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THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD INSPECTION CODE COMMITTEE

MAIN SESSION MINUTES

Meeting of July 14th, 2022
Indianapolis, IN

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1. **Call to Order**

Main Committee Chair Mr. George Galanes called the meeting to order at 9:10am local time.

2. **Introduction of Members and Visitors**

Mr. Galanes began the meeting with an introduction of members and visitors. The introductions began with those attending in-person, followed by a roll call of those attending virtually. A full list of attendees can be found on Attachment Pages 1-5.

3. **Check for a Quorum**

After introductions were concluded, Mr. Galanes announced that a quorum had been achieved. The following Main Committee members attended the meeting virtually:

- Mr. Brian Morelock
- Mr. Craig Hopkins
- Mr. Mike Richards
- Mr. Jim Sekely
- Mr. Randy Austin
- Mr. Marty Toth
- Mr. Eddie Wiggins
- Mr. Thakor Patel

All other members attended the meeting in-person.

4. **Awards/Special Recognition**

Mr. Scribner presented Mr. Jim Getter and Ms. Melissa Wadkinson an award for five years of membership on the Main Committee and thanked them for their contributions to the NBIC. He then presented a Certificate of Appreciation to Mr. Bob Wielgoszinski to thank him for his many years on the committee and his many contributions to the code. Mr. Wielgoszinski then spoke briefly about his time on the NBIC committees and his appreciation for the code, the committees, and the National Board.

5. **Announcements**

Mr. Galanes provided the following announcements:

- The National Board will be hosting lunch today at 11:30am in the City Way Gallery.

- This meeting marks the end of the development cycle for the 2023 NBIC. This will be the last meeting which items can be approved for inclusion in the 2023 edition.

- Mr. Robert Underwood, Mr. Timothy Barker, Ms. Kathy Moore, and Mr. Ben Schaefer were nominated for appointment to Main Committee. A full listing of all membership appointments and reappointments can be found in the Main Committee Executive Session minutes.

6. **Adoption of the Agenda**

Before taking a motion to adopt the meeting agenda, Mr. Galanes asked if any changes or additions needed to be made. Ms. Moore announced that Item 22-21, Examples of Alterations, would need to be added to the Subcommittee Repairs & Alterations (R&A) report. Mr. Getter announced that Item 22-22, Review of NDE Requirements, would need to be added to the Subcommittee Inspection report. Ms. Marianne Brodeur

announced that Item 22-20 would need to be added to the Subcommittee Pressure Relief Devices (PRD) report. Mr. Scribner also added that Item 22-23, which deals with removing Section 8 of the NBIC from all four parts, would need to be included in this agenda.

No additional items were added to the agenda. A motion was made, seconded, and unanimously approved to adopt the agenda with the additions mentioned above.

7. Approval of the Minutes of the January 20th, 2022 Meeting

The minutes are available for review online at https://www.nationalboard.org/Index.aspx?pageID=13&ID=18.

A motion was made, seconded, and unanimously approved to accept the minutes from the January 2022 Main Committee meeting.

8. Items Approved for 2023 NBIC

See Attachment Pages 6-7 for a list of items approved for the 2023 NBIC.

9. NB-240 Revisions

There have been two proposed revisions to NB-240, *National Board Inspection Code Procedures*. The first revision changes the definitions of "General Interest" to allow jurisdictional employees to become NBIC committee members. The second revision changes several instances of "Chairman of the Board" to "Chair of the Board of Trustees". These revisions can be found on Attachment Pages 20-50.

Mr. Scribner presented the proposed changes to NB-240. After reviewing the changes, Mr. Galanes called for a motion. A motion was made and seconded to approve the changes to NB-240. This motion passed unanimously.

10. Removing Section 8 of the NBIC from all four Parts (Item 22-23, Attachment Page 51)

Mr. Scribner stated that Section 8 of the NBIC, which provides instructions for submitting technical inquiries, has become outdated due to the implementation of the online submission system on the Business Center. Furthermore, keeping the instructions in the technical body of the code would make it harder to keep the section up to date with any future changes to the submission process. He also explained that a section was added to the NBIC Introduction detailing the online submission process. Because of this, Mr. Scribner proposed deleting all text in Section 8 and replacing that text with the following statement:

- "The process for submitting requests for Interpretations, Code Revisions, and Code Additions has been moved to the Introduction of this book."

By moving these instructions to the Introduction, National Board staff will be able to adjust them at any time since the Introduction is not part of the technical code.

No further discussion was held. A motion was made, seconded, and unanimously approved to accept this proposal.

11. Potential New Part 3 Supplement for Advanced Materials and Engineered Weld Repairs.

Mr. Robert Underwood gave a brief presentation on a study to determine the feasibility of creating a new supplement in Part 3 that would contain new fitness for service (FFS) guidelines and several of the alternative welding methods and repair methods unique to advanced materials (e.g., CSEF and other new materials) used in the power generation and petrochemical industries. It was determined that moving these processes into a supplement would help streamline Part 3 and make it more user-friendly for **R** Stamp holders. Mr. Underwood

stated that this project would begin during the 2025 NBIC development cycle and may run into the 2027 NBIC cycle as well. For more details on the study, please review the presentation on Attachment Pages 8-19.

12. Items Requiring a Reconsideration Vote

Letter ballots submitted to the Main Committee for these items were found to be in nonconformance to the ballot procedures found in NB-240. They will require a reconsideration vote to be approved for inclusion in the 2023 NBIC.

