated this item is being tabled for now and will be discussed at the next executive meeting.		

<b>Item Number: 20-33</b>	<b>NBIC Location: Part 1</b>	<b>No Attachment</b>
<b>General Description:</b> Flow or Temp Sensing Devices forced Circulation Boilers		
<b>Subgroup:</b> SG Installation		
<b>Task Group:</b> M. Downs (PM), D. Patten, M. Wadkinson		
<b>Explanation of Need:</b> Incorporation of applicable CSD-1 requirements.		
<b>January 2022 Meeting Action:</b> Progress report.		

<b>Item Number: 20-34</b>	<b>NBIC Location: Part 1</b>	<b>No Attachment</b>
<b>General Description:</b> Venting of gas train components		
<b>Subgroup:</b> SG Installation		
<b>Task Group:</b> P. Jennings (PM), M. Washington, R. Adams		
<b>Explanation of Need:</b> Incorporation of applicable CSD-1 requirements.		
<b>January 2022 Meeting Action:</b> Progress Report – This item will be sent to LB to SC.		

<b>Item Number: 20-39</b>	<b>NBIC Location: Part 1</b>	<b><a href="#">Attachment Page 66</a></b>
<b>General Description:</b> Modular Boilers		
<b>Subgroup:</b> SG Installation		
<b>Task Group:</b> T. Clark (PM), M. Downs, M. Wadkinson, D. Patten, R. Austin		
<b>Explanation of Need:</b> Incorporation of applicable CSD-1 requirements.		
<b>January 2022 Meeting Action:</b> Ms. Wadkinson presented this item to the MC. She went through the document to explain some of the changes. She brought up that there was a major erratum to ASME IV. A motion was made to send the proposal to LB to MC for vote.		

<b>Item Number: 20-41</b>	<b>NBIC Location: Part 1</b>	<b><a href="#">Attachment Page 68</a></b>
<b>General Description:</b> Safety and Safety Relief Valves for Steam and Hot Water Heating Boilers.		
<b>Subgroup:</b> SG Installation		
<b>Task Group:</b> E. Wiggins (PM), J. Brockman, G. Tompkins		
<b>Explanation of Need:</b> Incorporation of applicable CSD-1 requirements.		
<b>January 2022 Meeting Action:</b> Mr. Wiggins presented this item stating this proposal went out to LB to SC Installation and SC PRD and a motion was made to approve the proposal as presented. The motion was seconded and unanimously approved.		

<b>Item Number: 20-43</b>	<b>NBIC Location: Part 1</b>	<b><a href="#">Attachment Page 69</a></b>
<b>General Description:</b> Safety Relief valve for Hot Water Supply Boilers		
<b>Subgroup:</b> SG Installation		
<b>Task Group:</b> W. Anderson (PM), E. Wiggins, J. Brockman		
<b>Explanation of Need:</b> Incorporation of applicable CSD-1 requirements.		
<b>January 2022 Meeting Action:</b> Mr. Wiggins presented this item stating this proposal went out to LB to SC Installation and SC PRD and a motion was made to approve the proposal as presented. The MC confirmed that the paragraph's noted in this proposal were still relevant in the 2021 NBIC. The motion was seconded and unanimously approved.		

<b>Item Number: 20-44</b>	<b>NBIC Location: Part 1</b>	<b>No Attachment</b>
<b>General Description:</b> CW Vacuum Boilers		
<b>Subgroup:</b> SG Installation		
<b>Task Group:</b> R. Spiker (PM), M. Washington, M. Byrum		
<b>Explanation of Need:</b> Incorporation of applicable CSD-1 requirements.		
<b>January 2022 Meeting Action:</b> Progress report.		

<b>Item Number: 20-62</b>	<b>NBIC Location: Part 1, 1.4.5.1</b>	<b>No Attachment</b>
<b>General Description:</b> Update the National Board Boiler Installation Report		
<b>Subgroup:</b> SG Installation		
<b>Task Group:</b> T. Clark (PM), E. Wiggins, R. Spiker, T. Creacy, P. Jennings, G. Tompkins, and D. Patten.		
<b>January 2022 Meeting Action:</b> Progress report.		

<b>Item Number: 20-86</b>	<b>NBIC Location: Part 1, 2.10.1 a)</b>	<b>No Attachment</b>
<b>General Description:</b> Testing and Acceptance: Boiling-out Procedure		
<b>Subgroup:</b> SG Installation		
<b>Task Group:</b> E. Wiggins (PM), D. Patten, M. Washington and S. Konopacki.		
<b>January 2022 Meeting Action:</b> Progress Report – The item is being sent to LB to SG Part 1, then LB to Part 2 SG & Part 3 SG.		

iii. Action Items – New Business

<b>Item Number: 21-55</b>	<b>NBIC Location: Part 1, 3.7.5.1 b)</b>	<b>Attachment Page 70</b>
<b>General Description:</b>		
<b>Subgroup:</b> SG Installation		
<b>Task Group:</b> J. Kleiss (PM), T. Clark, R. Austin		
<b>Explanation of Need:</b> The inquirer manufactures a packaged pool heating system that uses a water-to-water heat exchanger to isolate the water boiler from the pool heating system loop. They do not provide stop valves between the boiler and the heat exchanger. Even though the boiler can be drained and serviced without draining or disturbing the primary system, they are told that NBIC Part 1, 3.7.5.1 mandates that isolation valves be installed on the boiler. This is a non-value-added expense to change the package design and rework existing installations. This has no impact on safety and is also consistent with the conditions and exemptions currently in 3.7.5.1 b and provides a needed clarification to the existing language.		
<b>January 2022 Meeting Action:</b> Mr. Kleiss presented this item to the MC. He stated this item was unanimously approved at SG and SC Inspection. This item, if approved will be in alignment with ASME IV (ASME action item 21-1905). A motion was made to accept the proposal as presented. The motion was seconded and unanimously approved.		

d. Subcommittee Inspection

Mr. Galanes asked Ms. Wadkinson to Chair this section of the agenda.

i. Interpretations

<b>Item Number: 21-65</b>	<b>NBIC Location: Part 2, 2.3.6.2 b) 4)</b>	<b>Attachment Page 73</b>
<b>General Description:</b> Air receiver tank manual drain valve		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> T. Barker (PM), W. Hackworth, B. Wilson		
<b>Explanation of Need:</b> The inquirer remembers this requirement some 12 years ago but could no longer find the specific code requirement. Their client wants to know where and what code provides this requirement.		
<b>January 2022 Meeting Action:</b> Mr. Getter presented this item to the MC. A motion was made to accept the document as presented. The motion was seconded. The reply on the proposal was revised, and the motion as revised to accept the revised proposal. The motion was seconded and unanimously approved.		

ii. Action Items – Old Business

<b>Item Number: NB16-1402</b>	<b>NBIC Location: Part 2, New Supplement</b>	<b>No Attachment</b>
<p><b>General Description:</b> Life extension for high pressure FRP vessels above 20 years</p> <p><b>Subgroup:</b> FRP  <b>Task Group:</b> M. Gorman (PM)</p> <p><b>Background:</b>            In 2016, when this item was first opened, it was assigned as an item for Part 3. Recent discussions with SC R&amp;A and the FRP Task Group have revealed that this item is better suited for Part 2. This item has been approved by the FRP Task Group.</p> <p><b>Scope:</b> The goal of this proposal is to provide a method to evaluate whether the service life of high-pressure fiber reinforced plastic pressure vessels can be extended for an additional lifetime.</p> <p><b>January 2022 Meeting Action:</b> Progress Report – gave the TG a timeline to have a proposal</p>		

<b>Item Number: 19-46</b>	<b>NBIC Location: Part 2, S5</b>	<b>Attachment Page 76</b>
<p><b>General Description:</b> Revisions to Yankee dryer supplement in Part 2</p> <p><b>Subgroup:</b> Inspection  <b>Task Group:</b> V. Newton (PM), T. Barker, D. Lesage, J. Jessick</p> <p><b>Explanation of Need:</b> Various parts of supplement 5 do not match their counterparts in Part 1, Supplement 1.</p> <p><b>January 2022 Meeting Action:</b> Mr. Getter presented this item stating he would like this proposal to be LB to MC.</p>		

<b>Item Number: 20-26</b>	<b>NBIC Location: Part 2, S2</b>	<b>No Attachment</b>
<p><b>General Description:</b> Concern for Historical Boiler Inspections Nationwide</p> <p><b>Subgroup:</b> Historical  <b>Task Group:</b> T. Dillon (PM), R. Underwood, L. Moedinger, M. Wahl, D. Rupert, K. Anderson, M. Sansone &amp; J. Wolf</p> <p><b>Explanation of Need:</b> Currently Jurisdictions are not uniform in adoption of how and when inspections are performed.</p> <p><b>January 2022 Meeting Action:</b> Progress report.</p>		

<b>Item Number: 20-46</b>	<b>NBIC Location: Part 2, 5.3.2</b>	<b>No Attachment</b>
<b>General Description:</b> Updates to Forms NB-5, NB-6, & NB-7		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> D. Buechel (PM), M. Sansone, V. Scarcella		
<b>Explanation of Need:</b> On the current forms NB-5, NB-6, & NB-7 there are fields that are already on the ASME Manufactures Data Report making them repetitive. Other fields that ask for in- depth technical information would be hard if not impossible for an inspector to determine and are irrelevant to the inspection process.		
<b>January 2022 Meeting Action:</b> Mr. Getter presented a progress report for this item.		

<b>Item Number: 20-57</b>	<b>NBIC Location: Part 2, 4.4.1 a)</b>	<b>No Attachment</b>
<b>General Description:</b> Evaluate revision to Part 2, 4.4 FFS scope roles and responsibilities (submitted by Mr. George Galanes).		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> M. Horbaczewski (PM) and B. Ray.		
<b>Explanation of Need:</b> Currently, there is confusion surrounding implementation of FFS for Part 2 inspection activities, where the FFS form is located and Part 3 activities regarding Part 3, 3.3.4.8 because it references Part 2 for FFS. In addition, we need to have a Part 2 Inspection member to be assigned to assist in the development of roles and responsibilities.		
<b>January 2022 Meeting Action:</b> Mr. Getter presented a progress report for this item.		

<b>Item Number: 20-70</b>	<b>NBIC Location: Part 2, S1.4.2.29</b>	<b><a href="#">Attachment Page 89</a></b>
<b>General Description:</b> Inspection of Furnace Slides (submitted by Mr. Mark Ray)		
<b>Subgroup:</b> Locomotive		
<b>Task Group:</b> M. Ray (PM)		
<b>Explanation of Need:</b> Furnace slide supports which are locked in-place by corrosion will adversely impact the thermal expansion of the boiler and lead to staybolt breakage.		
<b>January 2022 Meeting Action:</b> Mr. Getter presented this item to the MC. He has stated he'd like this item to go to LB to MC for vote.		

<b>Item Number: 21-03</b>	<b>NBIC Location: Part 2, S2</b>	<b>No Attachment</b>
<b>General Description:</b> Inspection of through stays and diagonal stays (submitted by David Rose)		
<b>Subgroup:</b> Historical		
<b>Task Group:</b> D. Rose (PM), R. Bryce, R. Forbes, & C. Jowett		
<b>Explanation of Need:</b> The code is silent on the inspection of through stays and diagonal stays. Additionally, new repair methods are available from ASME that can be incorporated.		
<b>January 2022 Meeting Action:</b> Progress Report – LB to Historical TG		

<b>Item Number: 21-25</b>	<b>NBIC Location: Part 2</b>	<b>No Attachment</b>
<b>General Description:</b> Autoclave/Quick opening device PP (submitted by Kevin Hawes)		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> V. Scarcella (PM), T. Bolden, M. Horbaczewski, J. Peterson, J. Clark, W. Hackworth, M.A. Shah		
<b>Explanation of Need:</b> Upon our AIA (Intact) QRR I produced a Power point presentation on Autoclave inspections. Your NB team leader Gary Scribner suggested I forward this inspection presentation to the NB for review of content as mention of good reference material for next NBIC edition. I have attached a copy of this PP for your considerations.		
<b>January 2022 Action:</b> Mr. Getter presented a progress report for this item.		

iii. New Items:

<b>Item Number: 21-34</b>	<b>NBIC Location: Part 2, S2</b>	<b>Attachment Page 90</b>
<b>General Description:</b> Working Pressure Calculations for Curved Stayed Surfaces		
<b>Subgroup:</b> Historical		
<b>Task Group:</b> Mike Wahl (PM), R. Bryce, and T. Dillon		
<b>Background:</b> In January 2021, Dr. Bryce initiated the conversation with the group for this topic. He is proposing the group open an item to address working pressure calculations for curved stayed surfaces. After discussion a task group was formed		
<b>January 2022 Meeting Action:</b> Progress report.		

<b>Item Number: 21-40</b>	<b>NBIC Location: Part 2</b>	<b>No Attachment</b>
<b>General Description:</b> Define "Remote" in the NBIC Glossary		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> V. Newton (PM), B. Ray, J. Morgan		
<b>Explanation of Need:</b> With the use of indirect inspection equipment from borescopes to tethered drones/vehicles for confined space inspections, there is a need to clarify what is considered a "remote" inspection vs an "indirect" inspection.		
<b>January 2022 Meeting Action:</b> Progress report.		

<b>Item Number: 21-41</b>	<b>NBIC Location: Part 2, 4.2 c)</b>	<b>No Attachment</b>
<b>General Description:</b> Requirements for NDE procedures and personnel		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> V. Scarcella (PM), W. Hackworth, D. Rose, J. Peterson		
<b>Explanation of Need:</b> Lacking qualification requirements has resulted in poor NDE.		
<b>January 2022 Meeting Action:</b> Progress report.		

<b>Item Number: 21-42</b>	<b>NBIC Location: Part 2, 5.3.3</b>	<b>No Attachment</b>
<b>General Description:</b> Review ASME 579 to make sure we are aligned for FFS requirements		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> None assigned		
<b>Explanation of Need:</b> FSS is a critical component of high-risk equipment and we need to make sure those that comply with ASME 579 are also in compliance with Part II.		
<b>January 2022 Meeting Action:</b> Mr. Getter made a motion to close this item with no action, and it will be incorporated into 20-57. The motion was seconded and unanimously approved.		

<b>Item Number: 21-46</b>	<b>NBIC Location: Part 2, 1.3 &amp; 9.1</b>	<b>No Attachment</b>
<b>General Description:</b> Defining Listed and Labeled		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> D. Graf (PM), J. Roberts		
<b>Explanation of Need:</b> Main Committee asked about having these defined in the NBIC.		
<b>January 2022 Meeting Action:</b> Progress Report – TG assigned – TG will come up with something to LB to SG between meetings		

<b>Item Number: 21-47</b>	<b>NBIC Location: Part 2, 2.2.4 &amp; 2.2.5</b>	<b>No Attachment</b>
<b>General Description:</b> To provide better guidance as it relates to carbon monoxide		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> W. Hackworth (PM), V. Scarcella, D. Buechel, T. Barker, T. Bolden		
<b>Explanation of Need:</b> Need to provide more comprehensive items to be reviewed to guide the inspector on carbon monoxide and combustion air.		
<b>January 2022 Meeting Action:</b> Progress report.		

<b>Item Number: 21-48</b>	<b>NBIC Location: Part 2, S2.6.3.4</b>	<b><a href="#">Attachment Page 91</a></b>
<b>General Description:</b> Correction of references in S2.6.3.4 a) 1) and 2).		
<b>Subgroup:</b> Historical		
<b>Task Group:</b> None assigned		
<b>Background:</b> the sentences in S2.6.2 (b&c) were re-lettered sometime between 2013 and 2019 and the references back to them in S2.6.3.4 were not changed at the same time. This also applies to S2.6.3.4 a) 1 & 2. This correction may be needed in other sentences, but I have not identified the need yet.		
<b>January 2022 Meeting Action:</b> Mr. Getter presented this item to the MC. A motion as made to accept the proposal as presented. They have asked NB to look into any other references that need to be updated. The motion as seconded and unanimously approved.		

<b>Item Number: 21-50</b>	<b>NBIC Location: Part 2, 2.3.6.4 &amp; S7</b>	<b>No Attachment</b>
<b>General Description:</b> Ensure IIAR PV Integrity codes are aligned with NBIC II		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> D. Graf (PM), J. Mangas, M. Horaczewski, J. Clark, J. Roberts, T. Vandini		
<b>Explanation of Need:</b> NH3 growing exposure.		
<b>January 2022 Meeting Action:</b> Progress report.		

<b>Item Number: 21-56</b>	<b>NBIC Location: Part 2, 2.3.6.4 f) 5) c.</b>	<b>No Attachment</b>
<b>General Description:</b> Clarify what action is necessary after determining the acceptance criteria.		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> None assigned		
<b>Explanation of Need:</b> There is no guidance in the Liquid Ammonia 2.3.6.4 f) 5) paragraphs for the acceptance criteria for corroded areas of considerable size as there are for dents and bulges, for example.		
<b>January 2022 Meeting Action:</b> Mr. getter stated this item was closed with no action, and it will be combined with item 21-50. A motion was made to close the item. The motion was seconded and unanimously approved.		

<b>Item Number: 21-66</b>	<b>NBIC Location: Part 2, S2.7.3.2</b>	<b>No Attachment</b>
<b>General Description:</b> Correct Water Treatment		
<b>Subgroup:</b> Historical		
<b>Task Group:</b> None assigned		
<b>Background:</b> As a jurisdiction we would like to define a process for treating the water that is used in historical boilers. Historical boiler owners in the province of Manitoba are stating that corrosion inhibitors do not have a noticeable capacity for slowing the effects of corrosive compounds in non-treated water. The request for this item is triggered from a discussion with historical boiler owners in the province of Manitoba. The owners are requesting a clarification for what the expectations are for treating the water used in the historical boilers.		
<b>January 2022 Meeting Action:</b> Mr. Getter stated this item was also closed with no action because is a Jurisdictional issue and outside the scope of the NBIC. Dr. Bryce will be contacting the submitter to let him know the Committee's decision and the reasoning. A motion was made to close the item with no action. The motion was seconded and unanimously approved.		



**General Description:** Add “Interference Fit” to the Glossary.

**Subgroup:** Inspection

**Task Group:** J. Jessick

**Submitted by:** T. Barker

**Explanation of Need:** Add verbiage for use of Valves that do not have adjustable packing. Not for steam use.

**January 2022 Meeting Action:** Mr. Getter presented this item to the MC. A motion was made to accept the proposal as submitted. The motion was seconded. Mr. Jessick gave some information with regards to this item stating this item was created based on the yankee dryer section of the NBIC. After discussion the motion was unanimously approved.

#### 10. Presentation by Teresa Melfi on Additive Manufacturing

Following the presentation Ms. Melfi answered a few questions from Committee Members and Visitors.

#### 11. Liaison Activities

- i. **American Society of Mechanical Engineers BPV Code (ASME BPV)**  
Mr. Scribner stated he will provide a copy of the last code week report for the minutes.
- ii. **American Welding Society (AWS)**  
Mr. Sekely presented a report on recent AWS activities ([Attachment Page 93](#)).

#### 12. Future Meetings

- Mr. Scribner reported on the future meetings stating Indianapolis is currently where they are looking for July 2022. A second option for July 2022 is Louisville. He has stated the January 2023 meeting will be in Charleston, SC., and January 2024 meeting will be in Charlotte, NC.