Item Number: NB15-0308	**NBIC Location: Part 4**	**Attachment Pages 52-58**
General Description: - Create Guidelines for Installation of Pressure Relief Devices for Organic Fluid Vaporizers. **Task Group:** T. Patel (PM), K. Beise, B. Nutter **Ballot Results:** The original ballot passed with 12 Approved votes and 4 Disapproved votes. **Reason for Reconsideration:** The Main Committee ballot for this item received disapproval votes, and no follow-up ballot was sent out to allow members to reaffirm or change their vote based on the Project Manager's responses to the disapproval votes. (See NB-240, 7.3.2) **July 2022 Meeting Action:** Ms. Wadkinson reported on this item. After some discussion on potentially sending this out for another letter ballot, the committee decided instead to take a vote to reaffirm the original votes for the ballot. A motion was made, seconded, and unanimously approved to reaffirm the existing votes from the Main Committee letter ballot.		

Item Number: NB15-0321	**NBIC Location: Part 4, 3.2.5 a) and Part 2, 2.5.7 a)**	**Attachment Pages 59-70**
General Description: Review testing requirements for in-service testing of pressure relief devices **Task Group:** A. Cox, A. Renaldo (PM), D. Marek, S. Irvin, D. DeMichael, B. Nutter, J. Ball **Ballot Results:** The original ballot passed with 13 Approved votes and 3 Disapproved votes. **Reason for Reconsideration:** The Main Committee ballot for this item was not properly authorized to be submitted to Main Committee (NB-240, 7.3.1). The ballot also received disapproval votes, and no follow-up ballot was sent out to allow members to reaffirm or change their vote based on the Project Manager's responses to the disapproval votes. (See NB-240, 7.3.2) **July 2022 Meeting Action:** Ms. Wadkinson reported on the item**.** The committee looked through the proposal and ballot comments, and Mr. Newton and Mr. Sansone were asked if they would like to change their vote based on the Project Manager's responses. Both members stated that they would change their vote from Disapprove to Approve. A motion was made and seconded to reaffirm the existing approval votes, and for Mr. Newton's and Mr. Sansone's votes to be recorded as Approve. This motion passed unanimously.		

Item Number: 19-84	NBIC Location: Part 2, S2.10.7	Attachment Pages 71-77

General Description: Inspecting riveted joints for failure

Subgroup: SG Historical

Task Group: F. Johnson (PM)

Ballot Results: The original ballot passed with 16 Approved votes and 2 Disapproved votes.

Reason for Reconsideration: The Main Committee ballot received disapproval votes, and no follow-up ballot was sent out to allow members to reaffirm or change their vote based on the Project Manager's responses to the disapproval votes. (See NB-240, 7.3.2)

July 2022 Meeting Action: Ms. Wadkinson presented this item and noted that an editorial correction needed to be made based on the ballot comments and project manager's response. Mr. Galanes stated that he would like to change his original vote from Disapprove to Approve since the editorial correction addressed his original concern. A motion was made and seconded to reaffirm the original Approve votes and to change Mr. Galanes' vote to Approve. This motion passed unanimously.

Item Number: 19-88	NBIC Location: Part 2, 2.2.12.7 c) 2)	Attachment Pages 78-82

General Description: At NBIC Part II propose the following be added to Thermal Fluid Heater

Subgroup: Inspection

Task Group: V. Scarcella (PM), M. Sansone, T. Bolden, M. Wadkinson

Ballot Results: The original ballot passed with 15 Approved votes and 1 Disapproved vote.

Reason for Reconsideration: The Main Committee ballot received disapproval votes, and no follow-up ballot was sent out to allow members to reaffirm or change their vote based on the Project Manager's responses to the disapproval votes. (See NB-240, 7.3.2)

July 2022 Meeting Action: Ms. Wadkinson presented this item and the project manager's response to the ballot comments. Mr. Sansone stated that he would like to change his original vote from Disapprove to Approve since the project manager's response addressed his original concern. A motion was made and seconded to reaffirm the original Approve votes and to change Mr. Sansone's vote to Approve. This motion passed unanimously.

Item Number: 20-34	NBIC Location: Part 1	Attachment Pages 83-101

General Description: Venting of gas train components

Subgroup: SG Installation

Task Group: P. Jennings (PM), M. Washington, R. Adams

Ballot Results: The original ballot passed with 13 Approved votes and 1 Abstention.

Reason for Reconsideration: The Main Committee ballot for this item was not properly authorized to be submitted to Main Committee (NB-240, 7.3.1).

July 2022 Meeting Action: Ms. Wadkinson reported on this item. A motion was made, seconded, and unanimously approved to reaffirm the existing vote results for this item.

Item Number: 20-56	NBIC Location: Part 4, 3.4	Attachment Pages 102-105

General Description: Review and clarify requirements training program for T/O holders

Subgroup: PRD

Task Group: A. Donaldson (PM), A. Cox, B. Donaldson, D. Marek, J. Simms, P. Dhobi, D. McHugh

Ballot Results: The original ballot passed with 15 Approved votes.

Reason for Reconsideration: The Main Committee ballot for this item was not properly authorized to be submitted to Main Committee (NB-240, 7.3.1).

July 2022 Meeting Action: Ms. Wadkinson presented this item and noted that some editorial corrections needed to be made based on the ballot comments and project manager's response. Once the corrections were made, a motion was made, seconded, and unanimously approved to accept the proposal with the editorial corrections.

Item Number: 21-51	NBIC Location: Part 4, Supplement 3	Attachment Pages 106-109

General Description: Clarify relief valve term to be pressure relief valve in Supplement 3

Subgroup: PRD

Task Group: T. Beirne (PM)

Ballot Results: The original ballot passed with 16 Approved votes.

Reason for Reconsideration: The Main Committee ballot for this item was not properly authorized to be submitted to Main Committee (NB-240, 7.3.1).

July 2022 Meeting Action: Ms. Wadkinson reported on this item. A motion was made, seconded, and unanimously approved to reaffirm the existing vote results for this item.