#### 13. Adjournment

The meeting was adjourned at 1:57 pm (PST)

Respectfully submitted,

*Jonathan Ellis*

Jonathan Ellis  
NBIC Secretary



*THE NATIONAL BOARD  
OF BOILER AND PRESSURE VESSEL INSPECTORS*

**NATIONAL BOARD  
INSPECTION CODE  
COMMITTEE**

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**ATTACHMENTS**

# Main Committee

## Members

Last Name	First Name	Interest Category	Role	In Person	Remote	Not in Attendance
Galanes	George	Users	Chair	x		
Wadkinson	Melissa	Manufacturers	Vice Chair	x		
Metzmaier	Jodi	NBBI	Secretary	x		
Austin	Randall	Users	Member	x		
Brodeur	Marianne	National Board Certificate Holders	Member			x
Getter	Jim	Manufacturers	Member	x		
Hopkins	Craig	National Board Certificate Holders	Member		x	
LeSage	Donnie	Jurisdictional Authorities	Member	x		
Morelock	Brian	Users	Member		x	
Newton	Venus	Authorized Inspection Agencies	Member		x	
Patel	Thakor	Manufacturers	Member		x	
Richards	H. Michael	General Interest	Member		x	
Sansone	Matthew	Jurisdictional Authorities	Member			x
Seime	Trevor	Jurisdictional Authorities	Member	x		
Sekely	James	General Interest	Member		x	
Simmons	Timothy	Labor	Member	x		
Toth	Marty	General Interest	Member	x		
Washington	Milton	Jurisdictional Authorities	Member		x	
Wielgoszinski	Robert	Authorized Inspection Agencies	Member	x		
Wiggins	Edward	Jurisdictional Authorities	Member	x		

## Visitors

Last Name	First Name	Interest Category	Role	In Person	Remote
Don Kinney				x	
Tom Vandini				x	
Teresa Melfi				x	
Jay Simms				x	
Rob Trout				x	
Don Patton				x	
Darrel Graf				x	
Lee Burton				x	
Dave Sullivan				x	
Rick Valdez				x	
Paul Davis				x	
Brian Boseo				x	
Tim Barker				x	
Dave McHough				x	
Mark Horbeczewski				x	
Bob Underwood				x	
Jon Ferera				x	
Sean Skiles				x	
Jeff Learch				x	
Jerry Jessik				x	
Chuck Becker				x	
Luis Dutra				x	
Pierre Bantolo				x	
Shelley Fisher				x	
Herbert Johnson				x	
Dennis Sendea				x	
Jeff Klease				x	
Tom Clark				x	
Greg Goosens				x	
Joe Bulregard				x	
Eben Creaser				x	
Brent Ray				x	
Michelle Vance				x	
Tom Beirne				x	
Mark Clemmens				x	



## 2022 Main Committee Attendance - Visitors

Name	Affiliation
CHUCK BECKER	QUALITY STEEL CORP.
Don Kinney	Chief - State of North Carolina
Tom Vardini	Quality Steel Corp.
Teresa Melfi	Lincoln Electric
JAY SIMMS	Baker Hughes - CONSOLIDATED
ED VERDEROSE	MIURA AMERICA CO., LTD
BRIAN BOSEO	Burns & McDonnell
PAUL M. DAVIS	WOOD GROUP USA, INC
Rick Valdez	ARB/PSC INC.
David Sullivan	State of Arkansas
Philip Gilston	GE Steam Power, Inc.
LEE BURTON	AIR PRODUCTS
DARRELL GRAY	AIR PRODUCTS
DONALD PATTEEN	BAY CITY BOILER CO., INC.
JERRY JESSICK	Fusion Integrated Solutions - yankee dryer consultant
Jeff Lerch	Cianbro Corporation
Sean Skiles	Fulton Equipment PACIFIC, LLC
Jon Ferreira	Hartford Steam Boiler
Bob Underwood	Hartford Steam Boiler
MARK HORBACZEWSKI	DIAMOND TECHNICAL SERVICES <small>MHORBACZEWSKI@DIAMONDTTECHNICALSERVICES.COM</small>
David McHugh	Allied Valve
TIMOTHY BARKER	Fm GLOBAL
Thomas Belme	NBBI
Michelle Vance	NBBI
Eben Creaser	Member - Prov. of New Brunswick.
Joseph Beausregard	Los Alamos National Lab



Name

Affiliation

BRENT DAVID RAY

MARATHON PETROLEUM CORPORATION (User)

Louis Dutra

Bay city Boiler L Dutra@BaycityBoiler.com

Pierre Bantolo

NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)

Shelley FISHER

NAVAL FACILITIES ENGINEERING Command (NAVFAC)

DENNIS SENDEK

NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)

Jeff Kless

Lochinvar, LLC.

Tom Clark

State of Oregon, BLD

Grey GOSSENS

NATIONAL BOARD STAFF

Leis Ponce

NBBI

HERBERT JOHNSON

NAVFAC. EXWC





















































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35 total

Jesus Silva

NAUFA EXWC

37 total in-person

-  Jodi Met... (Co-host, me participant ID: 520612) 
-  Jonathan Ellis (Host)  
-  NBIC2  
-  M - Thakor Patel  
-  M-Venus Newton  
-  Adam Renaldo  
-  Bob McGuire (V)  
-  Caslav Dinic  
-  Jeanne Bock - NB Staff  
-  Jim Byrum Arise  
-  Jim Sekely - M  
-  M - Brian Morelock, PE  
-  M - Craig Hopkins  
-  M - Todd Creacy, Zurich Services  
-  Matt Schaser, P.E. (E2G)  
-  Mike Richards 
-  Milton Washington  
-  Raymond Ceccarelli  



<b>MW</b>	Milton Washington		
<b>RC</b>	Raymond Ceccarelli		
<b>RS</b>	Ron Spiker SC		
<b>SF</b>	Steve Frazier (V)		
	Terrence Hellman		
<b>V-</b>	V - Michael Winters		
<b>V-</b>	V - Bobw		
<b>V-</b>	V - Jamie Walker		
<b>V-</b>	V - John Siefert, EPRI		
<b>V-</b>	V - Jonathan Blados - B&W		
<b>V-</b>	V - Julius Dacanay		
<b>V-</b>	V - Linn W Moedinger		
	V - Patrick Murray - ASME Staff		
<b>V-</b>	V - Tim McBee, ARISE		
	V- Matt Vazquez - ASME Staff		
<b>VM</b>	V- Mike Carlson		
<b>VP</b>	V- Paul Shanks, Bureau Veritas Inspection ...		
<b>VB</b>	V-Joe Brockman Fm Global		



Jodi Met... (Co-host, me, participant ID: 520612)



Jonathan Ellis (Host)



NBIC2

Mute

More >



M-Venus Newton



Bob McGuire (V)



Jamie Walker



Jeanne Bock - NB Staff



Jim Byrum Arise



Jim Sekely - M



M - Brian Morelock, PE



M - Craig Hopkins



Matt Schaser, P.E. (E2G)



Mike Richards



Milton Washington



mlstutler



Patrick Murray



































Raymond Ceccarelli



Ron Spiker SC





M	mlstutler	 
	Patrick Murray	 
RC	Raymond Ceccarelli	 
RS	Ron Spiker SC	<a href="#">Ask to Unmute</a> <a href="#">More &gt;</a>
SF	Steve Frazier (V)	 
	Terrence Hellman	 
TP	Thakor Patel	 
V-	V - Bobw	 
V-	V - Clark Turner - Calder	 
V-	V - Jonathan Blados - B&W	
V-	V - Julius Dacanay	
V-	V - Tim McBee, ARISE	 
VM	V- Mike Carlson	 
VP	V- Paul Shanks, Bureau Veritas Inspection ...	 
VB	V-Joe Brockman Fm Global	 
V	V-M.A.Shah	 
TM	Teresa Melfi	
V-	V - John Siefert, EPRI	

Title	Item Number	Cycle	Assigned Committee
Review testing requirements for inservice testing of pressure relief devices	NB15-0321	A	Subcommittee Pressure Relief Devices
Create Guidelines for Installation of Pressure Relief Devices for Organic Fluid Vaporizers	NB15-0308	A	Subcommittee Pressure Relief Devices
Prepare a guide for repair of tank vents	NB12-0901	A	Subcommittee Pressure Relief Devices
UT Thickness Check for a New Boiler	21-20	A	Subcommittee Inspection
Update of SWPS Table 2.3	21-11	A	Subcommittee Repairs/Alterations
Make it mandatory to install a temperature sensor in the stack of a thermal fluid heater	20-94	A	Subcommittee Installation
Reporting of Form NB-136	20-82	A	Subcommittee Inspection
Liquid Pressure Testing of Alterations	20-80	A	Subcommittee Repairs/Alterations
Charpy Impact Test Temperature for Welding Method 2	20-75	A	Subcommittee Repairs/Alterations
Correct Paragraph numbers in Section 3 Related to T/O Requirements	20-58	A	Subcommittee Pressure Relief Devices
Examples of repairs	20-55	A	Subcommittee Repairs/Alterations
Add practicable to the glossary and it's definition	20-51	A	Subcommittee Repairs/Alterations
Review and clarify requirements for documented training program for VR and T/O programs.	19-2	A	Subcommittee Pressure Relief Devices
Reword to provide clarity; contradictory requirement Part 3; 3.2.2 e)	19-16	A	Subcommittee Repairs/Alterations
Contacting jurisdiction regarding de-rates.	21-30	B	Subcommittee Repairs/Alterations
Add verbiage for use of Valves that do not have adjustable packing	21-01	B	Subcommittee Installation
Remove S6.15.1 - It is redundant and is not needed	20-88	B	Subcommittee Repairs/Alterations
Welds Across Riveted Lap Seams	20-69	B	Subcommittee Repairs/Alterations
Revision of the definition of ANIA in Section 9 of all Parts	20-47	B	Subcommittee Repairs/Alterations
Additional requirements for thermal fluid heaters	19-88	B	Subcommittee Inspection
Riveted Stay bolt dimensions	18-6	B	Subcommittee Inspection
Permanent nameplate removal from pressure vessel being removed from service	18-43	B	Subcommittee Inspection
Revision adding heat exchanger tubes with an outside diameter of ¾" or smaller to NBIC Part	18-100	B	Subcommittee Repairs/Alterations
Item 22-01. Add definitions for Interference Fit.	22-01	C	Subcommittee Inspection
Incorrect paragraph reference in Part 4 4.4.7 b)1)	21-83	C	Subcommittee Pressure Relief Devices
Repairs/Alterations of Impact Tested Vessels	21-77	C	Subcommittee Repairs/Alterations
Update ASME paragraph reference in Part 4, 3.2.4.3 and Part 2, 2.5.5.3	21-76	C	Subcommittee Pressure Relief Devices
Remove reasons for changes in 4.7.2 b)6) and 7)	21-72	C	Subcommittee Pressure Relief Devices
Isolation valve requirement	21-55	C	Subcommittee Installation
Incorrect paragraph reference at end of Part 4 2.5.3 a) and Part 1 4.5.3 a)	21-52	C	Subcommittee Pressure Relief Devices
Correction of references in S2.6.3.4 a) 1) and 2).	21-48	C	Subcommittee Inspection
Use of code cases pertaining to repairs and alterations	21-33	C	Subcommittee Repairs/Alterations
Provision of Exemption for original COC NDE requirements	21-27	C	Subcommittee Repairs/Alterations
Encapsulation sect. to remove para. conflicts to other referenced codes	21-26	C	Subcommittee Repairs/Alterations
Corrections and revisions to "R" Forms.	21-15	C	Subcommittee Repairs/Alterations
ASME PCC-2 article references are incorrectly formatted	21-14	C	Subcommittee Repairs/Alterations
Add a time frame for R forms (for completion of and submittal of forms)	21-10	C	Subcommittee Repairs/Alterations
NBIC Report Form certification clarification and NDE witnessing requirements.	21-07	C	Subcommittee Repairs/Alterations
Add nomenclature to formula in Part 2, S10.10.4 c)	20-79	C	Subcommittee Inspection
Safety Valve Sizing (Correct Use of Capacity Charts)	20-71	C	Subcommittee Inspection
Revise Supplement 8	20-61	C	Subcommittee Repairs/Alterations
Temporary nameplate removal for external inspection.	20-59	C	Subcommittee Inspection
Review and clarify requirements training program for T/O holders	20-56	C	Subcommittee Pressure Relief Devices
Safety Relief vlv for Hot Water Supply Boilers	20-43	C	Subcommittee Installation

Safety and Safety Relief Valves for Steam and Hot Water Heating Boilers.	20-41	C	Subcommittee Installation
inspecting riveted joints for failure	19-84	C	Subcommittee Inspection
Use of Personnel from another VR Certificate Holder to perform VR Repairs	19-71	C	Subcommittee Pressure Relief Devices
Review 1.6 requirements for ANI's & ANII's to hold the R endorsement	19-68	C	Subcommittee Repairs/Alterations
Review inspection requirements for pressure vessels designed for high pressures	18-63	C	Subcommittee Inspection

<b>GTAW — Gas Tungsten Arc Welding</b>	
<u>Title</u>	<u>Designation: Year</u>
Standard Welding Procedure Specification for Gas Tungsten Arc Welding of Carbon Steel, (M-1/P-1, Group 1 or 2), 3/16 in. ( <del>5 mm</del> ) through 7/8 in. ( <del>22 mm</del> ) Thick, <u>ER70S-2 and ER70S-3</u> , in the As-Welded Condition, <del>With or Without Backing</del> <u>Primarily Plate and Structural Applications.</u>	<del>B2.1-1-002: 2020</del> <u>B2.1-002-90, B2.1-002-90(R2006) and B2.1-1-002-90R</u>
Standard Welding Procedure Specification for Gas Tungsten Arc Welding of Carbon Steel (M-1/P-1/S-1, Group 1 or 2), 1/8 in. ( <del>3.2 mm</del> ) through <u>1 ½ 3/4</u> in. ( <del>19 mm</del> ) Thick, ER70S-2,	<u>B2.1-1-207: 2019</u> <del>B2.1-1-207-96</del>
Standard Welding Procedure Specification for Gas Tungsten Arc Welding of Carbon Steel (M-1/P-1/S-1, Group 1 or 2), 1/8 in. ( <del>3.2 mm</del> ) through 1 ½ in. ( <del>38 mm</del> ) Thick, ER70S-2, As-Welded or PWHT Condition, Primarily Pipe Application.	<u>B2.1-1-207: 2019</u> <del>B2.1-1-207-96 (R2007)</del>
Standard Welding Procedure Specification for Gas Tungsten Arc Welding (Consumable Insert) of Carbon Steel (M-1/P-1/S-1, Group 1 or 2), 1/8 in. ( <del>3.2 mm</del> ) through <u>1 ½ 3/4</u> in. ( <del>19 mm</del> ) Thick, INMs1 and ER70S-2, As-Welded or PWHT Condition, Primarily Pipe Application.	B2.1-1-210-96
Standard Welding Procedure Specification for Gas Tungsten Arc Welding with Consumable Insert Root of Carbon Steel (M-1/P-1/S-1, Group 1 or 2), 1/8 in. ( <del>3.2 mm</del> ) through 1-1/2 in. ( <del>38 mm</del> ) Thick, INMs-1, ER70S-2, As-Welded or PWHT Condition, Primarily Pipe Applications.	<u>B2.1-1-210: 2012</u> <del>B2.1-1-210:2001 R2012</del>

**Combination of Carbon Steel (M-1/P-1 Material) To Austenitic Stainless Steel (M-8/P-8 Material)**

<b>SMAW — Shielded Metal Arc Welding</b>	
<u>Title</u>	<u>Designation: Year</u>
Standard Welding Procedure Specifications for Shielded Metal Arc Welding of Carbon Steel (M-1/P-1/S-1, Groups 1 or 2) to Austenitic Stainless Steel (M-8/P-8/S-8, Group 1), 1/8 in. ( <del>3.2 mm</del> ) through 1 ½ in. ( <del>38 mm</del> ) Thick, E309(L)-15, -16, or -17, As-Welded Condition, Primarily Pipe Applications.	<u>B2.1-8-216: 2012</u> <del>B2.1-1/8-228:2002R2013</del>



PROPOSED INTERPRETATION

<b>Item No.</b> 21-28
<b>Subject/Title</b> Subcontracted Weld-Overlay Repair
<b>Project Manager and Task Group</b> Walter Sperko, Subcommittee Repairs/Alterations
<b>Source (Name/Email)</b> Alexander Garbolevsky / alex_garbolevsky@hsb.com
<b>Statement of Need</b> (1) To clarify whether it is permitted for an "R" Certificate of Authorization Holder to subcontract weld-overlay repair to another company who does not possess an "R" Certificate. (2) To clarify whether a subcontractor's shop used on a regular basis may be considered as a field location to allow welding by and under the control of the "R" Certificate Holder at that shop.
<b>Background Information</b> Company "A" holds ASME "U" and "U2" and National Board "R" Certificates with field extensions. During fabrication and proposed after-installation repair of ASME Code vessels they construct, Company "A" intends to send these vessels to Company "B", located across the street, for automatic laser-overlay welding and return of the vessels to Company "A". Company "B" has ASME Section IX qualified welding procedures and welding operators and does not currently hold any ASME or National Board Certificates of Authorization. NBIC Part 3, Section 1.5.1 states: "Work may be subcontracted provided controls are clearly defined for maintaining full responsibility for code compliance by the National Board repair organization certifying the work." However, NBIC Part 3, Section 3.3.3 c) considers "weld overlay" as a "Repair" and no provisions are given in the NBIC to "subcontract" a "Repair" to an organization not in possession of an "R" Certificate of Authorization, unless otherwise permitted by a Jurisdiction.
<b>Proposed Question</b> Question 1. May R-Certificate Holder Company "A" receive a pressure-retaining item, forward it to Company "B" for automatic weld-overlay repair, who returns the item to Company "A" to complete the repair? Question 2. Must Company "B" apply an R-stamped nameplate for the pressure-retaining item weld-overlay repair described in question (1) and prepare a Form R-1? Question 3: Upon completion of the weld-overlay repair, must Company "A" additionally apply its R-stamped nameplate and prepare a Form R-1? Question 4: If Company "A" completes the weld-overlay repair without additional welding, must Company "A" prepare a Form R-1?
<b>Proposed Reply</b> Reply 1: Yes, provided Company "B" has an R-Certificate of Authorization covering the work in its scope of activities. Reply 2: Yes, however, if the repair is considered "routine" a nameplate is not required. Reply 3: Yes. Company "A" must attach and refer to Company "B"'s Form R-1 in the Remarks. Reply 4: No, unless required by the Jurisdiction or requested by the end user.
<b>Committee's Question 1</b> Is it permitted for an "R" Certificate of Authorization Holder to subcontract welding to another company who does not possess an "R" Certificate?
<b>Committee's Reply 1</b> No.
<b>Rationale</b>
<b>Committee's Question 2</b> May a subcontractor's shop used on a regular basis be considered as a field location to allow welding by and under the control of the "R" Certificate Holder at that shop?

**Committee's Reply 2**

No.

**Rationale****VOTE:**

<b>COMMITTEE</b>	<b>Approved</b>	<b>Disapproved</b>	<b>Abstained</b>	<b>Not Voting</b>	<b>Passed</b>	<b>Failed</b>	<b>Date</b>
TG INTP	UA				X		1/17/22

## 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.	I 21-32
Subject/Title	NDE requirements when repairing minor defects on Pressure Vessel with RT4 marking.
NBIC Location	NBIC Part 3, Section 4, Paragraph 4.2
Project Manager and TaskGroup	<b>Marty Toth-PM, Robert Underwood</b>
Source (Name/Email)	<b>Eben Creaser</b>
Statement of Need	This provision will help clarify to "R" Stamp Certificate holders and owners of pressure vessels that are in need of minor repairs to existing welds. Due to the ambiguous wording of this clause any welding on a head to shell joint may be interpreted to require volumetric inspection when the name plate is stamped RT4.
Background Information	An "R" Certificate holder that performs shop repair and refurbishment of ASME Section VIII Div 1 pressure vessels used for propane storage in the propane distribution industry during the refurb process removes all paint from the tank and performs a complete visual inspection. They refurbish approx 10,000 tanks annually and among other repairs that are necessary find tanks that have defects in the original welds connecting head to shell that require weld repair. The defects noted are relatively minor in nature and comprise typically of indications like pin holes, cold lap, and undercut. Repairs like these are localized with the defect being removed by grinding, the weld prep area being examined by PT to confirm complete defect removal and a weld repair performed. If the repair weld in cases like this is required by clause 4.2 to be subject to RT/UT inspection to satisfy RT4 requirements the inspection requirement while providing no technical benefit would make the repair non viable and the otherwise serviceable tank will be scrapped.
Proposed Question	May volumetric NDE (RT/UT) of a repair weld required by NBIC Part 3, Paragraph 4.2 be considered "not practicable" when making a repair to a Section VIII Div 1 pressure vessel, where the name plate of the vessel is stamped RT4, and the scope of the repair is limited to the removal of a defect in an existing head to shell attachment weld, and the subsequent repair by welding of the excavated area and; a) the cumulative length of all weld repair(s) made is less than 15% of the circumference of the vessel or 12" in length, which ever is less. b) the thickness of the weld joint is less than or equal to 1/2" c) the weld is not required to be post weld heat treated d) the vessel is exempt from impact testing
Proposed Reply	<b>Yes</b>
Committee's Question 1	Is a "R" Certificate holder required to perform volumetric NDE when making a welded repair to an ASME Section VIII Division 1 vessel when the nameplate is marked with RT4?
Committee's Reply 1	No, as long as the volumetric NDE performed during original construction did not affect the weld joint efficiency.
Rationale	
Committee's Question 2	
Committee's Reply 2	
Rationale	Some vessels stamped RT-4 may have been designed with an increased joint efficiency because of the radiography. Example: some DOT nurse tanks manufactured prior to 1989 are stamped RT-4. The long seam and girth seams were only spot X-rayed, and the joint efficiencies were 85%. If a repair firm performed a repair on one of these vessels without spot radiography, then the joint efficiency would only be 70% and it would become an alteration.

VOTE:							
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date
INT TG	UA			14	X		1/17/22
SC R&A							



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## **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 will 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:

- 1) A review of calculations, design drawings, welding qualifications, or descriptions of equipment or Parts to determine compliance with code requirements;
- 2) 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
- 3) A request seeking the rationale for code requirements.