13. Report of Subcommittees

a. Subcommittee Pressure Relief Devices

i. Interpretations

There are currently no open interpretation requests for Part 4.

ii. Action Items – Old Business

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

General Description: Create Guidelines for Installation of Overpressure Protection by System Design.

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

July 2022 Meeting Action: Ms. Brodeur stated that work is still being done on this item.

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

General Description: Create Guidelines for Repair of Pin Devices.

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

July 2022 Meeting Action: Ms. Brodeur stated that work is still being done on this item.

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

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

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

July 2022 Meeting Action: Ms. Brodeur stated that work is still being done on this item.

Item Number: 17-119	NBIC Location: Part 4, 2.2.5 and Part 1, 2.9.1.4	No Attachment

General Description: States pressure setting may exceed 10% range. Clarify by how much.

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

July 2022 Meeting Action: Ms. Brodeur reported that SG and SC PRD voted to close this item with no action, as ASME has not taken any action on this subject. A motion was made, seconded, and unanimously approved to close this item with no action.

Item Number: 19-37	NBIC Location: Part 4, 4.3.1 c) 4)	No Attachment

General Description: Origin of Replacement Parts for Pressure Relief Devices

Task Group: A. Cox (PM), T. Patel, P. Dhobi, J. Simms

Explanation of Need: 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.

July 2022 Meeting Action: Ms. Brodeur reported that SG and SC PRD voted to close this item with no action, as the change was determined to be unnecessary. A motion was made, seconded, and unanimously approved to close this item with no action.

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

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

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

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

July 2022 Meeting Action: Ms. Brodeur stated that work is still being done on this item.

Item Number: 20-85	NBIC Location: Part 4, 3.2.6	No Attachment

General Description: Add language to Part 4, 3.2.6 to define test intervals for thermal fluid heater PRDs

Subgroup: PRD

Task Group: B. Nutter (PM), T. Patel, D. Schirmer, J. Wolf

Explanation of Need: The proposed language comes from work done on action item 19-88.

July 2022 Meeting Action: Ms. Brodeur stated that work is still being done on this item.

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

General Description: Additional guidance for tank vent repairs

Subgroup: PRD

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

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

July 2022 Meeting Action: Ms. Brodeur stated that work is still being done on this item.

Item Number: 21-18	NBIC Location: Part 4, 3.2.6	No Attachment

General Description: Pressure Tests for Pressure Relief Valve Repair Parts

Subgroup: PRD

Task Group: J. Simms (PM), T. Tarbay, A. Donaldson, D. DeMichael, T. Patel, B. Nutter

Explanation of Need: 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?

July 2022 Meeting Action: Ms. Brodeur stated that work is still being done on this item.

Item Number: 21-36	NBIC Location: Part 4, 3.3.3.4 i)	No Attachment

General Description: Add Test Details to NBIC Part 4, 3.3.3.4 i) Valve Adjustment and Sealing

Subgroup: PRD

Task Group: None assigned

Explanation of Need: 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.

July 2022 Meeting Action: Ms. Brodeur stated that work is still being done on this item.

Item Number: 21-59	NBIC Location: Part 4, 3.2.6.1	No Attachment

General Description: Deferral of inspection due dates (pressure relieving devices NBIC PART IV)

Subgroup: PRD
Task Group: None assigned

Explanation of Need: 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.

July 2022 Meeting Action: Ms. Brodeur stated that work is still being done on this item.

Item Number: 21-61	NBIC Location: Part 4, 3.3.4	No Attachment

General Description: Audit Requirements for the T/O holder

Subgroup: PRD
Task Group: A. Donaldson (PM), A. Cox, J. Simms, P. Dhobi, T. Tarbay, D. Marek

Explanation of Need: 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.

July 2022 Meeting Action: Ms. Brodeur stated that work is still being done on this item.

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

General Description: Verification of existing spring during repair activities

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

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

July 2022 Meeting Action: Ms. Brodeur stated that work is still being done on this item.

Item Number: 21-63	NBIC Location: Part 4, 4.7.2	Attachment Page 110

General Description: Require unique identifier marked on Pilots in addition to main valves

Subgroup: PRD
Task Group: B. Donaldson (PM), B. Nutter, D. Gonzales, J. Simms, T. Patel, D. Marek, T. Beirne

Explanation of Need: 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.

July 2022 Meeting Action: Ms. Brodeur presented the proposal for this item, which had been unanimously approved by SG and SC PRD. A motion was made, seconded, and unanimously approved to accept this proposal as presented.

Item Number: 21-84	NBIC Location: Part 4, 3.2.4.3 and Part 2, 2.5.5.3	Attachment Page 111

General Description: Update duplicate nameplate marking requirements to reflect new Section XIII

Subgroup: PRD
Task Group: A. Cox (PM), D. Sullivan, D. Marek, P. Dhobi, B. Nutter, T. Beirne

Explanation of Need: 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.

July 2022 Meeting Action: Ms. Brodeur presented the proposal for this item, which had been unanimously approved by SG and SC PRD. Mr. Wielgoszinski asked for clarification on the changes being made, and Mr. Tom Beirne provided further explanation. After discussion concluded, a motion was made, seconded, and unanimously approved to accept this proposal as presented.

iii. New Items:

Item Number: 22-08	NBIC Location: Part 4, 2.4.1.6 & 2.4.4.2; Part 1, 3.9.1.6 & 3.9.4.2	No Attachment

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

Subgroup: PRD

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

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

July 2022 Meeting Action: Ms. Brodeur stated that work is being done on this item.