### PROPOSED INTERPRETATION

<b>Item No.</b> 21-39
<b>Subject/Title</b> Routine repair scope
<b>Project Manager and Task Group</b> Paul Shanks with Phillip Gilston
<b>Source (Name/Email)</b> Paul Shanks / paul.shanks@onecis.com
<b>Statement of Need</b> Some R-certificate holders and AIAs are making huge (100 square feet) weld metal buildup type routine repairs on the basis that the components being built up are only 5" tubes and 3.3.2 e) 1) says welded repairs to 5" tubes are routine. As 3.3.2 e) includes "shall be limited to" shouldn't exceeding any one of the listed limitations preclude the routine repair approach.
<b>Background Information</b> Repairs that exceed the limit listed in 3.3.2 e) 3) are being conducted which potentially places the public in harms way.
<b>Proposed Question</b> Q1, In a boiler water wall which has been subject to wastage and requires weld metal buildup, does the fact that the tubes are 5" or smaller mean that the weld build up is always routine regardless of the area involved? Q2 or if the area of weld metal buildup exceeds 100in <sup>2</sup> does the size and nature of the component being repaired become irrelevant?
<b>Proposed Reply</b> A1, No A2, Yes
<b>Committee's Question 1</b> In a boiler water wall which has been subject to wastage and requires weld metal buildup, does the fact that the tubes are 5" or smaller mean that the weld build up may be considered a routine repair regardless of the area involved?
<b>Committee's Reply 1</b> Yes, subject to the acceptance of the Inspector and Jurisdiction where the pressure retaining item is installed.
<b>Rationale</b>
<b>Committee's Question 2</b> For a repair to be considered routine, must the repair meet all categories in 3.3.2 e)?
<b>Committee's Reply 2</b> No.
<b>Rationale</b>

VOTE:							
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

## 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**

<p><b>Item No.</b></p> <p>21-64</p>
<p><b>Subject/Title</b></p> <p>Repair or Alteration activity allowed prior to Certification</p>
<p><b>Project Manager and Task Group</b></p>
<p><b>Source (Name/Email)</b></p> <p>Terrence Hellman / thellman@nationalboard.org</p>
<p><b>Statement of Need</b></p> <p>Applicants for the "R" Certificate are unclear if the NBIC allows for any activities to be performed prior to certification, especially since ASME does allow it.</p>
<p><b>Background Information</b></p> <p>Below are references from the NB-415 and 2019 NBIC supporting A1 and A2. Per NB-415: 3.8 When all requirements have been met, a Certificate of Authorization will be issued evidencing permission to use the "R" Symbol Stamp. The Certificate of Authorization shall expire on the triennial anniversary date. Per NBIC: 1.4 ACCREDITATION a) Organizations performing repairs or alterations to pressure-retaining items shall be accredited as described in this section, as appropriate for the scope of work to be performed. 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, Accreditation of "R" Repair Organizations. 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 Certificate of Authorization. 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. 1.5.1 OUTLINE OF REQUIREMENTS FOR A QUALITY SYSTEM FOR QUALIFICATION FOR THE NATIONAL BOARD "R" CERTIFICATE OF AUTHORIZATION d) Statement of Authority and Responsibility A dated Statement of Authority and Responsibility, signed by a senior management official of the organization, shall be included in the manual. Further, the Statement shall include: 1) A statement that all repairs or alterations carried out by the organization shall meet the requirements of the NBIC and the Jurisdiction, as applicable; n) Acceptance and Inspection of Repair or Alteration 1) The manual shall specifically indicate that before the work is started, acceptance of the repair/alteration shall be obtained from an Inspector who will make the required inspections and confirm NBIC compliance by signing and dating the applicable NBIC Report Form upon completion of the work.</p>
<p><b>Proposed Question</b></p> <p>Q1 - Can a new applicant's demonstration item be a welded repair to a PRI in accordance with the original code of construction prior to the applicant holding the "R" Certificate of Authorization? Q2 - Can the demonstration item in Q1 be stamped with the "R" Stamp pending a successful review if the Repair/Alteration activity is authorized by and has the required in-process involvement of the company's Repair Inspector?</p>
<p><b>Proposed Reply</b></p> <p>A1 - No. No Repair/Alteration activities can be performed prior to holding an "R" Certificate of Authorization. A2 - No.</p>
<p><b>Committee's Question 1</b></p> <p>Can the demonstration or implementation of the Quality System of a new "R" Certificate of Authorization applicant be conducted on work in process prior to the applicant holding the "R" Certificate of Authorization?</p>
<p><b>Committee's Reply 1</b></p> <p>Yes, provided all the following apply:</p> <p>(a) The activities are done with the participation and acceptance of the Authorized Inspection Agency of record;</p> <p>(b) The activities shall have been performed in conformance with the Applicant's accepted Quality System; and</p> <p>(c) The pressure retaining item is marked with the "R" stamp and certified only after the Applicant receives the National Board "R" Certificate of Authorization.</p>

**Rationale**

NB-415 allows for "...current work, a demonstration mock-up, or a combination of both.", and NB-57 (*The National Board & ASME Guide for reviews (Guide)*) encourages "*The demonstration will be conducted on work in-process whenever possible...*"

**Committee's Question 2**

**Committee's Reply 2**

**Rationale**

**VOTE:**

COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

## 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**

<b>Item No.</b> 21-74
<b>Subject/Title</b> ASME Sect VIII, Div 1 Design Personnel Requirements and NBIC Repairs/Alts
<b>Project Manager and Task Group</b> Tim McBee (PM) Philip Gilston, Kathy Moore
<b>Source (Name/Email)</b> Luis Ponce / lponce@nationalboard.org
<b>Statement of Need</b> Many have asked what, if any, impact the new ASME VIII-1 Appendix 47 design personnel requirements will have on NBIC repairs and alterations.
<b>Background Information</b> Paragraphs 3.3.5 (Repairs to VIII-2 PRIs) and 3.4.5 (Alterations to VIII-2 PRIs) contain the statement that reads in part, "The repair/alteration plan shall be reviewed and certified by an engineer meeting the criteria of ASME Section VIII, Division 2 or 3, as applicable...". The argument can be made that this would also apply to ASME Section VIII Division 1 alterations too in light of new Appendix 47, but not to repairs because there are no design functions associated with repairs in the NBIC.
<b>Proposed Question</b> 1. Are the 2021 ASME Section VIII, Division 1 Mandatory Appendix 47 design personnel requirements applicable to NBIC alterations to ASME Section VIII, Division 1 PRIs ? 2. Are the 2021 ASME Section VIII, Division 1 Mandatory Appendix 47 design personnel requirements applicable to NBIC repairs to ASME Section VIII, Division 1 PRIs ?
<b>Proposed Reply</b> 1 Yes, same as the NBIC requirements for ASME Section VIII, Division 2 or 3 alterations. 2 No, there are no design functions associated with repairs.
<b>Committee's Question 1</b> 1. 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?
<b>Committee's Reply 1</b> 1. 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.
<b>Rationale</b>
<b>Committee's Question 2</b>
<b>Committee's Reply 2</b>
<b>Rationale</b>

VOTE:							
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

## 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.

## **Intent Interpretation**

**Subject: Repair and Alterations of Impact Tested Pressure Vessels**

**NBIC Part 3**

**Section 3, Paragraph 3.3.6**

**Submitted by: Bob Underwood, HSB**

**Q1:** When performing repair and alteration activities to pressure retaining items that have been impact tested, is it the intent that the test coupon material used to qualify the welding procedure be of the same heat treated condition of the material being repaired?

**A1:** No, qualification of the welding procedure shall be in compliance with the following minimum requirements:

- a) Welding procedures used for repairs shall be qualified with impact testing when required by the original code of construction. The requirements for impact testing shall be in accordance with the rules of the original code of construction except that vessel (production) impact testing is not required.
  
- b) The test coupon material does not need to be in the same heat-treated condition as the existing material prior to welding.

**Q2:** Is it the intent that the notch toughness of the material to be repaired be verified prior to performing a repair/alteration activity on a pressure retaining item that has been impact tested?

**A2:** No.

- e) For Transport Tanks, the Competent Authority, i.e. the U.S. Department of Transportation (DOT), shall be consulted for any requirements which it has established since they take precedence for repairs.
- 1) Transport tanks manufactured prior to the adoption of ASME Section XII by the Competent Authority (DOT) were constructed in accordance with ASME Section VIII, Division 1. Certain transport tanks manufactured to this code were required to be stamped in accordance with Section VIII, Division 1, if the design pressure of the transport tank was 241 kPa (35 psi) (depending on material being transported) and greater. If the design pressure was less than 241 kPa (35 psi) (depending on material being transported), the transport tank was manufactured in accordance with Section VIII, Division 1, but not required by the Competent Authority (DOT) to be stamped.
  - 2) ASME stamped transport tanks are subject to the requirements of NBIC Part 3, for continued in service repairs, alterations, or modifications, unless exempted by the Competent Authority (DOT).

### 1.3 INSPECTOR

- a) Inspection and certification shall be made by an Inspector holding a valid commission with the appropriate endorsement issued by the National Board and employed by an Authorized Inspection Agency (see NBIC Part 3, Section 9, Glossary of Terms for definition of Authorized Inspection Agency).
- b) An Inspector employed by an Owner-User Inspection Organization or a Federal Inspection Agency may authorize and accept work only on pressure-retaining items owned or used by the respective organization. Each accredited Owner-User Inspection Organization's quality program shall have specific approval of the Jurisdiction as required.

#### 1.3.1 AUTHORIZATION

- a) The Inspector's authorization to perform a repair or alteration shall be obtained by the repair organization prior to initiation of a repair or alteration to a pressure-retaining item. The Inspector shall determine that the repair or alteration methods are acceptable.
- b) Subject to acceptance of the Jurisdiction, the Inspector may give approval for routine repairs prior to the start of work, provided the Inspector ensures that the "R" Certificate Holder has adequately addressed routine repairs in the quality program.

#### ~~1.3.2 ACCEPTANCE INSPECTION~~ 1.3.2 INSPECTIONS AND CERTIFICATIONS

- a) ~~The Inspector making the acceptance inspection~~ Inspections and NBIC Report Form R Report certifications shall be performed by the same Inspector who authorized the repair or alteration activity. Where this is not possible or practicable, another Inspector may perform ~~these duties the acceptance inspection~~; however, in all cases, the ~~Inspector who performs the acceptance inspection shall be an employee of the same organization as the Inspector who authorized the repair or alteration.~~ duties associated within the same scope of work shall be performed by Inspectors employed by the same AIA.
- b) ~~Before signing the appropriate NBIC Report Form R Report, the Inspector shall verify all applicable Inspector duties have been performed as required in NB-263 RCI-1.; review the drawings, ensure the repair or alteration was performed in accordance with the accepted code of construction or standard, witness any pressure test or any acceptable alternative test method applied, ensure that the required nondestructive examinations have been performed satisfactorily, and that the other functions necessary to ensure compliance with the requirements of this code have been satisfactorily performed.~~
  - ~~1) Verify the repair or alteration activity was performed in accordance with the NBIC and original code of construction or standard.~~
  - ~~2) Verify any other functions necessary to ensure compliance with the requirements of the NBIC have been satisfactorily performed.~~
  - ~~3) Verify all applicable Inspector duties have been performed as required in NB-263 RCI 1.~~
  - ~~4) Verify the required stamping or nameplate is correct and where applicable, the nameplate has been properly attached.~~
- b) ~~The Inspector shall verify the stamping or nameplate is correct and where applicable, the nameplate has been properly attached.~~

## PART 3, SECTION 5 REPAIRS AND ALTERATIONS — CERTIFICATION/DOCUMENTATION AND STAMPING

### 5.1 SCOPE

This section provides requirements for certification, stamping, and documentation of repairs and alterations to pressure-retaining items. Applicable forms are provided in this section for reference. Forms may be obtained from the National Board website.

### 5.2 DOCUMENTATION

- a) Repairs that have been performed in accordance with the NBIC shall be documented on a Form R-1, *Report of Repair*, as shown in Supplement S9.2. A Form R-4, *Report Supplement Sheet*, as shown in Supplement S9.5, shall be used as needed to record additional data when the space provided on Form R-1 is not sufficient.
- b) Alterations performed in accordance with the NBIC shall be documented on a Form R-2, *Report of Alteration*, as shown in Supplement S9.3. A Form R-4, *Report Supplement Sheet*, as shown in Supplement S9.5, shall be used as needed to record additional data when the space provided on Form R-2 is not sufficient.
- c) The organization performing repairs and alterations shall retain a copy of the completed Form “R” Report on file and all records and documentation substantiating the summary of work as described throughout Section 5, and as identified in the “R” Certificate Holder’s Quality System Manual.
- d) **Unless otherwise required by the Jurisdiction, Form R Reports shall be completed and certified by the Certificate Holder and the Inspector no more than 90 days following the completion of construction activities or the completion of design activities when no construction work is performed.**

#### 5.2.1 PREPARATION OF FORM R-1 (REPORT OF REPAIR)

- a) Using the instructions found in Table S9.2 of Supplement 9, preparation of Form R-1 shall be the responsibility of the “R” Certificate Holder performing the repair.
- b) Information describing the scope of work used to repair a pressure-retaining item (PRI) shall be documented on a Form R-1 and extended to a Form R-4 as needed to fully describe the repair activities completed per the instructions at in Table S9.2 of Supplement 9.
- c) An Inspector shall indicate acceptance by signing Form R-1, and Form R-4, if attached.
- d) The Form R-3, *Report of Parts Fabricated by Welding*, Manufacturer’s Data Reports, and Certificates of Compliance described in this section shall be a part of the completed Form R-1 and shall be attached thereto.

#### 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 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.

(21)

## 5.4 DISTRIBUTION OF FORM R-2

- a) Distribution of completed Form R-2 shall be the responsibility of the “R” Certificate Holder who performed the construction portion of the alteration. When no construction work is performed (e.g., a re-rating with no physical changes), the “R” Certificate Holder responsible for the design shall distribute the form.
- b) Legible copies of the completed Form R-2, together with attachments, shall be distributed to the owner-user, the “R” Certificate Holder responsible for design, and the Jurisdiction, if required, and shall be provided to the Inspector and inservice Authorized Inspection Agency of the pressure retaining item upon request.

## 5.5 REGISTRATION OF FORMS — GENERAL

- a) When registration of the forms are required, the Certificate Holder performing a repair or alteration shall submit the completed form, meeting the requirements of the NBIC, to the National Board **no more than 30 days following certification**.
- b) When registration of the forms is not required, the Certificate Holder may register the completed form, meeting the requirements of the NBIC, with the National Board.
- c) The “R” or “NR” Certificate Holder should be aware that some Jurisdictions may require registration of repairs and alterations with the National Board.

### 5.5.1 REGISTRATION FOR REPAIRS

Form R-1 may be registered with the National Board as noted in NBIC Part 3, 5.5.

### 5.5.2 REGISTRATION FOR ALTERATIONS

- a) If the pressure-retaining item is originally registered with the National Board, an original Form R-2, together with attachments, shall be registered with the National Board.
- b) If the item was not registered with the National Board, one original Form R-2, together with attachments, may be registered with the National Board or retained as required by the Quality System Manual.

### 5.5.3 REGISTRATION FOR FIBER-REINFORCED VESSELS

Organizations performing repairs or alterations under an “R” stamp program shall register such repairs or alterations with the National Board.

### 5.5.4 REGISTRATION FOR NUCLEAR REPAIR/REPLACEMENT ACTIVITIES

Organizations performing repair/replacement activities under the “NR” or “NVR” stamp program shall register forms with the National Board.

### 5.5.5 REGISTRATION FOR GRAPHITE VESSELS

Organizations performing repair/replacement activities under the “R” stamp program shall register such repairs or alterations with the National Board.

- d) The pressure-retaining item has been pressure tested, as required, for the new service conditions. Any insulation, coatings, or coverings that may inhibit or compromise a meaningful pressure test shall be removed, to the extent identified by the Inspector. The pressure test may be waived if the original pressure test as recorded on the Manufacturer's Data Report is at least equal to the calculated test pressure required to verify the integrity of the pressure-retaining item for the new conditions. If the pressure test is waived it shall be documented on Form R-2 with this statement in the Remarks section: "Pressure test waived in accordance with NBIC Part 3, 3.4.1 d)";
- e) In lieu of pressure testing, alternative methods can be used to ensure the structural integrity of the re-rated pressure-retaining item. The alternative methods shall be documented and subject to review and approval by the Jurisdiction.

### 3.4.2 ALTERATIONS BASED ON ALLOWABLE STRESS VALUES

For re-rating or re-calculating a new minimum wall thickness for a pressure-retaining item using a later edition/addenda of the original code of construction or selected construction standard or code that permits use of higher allowable material stress values than were used in the original construction, the following requirements shall apply:

- a) The "R" Certificate Holder shall verify, by calculations and other means, that the re-rated item can be satisfactorily operated at the new service condition (e.g., stiffness, buckling, external mechanical loadings);
- b) The pressure-retaining item shall not be used in lethal service;
- c) The pressure-retaining item shall not be used in high-cycle operation or fatigue service (i.e., loadings other than primary membrane stress are controlling design considerations) unless the pressure-retaining item was originally designed for fatigue service and a fatigue analysis is performed;
- d) The pressure-retaining item shall have been constructed to the 1968 edition or later edition/addenda of the original code of construction;
- e) The pressure-retaining item shall be shown to comply with all relevant requirements of the edition/addenda of the code of construction, which permits the higher allowable stress values (e.g., reinforcement, toughness, examination, pressure testing);
- f) The pressure-retaining item shall have a satisfactory operating history and current inspection of the pressure-retaining item shall verify the item exhibits no unrepaired damage (e.g., cracks, corrosion, erosion). Areas of corrosion or erosion may be left in place provided the remaining wall thickness is greater than the minimum thickness for the new design conditions;
- g) The re-rating shall be acceptable to the Inspector and, where required, the Jurisdiction;
- h) All other requirements of Part 3, as applicable, and jurisdictional requirements shall be met; and
- i) Use of this paragraph shall be documented in the "Remarks" section of Form R-2.

### 3.4.3 ENCAPSULATION

Encapsulation is a method used to maintain the pressure retaining capability of pipe, nozzles, fittings and valves (with the exception of fire tube boilers) by fabricating a new pressure containing boundary over the item in the form of a "welded leak box" as described by ASME PCC-2, Article 2.4.

- a) Except as required in 3.4.3 c) 1), ASME PCC-2 should be used as a guideline for the design of the welded leak box and fabrication shall be in accordance with the original code of construction, when practicable. Design of the encapsulation shall consider original design conditions, taking into account

Replace 2.4 with 204



current service conditions and damage mechanisms. Use of this method shall be acceptable to the inspector and when required, the jurisdiction.

- b) The "R" Certificate Holder responsible for the design of the encapsulation shall ensure a Fitness for Service Assessment (FFSA) has been performed on the portion of the item being encapsulated in accordance with NBIC Part 2, 4.4.1, supporting the continued service of the item. The leak box shall not remain in place beyond the calculated remaining life of the encapsulated portion of the pressure retaining item.
  - 1) The remaining life of the encapsulated pressure retaining item shall be documented on the Report of FFSA in the Remarks section. The Report of FFSA Form shall be affixed to the Form R-2 and identified in the Remarks section.
  - 2) The leak box shall fully encapsulate the thinned or leaking area, as specified in the FFSA, to the distance where the minimum required metal thickness is verified. Wall thickness shall be verified in the area to be welded.
  - 3) A welded leak box shall not be used to encapsulate a crack unless it has been removed and repaired in accordance with Part 3, Paragraph 3.3.4.2 a).
- c) Hazards associated with welding on degraded components should be addressed with the Owner-User by the use of engineering controls, administrative controls and personal protective equipment.
  - 1) When the pressure retaining item will remain in service while implementing this method, the requirements and limitations described within ASME PCC-2, Part-1 shall be used in conjunction with ASME PCC-2, Part-2, Article ~~2.10~~.
  - 2) API RP-2201, "Safe Hot Tapping Practices in the Petroleum and Petrochemical Industries" may be used as a guideline for identifying hazards associated with welding to a component that is under pressure, including service restrictions.
- d) Visual examination shall be in accordance with the NBIC Part 3, 4.4.1 e).
- e) Completion of the Form R-2 shall follow the requirements for preparation, distribution, and registration as described in Part 3, Section 5.

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### 3.4.4 EXAMPLES OF ALTERATIONS

(21)

- a) An increase in the maximum allowable working pressure (internal or external) or temperature of a pressure-retaining item regardless of whether or not a physical change was made to the pressure-retaining item;
- b) A decrease in the minimum temperature;
- c) The addition of new nozzles or openings in a boiler or pressure vessel except those classified as repairs;
- d) A change in the dimensions or contour of a pressure-retaining item;
- e) An increase in the steaming capacity by means of increasing heating surface, total heat input, firing rate, adjustment, or other modification to the primary or auxiliary heat source, resulting in the steaming capacity exceeding the original Manufacturer's Minimum Required Relieving Capacity (MRRC) as described on the nameplate and or Manufacturer's Data Report (MDR);
- f) The addition of a pressurized jacket to a pressure vessel;

# ASME PCC-2-2018 SUMMARY OF CHANGES

Following approval by the ASME PCC Committee and ASME, and after public review, ASME PCC-2-2018 was approved by the American National Standards Institute on August 8, 2018.

ASME PCC-2-2018 includes the following changes identified by a margin note, (18). In addition, articles and all associated appendices have been redesignated with a new identifying article number. Paragraphs now carry that unique number as a prefix, with the figures and tables identified with the specific paragraph number to which they belong. For example, Figure 1 in former Article 2.1 is now designated as Figure 201-3.5-1.

<i>Page</i>	<i>Location</i>	<i>Change</i>
xv	Foreword	Updated and second paragraph added
xviii	Correspondence With the PCC Committee	Former "Preparation of Technical Inquiries" replaced with "Correspondence With the PCC Committee"
1	101-1	First sentence revised and third paragraph added
1	101-2	(1) Subparagraph (a) revised (2) Former Table 1 deleted
2	101-3.4	Revised in its entirety
2	101-3.7	Second and third sentences revised
4	201-3.8	Subparagraph (b) revised
5	Figure 201-3.8-1	Note (5) revised
6	Figure 201-3.8-2	Note (5) revised
15	202-7	Updated
16	203-1.1	First sentence revised
16	203-1.3	Fourth sentence revised
16	203-2.3	Second sentence revised
17	203-5	Revised in its entirety
18	203-7	Updated
23	Article 205	Added
29	Figure 206-1.1.1-1	Callouts "Carrier pipe" and "Groove weld optional" added
30	Figure 206-1.1.2-1	Callout "Carrier pipe" added
29	206-2.10	Title revised
29	206-3.2	Revised
30	206-3.5	Subparagraph (b) revised
32	Figure 206-3.5-1	Revised
32	Figure 206-3.5-2	Revised
33	206-4.6	First sentence revised
33	206-4.7	Title and paragraph revised
33	206-5.3	Revised
33	206-5.5	Revised
33	206-6	Revised

204 no changes

33	206-7	Updated
37	207-3.2	In nomenclature below eq. (1), unit of measure for <i>P</i> revised
40	207-7	Updated
44	208-7	Updated
49	209-7	Updated
58	210-7	Updated
67	211-7	Updated
70	212-3.2	In nomenclature below eq. (1), unit of measure for <i>P</i> revised
71	212-3.4	Equation (4) revised
72	212-7	Updated
75	213-7	Updated
81	214-7	Updated
85	Article 215	Former Article 2.15 published in ASME PCC-2S-2015, incorporated into PCC-2 and revised editorially
	215-7	Updated
96	Article 216	Added
109	301-7	Updated
118	303-7	Updated
129	304-7	Updated
135	305-7.1	Updated
139	306-7	Updated
141	307-5.1.2	Editorially revised
142	307-7	Updated
144	308-3.1	Editorially revised
149	308-7	Updated
157	311-7	Updated
165	312-7	Updated
170	Article 313	Added
175	Article 401	Revised in its entirety
192	Mandatory Appendix 401-I	In the Component Repair Data Sheet, under Risk Assessment, Repair type revised
195	401-II-1	Subparagraph (b) revised
195	401-II-2	Subparagraphs (h) and (i) revised
195	401-II-3	Revised
197	401-III-2	Subparagraph (a) revised
199	401-IV-3	In subpara. (c), equations numbered and subsequent equations in subparas. (d) and (e) renumbered
201	401-V-2.1	Subparagraphs (e) and (f) revised
201	401-V-2.2	Subparagraph (f) revised
202	401-V-2.3	Subparagraphs (e) and (f) revised
204	401-VII-1	Last sentence above Note revised
204	401-VII-2	Subparagraph (a)(1) revised
205	401-VII-4	Subparagraph (d) revised
206	401-VIII-5	Subparagraph (e)(5) revised
208	401-A-1	Definition of <i>batch</i> added
209	401-A-2	Revised

210 only an update

## Article 2.4

### Welded Leak Box Repair

#### 1 DESCRIPTION

(a) A welded leak box consists of an enclosure used to seal off or reinforce a component. An example of a leak box is illustrated in Fig. 1.

(b) Leak boxes are commonly used to seal repair-leaking components or reinforce damaged components.

(c) Leak repair boxes can have a variety of shapes (e.g., cylindrical, rectangular, with either flat or formed heads), often following the contour of the pipe or component being repaired. Leak repair boxes can also be used to enclose components such as flanges and valves or fittings, branches, nozzles, or vents and drains.

(d) Leak repair boxes are typically custom-made by welding split pipe, pipe caps, or plates.

(e) The annular space between the leak repair box and the repaired component can be left empty, or filled or lined with epoxy, sealant, fiber, refractory materials, or other compounds.

(f) A leak box can be nonstructural (designed to contain leaks) or structural (designed to reinforce and hold together a damaged component).

#### 2 LIMITATIONS

##### 2.1 General

Part 1 of this Standard, “Scope, Organization, and Intent,” contains additional requirements and limitations. This Article shall be used in conjunction with Part 1.

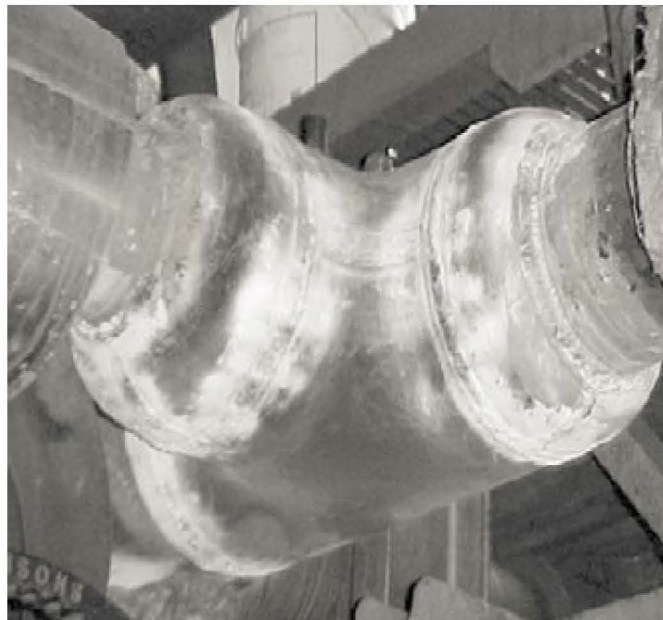
##### 2.2 Crack Repair

Normally, leak boxes are used to contain leaks at packings, and at flange and gasketed joints, or to contain leaks (or potential leaks) due to local thinning. Since the leak box may not prevent the propagation of a crack in the pipe or component, leak repair boxes shall not be used when cracks are present, unless

(a) the conditions that led to the crack formation and propagation have been eliminated so that the crack will not grow during the planned life of the repair

(b) a fitness-for-service assessment shows that the crack growth during the planned life is acceptable, and that the crack will not propagate across the leak repair box closure weld

**Fig. 1 Example of a Welded Leak Box Repair of a Tee**





## Article 204

### Welded Leak Box Repair

#### 204-1 DESCRIPTION

(a) A welded leak box consists of an enclosure used to seal off or reinforce a component. An example of a leak box is illustrated in Figure 204-1-1.

(b) Leak boxes are commonly used to seal repair-leaking components or reinforce damaged components.

(c) Leak repair boxes can have a variety of shapes (e.g., cylindrical, rectangular, with either flat or formed heads), often following the contour of the pipe or component being repaired. Leak repair boxes can also be used to enclose components such as flanges and valves or fittings, branches, nozzles, or vents and drains.

(d) Leak repair boxes are typically custom-made by welding split pipe, pipe caps, or plates.

(e) The annular space between the leak repair box and the repaired component can be left empty, or filled or lined with epoxy, sealant, fiber, refractory materials, or other compounds.

(f) A leak box can be nonstructural (designed to contain leaks) or structural (designed to reinforce and hold together a damaged component).

#### 204-2 LIMITATIONS

##### 204-2.1 General

Part 1 of this Standard, "Scope, Organization, and Intent," contains additional requirements and limitations. This Article shall be used in conjunction with Part 1.

##### 204-2.2 Crack Repair

Normally, leak boxes are used to contain leaks at packings, and at flange and gasketed joints, or to contain leaks (or potential leaks) due to local thinning. Since the leak box may not prevent the propagation of a crack in the pipe or component, leak repair boxes shall not be used when cracks are present, unless

(a) the conditions that led to the crack formation and propagation have been eliminated so that the crack will not grow during the planned life of the repair

(b) a fitness-for-service assessment shows that the crack growth during the planned life is acceptable, and that the crack will not propagate across the leak repair box closure weld

(c) the crack is circumferential and the repair is a structural leak box, where the leak box and its welds are designed for the case of full circumferential break of the pipe, or separation of the cracked component

(d) the leak box fully encapsulates a cracked vent or drain

#### 204-2.3 Qualifications

Installation, welding and sealant injection, where necessary, shall be performed by personnel qualified under conditions representative of the field application.

#### 204-2.4 Safety

Personnel shall be aware of hazards in welding on degraded components, and shall take the necessary precautions to avoid unacceptable risks.

(a) A hazard review should be undertaken prior to starting the work to address all credible problems that could arise.

(b) If the component is leaking or has the potential to leak during installation, and if the contents are hazardous, additional precautions should be taken and they should be addressed during the prejob hazard review meeting (e.g., need for fresh air suit, etc.).

#### 204-3 DESIGN

##### 204-3.1 Materials

Materials for the leak box shall be listed in the construction or post-construction code, and be compatible with the fluid, pressure, and temperature, with due consideration for the stagnant condition created by a leak of fluid into the box. Generally, the material of construction of the leak box should be similar to the repaired component and weldable to the existing pressure boundary. The leak box design and construction, including material selection, shall be done considering the deterioration mode that led to the need for the repair. The leak box shall be suitable for resisting this deterioration mode for the life of the repair.

##### 204-3.2 Design Life

The design life of the repair shall be based on the remaining strength of the repaired component, the corrosion resistance, and mechanical properties of the leak box and welds.

## Article 2.10, Mandatory Appendix I

### In-Service Welding Procedure/Welder Performance Qualification Setup

The intent of producing a simulated in-service welding procedure qualification is to make welds that will be more likely to produce hydrogen cracking during the qualification than in the field. This can be done by making welds on higher carbon equivalent carbon steel, by using a higher cooling potential, or by incorporating both variables to have a more conservatively qualified procedure.

The simulated in-service setup used for the in-service procedure qualification can be any applicable joint configuration, but it is imperative that the in-service procedure qualification weld coupon be more susceptible to hydrogen cracking. It is good practice to simulate the actual field weld that will be made using the in-service welding procedure. It is common for the in-service production qualification weld to be made using a higher carbon equivalent carbon steel pipe with water backing because water has been shown to cool welds faster than any other cooling medium. It is important to note that using water as the cooling medium may make the welding procedure overly conservative to the point of making it impossible to successfully qualify the weld coupon.

The in-service procedure qualification coupon should have sufficient length to remove all of the required test specimens. More than one assembly may be used if all the required specimens cannot be removed from a single assembly. The cooling medium should be circulated through the test assembly prior to welding. The simulated in-service setup should be prepared as follows:

(a) The simulated in-service setup for an in-service fillet weld should be prepared in a manner similar to Fig. I-1 or an alternative position that would simulate the in-service welding application. The sleeve should have a close fit to the carrier pipe unless a special design sleeve fitting is to be qualified. The sleeve longitudinal groove welds should be welded prior to the in-service fillet welds to improve fit-up [see Note to Fig. I-1].

(b) The simulated in-service setup for an in-service attachment weld should be prepared in a manner similar to Fig. I-2 or an alternative position that would simulate the in-service welding application. The tack welds should be ground to assure complete fusion along the entire length of the weld. No test samples shall be taken from the tack locations.

(c) The simulated in-service setup for an in-service weld metal buildup weld should be prepared in a manner similar to Fig. I-1 but without using the sleeve. The weld will be deposited directly onto the pipe wall. It is common to mechanically remove a specified amount of wall to simulate corrosion loss. The probability of burn-through shall be evaluated before weld metal buildup is performed using the qualified procedure in the field.

After completion of the procedure qualification weld, the cooling medium shall continue until the entire assembly has achieved a uniform equilibrium temperature.



## Article 210

# In-Service Welding Onto Carbon Steel Pressure Components or Pipelines

### 210-1 DESCRIPTION

This Article addresses the requirements and precautions associated with welding onto pressure components or pipelines while the system is still in operation. In-service pressure components or pipelines include pressure equipment and piping and are defined as systems in which the contents may or may not be pressurized and/or flowing but affect the way the weld cools. This Article is intended to be used in conjunction with Part 2 of this Standard or another applicable construction code or post-construction code.

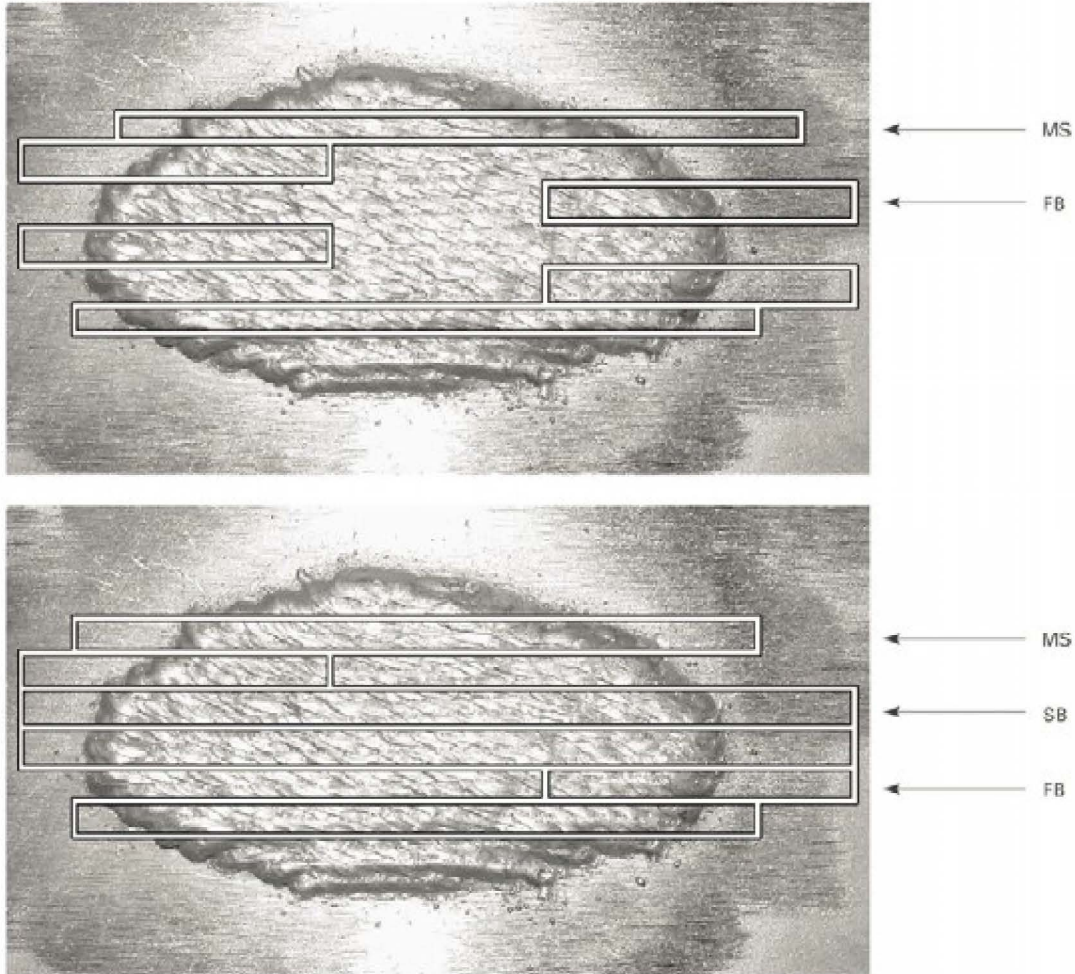
There are two primary concerns when performing in-service welding. The first concern is "burn-through," also referred to as "blowout." A burn-through occurs when the unmelted base material under the weld pool loses the ability to contain the contents of the pressure components or pipeline allowing the contents to be expelled. Welding onto pressure components or pipelines with thin walls [e.g., 4.8 mm (0.188 in.) or less] is possible as long as precautions are taken. Such precautions include controlling the heat input or penetration of the welding process and using smaller diameter electrodes [e.g., 2.4 mm (0.094 in.)] when the wall thickness is less than 6.4 mm (0.250 in.). Safety aspects and contingency planning aspects for an occurrence of burn-through should be planned for in accordance with company practices, industry standards (e.g., API Recommended Practice 2201), or post-construction code.

The second concern is hydrogen cracking. Hydrogen cracking occurs when tensile stresses are acting on the weld, hydrogen is present in the weld and, when the weld solidifies, the resultant weld microstructure is crack susceptible. If any of the three conditions is eliminated or reduced below a threshold level, then hydrogen cracking will not occur. Tensile stresses can always be assumed due to the shrinkage of the weld upon cooling. Hydrogen, typically, cannot be eliminated but can be reduced by using proper low hydrogen welding processes such as shielded metal arc welding with EXX18 or EXX15 type electrodes. Crack-susceptible microstructures typically have high microstructure hardness and are controlled by the carbon equivalence of the material and the rate at which the weld cools.

The likelihood of developing microstructures susceptible to hydrogen cracking can be high because in-service welds tend to have accelerated cooling rates due to the ability of the pressure components or pipeline contents to pull heat from the weld region. The chance of developing a crack-susceptible microstructure can be reduced by using welding procedures that overcome the cooling effect of the pressure components or pipeline contents or by altering the pressure components or pipeline operating conditions during in-service welding. Such welding procedures include using sufficiently high heat input levels or by using specific weld deposition sequences. The most common in-service welding practices used to reduce hydrogen cracking concerns incorporate both a low-hydrogen welding process and a welding procedure that reduces the susceptibility of forming a crack-susceptible microstructure. The use of preheat is another technique that is commonly used to reduce the susceptibility of forming a crack-susceptible microstructure but it may be difficult to apply to in-service welding applications because of the ability of the pressure components or pipeline contents to cool the pipe wall especially for thin-walled applications. The cooling effect of the pressure components or pipeline contents can interfere with achieving the proper preheating temperature.

Successful application of in-service welding procedures requires a balance between the probability of burn-through and reducing the probability of hydrogen cracking. For example, when welding onto a pipeline less than 6.4 mm (0.250 in.) thick it may be necessary to reduce the welding heat input to lower the probability of burn-through; however, the lower welding heat input could result in a weld microstructure that is susceptible to hydrogen cracking. When the maximum required welding heat input to eliminate the probability of burn-through is lower than the minimum required heat input to protect against hydrogen cracking then alternative precautions need to be taken (e.g., welding procedure that included a temper bead deposition sequence).

Figure 210-4.2.2-3 Test Sample Locations for In-Service Weld Metal Buildup Welding Procedure Qualification



GENERAL NOTES:

- (a) SB = side bend test sample; FB = face bend test sample; MS = metallographic test sample.
- (b) The figure is not to scale.

(18) **210-7 REFERENCES**

The following is a list of publications referenced in this Article. Unless otherwise specified, the latest edition shall apply.