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

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

Subgroup: PRD

Task Group: A. Donaldson (PM), R. Donalson, B. Nutter, T. Tarbay, J. Simms
Explanation of Need: There are no requirements to address valve repairs that were manufactured or assembled to Code Case 2787 (use of more than one certified capacity on the pressure relief valve or the nameplate).

July 2022 Meeting Action: Ms. Brodeur stated that work is being done on this item.

Item Number: 22-15	NBIC Location: Part 4, 2.4.5 and Part 1, 3.9.5	No Attachment

General Description: What is the meaning of "service limitations" as used in Part 4, 2.4.5?

Subgroup: PRD

Task Group: T. Beirne (PM), B. Nutter, T. Clark

Explanation of Need: Part 4, 2.4.5 (also Part 1, 3.9.5) references "service limitations set forth in Part 1, 3.2, Definitions" when establishing pressure relief requirements for tanks and heat exchangers. Part 1, 3.2 points readers to the glossary. As "service limitations" is not itself defined within the glossary, and the term does not appear elsewhere in the code, what specific service limitations are being referenced?

July 2022 Meeting Action: Ms. Brodeur stated that work is being done on this item.

Item Number: 22-16	NBIC Location: Part 4, 2.4.4 and Part 1, 3.9.4	No Attachment

General Description: Allow the use of pressure relief valves on potable water heaters.

Subgroup: PRD

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

Explanation of Need: ASME Section IV, Part HLW-800.1 allows the use of pressure relief valves in place of temperature and pressure relief valves on potable water heaters. NBIC Parts 1 and 4 specifically require temperature and pressure relief valves, which is not consistent with the code of construction. Some manufacturers are shipping HLW stamped potable water heaters with pressure relief valves. Often the physical construction of these units is such that a temperature and pressure relief valve cannot be accommodated.

July 2022 Meeting Action: Ms. Brodeur stated that work is being done on this item.

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

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

Subgroup: PRD

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

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

July 2022 Meeting Action: Ms. Brodeur stated that work is being done on this item.

b. Subcommittee Installation

i. Interpretations

There are currently no open interpretation requests for Part 1.

ii. Action Items – Old Business

Item Number: 20-27	**NBIC Location: Part 1, 1.6.9 & S6.3**	**No Attachment**

General Description: Carbon Monoxide Detector/Alarm NBIC 2019

Subgroup: SG Installation

Task Group: E. Wiggins (PM), R. Spiker, R. Smith, G. Tompkins, S. Konopacki and R. Austin

Explanation of Need: 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?

July 2022 Meeting Action: Mr. Don Patten provided a progress report for this item.

Item Number: 20-33	**NBIC Location: Part 1**	**No Attachment**

General Description: Flow or Temp Sensing Devices forced Circulation Boilers

Subgroup: SG Installation

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

Explanation of Need: Incorporation of applicable CSD-1 requirements.

July 2022 Meeting Action: Mr. Patten provided a progress report for this item.

Item Number: 20-44	**NBIC Location: Part 1**	**No Attachment**

General Description: CW Vacuum Boilers

Subgroup: SG Installation
Task Group: R. Spiker (PM), M. Washington, M. Byrum

Explanation of Need: Incorporation of applicable CSD-1 requirements.

July 2022 Meeting Action: Mr. Patten provided a progress report for this item.

Item Number: 20-62	NBIC Location: Part 1, 1.4.5.1	No Attachment

General Description: Update the National Board Boiler Installation Report

Subgroup: SG Installation

Task Group: T. Clark (PM), E. Wiggins, R. Spiker, T. Creacy, P. Jennings, G. Tompkins, and D. Patten.

July 2022 Meeting Action: Mr. Patten provided a progress report for this item.

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

General Description: Testing and Acceptance: Boiling-out Procedure

Subgroup: SG Installation

Task Group: E. Wiggins (PM), D. Patten, M. Washington and S. Konopacki.

July 2022 Meeting Action: Mr. Patten provided a progress report for this item.

iii. Action Items – New Business

Item Number: 22-10	NBIC Location: Part 1, S1	Attachment Pages 112-117

General Description: Changes to Yankee Dryer P1_S1

Subgroup: SG Installation

Task Group: J. Jessick (PM)

Explanation of Need: Various updates including to recognize steel in addition to cast iron, and to promote consistency of Supplements of each Part.

July 2022 Meeting Action: Mr. Patten presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Mr. Wielgoszinski asked if this could go to letter ballot as it contained several changes that could take time to review. It was mentioned that changes to the yankee dryer supplement in Part 2 have already been approved, so to keep the NBIC consistent these changes would need to be approved at this meeting. Mr. Jerry Jessick was asked to give an overview of the changes. An additional small change was made to the proposal at Mr. Wielgoszinski's request. Mr. Scribner commented about adding glossary terms related to yankee dryers to the NBIC in a separate item. After discussion, the original motion passed unanimously.

Item Number: 22-13	NBIC Location: Part 1, 3.8.2.2	No Attachment

General Description: Align hot water boiler thermometer requirements with ASME Section IV

Subgroup: SG Installation

Task Group: None assigned.

Explanation of Need: NBIC Part 1 does not expressly permit the use of temperature sensors or digital displays as thermometers for hot-water heating or supply boilers, even though they are permitted under ASME Section IV, HG-612. NBIC Part 1 also does not address the required temperature range of thermometers, inconsistent with ASME Section IV.

July 2022 Meeting Action: Mr. Patten provided a progress report for this item.

c. Subcommittee Inspection

i. Interpretations

There are currently no open interpretation requests for Part 2.

ii. Action Items – Old Business

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

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

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

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

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

July 2022 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 20-26	NBIC Location: Part 2, S2	No Attachment

General Description: Concern for Historical Boiler Inspections Nationwide

Subgroup: Historical
Task Group: T. Dillon (PM), R. Underwood, L. Moedinger, M. Wahl, D. Rupert, K. Anderson, M. Sansone & J. Wolf

Explanation of Need: Currently Jurisdictions are not uniform in adoption of how and when inspections are performed.