AGA Pipeline Repair Manual, December 31, 1994  
 Publisher: American Gas Association (AGA), 400 North Capitol Street NW, Suite 450, Washington, DC 20001 ([www.aga.org](http://www.aga.org))

API Recommended Practice 2201, Safe Hot Tapping Practices in the Petroleum & Petrochemical Industries  
 API Recommended Practice 579-1

API 579-1/ASME FFS-1, Fitness-For-Service  
 API Standard 1104, Welding of Pipelines and Related Facilities  
 Publisher: American Petroleum Institute (API), 1220 L Street, NW, Washington, DC 20005 ([www.api.org](http://www.api.org))

ANSI/AWS A3.0, Standard Definitions; Including Terms for Adhesive Bonding, Brazing, Soldering, Thermal Cutting, and Thermal Spraying

ANSI/AWS B4.0, Standard Methods for Mechanical Testing Welds

ANSI/NB-23-2007, National Board Inspection Code



Publisher: American National Standards Institute (ANSI),  
25 West 43rd Street, New York, NY 10036  
([www.ansi.org](http://www.ansi.org))

ASME B31.1, Pressure Piping

ASME B31.3, Process Piping

ASME B31.4, Pipeline Transportation Systems for Liquid  
Hydrocarbons and Other Liquids

ASME B31.8, Gas Transmission and Distribution Piping  
Systems

ASME Boiler and Pressure Vessel Code, 2007 Edition,  
Section IX, Welding and Brazing Qualifications;  
Article II — Welding Procedure Qualifications;  
Article III — Welding Performance Qualifications

Publisher: The American Society of Mechanical Engineers  
(ASME), Two Park Avenue, New York, NY 10016-5990  
([www.asme.org](http://www.asme.org))

ASTM E3, Standard Practice for Preparation of  
Metallographic Specimens

ASTM E384, Standard Test Method for Microindentation  
Hardness of Materials

Publisher: American Society for Testing and Materials  
(ASTM International), 100 Barr Harbor Drive, P.O.  
Box C700, West Conshohocken, PA 19428-2959  
([www.astm.org](http://www.astm.org))

CSA Standard Z662, Oil and Gas Pipeline Systems

Publisher: Canadian Standards Association (CSA), 178  
Rexdale Boulevard, Toronto, Ontario M9W 1R3,  
Canada ([www.csagroup.org](http://www.csagroup.org))

### **Part 3, Supplement 9- S9.8 Corrections to Completed National Board Report Forms**

- a) Corrections to completed National Board Report ~~Forms (R-Forms)~~Form R Reports shall not be made without acceptance from the Inspector.
- b) Corrected copies of ~~R-Forms~~Form R Reports shall be distributed in the same manner as the original, in accordance with NBIC Part 3, and the jurisdiction when applicable.
- c) For ~~R-Forms~~Form R Reports ~~that have been~~ previously distributed, the words "Corrected Copy" shall be placed on the top of the first page of the corrected ~~R-Form~~Form R Report. Do not mark "Corrected Copy" on a corrected Form R Report if the original had not been previously distributed.
- d) Methods for correcting ~~R-Forms~~Form R Reports:
  - 1) Complete a new, corrected ~~R-Form~~Form R Report with revised certifications. The requirements in NBIC Part 3, 1.3.2 shall apply when completing a ~~n-R-Form~~Form R Report with revised certifications. A brief description of changes including line number shall be listed in the "Remarks" section of the ~~R-Form~~Form R Report.
  - 2) Correcting by strike-through; Place a single line through the incorrect data and insert the correct data in the appropriate block on the ~~R-Form~~Form R Report. The Certificate Holder and Inspector shall indicate acceptance of the correction(s) by legibly placing their initials and date adjacent to the correction(s).
- e) At the time corrections are made to a ~~n-R-Form~~Form R Report, if the Inspector or AIA differ from that which is indicated on the original ~~R-Form~~Form R report, a new corrected Form R Report shall be generated. ~~†~~The new Inspector shall certify the corrected R-Form Form R Report. ~~The new Inspector certification on the corrected Form R Report is for documentation purposes only, and not for acceptance of the work performed. and †~~The following shall be noted in the "Remarks" section of the corrected R-Form Form R Report;
  1. A brief description of changes including line number.
  2. The original ~~AIA, certifying~~ -Inspector's name and National Board commission number, and the name of the original AIA if applicable.
  3. The statement "Inspector signature for documentation purposes only".

~~Note: It is not intended that the new Inspector, when accepting the correction(s) to the R Form also accepts the activity or activities previously certified by an Inspector employed by a different AIA.~~

## 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. Weld repairs and alterations shall be subjected to the same nondestructive examination requirements as the original welds. 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.

PROPOSED REVISION OR ADDITION

**Item No.** 21-33

**Subject/Title:** Use of code cases pertaining to repairs and alterations

**NBIC Location Part:** Repairs and Alterations; Section: 1; Paragraph: 1.2(a)

**Project Manager and Task Group:** Robert Underwood, Subcommittee Repairs/Alterations

**Source (Name/Email):** Robert Underwood / [robert\\_underwood@hsb.com](mailto:robert_underwood@hsb.com)

**Statement of Need:** The NBIC Part 3 already references code cases in various paragraphs such as NR quality requirements, welding method 7, and R Form instructions, but there is no direct reference to acceptance of their use. I think it's always been an unwritten rule that they are permitted to be used with acceptance of the Inspector and Jurisdiction. This proposal will address this in a new paragraph 1.2(a).

**Background Information:** Section IX approved Code Case 3002 which addresses qualification of WPS and WPQ relating to the Explosion Welding Process for Tube Plugging. This Code Case was specifically written for NBIC use. This proposal will clarify that use of code cases are permitted with Inspector and Jurisdiction approval, when required.

**Existing Text :**

**Proposed Text:**

1.2(a) When the standard governing the original code of construction is the ASME Code or ASME RTP-1, repairs and alterations to pressure-retaining items shall conform, insofar as possible, to the section and edition of the ASME Code most applicable to the work planned. ASME Code Cases that are active may be used for repairs and alterations of pressure retaining items with acceptance of the Inspector, and when required, the Jurisdiction. Use of the active ASME Code Case shall be noted on the appropriate Form R Report.

### 2.2.1.1 PROCEDURE SPECIFICATIONS WITH IMPACT TESTING

- a) Welding procedures shall be qualified with impact testing when required by the original code of construction. The requirements for impact testing shall be in accordance with the rules of the original code of construction except that vessel (production) impact testing is not required.
- b) The test coupon material does not need to be in the same heat-treated condition as the existing material.

#### **Background Info:**

Existing paragraph 3.3.6 contains some requirements that the repair firm cannot comply with such as determining the heat treated condition and the notch toughness characteristics of the material to be repaired. It also contains references to dead links in the NBIC that provide no guidance to the repair firm. This proposal would eliminate the requirements of knowing the heat treated condition and the notch toughness characteristics of the material to be repaired and simply refer back to the original construction code in regards to WPS qualification. The proposal also would move the location of these requirements from paragraph 3.3.6 (which addresses repair only) to 3.2.8 which addresses repairs and alterations. Alternatively, this paragraph could be moved to 2.6 in the Welding section. It was decided to create a new paragraph 2.2.1.1 and delete existing paragraph 3.3.6.

#### **Statement of Need:**

There is an urgent need to address these concerns as the repair firms cannot comply with the existing wording in 3.3.6. The plan is to incorporate this item into the 2023 Edition of Part 3 and propose a corresponding Intent Interpretation that would provided guidance to NBIC users as soon as possible.

#### ~~3.3.6 PRESSURE VESSEL IMPACT TESTING~~

~~a) Welding procedures used for repairs shall be qualified with impact testing when required by the original code of construction. The requirements for impact testing shall be in accordance with the rules of the original code of construction except that vessel (production) impact testing is not required.~~

~~b) The test material for the welding procedure qualification with impact testing shall be of the same P-number and Group number, and heat treated condition as the material being repaired.~~

~~1) In the event that the notch toughness of the material to be repaired is unknown, evidence from tests of that material or from another acceptable source (see NBIC Part 3, 2.5.3) may be used for the base metal notch toughness when qualifying the WPS as required in NBIC Part 3, 2.5.3.2 h).~~

~~2) 1) In the event that the original material specification is obsolete, the material used for the test coupon should conform as closely as possible to the original material used for construction based on nominal composition and carbon equivalent (IIW Formula  $CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$ ; elements are expressed in Weight Percent Amounts), and heat treated condition, but in no case shall the material be lower in strength.~~



PROPOSED REVISION OR ADDITION

<b>Item No.</b> A21-53	
<b>Subject/Title</b> Supplement 8 Weld and Post Repair Inspection of Creep Strength Enhanced Ferritic Steel Pressure Equipment	
<b>NBIC Location</b> NBIC Part 3 Repairs and Alterations Supplement 8 S8.5 a)	
<b>Project Manager and Task Group</b> Philip Gilston	
<b>Source (Name/email)</b> Mark Kincs / mark.r.kincs@xcelenergy.com	
<b>Statement of Need</b> 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 in service Authorized Inspection Agency, not the Repair Inspector, whose duties end with completion of repair documentation.	
<b>Background Information</b> The post-repair inspection requirements specified in S8.5 are unique. There is no other mention of such inspections elsewhere in NBIC–Part 3. Presumably, Welding Method 6 repairs don't require post-repair inspection due to the perceived low-level of associated risk (inside the boiler setting).	
<b>S8.5 POST REPAIR INSPECTION</b> a) After the completion of weld repairs to CSEF steels, post inspection requirements shall be developed and implemented based on acceptance from the Inspector, and if applicable, the Jurisdiction. b) Post-repair inspection intervals and methods of examination shall be implemented to ensure safe operation and margin to locate and monitor defect growth in the weld repair area. The selected non-destructive examination method shall provide meaningful results and shall follow NBIC Part 3, Section 4. c) Post repair inspection shall be on-going until the component reaches end of life or is replaced. The Owner/User may revise the re-inspection interval based on inspection results from previous inspections.	<b>S8.5 POST REPAIR INSPECTION</b> a) After the completion of weld repairs to CSEF steels, post inspection requirements shall be developed and implemented based on acceptance from the <u>Inspector in service Authorized Inspection Agency of the pressure retaining item</u> , and if applicable, the Jurisdiction. b) Post-repair inspection intervals and methods of examination shall be implemented to ensure safe operation and margin to locate and monitor defect growth in the weld repair area. The selected non-destructive examination method shall provide meaningful results and shall follow NBIC Part 3, Section 4. c) Post repair inspection shall be on-going until the component reaches end of life or is replaced. The Owner/User may revise the re-inspection interval based on inspection results from previous inspections.

VOTE							
Committee	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

Item 21-80, Replacement of Shell/Heads per 3.3.3(h)  
Jon Ferriera, Hartford Steam Boiler

### 3.3.3 Examples of Repairs

- h) Replacement of pressure-retaining parts identical to those existing on the pressure-retaining item and described on the original *Manufacturer's Data Report*. For example:
  - 1) Replacement of furnace floor tubes and/or sidewall tubes in a boiler;
  - 2) Welded or mechanical replacement of a shell or head in accordance with the original design;
  - 3) Rewelding a circumferential or longitudinal seam in a shell or head; and
  - 4) Replacement of nozzles of a size where reinforcement is not a consideration.

**Background:** There are two conflicting NBIC interpretations relating to mechanical replacement of parts. Interpretation 01-29 states that NBIC neither requires nor prohibits documenting mechanical repair installation on a Form R-1. Recently passed interpretation 19-11 states that mechanical replacement of pressure retaining components in ASME Section VIII, Div. 3 vessels are considered a repair activity. 19-11 cites paragraph 3.3.3 which provides examples of repairs. Paragraph 3.3.3(h)(2) specifically states that replacement of head or shell in accordance with the original design. It does not specify whether head was replaced by welding or mechanical attachment.

**Statement of Need:** This interpretation and corresponding Code revision would provide clarity to NBIC users and address whether mechanical replacement of these components is considered a repair.



**2021 NBIC Part 4, 2.4.4.3 b) errata:**

How the section currently reads:	How it should read:
<p><b>Part 4:</b></p> <p><b>2.4.4.3 REQUIREMENTS FOR COMMON CONNECTION FOR TWO OR MORE VALVES</b></p> <p>a) When a potable water heater is fitted with two or more temperature and pressure relief valves on one connection, this connection shall have a cross sectional area not less than the combined areas of inlet connections of all the temperature and pressure relief valves with which it connects.</p> <p>b) When the size of the water heater requires a temperature and pressure relief valve larger than NPS 4 (DN 100) two or more valves having the required combined capacity shall be used. When two or more valves are used on a water heater, they may be single, directly attached, or installed on a Y-base.</p>	<p><b>Part 4:</b></p> <p><b>2.4.4.3 REQUIREMENTS FOR COMMON CONNECTION FOR TWO OR MORE VALVES</b></p> <p>a) When a potable water heater is fitted with two or more temperature and pressure relief valves on one connection, this connection shall have a cross sectional area not less than the combined areas of inlet connections of all the temperature and pressure relief valves with which it connects.</p> <p>b) When the size of the water heater requires a temperature and pressure relief valve larger than NPS 4 (DN 100) two or more valves having the required combined capacity shall be used. <del>When two or more valves are used on a water heater, they may be single, directly attached, or installed on a Y-base.</del></p>

**Item 17-128 for reference:**

**Part 4:**

**2.4.4.3 REQUIREMENTS FOR COMMON CONNECTION FOR TWO OR MORE VALVES**

a) When a potable water heater is fitted with two or more temperature and pressure relief valves on one connection, this connection shall have a cross sectional area not less than the combined areas of inlet connections of all the temperature and pressure relief valves with which it connects.

~~b) When a Y-base is used, the inlet area shall be not less than the combined outlet areas.~~

~~e)b) When the size of the water heater requires a temperature and pressure relief valve larger than NPS 4 (DN 100) two or more valves having the required combined capacity shall be used. ~~When two or more valves are used on a water heater, they may be single, directly attached, or installed on a Y-base.~~~~

**Part 1:**

**3.9.4.3 REQUIREMENTS FOR COMMON CONNECTION FOR TWO OR MORE VALVES**

a) When a potable water heater is fitted with two or more temperature and pressure relief valves on one connection, this connection shall have a cross sectional area not less than the combined areas of inlet connections of all the temperature and pressure relief valves with which it connects.

~~b) When a Y-base is used, the inlet area shall be not less than the combined outlet areas.~~

~~e)b)~~ When the size of the water heater requires a temperature and pressure relief valve larger than NPS 4 (DN 100) two or more valves having the required combined capacity shall be used. ~~When two or more valves are used on a water heater, they may be single, directly attached, or installed on a Y-base.~~

## Item 21-05. Develop Implementation Audit

### Initial Language:

#### 4.8.5.4 r) Field Repairs

If field repairs are included in the scope of work, the system shall address any differences or additions to the quality system required to properly control this activity, including the following:

- 1) Provisions for annual audits of field activities shall be included;
- 2) Provisions for receipt and inspection of replacement parts, including parts received from the owner-user, shall be addressed;
- 3) If owner-user personnel will assist with repairs, provisions for the use of owner user personnel shall be included; and
- 4) Provisions for use of owner-user measurement and test equipment, if applicable, shall be addressed.

#### 4.8.6 FIELD REPAIR

Repair organizations may obtain a “VR” *Certificate of Authorization* for field repair, either as an extension to their in-shop/plant scope, or as a field-only scope, provided that:

- 1) Qualified technicians in the employ of the Certificate Holder perform such repairs;
- 2) An acceptable quality system covering field repairs, including field audits, is maintained; and
- 3) Functions affecting the quality of the repaired valves are supervised from the address of record where the “VR” certification is issued.

##### 4.8.6.1 AUDIT REQUIREMENTS

Upon issuance of a *Certificate of Authorization*, provided field repairs are performed, annual audits of the work carried out in the field shall be performed to ensure that the requirements of the Certificate Holder’s quality system are met. The audit shall include, but not be limited to performance testing in accordance with 4.6 of valve(s) that were repaired in the field. The audits shall be documented.

**Proposed Language:**

**4.8.5.4 r) Field Repairs**

If field repairs are included in the scope of work, the quality system shall address any differences or additions ~~to the quality system~~ required to properly control this activity, including the following:

- ~~1) Provisions for annual audits of field activities shall be included;~~
- ~~2)1) Provisions for receipt and inspection of replacement parts, including parts received from the owner-user, shall be addressed;~~
- ~~3)2) If owner-user personnel will assist with repairs, provisions for the use of owner user personnel shall be included; and~~
- ~~4)3) Provisions for use of owner-user measurement and test equipment, if applicable, shall be addressed.~~

Table 4.8.5.4 (s) Addition:

<u>Records of audits of the Quality Program</u>	<u>The repair organization shall audit the Quality System on an annual basis</u> <u>Audit results shall be documented and any exclusions shall be noted.</u>	<u>5 Years</u>
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**4.8.6 FIELD REPAIR**

Repair organizations may obtain a “VR” *Certificate of Authorization* for field repair, either as an extension to their in-shop/plant scope, or as a field-only scope, provided that:

- 1) Qualified technicians in the employ of the Certificate Holder perform such repairs;
- 2) An acceptable quality system covering field repairs, ~~including field audits,~~ is maintained; and
- 3) Functions affecting the quality of the repaired valves are supervised from the address of record where the “VR” certification is issued.

**4.8.6.1 AUDIT REQUIREMENTS**

~~Upon issuance of a *Certificate of Authorization*, provided field repairs are performed, annual audits of the work carried out in the field shall be performed to ensure that the requirements of the Certificate Holder’s quality system are met. The audit shall include, but not be limited to performance testing in accordance with 4.6 of valve(s) that were repaired in the field. The audits shall be documented~~

#### 4.11 Annual Audits.

Upon Issuance of a Certificate of Authorization, the repair organization shall audit the Quality System of the repair program on an annual basis. The quality manual shall define the auditing criteria, scope, frequency, and methods to ensure the requirements of the NBIC and Certificate Holder's Quality System are effectively implemented. The scope shall include but not be limited to:

- a) Drawing and Specification Control 4.8.5.4 (g)
- b) Material and Part Control 4.3 & 4.8.5.4 (h)
- c) Repair and Inspection Program 4.8.5.4 (i)
- d) Welding, NDE and Heat Treatment 4.8.5.4 (j) (when in scope)
- e) Valve Testing, Setting, and Sealing 4.8.5.4 (k)
- f) Valve Repair Nameplates 4.8.5.4 (l)
- g) Calibration 4.8.5.4 (m)
- h) Manual and Documentation Control 4.8.5.4 (n)
- i) Nonconformities 4.8.5.4 (o)
- j) Testing Equipment 4.8.5.4 (q)
- k) Field Repair 4.8.5.4 (r) (when in scope)
- l) Record Retention 4.8.5.4 (s)
- m) Competency, Training & Qualification of Personnel 4.9
- n) Use of Personnel not in the Certificate Holder's employ 4.10<sup>[DA1]</sup>

The audit results shall be documented. Mandatory items in the repair organization's scope that have not been performed during the annual audit period shall be documented as exceptions in the audit results.

ITEM 21-49 Proposal 10/5/21

NBIC Part 4 Paragraph 3.3.3.4

d) Statement of Authority and Responsibility

A statement of authority and responsibility shall be dated and signed by an officer of the company. It shall include:

1) A statement that the "T/O" Certification Mark shall be used only for pressure relief valves that meet the following conditions:

a) Are marked with an ASME "V", "UV", or "HV" Code symbol or marked with the ASME Certification Mark with "V", "UV", or "HV" designator and have been capacity certified by the National Board;

b) Have been visually inspected, and successfully tested in accordance with this program; and

c) Only external adjustments to restore the nameplate set pressure and/or performance of a pressure relief valve shall be made under the provisions of this program. If disassembly, change of set pressure, or additional repairs are necessary, the valve shall be repaired by a National Board "VR" Certificate Holder or replaced.

2) The title of the individual responsible for ensuring that the quality system is followed and who has authority and freedom to affect the responsibility;

3) A statement that if there is a disagreement in the implementation of the written quality system, the matter is to be referred to a higher authority in the company for resolution; and

4) The title of the individual authorized to approve revisions to the written quality system and the method by which such revisions are to be submitted to and accepted by the National Board ~~for acceptance~~ before implementation.

l) Manual Control/Procedures

The quality system manual and referenced procedures shall include:

1) Measures to control the issuance of and revisions to the quality system manual;

2) Provisions for a review of the system in order to maintain the manual current with these rules and the applicable sections of the ASME Code;

3) The title(s) of the individual(s) responsible for preparation, revision distribution, approval, and implementation of the quality system manual;

4) Provision for a controlled copy of the accepted written quality system manual to be submitted to the National Board ~~for acceptance prior to implementation~~; and

5) Revisions shall be submitted ~~for~~ to and accepted by ~~acceptance by~~ the National Board prior to being implemented.

NBIC Part 4 Paragraph 4.8.5.4

d) Statement of Authority and Responsibility

A statement of authority and responsibility shall be dated and signed by an officer of the company. It shall include:

- 1) A statement that the “VR” stamp shall be applied only to pressure relief valves that meet both of the following conditions:
  - a. Are marked with the ASME Certification Mark and the “V”, “UV”, “HV”, or “NV” Designator or the supplanted ASME “V”, “UV”, “HV” or “NV” Code symbol and have been capacity certified by the National Board; and
  - b. Have been disassembled, inspected, and repaired by the Certificate Holder such that the valves’ condition and performance are equivalent to the standards for new valves.
- 2) The title of the individual responsible to ensure that the quality system is followed and who has authority and freedom to effect the responsibility;
- 3) A statement that if there is a disagreement in the implementation of the written quality system, the matter is to be referred to a higher authority in the company for resolution; and
- 4) The title of the individual authorized to approve revisions to the written quality system and the method by which such revisions are to be submitted to and accepted by the National Board ~~for acceptance~~ before implementation.

n) Manual Control

The quality system shall include:

- 1) Measures to control the issuance of and revisions to the quality system manual;
- 2) Provisions for a review of the system in order to maintain the manual current with these rules and the applicable sections of the ASME Code;
- 3) The title(s) of the individual(s) responsible for control, revisions, and review of the manual;
- 4) Provision of a controlled copy of the accepted written quality system manual to be submitted to the National Board; and
- 5) Revisions shall be submitted to and accepted by the National Board prior to being implemented.

**ITEM 21-52 1/18/22**

**Part 4 Paragraph 2.5.3**

**2.5.3 LOCATION**

a) The pressure relief device shall be installed directly on the pressure vessel, unless the source of pressure is external to the vessel and is under such positive control that the pressure cannot exceed the maximum overpressure permitted by the original code of construction and the pressure relief device cannot be isolated from the vessel, except as permitted by 2.5.6 e)-2).