July 2022 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 20-46	NBIC Location: Part 2, 5.3.2	Attachment Pages 118-127

General Description: Updates to Forms NB-5, NB-6, & NB-7

Subgroup: Inspection
Task Group: D. Buechel (PM), M. Sansone, V. Scarcella

Explanation of Need: 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.

July 2022 Meeting Action: Mr. Getter presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Discussion was held about the proposal. The motion was modified to act on one form at a time. The motion to approve the changes to NB-6 was approved unanimously. The motion to approve the changes to NB-7, including some minor editorial corrections, was approved unanimously. The motion to approve the deletion of NB-5, along with Nation Board staff correcting any existing references to NB-5, was approved unanimously.

Item Number: 20-57	NBIC Location: Part 2, 4.4.1 a)	No Attachment

General Description: Evaluate revision to Part 2, 4.4 FFS scope roles and responsibilities (submitted by Mr. George Galanes).

Subgroup: Inspection
Task Group: M. Horbaczewski (PM) and B. Ray**.**

Explanation of Need: 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.

July 2022 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 21-03	NBIC Location: Part 2, S2	No Attachment

General Description: Inspection of through stays and diagonal stays (submitted by David Rose)

Subgroup: Historical
Task Group: D. Rose (PM), R. Bryce, R. Forbes, & C. Jowett

Explanation of Need: 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.

July 2022 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 21-25	NBIC Location: Part 2	No Attachment

General Description: Autoclave/Quick opening device PP (submitted by Kevin Hawes)

Subgroup: Inspection
Task Group: V. Scarcella (PM), T. Bolden, M. Horbaczewski, J. Peterson, J. Clark, W. Hackworth, M.A. Shah

Explanation of Need: 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.

July 2022 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 21-34	NBIC Location: Part 2, S2	No Attachment

General Description: Working Pressure Calculations for Curved Stayed Surfaces

Subgroup: Historical
Task Group: Mike Wahl (PM), R. Bryce, and T. Dillon

Background: 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

July 2022 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 21-40	NBIC Location: Part 2	Attachment Page 128

General Description: Define "Remote" in the NBIC Glossary

Subgroup: Inspection
Task Group: V. Newton (PM), B. Ray, J. Morgan

Explanation of Need: 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.

January 2022 Meeting Action: Progress report.

July 2022 Meeting Action: Mr. Getter presented the proposal for this item. After making some minor adjustments to the proposal, a motion was made, seconded, and unanimously approved to accept the proposal.

Item Number: 21-41	NBIC Location: Part 2, 4.2 c)	No Attachment

General Description: Requirements for NDE procedures and personnel

Subgroup: Inspection
Task Group: V. Scarcella (PM), W. Hackworth, D. Rose, J. Peterson

Explanation of Need: Lacking qualification requirements has resulted in poor NDE.

July 2022 Meeting Action: Mr. Getter stated that SG and SC Inspection voted to close this item as it will be covered in item 22-21. A motion was made, seconded, and unanimously approved to close this item with no action.

Item Number: 21-46	NBIC Location: Part 2, 1.3 & 9.1	Attachment Page 129

General Description: Defining Listed and Labeled

Subgroup: Inspection
Task Group: D. Graf (PM), J. Roberts

Explanation of Need: Main Committee asked about having these defined in the NBIC.

July 2022 Meeting Action: Mr. Getter presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Mr. Newton commented that these definitions came from the 2021 edition of CSD-1. With no further discussion, the motion passed unanimously.

Item Number: 21-47	NBIC Location: Part 2, 2.2.4 & 2.2.5	No Attachment

General Description: To provide better guidance as it relates to carbon monoxide

Subgroup: Inspection
Task Group: W. Hackworth (PM), V. Scarcella, D. Buechel, T. Barker, T. Bolden

Explanation of Need: Need to provide more comprehensive items to be reviewed to guide the inspector on carbon monoxide and combustion air.

July 2022 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 21-50	NBIC Location: Part 2, 2.3.6.4 & S7	No Attachment

General Description: Ensure IIAR PV Integrity codes are aligned with NBIC II

Subgroup: Inspection
Task Group: D. Graf (PM), J. Mangas, M. Horaczewski, J. Clark, J. Roberts, T. Vandini

Explanation of Need: NH3 growing exposure.

July 2022 Meeting Action: Mr. Getter stated that SG and SC Inspection voted to close this item. A motion was made, seconded, and unanimously approved to close this item with no action.

iii. New Items:

Item Number: 22-03	NBIC Location: Part 2	No Attachment
General Description: Create example inspection list **Subgroup:** Inspection **Task Group:** V. Scarcella (PM), M. Sansone, M. Mooney, T. Bolden, and D. Buechel **Submitted by:** V. Scarcella **Explanation of Need:** Average high and low mean failure rate has a 10 point plus gap which needs to be closed. The Chief of LA, Donnie LeSage brought up the item in COQ but resigned Part 2 due to other duties.		
July 2022 Meeting Action: Mr. Getter provided a progress report for this item.		

Item Number: 22-06	NBIC Location: Part 2, 3.4.9 e)	No Attachment
General Description: Part 2 task group to review Part 3 Item 21-53 **Subgroup:** Inspection **Task Group:** None assigned. **Submitted by:** D. Graf **Explanation of Need:** Part 2 task group to investigate further changes to Part 2/Part 3 that could be needed because of action item 21-53.		
July 2022 Meeting Action: Mr. Getter provided a progress report for this item.		

d. Subcommittee Repairs & Alterations

i. Interpretations

Item Number: 20-78	NBIC Location: Part 3, 3.3.3 s) & 3.4.4 d)	Attachment Pages 130
General Description: Repairs and Alterations of Tube Bundles **Subgroup:** Repairs and Alterations **Task Group:** P. Shanks (PM). **Explanation of Need:** 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.) **July 2022 Meeting Action:** Mr. Paul Shanks presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.		

Item Number: 21-39	NBIC Location: Part 3, 3.3.2 e)	Attachment Page 132

General Description: Routine repair scope

Subgroup: Repairs and Alterations

Task Group: P. Shanks (PM)

Explanation of Need:
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.

July 2022 Meeting Action: Mr. Seime presented the proposal. A motion was made and seconded to approve the proposal as presented. A revision made to response, and then the proposal was unanimously approved.

Item Number: 21-60	NBIC Location: Part 3, 3.4.5.1 b)	Attachment Page 135

General Description: UDS requirements for repairs and alterations for Divisions 2 & 3

Subgroup: Repairs and Alterations

Task Group: G. Galanes (PM)

Explanation of Need:
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))?

July 2022 Meeting Action: Mr. Seime presented the proposal. A motion was made and seconded to close this item with no action, as there is currently an action item open to address the inquirer's question. This motion was approved unanimously.

Item Number: 21-75	NBIC Location: Part 3, 3.3.2 e) 1)	Attachment Page 138

General Description: Routine Repairs

Subgroup: Repairs and Alterations

Task Group: C. Hopkins (PM), S. Frazier

Explanation of Need:
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.

July 2022 Meeting Action: Mr. Seime presented the proposal. A motion was made and seconded to approve the proposal as presented. Discussion was held on whether flanges would be considered a fitting according to 3.3.2 e) 1). Further edits to the proposal were made. After discussion, the amended proposal was unanimously approved.

Item Number: 21-79	NBIC Location: Part 3, 3.3.3 h)	Attachment Page 141

General Description: Mechanical Replacement of Shell or Head

Subgroup: Repairs and Alterations

Task Group: None assigned

Explanation 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.

July 2022 Meeting Action: Mr. Seime presented a progress report for this item.

ii. New Interpretation Requests:

Item Number: 22-14	NBIC Location: Part 3, 3.2.2 b) and c)	Attachment Page 144

General Description: Overlaid Replacement Parts

Subgroup: Repairs and Alterations

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

Explanation of Need: Replacement parts that are documented using a Manufacturer's Partial Data report that have been inspected by an Authorized Inspector may still be supplied as a replacement part under paragraph 3.2.2 b) and therefore not require a Hydro test per Paragraph 3.2.2 e).
Panels made from Overlaid tubes and for single overlaid tube Dutchman that contain only weld overlay, where the overlay is not considered to be pressure retaining when the overlay is not considered part of the strength of the boiler tube per ASME Section I PW-44. May be supplied as replacement parts under paragraph 3.2.2 b). The purpose of the overlay is to extend the life of boiler tubes in the waste to energy corrosive environment from external wear.

July 2022 Meeting Action: Mr. Seime presented a progress report for this item.

iii. Action Items – Old Business

Item Number: NB15-2208	NBIC Location: Part 3	No Attachment

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

Subgroup: Graphite

Task Group: Greg Becherer (PM)

July 2022 Meeting Action: Mr. Aaron Viet presented a progress report for this item.

Item Number: 17-167	NBIC Location: Part 3, S3.2 d)	No Attachment

General Description: Clarify repair inspection requirements for machined only graphite parts.

Subgroup: Graphite

Task Group: Aaron Viet (PM)

July 2022 Meeting Action: Mr. Viet presented this item and stated that TG Graphite closed this item because they determined the change was not needed. A motion was made, seconded, and unanimously approved to close this item with no action.

Item Number: 18-94	NBIC Location: Part 3, S3.2 f), h); S3.4 a), b), c) etc.	Attachment Page 147

General Description: G-mark Requirements for Various Repairs/Alteration to Graphite

Subgroup: Graphite

Task Group: C. Cary (PM)

July 2022 Meeting Action: Mr. Viet presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. A slight change was made to the proposal, and the motion was amended to include the change. The motion passed unanimously.

Item Number: 19-73	NBIC Location: Part 3, S3	No Attachment

General Description: Requirements for who can make hole plugging repairs on graphite blocks

Subgroup: Graphite

Task Group: C. Cary (PM), A. Viet, A. Stupica

Explanation of Need: 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.

July 2022 Meeting Action: Mr. Aaron Viet presented a progress report for this item.

Item Number: 19-74	NBIC Location: Part 3, S3.3	Attachment Page 148

General Description: Routine repair requirements for partial nozzle replacement

Subgroup: Graphite

Task Group: A. Stupica (PM), M. Bost

Explanation of Need: 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.

July 2022 Meeting Action: Mr. Viet presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. A question was asked about design considerations and NDE. Mr. Viet answered the questions, stating that no design considerations or NDE would be needed for this process needed. After discussion ended, the motion was unanimously approved.

Item Number: 19-79	NBIC Location: Part 3, S3.5.4 h)	Attachment Page 149

General Description: Re-word Part 3, S3.5.4 h) to clarify cementing procedure for plugs

Subgroup: Graphite

Task Group: A. Stupica (PM)

Explanation of Need: Existing language includes unnecessary steps and is clunky to read. Text will be reworded to clarify the full procedure.

July 2022 Meeting Action: Mr. Viet presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

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

General Description: Repair Procedure for Fire Boxes

Subgroup: SG Historical

Task Group: M. Wahl (PM), Robin Forbes, T. Dillon, L. Moedinger, & F. Johnson

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

July 2022 Meeting Action: Ms. Kathy Moore presented a progress report for this item.