**Part 1 Paragraph 4.5.3**

**4.5.3 LOCATION**

a) The pressure relief device shall be installed directly on the pressure vessel, unless the source of pressure is external to the vessel and is under such positive control that the pressure cannot exceed the maximum overpressure permitted by the original code of construction and the pressure relief device cannot be isolated from the vessel, except as permitted by 4.5.6 e)-2).



## ITEM 21-72 Proposal 11/10/21

### 4.7.2 REPAIR NAMEPLATES

When a pressure relief valve is repaired, a metal repair nameplate stamped with the information required below shall be securely attached to the valve adjacent to the original manufacturer's stamping or nameplate. If not installed directly on the valve, the nameplate shall be securely attached to the valve independent of the external adjustment seals in a manner that does not interfere with valve operation and sealed in accordance with the quality system.

a) Prior to attachment of the repair nameplate, the previous repair nameplate, if applicable, shall be removed from the repaired valve.

b) As a minimum, the information on the valve repair nameplate (see Figure 4.7.2-a) shall include:

- 1) The name of the repair organization preceded by the words "repaired by";
- 2) The "VR" repair symbol stamp and the "VR" certificate number;
- 3) Unique identifier (e.g., repair serial number, shop order number, etc.);
- 4) Date of repair;
- 5) Set pressure;
- 6) Capacity and capacity units (if changed from original nameplate ~~due to set pressure or service fluid change~~);
- 7) Type/Model number (if changed from original nameplate ~~by a conversion. See 4.2~~); and
- 8) When an adjustment is made to correct for service conditions of superimposed back pressure and/ or temperature, the information on the valve repair nameplate shall include the:
  - a. Cold Differential Test Pressure (CDTP); and
  - b. Superimposed Back Pressure (BP) (only when applicable).

## ITEM 21-76 Proposal 12/13/21

PART 4,

### 3.2.4.3 PRESSURE VESSELS AND PIPING

Standard practice for overpressure protection devices is to not permit any type of isolation valve either before or after the device. However, some pressure vessel standards permit isolation valves under certain controlled conditions when shutting down the vessel to repair a damaged or leaking valve. If isolation block valves are employed, their use should be carefully controlled by written procedures. Block valves should have provisions to be either car-sealed or locked in an open position when not being used. For ASME Section VIII, Div. 1 pressure vessels, see UG-~~135~~156, Appendix M, and Jurisdictional rules for more information.

PART 2,

### 2.5.5.3 PRESSURE VESSELS AND PIPING

Standard practice for overpressure protection devices is to not permit any type of isolation valve either before or after the device. However, some pressure vessel standards permit isolation valves under certain controlled conditions when shutting down the vessel to repair a damaged or leaking valve. If isolation block valves are employed, their use should be carefully controlled by written procedures. Block valves should have provisions to be either car-sealed or locked in an open position when not being used. For ASME Section VIII, Div. 1 pressure vessels, see UG-~~135~~156, Appendix M, and Jurisdictional rules for more information.

## ITEM 21-83 Proposal 1/13/22

### PART 4, 4.4.7 WELD REPAIRS TO PRESSURE RELIEF VALVE PARTS BY AN “R” STAMP HOLDER

a) The quality system manual may include controls for the “VR” Certificate Holder to have the pressure relief valve part repaired by a National Board “R” Certificate Holder, per this section provided the following documentation is provided to the “R” Certificate Holder:

- 1) Code of construction, year built;
- 2) Part identification;
- 3) Part material specified; and
- 4) “VR” Certificate Holder’s unique identifier for traceability as required by the repair inspection program.

b) Prior to performing weld repairs to pressure relief valve (PRV) parts, the “R” Certificate Holder shall receive repair information required by 4.4.7 a) from the “VR” Certificate Holder responsible for the pressure relief valve repair.

- 1) PRV part weld repairs shall be performed under the “R” Certificate Holder’s quality system; however, the requirements for in-process involvement of the Inspector (see Part 3, ~~2.23.3.2~~) may be waived. The requirement for stamping is waived.

# NB11-1901

## SUPPLEMENT X

### INSTALLATION OF HIGH PRESSURE COMPOSITE PRESSURE VESSELS

#### **SX.1 SCOPE**

This supplement provides requirements for the installation of high-pressure composite pressure vessels. This supplement is applicable to pressure vessels with an MAWP not exceeding 15,000 psi, and is applicable to the following classes of vessels:

- a) Metallic vessel with a Fiber Reinforced Plastic (FRP) hoop wrap over the shell part of the vessel (both load sharing)
- b) Metallic vessel with a full FRP wrap (both load sharing)
- c) FRP vessel with a non-load sharing metallic liner
- d) FRP vessel with a non-load sharing non-metallic liner

#### **SX.2 SUPPORTS**

Design of supports, foundations, and settings shall consider the dead loads, live loads, wind, and seismic loads. Vibration and thermal expansion shall also be considered. The design of supports, foundations, and settings shall be in accordance with ASCE/SEI 7, *Minimum Design Loads for Buildings and Other Structures*. The importance factors used in calculating the seismic and wind loads shall be the

highest value specified for any category in ASCE/SEI 7.

### **SX.3 CLEARANCES**

The pressure vessel installation shall allow sufficient clearance for normal operation, maintenance, and inspection. Stacking of pressure vessels is permitted. The minimum clear space between pressure vessels shall be 1 ft. vertical and 2 ft. horizontal. Vessel nameplates shall be visible after installation for inspection. The location of vessels containing flammable compressed natural gas fluids shall comply with NFPA 52. The location of vessels containing hydrogen or other flammable fluids shall comply with NFPA 2. The vessel owner shall document the vessel pressure and pipe diameters used as a basis for compliance with NFPA 2 location requirements.

### **SX.4 PIPING LOADS**

Piping loads on vessel nozzles shall be determined by a formal flexibility analysis per ASME B31.12: paragraph IP-6.1.5(b). The piping loads shall not exceed the maximum nozzle loads defined by the vessel manufacturer.

### **SX.5 MECHANICAL CONNECTIONS**

Mechanical connections shall comply with pressure vessel manufacturer's instructions, and with requirements of the Jurisdiction. Connections to threaded nozzles shall have primary and secondary seals. The seal design shall include a method for detecting a leak in the primary seal. Seal functionality shall be demonstrated at the initial pressurization of the vessel.

### **SX.6 PRESSURE INDICATING DEVICES**

Each pressure vessel shall be equipped with a pressure gage mounted on the vessel. The dial range shall be from 0 psi to not less than 1.25 times the vessel MAWP. The pressure gage shall have an opening not to exceed 0.0550in (1.4mm) (No. 54 drill size) at the inlet connection. In addition, vessel pressure shall be monitored by a suitable remote pressure indicating device with alarm having an indicating range of 0 psi to not less than 1.25 times the vessel MAWP.

### **SX.7 PRESSURE RELIEF DEVICES**

Each pressure vessel shall be protected by pressure relief devices per the following requirements:

- a) Pressure relief devices shall be suitable for the intended service.
- b) Pressure relief devices shall be manufactured in accordance with a national or international standard and certified for capacity (or resistance to flow for rupture disk devices) by the National Board.
- c) Dead weight or weighted lever pressure relief valves are prohibited.
- d) Pressure relief valves shall not be fitted with lifting devices.
- e) The pressure relief device shall be installed directly on the pressure vessel with no isolation valves between the vessel and the pressure relief device except:

1) When these isolation valves are so constructed or positively controlled below the minimum required capacity, that closing the maximum number of valves at one time will not reduce the pressure relieving capacity, or

2) Upon specific acceptance of the Jurisdiction, an isolation valve between vessel and its pressure relief device may be provided for vessel inspection and repair only. The isolation valve shall be arranged so it can be locked or sealed open.

f) The discharge from pressure relief device(s) shall be directed upward to prevent any impingement of escaping fluid upon the vessel, adjacent vessels, adjacent structures, or personnel. The discharge must be to outdoors, not under any structure or roof that might permit formation of a "cloud". The pressure relief device(s) discharge piping shall be designed so that it cannot become plugged by animals, insects, rainwater, or other materials.

g) When a single pressure relieving device is used, it shall be set to operate at a pressure not exceeding the MAWP of the vessel. When the required capacity is provided in more than one pressure relieving device, only one device need be set at or below the MAWP, and the additional device(s) may be set to open at higher pressures but in no case at a pressure higher than 105% of the MAWP. The requirements of RR-130 of ASME Section X shall also apply.

- h) The pressure relief device(s) shall have sufficient capacity to ensure the pressure vessel does not exceed the MAWP of that specified in the original code of construction.
- i) The owner shall document the basis for selection of the pressure relief device(s) used, including capacity.
- j) The owner shall have such analysis available for review by the Jurisdiction.
- k) Pressure relief devices and discharge piping shall be supported so that reaction forces are not transmitted to the vessel.
- l) Heat detection system: a heat activated system shall be provided so that vessel contents will be vented per f) (above), if any part of the vessel is exposed to a temperature greater than 220°F.
- m) Positive methods shall be incorporated to prevent overfilling of the vessel.

## **SX.8 ASSESSMENT OF INSTALLATION**

- a) Isolation valve(s) shall be installed directly on each vessel, but not between the vessel and the pressure relief device except as noted in 3.7, e), above.
- b) Vessels shall not be buried.



c) Vessels may be installed in a vault subject to a hazard analysis, verified by the manufacturer, owner, user, qualified engineer, or the Jurisdiction, to include as a minimum the following:

- 1) Ventilation
- 2) Inlet and outlet openings
- 3) Access to vessels
- 4) Clearances
- 5) Intrusion of ground water
- 6) Designed for cover loads
- 7) Explosion control
- 8) Ignition sources
- 9) Noncombustible construction
- 10) Remote monitoring for leaks, smoke, and fire
- 11) Remote controlled isolation valves

d) Fire and heat detection/suppression provisions shall comply with the requirements of the Jurisdiction and, as a minimum, include relief scenarios in the event of a fire or impending overpressure from heat sources.

e) Installation locations shall provide the following:

1) Guard posts shall be provided to protect the vessels from vehicular damage per NFPA 2 or NFPA 52, as appropriate.

Protection from wind, seismic events shall be provided.

2) Supports and barriers shall be constructed of non-combustible materials.

3) Vessels shall be protected from degradation due to direct sunlight.

4) Access to vessels shall be limited to authorized personnel.

5) Any fence surrounding the vessels shall be provided with a minimum of two gates. The gates shall open outward, and shall be capable of being opened from the inside without a key.

6) Access for initial and periodic visual inspection and NDE of vessels, supports, piping, pressure gages or devices, relief devices and related piping, and other associated equipment.

7) Completed installations shall be validated as required by the Jurisdiction as addressing all of the above, and any requirements of the Jurisdiction, prior to first use. This verification shall be posted in a conspicuous location near the vessel and, when required, on file with the

Jurisdiction. Certificates shall be updated as required by mandated subsequent inspections.

8) Piping installation shall comply with ASME B31.12, NFPA 52, or NFPA 2.

9) The vessels shall be electrically bonded and grounded per NFPA 55.

### **SX.9 LADDERS AND RUNWAYS**

See NBIC Part 1, Section 1.6.4 *Ladders and Runways*

## Item 20-39

Context: ASME Section IV does not require secondary low-water cutoffs on modular steam boilers, or any low pressure steam boilers for that matter. CSD-1 requires secondary low-water cutoffs on all low pressure steam boilers, including assembled modular units. NBIC Part 1, 3.8.1.5 c) currently requires secondary low-water cutoffs on low pressure steam boilers.

Proposed text if we align with CSD-1 and require a secondary low-water cutoff:

### 3.8.1.6 MODULAR STEAM HEATING BOILERS

a) Each module of a modular steam boiler shall be equipped with:

- 1) Steam gage, see NBIC Part 1, 3.8.1.1;
- 2) Water-gage glass, see NBIC Part 1, 3.8.1.2;
- 3) Pressure control, see [NBIC Part 1, 3.8.1.4 a\)](#); and
- 4) Low-water fuel cutoff, see [NBIC Part 1, 3.8.1.5 a\)](#).

b) The assembled modular steam heating boiler shall also be equipped with: ~~a pressure control. See NBIC Part 1, 3.8.1.4 b).~~

~~1) Pressure control, see NBIC Part 1, 3.8.1.4 b); and~~

~~2) Low-water fuel cutoff, see NBIC Part 1, 3.8.1.5 c).~~

~~Proposed text if we align with Section IV and do not require a secondary low-water cutoff:~~

### ~~3.8.1.6 MODULAR STEAM HEATING BOILERS~~

~~a) Each module of a modular steam boiler shall be equipped with:~~

- ~~1) Steam gage, see NBIC Part 1, 3.8.1.1;~~
- ~~2) Water-gage glass, see NBIC Part 1, 3.8.1.2;~~
- ~~3) Pressure control, see [NBIC Part 1, 3.8.1.4 a\)](#); and~~
- ~~4) Low-water fuel cutoff, see [NBIC Part 1, 3.8.1.5 a\)](#).~~

~~b) The assembled modular steam heating boiler shall also be equipped with a pressure control. See NBIC Part 1, 3.8.1.4 b).~~

ASME Section IV and CSD-1 wording for reference:

<p><b>HG-607 Modular Steam Heating Boilers</b></p> <p>(a) Each module of a modular steam heating boiler shall be equipped with</p> <p>(1) steam gage, see HG-602</p> <p>(2) water gage glass, see HG-603</p> <p>(3) a pressure control that will cut off the fuel supply when the pressure reaches an operating limit, which shall be less than the maximum allowable pressure</p> <p>(4) low water cutoff, see HG-606</p> <p>(b) The assembled modular steam boiler shall also be equipped with a safety limit control that will cut off the fuel supply to prevent steam pressure from exceeding the 15 psi (100 kPa) maximum allowable working pressure of the boiler. The control shall be constructed to prevent a pressure setting above 15 psi (100 kPa).</p> <p>(c) When the assembled modular boiler is certified as a single boiler in accordance with HG-530.3(b), the steam gage required on each module by (a)(1) may be replaced by a single gage located on the supply header.</p>	<p><b>HG-606 Automatic Low-Water Fuel Cutoff and/or Water Feeding Device</b></p> <p>(a) Each automatically fired steam boiler shall have an automatic low-water fuel cutoff, conforming to UL 353, Standard for Limit Controls, and accepted by a nationally recognized testing agency. This device shall be so located as to automatically cut off the fuel supply before the surface of the water falls below the lowest visible part of the water gage glass. If a water feeding device is installed, it shall be so constructed that the water inlet valve cannot feed water into the boiler through the float chamber and so located as to supply requisite feedwater.</p> <p>(b) Such a fuel cutoff or water feeding device may be attached directly to a boiler. A fuel cutoff or water feeding device may also be installed in the tapped openings available for attaching a water glass directly to a boiler, provided the connections are made to the boiler with nonferrous tees or Y's not less than NPS 1/2 (DN 15) between the boiler and the water glass so that the water glass is attached directly and as close as possible to the boiler; the run of the tee or Y shall take the water glass fittings, and the side outlet or branch of the tee or Y shall take the fuel cutoff or water feeding device. The ends of all nipples shall be reamed to full-size diameter.</p> <p>(c) Fuel cutoffs and water feeding devices embodying a separate chamber shall have a vertical drain pipe and a blowoff valve not less than NPS 3/4 (DN 20), located at the lowest point in the water equalizing pipe connections so that the chamber and the equalizing pipe can be flushed and the device tested.</p>
<p><b>CW-610 Water Level Controls for Modular Steam Heating Boilers</b></p> <p>Modular steam heating boilers shall comply with CW-120, with the following differences:</p> <p>(a) Each module shall be equipped with an automatic low-water fuel cutoff.</p> <p>(b) The assembled modular steam boiler shall have a second low-water fuel cutoff mounted on a water column attached to the manifolds, or may be mounted on one of the modules, where the return piping is below the lowest safe waterline and all modules will drain equally. Operation of this low-water fuel cutoff shall shut off the fuel or energy supply to all modules.</p>	

Item Number: 20-41

ASME CSD-1 2018 Edition

#### CW-510 Requirements for Steam and Hot-Water Heating Boilers

The safety and safety relief valves of all steam and hot-water heating boilers shall conform to the ASME Boiler and Pressure Vessel Code, Section I or Section IV, as applicable.

NBIC Part I 2019 Edition

2.9.1 (e) <sup>[TB1]</sup> Pressure relief valve shall be manufactured in accordance with a national or international standard and be certified for capacity or flow resistance <sup>[TB2]</sup> by the National Board.

3.9.2 (a) <sup>[TB3]</sup> Pressure Relief Valve requirements for steam heating boilers

(a) Pressure relief valve shall be manufactured in accordance with a national or international standard and be certified for capacity or flow resistance <sup>[TB4]</sup> by the National Board.

NBIC Part 4 2019 Edition

2.2.1b) Pressure relief valves shall be manufactured in accordance with a national or international standard and be certified for capacity by the National Board.

2.4.2 a) Pressure relief valves shall be manufactured in accordance with a national or international standard and be certified for capacity by the National Board.

Item Number: 20-43

ASME CSD-1 2018 Edition

#### CW-510 Requirements for Hot-Water Supply Boilers

The safety and safety relief valves of all hot-water supply boilers shall conform to the ASME Boiler and Pressure Vessel Code, Section I or Section IV, as applicable.

Part 1, 2019 Ed.

3.9.3 (a) Pressure relief valve shall be manufactured in accordance with a national or international standard and be certified for capacity or flow resistance <sup>[TB1]</sup> by the National Board.

Part 4, 2019 Ed.

2.4.3 a) Pressure relief valves shall be manufactured in accordance with a national or international standard and be certified for capacity by the National Board.

**Item Number: 21-55**

**NBIC Location: Part 1, 3.7.5.1 b)**

**General Description: Isolation Valves**

**Explanation of Need:**

The inquirer manufactures a packaged pool heating system that uses a water to water heat exchanger to isolate the water boiler from the pool heating system loop. They do not provide stop valves between the boiler and the heat exchanger. Even though the boiler can be drained and serviced without draining or disturbing the primary system, they are told that NBIC Part 1, 3.7.5.1 mandates that isolation valves be installed on the boiler. This is a non-value-added expense to change the package design and rework existing installations. This has no impact on safety and is also consistent with the conditions and exemptions currently in 3.7.5.1 b and provides a needed clarification to the existing language.

**Existing Text:**

**3.7.5.1 STEAM HEATING, HOT-WATER HEATING, AND HOT-WATER SUPPLY BOILERS**

a) For Single Steam Heating Boilers

When a stop valve is used in the supply pipe connection of a single steam boiler, there shall be one installed in the return pipe connection.

b) For Single Hot-Water Heating & Hot-Water Supply Boilers

- 1) Stop valves shall be located at an accessible point in the supply and return pipe connections as near the boiler as is convenient and practicable, of a single hot water boiler installation to permit draining the boiler without emptying the system.
- 2) When the boiler is located above the system and can be drained without draining the system stop valves required in NBIC Part 1, 3.7.5.1 b) 1) may be eliminated.

c) For Multiple Boiler Installations

A stop valve shall be used in each supply- and-return pipe connection of two or more boilers connected to a common system. See NBIC Part 1, Figures 3.7.5.1-a, 3.7.5.1-b, and 3.7.5.1-c.



**Proposed Text:**

**3.7.5.1 STEAM HEATING, HOT-WATER HEATING, AND HOT-WATER SUPPLY BOILERS**

a) For Single Steam Heating Boilers

When a stop valve is used in the supply pipe connection of a single steam boiler, there shall be one installed in the return pipe connection.

b) For Single Hot-Water Heating & Hot-Water Supply Boilers

1) Stop valves shall be located at an accessible point in the supply and return pipe connections as near the boiler as is convenient and practicable, of a single hot water boiler installation to permit draining the boiler without emptying the system.

2) ~~When the boiler is located above the system and can be drained without draining the system stop valves required in NBIC Part 1, 3.7.5.1 b) 1) may be eliminated.~~ The stop valves required in NBIC Part 1, 3.7.5.1 b) 1) may be eliminated when the boiler can be drained without draining the system. Means to allow draining the boiler without emptying the system may include installation of the boiler above the system or isolation of the boiler from the system by equipment.

c) For Multiple Boiler Installations

A stop valve shall be used in each supply- and-return pipe connection of two or more boilers connected to a common system. See NBIC Part 1, Figures 3.7.5.1-a, 3.7.5.1-b, and 3.7.5.1-c.

**Background Information:**

The proposed revisions are similar to a proposal in the balloting process at ASME BPVC IV (C&S Connect Record 21-1905). The initial ASME proposal included specific examples of equipment that would serve to isolate the boiler from the system. The only vote opposing the proposal advised that they would approve the proposal if the specific examples were removed from the proposal. The ASME proposal was revised accordingly and is expected to be approved in the next voting cycle.

The proposed revisions are identical to the updated ASME proposal with the exception to the numbering for the referenced clause.

The proposal was reviewed and approved by SG Installation and SC Installation at the January 2022 meeting.