Item Number: 20-48	NBIC Location: Part 3, 1.6	Attachment Page 150

General Description: Compare 2015 NQA-1 revision to NR program (1.6) for consistency.

Subgroup: Repairs and Alterations

Task Group: B. Wielgoszinski (PM).

Explanation of Need: Latest NQA-1 revision to be compared to NR program (1.6) for consistency.

July 2022 Meeting Action: Mr. Ben Schaefer presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: 20-52	NBIC Location: Part 3, 1.6.2 a) 2)	Attachment Page 157

General Description: Rvw NR requirements for ASME Section XI Div. 2 potential applications

Subgroup: Repairs and Alterations

Task Group: T. Roberts (PM)

Explanation of Need: This was created based on discussion from Item 20-47 dealing with ANIA requirements.

July 2022 Meeting Action: Mr. Ben Schaefer presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: 20-67	NBIC Location: Part 3, S6	No Attachment

General Description: Revisions to Part 3, Supplement 6

Subgroup: Repairs and Alterations
Task Group: R. Underwood (PM)

Explanation of Need: 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.

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

Item Number: 20-83	NBIC Location: Part 3, 1.5.1 s) & 9.1	No Attachment

General Description: Definition of Nonconformance

Subgroup: Repairs and Alterations
Task Group: T. Hellman (PM)

Explanation of Need: 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.

July 2022 Meeting Action: Ms. Moore stated that this item was closed at the SG and SC R&A meetings. A motion was made, seconded, and unanimously approved to close the item with no action.

Item Number: 21-02	NBIC Location: Part 3, 1.6	No Attachment

General Description: Define "Fuel Loading" as it pertains to NR activities

Subgroup: Repairs and Alterations

Task Group: P. Edwards (PM)

Explanation of Need: The NR TG would like to clarify "Fuel Loading" as used to determine Category 1, 2 or 3 NR activities.

July 2022 Meeting Action: Mr. Schaefer presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. A question was asked about changing references to ASME Section XI to ASME Section XI, Division 1. Mr. Schaefer said the change will be made. Mr. Wielgoszinski gave background info on the fuel loading change. After discussion, it was decided that this item will go back to the NR Task Group for further work.

Item Number: 21-06	NBIC Location: Part 3, 4.4.2	No Attachment

General Description: Concessions with pressure testing associated with replacement parts

Subgroup: Repairs and Alterations

Task Group: D. Kinney (PM), R. Miletti, P. Becker, P. Davis, R. Underwood, M. Winters

Explanation of Need: 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.

July 2022 Meeting Action: Ms. Moore stated that this item was closed at the SG and SC R&A meetings. A motion was made, seconded, and unanimously approved to close the item with no action.

Item Number: 21-09	NBIC Location: Part 3, S2	No Attachment

General Description: Incorporate new repair methods for through and diagonal stays

Subgroup: Historical

Task Group: D. Rose (PM), R. Bryce, R. Forbes, & C. Jowett

Explanation of Need: 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.

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

Item Number: 21-12	NBIC Location: Part 3, 3.3.3, 3.4.4, Section 9	No Attachment

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

Subgroup: Repairs and Alterations

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

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

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

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

Item Number: 21-31	NBIC Location: NBIC Glossary	No Attachment

General Description: Revise definition of "Field"

Subgroup: Repairs and Alterations

Task Group: R. Miletti (PM), P. Gilston, M. Toth, J. Walker

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

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

Item Number: 21-37	NBIC Location: Part 3, 1.6	No Attachment

General Description: Parts used in NR Activities

Subgroup: Repairs and Alterations

Task Group: B. Wielgoszinski (PM)

Explanation of Need: Clarification that parts used in NR activities are fabricated by NR Certificate Holders and inspected by appropriately endorsed National Board commissioned Inspectors.

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

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

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

Subgroup: Repairs and Alterations

Task Group: M. Toth (PM)

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

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

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

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

Subgroup: Repairs and Alterations

Task Group: M. Toth (PM)

Explanation of Need: Defining de-rating within Part 3

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

Item Number: 21-45	NBIC Location: Part 3, Supplements	Attachment Page 110

General Description: Add a supplement to address oil, gas and chemical repair & alteration scope

Subgroup: Repairs and Alterations

Task Group: R. Underwood (PM)

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

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

Item Number: 21-53	NBIC Location: Part 3, S8.5 a)	Attachment Page 112

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

Subgroup: Repairs and Alterations

Task Group: P. Gilston (PM)

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

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

Item Number: 21-67	NBIC Location: Part 3, 3.4.9	Attachment Page 114

General Description: Add welding requirements to plugging firetubes

Subgroup: Repairs and Alterations

Task Group: P. Gilston (PM), K. Moore, Trevor Seime, M. Quisenberry

Explanation of Need: The current NBIC does not have enough direction or requirements for welding tube plugs in firetubes.

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

Item Number: 21-70	NBIC Location: Part 3, Table 2.3	Attachment Page 182

General Description: Updating Table 2.3 in Part 3 with newest SWPSs

Subgroup: Repairs and Alterations

Task Group: J. Sekely (PM)

Explanation of Need: 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.

July 2022 Meeting Action: Ms. Moore presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.

Item Number: 21-80	NBIC Location: Part 3, 3.3.3 h) 2)	No Attachment

General Description: Mechanical Replacement of Shell or Head

Subgroup: Repairs and Alterations

Task Group: R. Underwood (PM)

Explanation of Need: 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.

July 2022 Meeting Action: A motion was made and seconded to close this item with no action. It was decided that the NBIC committees would not address mechanical replacement at this time. The motion was unanimously approved.