If approved, this will maintain consistency between ASME BPVC IV and NBIC Part 1.



### PROPOSED INTERPRETATION

<b>Item No.</b> 21-65
<b>Subject/Title</b> Air receiver tank manual drain valve
<b>Project Manager and Task Group</b>
<b>Source (Name/Email)</b> Luciano Tuason / Luciano.Tuason@tuvsud.com
<b>Statement of Need</b> In preparing an inspection of a Texas cement plant, I put this requirement indicated in my proposed reply above.
<b>Background Information</b> I remember this requirement some 12 years ago, but I could no longer find the specific code requirement. The client want to know where and what code provide this requirement.
<b>Proposed Question</b> Is the requirement for air receiver tank manual drain valve mandatory even if the system has an automatic condensate drain?
<b>Proposed Reply</b> Yes.
<b>Committee's Question 1</b> <u>Does the NBIC require an air receiver to have a manual drain in addition to an automatic drain?</u>
<b>Committee's Reply 1</b> <u>It is the committee's opinion that this is a specific Jurisdictional requirement. The NBIC requires a manual drain or an automatic drain, but not both. Reference NBIC, Part 2, 2.3.6.2 b) 4).</u>
<b>Rationale</b>
<b>Committee's Question 2</b>
<b>Committee's Reply 2</b>
<b>Rationale</b>

VOTE:							
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

## 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.

## SUPPLEMENT 5 INSPECTION OF YANKEE DRYERS (~~ROTATING CAST IRON PRESSURE VESSELS~~) WITH ~~FINISHED SHELL OUTER SURFACES~~

### S5.1 SCOPE

This supplement provides guidelines for the in-service inspection of a ~~Yankeeyankee~~ dryer as defined in NBIC Part 1 Supplement 1. ~~A Yankee dryer is a pressure vessel with the following characteristics:~~

a) A yankee dryer is a rotating steam-pressurized cylindrical vessel commonly used in the paper industry. It is characterized by a center shaft connecting the heads. While traditionally made of cast iron, bolted or welded steel vessels are in use.

~~a)b)~~ Yankee dryers are primarily used in the production of tissue-type paper products. When used to produce machine-glazed (MG) paper, the dryer is termed an MG cylinder. A wet paper web is pressed onto the finished dryer surface using one or two pressure (pressing) rolls. Paper is dried through a combination of mechanical dewatering by the pressure roll(s); thermal drying by the pressurized ~~Yankeeyankee~~ dryer; and a steam-heated or fuel-fired hood. After drying, the paper web is removed from the dryer.

~~b)c)~~ The dryer is typically manufactured in a range of outside diameters from 8 to 23 ft. (2.4 m to 7 m), widths from 8 to 28 ft. (2.4 m to 8.5 m), pressurized and heated with steam up to 160 psi (1,100 kPa), and rotated at speeds up to 7,000 ft./min (2,135 m/min). Typical pressure roll loads against the ~~Yankeeyankee~~ dryer are up to 600 pounds per linear inch (105 kN/m). A thermal load results from the drying process due to difference in temperature between internal and external shell surfaces. The dryer has an internal system to remove steam and condensate. These vessels can weigh up to 220 tons (200 tonnes).

~~e)d)~~ The typical ~~Yankeeyankee~~ dryer is an assembly of several large ~~castings~~ components. The cylindrical shell is normally a gray iron casting, in accordance with commonly ASME designation SA-278 gray cast iron or SA-516 steel. ~~Shells internally, shells~~ may be smooth bore or ribbed. Heads, center shafts, and journals may be gray cast iron, ductile cast iron, or steel.

### S5.2 ASSESSMENT OF INSTALLATION

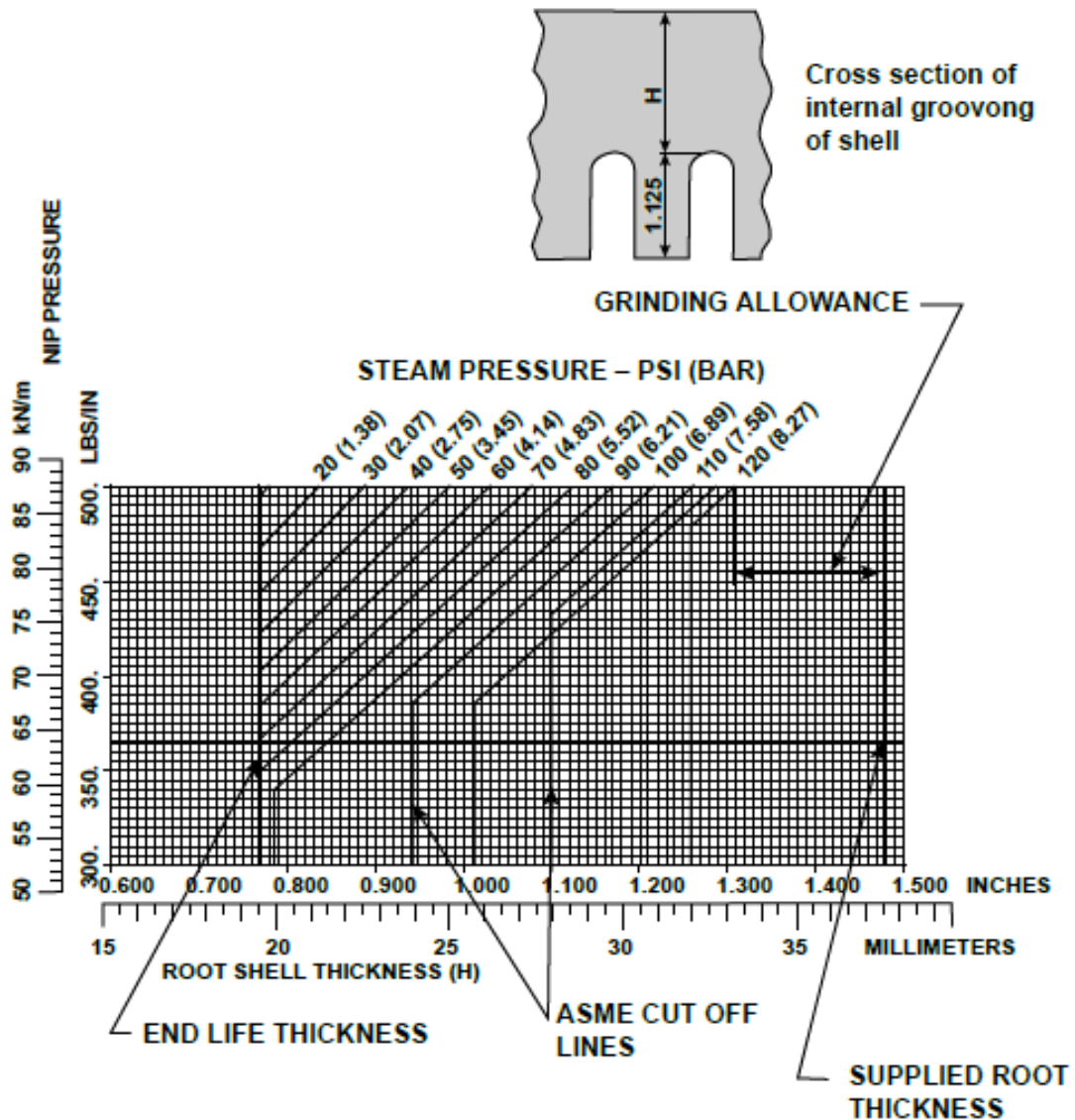
a) The Inspector verifies that the owner or user is properly controlling the operating conditions of the dryer. ~~The Inspector does this by reviewing the owner's comprehensive assessments of the complete installation, operating environment, maintenance, and operating history.~~

b) The dryer is subjected to a variety of loads over its life. Some of the loads exist individually, while others are combined. Consideration of all the loads that can exist on a ~~Yankeeyankee~~ dryer is required to determine the maximum allowable operating parameters. There are four loads that combine during normal operation to create the maximum operating stresses, usually on the outside surface of the shell at the axial center line. These are:

1) Pressure load due to internal steam pressure;

- 2) Inertial load due to dryer rotation;
  - 3) Thermal gradient load due to the drying of the web; and
  - 4) Pressure roll load (line or nip load) due to pressing the wet web onto the dryer.
- c) Steam pressure, inertial, and thermal gradient loads impose steady-state stresses. These stresses typically change when the dryer shell thickness (effective thickness for ribbed dryers) is reduced to restore a paper-making surface, the grade of tissue is ~~changed~~changed, or speed of the dryer is changed.

~~FIGURE S5.2~~  
~~DE-RATE CURVE~~



- d) The pressure roll(s) load imposes an alternating stress on the shell face. The resulting maximum stress is dependent on the magnitude of the alternating and steady-state stresses.
- e) ASME Section VIII, Div. 1, only provides specific requirements for the analysis of pressure loads. Although the code requires analysis of other loads, no specific guidance for thermal, inertial, or pressure roll loads is provided. Hence, additional criteria must be applied by the manufacturer to account for all the steady-state and alternating stresses.

f) To maintain product quality, the dryer surface is periodically refurbished by grinding. This results in shell thickness reduction. Therefore, the manufacturer does not provide a single set of maximum allowable operating parameters relating steam pressure, rotational speed, and pressure roll load for a single design shell thickness. The manufacturer, or another qualified source acceptable to the Inspector, instead provides a series of curves that graphically defines these maximum allowable operating parameters across a range of shell thicknesses. This document is known as the “De-Rate Curve.” See NBIC Part 2, Figure S5.2. In cases where no derate curve is provided the manufacturer, or another qualified source, may provide a set of operating conditions and a minimum shell thickness.

g) Thermal spray (metallizing) materials may be applied to extend and improve dryer operations and provide a more wear resistant surface. Thermal spray coatings are often applied to the exterior of steel shells and may be applied to cast iron shells. Once applied, the metallization may be ground periodically before it is removed or replaced. Thermal spray coatings do not add strength to the component and are not included in shell thickness calculation. Grinding that reduces thickness of the pressure containing shell material to which metallization has been applied must be evaluated for any necessary pressure and safety device re-settings.

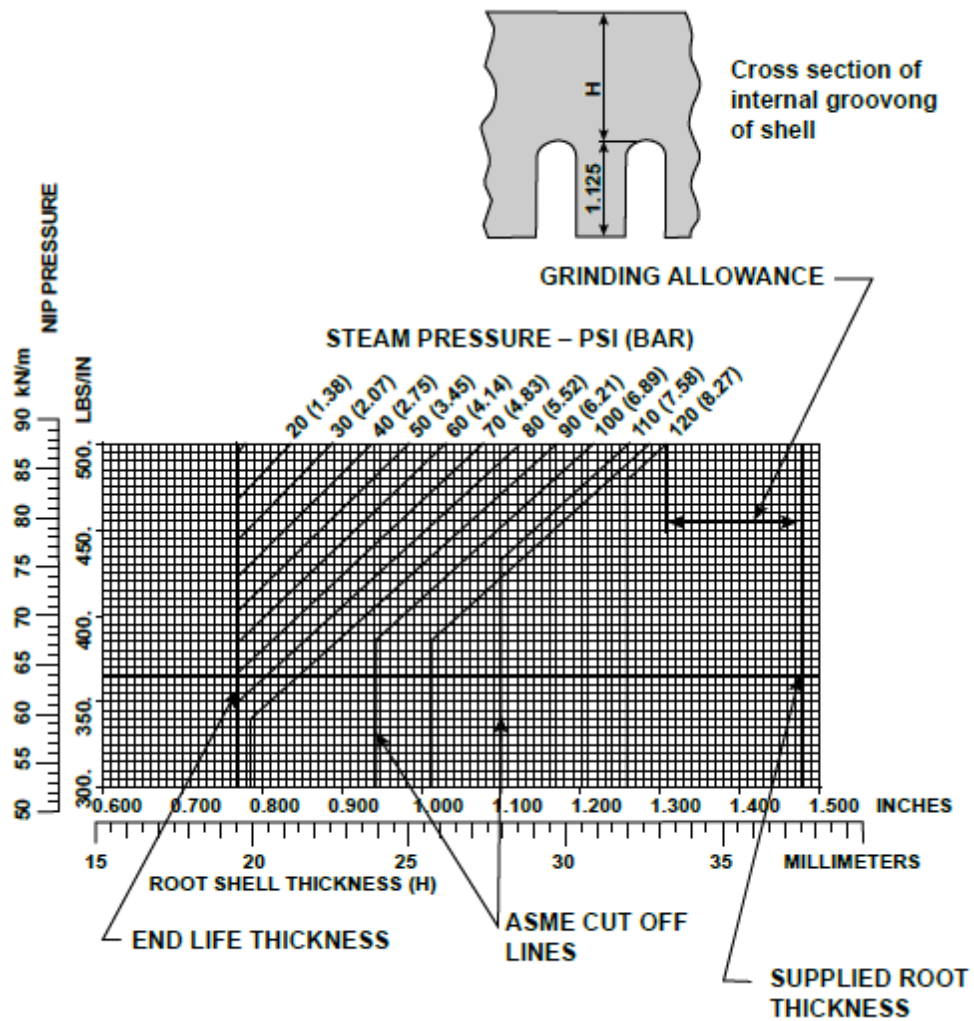
a)h) In addition to the loads on the dryer due to normal operation, other nonstandard load events can occur. These nonstandard load events should be recorded in an operation or maintenance log. Examples of nonstandard load events include:

- 1) ~~Excessive thermal load due to local or global heating rate during warm-up~~Local or overall thermal loads due to exceeding the warm-up rate;
- 2) ~~Excessive thermal load due to local or global cooling rate during shut-down~~Local or overall thermal loads due to exceeding the cool-down rate;
- 3) ~~Excessive t~~Thermal load due to inappropriate use or malfunctioning auxiliary heating devices causing localized heating;
- 4) ~~Excessive t~~Thermal load due to the misapplication or uncontrolled application of water or other fluids for production, cleaning, or ~~fire fighting~~firefighting; and
- 5) Impact load.

b)i) If nonstandard load events have occurred, then the Inspector should ensure that an appropriate risk based~~risk-based~~ assessment of the ~~structural integrity on the~~ dryer has been performed.



**FIGURE S5.2**  
DE-RATE CURVE



## S5.2.1 DETERMINATION OF ALLOWABLE OPERATING PARAMETERS

- a) A Yankeeyankee dryer is designed and intended to have its shell thickness reduced over the life of the vessel through routine wear and grinding. The Yankeeyankee dryer shell is ground on the outside surface to restore the quality or shape of the papermaking surface, essential to the manufacturing of tissue or other paper products.
- b) Design documentation is required that dictates the maximum allowable operating parameters as shell thickness is reduced. Calculations used to determine those parameters are in accordance with ASME Code requirements for primary membrane stress and design criteria based upon other relevant stress categories; (e.g., fatigue and maximum principal stress). Calculation of these parameters requires that the respective stresses, resulting from the imposed loads, be compared to the appropriate material strength properties. Hence, knowledge of the applied stresses in the shell and the tensile and fatigue properties of the material are essential.
- c) Yankee dryers are subjected to a variety of loads that create several categories of stress. Yankee dryers are designed such that the stress of greatest concern typically occurs on the outside surface at the axial centerline of the shell.
  - 1) Steam Pressure Load – The internal steam pressure is one of the principal design loads applied to the Yankeeyankee dryer. The steam pressure expands the shell radially, causing a predominately circumferential membrane tensile stress. Because the shell is constrained radially by the heads at either end of the shell, the steam pressure also causes a primary bending stress in the vicinity of the head-to-shell joint. The ends of the shell are in tension on the inside and compression on the outside due to the steam pressure. The steam pressure also causes a bending stress in the heads.
  - 2) Inertia Load – The rotation of the Yankeeyankee dryer causes a circumferential membrane stress in the shell similar to that caused by the steam pressure load. This stress is included in the design of the shell and increases with dryer diameter and speed.
  - 3) Thermal Gradient Load – The wet sheet, applied to the shell, causes the outside surface to cool and creates a thermal gradient through the shell wall. This thermal gradient results in the outside surface being in tension and the inside surface in compression. With this cooling, the average shell temperature is less than the head temperature, which creates bending stresses on the ends of the shell and in the heads. The ends of the shell are in tension on the outside and compression on the inside.
    - a. Other thermal loading also occurs on a Yankeeyankee dryer. The use of full width showers for a variety of papermaking purposes affects the shell similar to a wet sheet. The use of edge sprays produces high bending stress in the ends of the shell due to the mechanical restraint of the heads.

- b. Warm-up, cool-down, hot air impingement from the hood, moisture profiling devices, ~~fire fighting~~firefighting, and wash-up can all produce non-uniform thermal stresses in the pressure-containing parts of the ~~Yankee~~yankee dryer. Heating or cooling different portions of the ~~Yankee~~yankee dryer at different rates causes these non-uniform stresses.
- 4) Line Load - The line load from the contacting pressure roll(s) results in an alternating, high cycle, bending stress in the shell. This stress is greatest at the centerline of the shell. The load of the pressure roll deflects the shell radially inward causing a circumferential compressive stress on the outside surface and a tensile stress on the inside. Because the shell has been deflected inward at the pressure roll nip, it bulges outward about 30 degrees on each side of the nip. The outward bulge causes a tensile stress on the outside shell surface at that location and a corresponding compressive stress on the inside. Since the shell is passing under the pressure roll, its surface is subjected to an alternating load every revolution.

### **S5.2.2 ADJUSTING THE MAXIMUM ALLOWABLE OPERATING PARAMETERS OF THE YANKEE DRYER DUE TO A REDUCTION IN SHELL THICKNESS FROM GRINDING OR MACHINING AND SHELL THICKNESS**

a) The maximum allowable operating parameters are a function of shell thickness and are addressed in one of the following two manners in the industry.

1) Adjusted throughout life of dryer

The maximum allowable operating parameters are reduced throughout the life of the dryer as the shell thickness is reduced. This method is commonly used for cast iron shells.

Required design documentation called a de-rate curve dictates the maximum allowable operating parameters based on imposed loads over a range of shell thicknesses. The documentation shall be obtained from the original dryer manufacturer or from another qualified source acceptable to the Inspector.

After the maximum allowable operating parameters are adjusted per the de-rate curve, the appropriate load limiting devices are reset (e.g., steam safety relief valve, line load limiting device).

2) Held constant throughout life of dryer

The maximum allowable operating parameters are held constant throughout the life of the dryer, until the shell thickness is reduced to a minimum end-of-life value. This method is commonly used for steel shells.

Required design documentation dictates the maximum allowable operating parameters and the minimum shell thickness. The documentation shall be obtained from the original dryer manufacturer or from another qualified source acceptable to the Inspector.

b) The current shell thickness and maximum allowable operating conditions shall be documented throughout the life of the ~~Yankee~~yankee dryer.

- ~~a) The outside surface of the Yankee dryer shell is routinely ground to restore the quality of the papermaking surface. The papermaking surface degrades due to wear, corrosion, and local thinning. As the shell thickness is reduced, the maximum allowable operating parameters are adjusted. Adjustment of the maximum allowable operating parameters requires accurate shell thickness measurements.~~
- ~~b) Over the life of the Yankee dryer, the adjustment of the maximum allowable operating parameters will require that the original design pressure and/or the pressure roll line load be reduced. After the maximum allowable operating parameters are adjusted per the De-rate Curve, the appropriate load limiting devices are reset (e.g., steam safety relief valve, line load limiting device).~~

### ~~S5.2.3 DOCUMENTATION OF SHELL THICKNESS AND ADJUSTED MAXIMUM ALLOWABLE OPERATING PARAMETERS~~

(21)

- ~~a) Design documentation, a De-rate Curve, is required, which dictates the maximum allowable operating parameters, based on imposed loads over a range of shell thickness. The documentation shall be obtained from the original dryer manufacturer or from another qualified source acceptable to the Inspector.~~
- ~~b) Yankee dryer shell grinding requires accurate shell thickness measurements in conjunction with the Derate Curve in order to set load-limiting devices. The resulting shell thickness and maximum allowable operating parameters after grinding shall be documented, and the Inspector notified that load-limiting device settings have changed.~~

### ~~S5.3 CAUSES OF DETERIORATION AND DAMAGE~~

Three types of deterioration or damage typically encountered in Yankeeyankee dryers are local thinning, cracking, and corrosion. Many times, the mechanisms are interrelated, one being the precursor of another.

#### ~~S5.3.1 LOCAL THINNING~~

- a) Internally, a Local Thin Area (LTA) can occur on the pressure-retaining surfaces due to steam and condensate erosion, mechanical wear and impact, and removal of material flaws. These assume features ranging from broad shallow areas washed out by erosion, to more groove-like flaws, including gouges and indentations from contacting metal parts.
- b) Externally, the process is typically one of wear-corrosion in circumferential bands. Except on the shell edges, local thinning never achieves significant depth because the papermaking process will tolerate only the smallest departure from surface contour. On the shell edges, beyond the papermaking surface, wear-corrosion may advance to comparatively greater depths. However, the stresses are far less in this area than under the papermaking surface, so the wear is inconsequential in considerations of load-carrying ability. Only in the instance of steam leakage between flanges has the resultant local thinning ever been implicated in Yankeeyankee failure.
- c) Steam leakage is detrimental to the long-term structural integrity of the vessel, in that the escaping steam, under high velocity, erodes ever-widening paths in the east-iron surfaces over which it passes, thinning the cross-section. Steam cutting of connecting

bolts is another possible outcome. Either result reduces load-carrying capacity of the part. A safety hazard can also be created for operating personnel, who may be burned by the high-velocity steam jets.

~~d) Interface leakage, including joints and bolted connections.~~

~~1) Joint Interface Corrosion~~

~~Jacking forces, which develop from the expansion of corrosion products between head-to-shell flanges, cause flange separation and create leakage paths between the flanges and/or through the bolt holes.~~

~~2) Insufficient Joint Clamping Force~~

~~Through inadequate design, improper assembly, loss of washer/gasket, or stress corrosion cracking of connecting bolts, the clamping force between mating flanges is insufficient to retain internal pressure.~~

~~3) Washer/Gasket Functional Loss~~

~~Deterioration, caused by corrosion or expulsion, provides a path for escaping steam and condensate.~~

~~4) Flange Machining Variation~~

~~Variations in surface contour of flange faces may create leakage paths.~~

~~e) Through-Wall Leakage~~

~~Cast iron inherently exhibits shrinkage porosity. Where porosity linkages occur between internal and external surfaces, a path for steam leakage is made available. Such leakage is largely an operational issue, as holes are formed in the paper product, demanding expedient attention.~~

## **S5.3.2 CRACKING**

~~Cracks in cast-iron parts are problematic because of the relatively low fracture toughness compared with standard, more ductile pressure vessel materials and because strengthening repair through welding is prohibited. Furthermore, Yankee dryers are subject to both low-cycle and high-cycle fatigue loading; c. Consequently, considerable emphasis is placed upon quality inspection for crack detection and timely remediation of cracks, ~~the central causes of which (in Yankee dryers) are:~~ Possible causes include:~~

### **S5.3.2.0 EXCEEDING MAXIMUM ALLOWABLE OPERATING CONDITIONS**

~~a) Overpressurization~~

~~As shell thickness is routinely diminished through time, Yankee dryers are designed to operate within the pressure limitations set down by ASME Section VIII and the safety factors~~

inherent to the ~~“De-rate Curve”~~ calculated documentation provided by the vessel manufacturer or equally qualified source. Failure to maintain operation within the ~~steam pressure parameters~~ established by those criteria can ~~, in the extreme,~~ lead to cracking.

b) ~~Pressure Roll Overload~~

~~Included in Yankee dryer shell design is a fatigue factor of safety. Exceeding allowable roll load, in combination with other stress-elevating or strength-reducing conditions, can precipitate fatigue cracking and failure.~~

### **S5.3.2.1 THROUGH JOINTS AND BOLTED CONNECTIONS**

a) Joint Interface Corrosion

Jacking forces, which develop from the expansion of corrosion products between head-to-shell flanges, cause flange separation and create leakage paths between the flanges and/or through the bolt holes. The products of corrosion occupy a larger volume than the base metal. The forces created by this expansion are sufficient to cause cracking in flanges or bolts. Without remediation, expansion will continue until failure occurs. Corrosion products form in the presence of moisture in the crevice created between flanges, wherever the clamping force is insufficient to maintain contact between the mating surfaces.  
~~Jacking forces, which develop from the expansion of corrosion products between head-to-shell flanges, cause flange separation and create leakage paths between the flanges and/or through the bolt holes.~~

b) Insufficient Joint Clamping Force

Through inadequate design, improper assembly, loss of washer/gasket, or stress corrosion cracking of connecting bolts, the clamping force between mating flanges is insufficient to retain internal pressure.

c) Washer/Gasket Functional Loss

Deterioration, caused by corrosion or ~~expulsion~~ gasket damage, provides a path for escaping steam and condensate.

d) Flange Machining Variation

Variations in surface contour of flange faces may create leakage paths.

### **S5.3.2.2 THROUGH-WALL LEAKAGE**

Cast iron inherently exhibits shrinkage porosity. Where porosity linkages occur between internal and external surfaces, a path for steam leakage is made available. Such leakage in a cast iron ~~the~~ shell is largely an operational issue, as holes are formed in the paper product, demanding expedient attention. Steel shells are not cast, and any through-wall leakage would likely be due to a through-wall crack which should be addressed immediately.

### **S5.3.2.3 IMPACT FROM OBJECTS PASSING THROUGH THE ~~YANKEE/PRESSURE ROLL~~ NIP**

An object passing through the nip can create a localized impact that leads to elevated stress within fatigue loaded material.

~~Because of cast iron's low fracture toughness, it is especially intolerant of local, high-impact loads.~~

#### **S5.3.2.4 STRESS MAGNIFICATION AROUND DRILLED HOLES**

Surface defects, caused by porosity and indentations, are frequently repaired with driven plugs, having some level of interference fit. Pumping ports, threaded for a tapered pipe fitting, are often installed as a standard Yankeeyankee design feature for sealant injection into flange interfaces. When installed, both produce an area of increased stress, local to the hole's edge. In the case of driven plugs, this stress can be exaggerated by excessive interference fits and by closely-grouped or overlapping plugs. Over-torque of threaded, tapered plugs can cause cracks to develop at the periphery of the hole.

#### **S5.3.2.5 ~~THERMAL STRESS AND/OR MICRO-STRUCTURAL CHANGE FROM EXCESSIVE LOCAL HEATING AND COOLING~~**

Transient thermal stresses are usually the highest encountered by a Yankeeyankee dryer. Temperature differential through and between parts can be of such magnitude as to exceed the strength of the material. When abnormal thermal loads occur, nondestructive examination is crucial to ensure the vessel's fitness-for-service. Micro-structural change and transient thermal stresses, sufficiently high to cause cracking in Yankeeyankee dryers, have resulted, or could result, from:

- a) Bearing failure;
- b) Rapid warm-up;
- c) Excessive steam temperature;
- d) Heat from fires;
- e) Application of water sprays to fight fires and remove paper jams;
- f) Continuous and excessive local cooling from water sprays;
- g) Operating heating or cooling systems while the Yankeeyankee dryer is stationary; (e.g., high-temperature air impingement hoods, infra-red heating devices, coating showers);
- h) Welding and electrical arcs ~~on cast-iron parts; and~~
- i) Excessive local temperature due to improper thermal spray application.

#### **S5.3.2.6 JOINT INTERFACE CORROSION**

~~The products of corrosion occupy a larger volume than the base metal. The forces created by this expansion are sufficient to cause cracking in cast-iron flanges. Without remediation, expansion will continue until failure occurs. Corrosion products form in the presence of~~

~~moisture in the crevice created between flanges, wherever the clamping force is insufficient to maintain contact between the mating surfaces.~~

### **S5.3.2.67 STRESS-CORROSION CRACKING OF STRUCTURAL BOLTS**

Stress-corrosion cracking (SCC) is the result of the combination of a corroding agent, material sensitivity, tensile stress, and temperature. At stress levels sufficiently high to induce SCC in the presence of a corrosive medium, attack proceeds along or through grain boundaries perpendicular to the direction of maximum tensile stress. Cracking can initiate with little or no evidence of general corrosion.

### **S5.3.3 CORROSION**

Corrosion culminates with a failure in component functionality by diminishing load-carrying capacity or by generating forces beyond the material's strength. In addition to SCC, corrosion-jacking of joints ~~(head to shell joint)~~, wear-corrosion, and deterioration of washers described above, oxygen pitting, and general corrosion wastage need to be considered as potential failure causes. These latter two corrosion conditions are the result of inadequate boiler water treatment. ~~Oxygen pitting has been encountered, but rarely.~~

### **S5.4 INSPECTIONS**

- a) ~~Yankee dryers should be inspected on a routine periodic basis. However, as a minimum, T~~the Yankee yankee dryer should be inspected internally and externally at least one time every two years. The degree and frequency of inspection should be determined based on OEM recommendations, owner/user experience, and risk-based considerations.
- b) As appropriate, the following items should be included depending on material of construction and design:
  - 1) Head-to-shell joint;
  - 2) Shell out-of-roundness;
  - 3) Shell centerline thickness;
  - 4) Tilt of head flange;
  - 5) Integrity and security of internal parts;
  - 6) Spigot fit of flanged joints (head-to-shell, head-to-journal);
  - 7) Integrity of structural bolts and studs; ~~and~~
  - 8) Previously identified areas of deterioration and damage; ~~and~~
  - 9) Welds within pressure-retaining items.
  - ~~1) Head-to-shell joint;~~



~~2) 1) Shell out-of-roundness;~~

~~3) 1) Shell centerline thickness;~~

~~4) 1) Tilt of head flange;~~

~~5) 1) Integrity and security of internal parts;~~

~~6) 1) Spigot fit of flanged joints (head-to-shell, head-to-journal);~~

~~7) 1) Integrity of structural bolts and studs; and~~

~~8) 1) Previously identified areas of deterioration and damage.~~

- c) When a nonstandard load event occurs, or a material non-conformity is noted, an inspection should be performed to assess fitness for continued service. This inspection may involve testing methods not typically used in routine inspections and may also involve removal of material samples for destructive testing.

## **S5.5 NONDESTRUCTIVE EXAMINATION**

- a) Nondestructive examination (NDE) methods shall be implemented by individuals qualified and experienced with the material to be tested using written NDE procedures. For cast Yankeeyankee dryers, cast-iron knowledge and experience are essential.
- b) Typical nondestructive examination methods should be employed to determine indication length, depth, and orientation (sizing) of discontinuities in Yankeeyankee dryers. Magnetic particle, specifically the wet fluorescent method, and dye penetrant methods are applicable in the evaluation of surface-breaking indications. Ultrasonic testing is the standard method for evaluation of surface-breaking and embedded indications. Radiographic methods are useful in the evaluation of embedded indications. Acoustic emission testing can be used to locate and determine if a linear indication is active, i.e., propagating crack. Metallographic analysis is useful in differentiating between original casting discontinuities and cracks.
- c) When nondestructive examination produces an indication, the indication is subject to interpretation as false, relevant, or non-relevant. If it has been interpreted as relevant, the necessary subsequent evaluation will result in a decision to accept, repair, replace, monitor, or adjust the maximum allowable operating parameters.

e)d) The inspection shall include review of the NDE history.

## **S5.6 PRESSURE TESTING**

- a) Water pressure testing in the field is not recommended because of the large size of the Yankeeyankee dryers and the resulting combined weight of the Yankeeyankee dryer and the water used in testing. This combined weight can lead to support structure overload. Several failures of Yankeeyankee dryers have occurred during field pressure testing using water. If this test must occur, the following review is recommended:

1) The testing area should be evaluated for maximum allowable loading, assuming the weight of the Yankeeyankee dryer, the weight of the water filling the Yankeeyankee dryer, and the weight of the support structure used to hold the Yankeeyankee dryer during the test.

2) The building and supporting structures should be assessed for overload.

~~2) The manufacturer should be contacted to provide information on building the Yankee dryer support structure for the water pressure test. Typically, the Yankee dryer is supported on saddles that contact the testing area and should be evaluated for maximum allowable loading, assuming the weight of the Yankee dryer, the weight of the water filling the Yankee dryer, and the weight of the support structure used to hold the Yankee dryer during the test.~~

**PL-5**

3) The Yankeeyankee manufacturer should be contacted to provide information on building the Yankeeyankee dryer support structure for the water pressure test. Typically, the Yankeeyankee dryer is supported on saddles that contact the Yankeeyankee dryer shell at each end near the head-to-shell joint. The manufacturer can provide information on saddle sizing and location so that the Yankeeyankee dryer is properly supported for the test.

b) Steam or air is recommended when pressure testing is performed. Acoustic emission testing is recommended in conjunction with pressure testing when there are concerns for deterioration or fitness for service. ~~When pressure testing is desired to evaluate forms of deterioration, acoustic emission testing, with steam or air, is recommended. Typically, the test pressure used is the operating pressure.~~

## **S5.7 TABLES AND FIGURES**

e) ~~FIGURE S5.2, De-Rate Curve.~~

**Task Group Locomotive Boilers****Summary**

Many steam locomotive operators do not inspect the sliding firebox supports on their locomotives (when they are equipped). Inspections have found them to be rusted in-place causing breakage of connection bolts and other damage to the locomotive firebox and mudring.

Furnace slide supports which are locked in-place by corrosion will adversely impact the thermal expansion of the boiler and lead to staybolt breakage.

**Proposal****S1.4.2.29 BOILER ATTACHMENT BRACKETS**

The boiler attachment brackets and associated components and fasteners used to secure the boiler to the frame shall be inspected for:

- a) Correct installation;
- b) Damaged or missing components;
- c) Looseness;
- d) Leakage;
- e) Loose, bent, broken, or damaged rivets, nuts, bolts and studs;
- f) Defective rivets; and
- g) Provision for expansion; and free movement of sliding supports.
- ~~h) Corrosion which may preclude free movement of sliding supports.~~



**PROPOSED REVISION OR ADDITION**

<b>Item No.</b> A 21-35	
<b>Subject/Title</b> Part 3, Table S1.1.3.1, Threaded Staybolts and Patch Bolts is incorrect	
<b>NBIC Location</b> Part: Repairs and Alterations; Section: S1; Paragraph: S1.1.3.1	
<b>Project Manager and Task Group</b>	
<b>Source (Name/Email)</b> Linn Moedinger / linnwm@supernet.com	
<b>Statement of Need</b> The wording in the 2017 NBIC was "Threaded Staybolts and Patch Bolts SA-31 Grade A SA-675 with a tensile strength of 47,000 psi to 65,000 psi inclusive" A change was made for the 2019 Edition to reflect the grades rather than tensile strength. Somehow the wrong grades were used and this was not caught until now.	
<b>Background Information</b> ASME adopted SA-675 grades 45, 50, and 55 rather than using the tensile strengths of the material. Using the grades allows for material from 45ksi to 65ksi. The limitation of 7500 psi stay stress on locomotive boilers allows for 45ksi to be used with a design margin of 6.	
<b>Existing Text</b> Threaded Staybolts and Patch Bolts SA-31 Grade A, SA-675 grade 60, 65, 70	<b>Proposed Text</b> Threaded Staybolts and Patch Bolts SA-31 Grade A, SA-675 grade <del>60,</del> <u>65, 70, 45, 50, 55</u>

#### **S2.6.3.4 GENERALIZED THINNED AREAS**

- a) For corroded areas exceeding the specifications in S2.6.3.1, S2.6.3.2, and S2.6.3.3, the remaining thickness may be averaged over an area not exceeding the UT-grid size specified in S2.6.2 ~~e)b)~~ or S2.6.2 ~~e)c)~~.
  - 1) The least measured remaining thickness within the grid indicated in S2.6.2 ~~e)b)~~ or S2.6.2 ~~e)c)~~ as applicable shall not be less than 50% of the required thickness per the calculation for MAWP.
  - 2) The average remaining thickness recognized from the grid indicated in S2.6.2 ~~e)b)~~ or S2.6.2 ~~e)c)~~ as applicable shall not be less than 75% of the required thickness per the calculation for MAWP.

Item 22-01

January 18, 2022

Add the below definition to the Glossary:

**Interference Fit**

An interference fit, also known as a press fit or friction fit, is a form of fastening between two tight fitting mating parts that produces a joint which is held together by friction after the parts are pushed together.

NOTE: This definition is directly from Wikipedia

## AWS Liaison Report January 2022

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The B2 committee is in the process of systematically updating all published SWPS's to bring them in line with the advancements realized by the Welding Community over the last 20 years or so.

To date. The status of that effort is;

B2.1-1-001: 2020	B2.1-1-201: 2019	B2.1-8-215: 2022	B2.1-1/8-229: 2022
B2.1-1-002: 2020	B2.1-1-202: 2019	B2.1-8-216: 2022	B2.1-1/8-230: 2022
B2.1-1-016: 2018	B2.1-1-203: 2019	B2.1-4-217: 2021	B2.1-1/8-231: 2022
B2.1-1-017: 2018	B2.1-1-204: 2019	B2.1-4-218: 2021	B2.1-1-232: 2020
B2.1-1-018: 2021	B2.1-1-205: 2019	B2.1-4-219: 2021	B2.1-1-233: 2020
B2.1-1-019: 2018	B2.1-1-206: 2019	B2.1-4-220: 2021	B2.1-1-234: 2021
B2.1-1-020: 2018	B2.1-1-207: 2019	B2.1-4-221: 2021	B2.1-1-235: 2021
B2.1-1-021: 2018	B2.1-1-208: 2019	B2.1-5A-222: 2021	
B2.1-1-022: 2018	B2.1-1-209: 2019	B2.1-5A-223: 2021	
B2.1-8-023: 2018	B2.1-1-210: 2022	B2.1-5A-224: 2021	
B2.1-8-024: 2022	B2.1-1-211: 2022	B2.1-5A-225: 2021	
B2.1-8-025: 2022	B2.1-8-212: 2022	B2.1-5A-226: 2021	
B2.1-1-026: 2018	B2.1-8-213: 2022	B2.1-1/8-227: 2022	
B2.1-1-027: 2018	B2.1-8-214: 2022	B2.1-1/8-228: 2022	

**STATUS:**

2022 14 SWPSs: Updated and at the various stages of the B2 committee balloting process

2021 13 SWPSs approved and in process of publication in the 1<sup>st</sup> quarter of 2022.

2020 4 SWPSs Done

2019 9 SWPSs Done

2018 9 SWPSs Done

**TOTAL: 49 SWPSs**

The long-range plan for the updated SWPSs is to group them into an ANSI approved “Stabilized Maintenance” program” changing from the traditional ANSI 5year revision/re-affirmation program to a 10-year revision/re-affirmation program

As in the past, as newly developed SWPS's are approved by the various committees, they will be offered to the NBIC for adoption.

The format of Table 2.3 was updated, balloted, and approved by the NBIC in January 2021 but, unfortunately, this revision missed the closing date for publication of the 2021 Edition of the NBIC. See page 2 of this report for details

Regards,

*Jim Sekely*

### 2.3 STANDARD WELDING PROCEDURE SPECIFICATIONS (SWPSs)

a) One or more SWPSs from NBIC Part 3, Table 2.3 may be used as an alternative to one or more WPS documents qualified by the organization making the repair or alteration, provided the organization accepts by certification (contained therein) full responsibility for the application of the SWPS in conformance with the Application as stated in the SWPS. When using SWPSs, all variables listed on the Standard Welding Procedure are considered essential and, therefore, the repair organization cannot deviate, modify, amend, or revise any SWPS. US Customary Units or metric units may be used for all SWPSs in NBIC Part 3, Table 2.3, but one system shall be used for application of the entire SWPS in accordance with the metric conversions contained in the SWPS. The user may issue supplementary instructions as allowed by the SWPS. Standard Welding Procedures Specifications shall not be used in the same product joint together with the other Standard Welding Procedure Specifications or other welding procedure specifications qualified by the organization. SWPSs may be purchased at the AWS Bookstore at <http://pubs.aws.org>.

b) The AWS reaffirms, amends or revises SWPSs in accordance with ANSI procedures.

c) The use of previous versions of the listed SWPSs is permitted. Previous versions include Amended, Reaffirmed Revised or Superseded SWPSs regardless of the publication date.

**TABLE 2.3**

**SWPS DESIGNATION: YEAR**

B2.1-1-001: 2020	B2.1-1-201: 2019	B2.1-8-215: 2012	B2.1-1/8-229: 2013
B2.1-1-002: 2020	B2.1-1-202: 2019	B2.1-8-216: 2012	B2.1-1/8-230: 2013
B2.1-1-016: 2018	B2.1-1-203: 2019	B2.1-4-217: 2009	B2.1-1/8-231: 2015
B2.1-1-017: 2018	B2.1-1-204: 2019	B2.1-4-218: 2009	B2.1-1-232: 2020
B2.1-1-018: 2005	B2.1-1-205: 2019	B2.1-4-219: 2009	B2.1-1-233: 2020
B2.1-1-019: 2018	B2.1-1-206: 2019	B2.1-4-220: 2009	B2.1-1-234: 2006
B2.1-1-020: 2018	B2.1-1-207: 2019	B2.1-4-221: 2009	B2.1-1-235: 2006
B2.1-1-021: 2018	B2.1-1-208: 2019	B2.1-5A-222: 2009	
B2.1-1-022: 2018	B2.1-1-209: 2019	B2.1-5A-223: 2009	
B2.1-8-023: 2018	B2.1-1-210: 2012	B2.1-5A-224: 2009	
B2.1-8-024: 2012	B2.1-1-211: 2012	B2.1-5A-225: 2009	
B2.1-8-025: 2012	B2.1-8-212: 2012	B2.1-5A-226: 2009	
B2.1-1-026: 2018	B2.1-8-213: 2012	B2.1-1/8-227: 2013	
B2.1-1-027: 2018	B2.1-8-214: 2012	B2.1-1/8-228: 2013	