Item Number: 21-78	NBIC Location: Part 2, S2.13.9.5 e)	No Attachment

General Description: Alternative Weld Joint For Historical Boiler Barrel Replacement

Subgroup: Historical
Task Group: R. Underwood (PM)

Background: 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.

July 2022 Meeting Action: A motion was made and seconded to close this item with no action. Mr. Underwood explained why the item was being closed. The motion was unanimously approved.

Item Number: 21-82	NBIC Location: Part 3, 3.3.3 s)	No Attachment

General Description: Examples of Repairs

Subgroup: Repairs and Alterations

Task Group: P. Davis (PM), R. Underwood, P. Gilston, , J. Ferreira, J. Walker, E. Cutlip, P. Miller, L. Dutra

Explanation of Need: 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)).

July 2022 Meeting Action: Ms. Moore presented a progress report for this item

iv. New Items:

Item Number: A22-02	**NBIC Location: Part 3, 3.3.2 e) 1)**	**No Attachment**

General Description: Part 4 Item A21-83 may impact part 3, 3.3.2 e) 1)

Subgroup: Repairs and Alterations

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

Explanation of Need: Part 4 Item A21-83 was reviewed as it may impact part 3, 3.3.2 e) 1) examples of Routine Repairs. An Item for Part 3 will be opened to address "valve" repairs as they relate to SRVs.

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

Item Number: A22-04	**NBIC Location: Part 3, 3.3.3 s)**	**Attachment Page 183**

General Description: Clarification on Part 3, 3.3.3 s)

Subgroup: Repairs and Alterations

Task Group: T. White

Explanation of Need: The paragraph was written for pressure-retaining parts not just vessels as stated later in the first sentence.

July 2022 Meeting Action: Mr. Tom White presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. The motion passed unanimously.

Item Number: A22-05	**NBIC Location: Part 3, 1.2 a) and b), 4.2 a)**	**Attachment Page 184**

General Description: Clarify NDE Requirements as it pertains to OCC edition

Subgroup: Repairs and Alterations

Task Group: Don Kinney (PM), B. Derby, P. Davis

Explanation of Need: The paragraph was written for pressure-retaining parts not just vessels as stated later in the first sentence.

July 2022 Meeting Action: Mr. Don Kinney presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. The motion passed unanimously.

Item Number: A22-11 **NBIC Location: Part 3, S5** **Attachment Page 186**

General Description: Changes to Yankee Dryer P3_S5

Subgroup: Repairs and Alterations

Task Group: Jerry Jessick (PM)

Explanation of Need: Various updates including to recognize steel in addition to cast iron, and to promote consistency of Supplements of each Part.

July 2022 Meeting Action: Mr. Jerry Jessick presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. The motion passed unanimously.

Item Number: A22-12 **NBIC Location: Part 3, 3.3.5.2 & 3.4.5.1** **No Attachment**

General Description: Lost or Destroyed UDS

Subgroup: Repairs and Alterations

Task Group: T. Seime (PM)

Explanation of Need: To provide the ability to repair/alter these vessels with a reconstructed UDS.

July 2022 Meeting Action: Mr. Seime presented the proposal for this item. Discussion was held on who will handle recreating the UDS; can it be done by the R stamp holder or an ASME certificate holder? Can you use MDR to generate the UDS? A vote was taken, and none of the members voiced a vote. Mr. Galanes asked for the proposal to be sent for out for a Review and Comment ballot to get feedback from the Main Committee members. The proposal will be sent back to the subgroup for further work.

Item Number: A22-17 **NBIC Location: Part 3, 4.4.2 & S5.7.2** **Attachment Page 191**

General Description: NBIC Part 3, S5.7.2, a), 1) and the examination methods of Part 3, 4.4.2, c

Subgroup: Repairs and Alterations

Task Group: T. McBee (PM), J. Jessick.

Explanation of Need: An additional examination option is needed for alterations performed to NBIC S5.7.2 a) 1).

July 2022 Meeting Action: Mr. Tim McBee presented the proposal for this item. A motion was made and seconded to approve as presented. Discussion was held about visual examination and pressure testing, and slight modifications made to the proposal to address questions. The motion was then unanimously approved.

Item Number: A22-18	NBIC Location: Part 3, 9.1 (and all other Parts)	No Attachment

General Description: Definition of blowdown and blowoff

Subgroup: Repairs and Alterations

Task Group: K. Moore (PM)

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

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

Item Number: A22-19	NBIC Location: Part 3, 5.5.2	No Attachment

General Description: R Certificate Holders with Design Only Scope

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need: To add new paragraphs 5.2.2 d) and 5.2.2 e) which will provide guidance for R Certificate Holders with "Design Only" on which activities they are permitted to perform and how they and the Inspectors shall complete the R-2 Form.

July 2022 Meeting Action: Ms. Moore presented a progress report for this item.

Item Number: A22-21	NBIC Location: Part 3, 3.4.4 d)	Attachment Page 193

General Description: Example of Alterations

Subgroup: Repairs and Alterations

Task Group: B. Underwood (PM)

Explanation of Need: A change in dimension of a pressure retaining item is not considered an alteration in many cases (increasing nozzle/tube thickness, increasing nozzle diameter in some cases...). This revision would provide clarity that only a change in dimension that decreases its pressure retaining capability be considered an alteration.

July 2022 Meeting Action: Mr. Underwood presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Discussion was held about if limiting the scope of the alteration described in d) to decreased pressure rating is appropriate. Clarification was made to indicate that Part 3, 3.4.4 is a list of examples, not rules. After discussion concluded, a vote on the motion was taken. The motion was approved with three abstentions.

14. Liaison Activities

i. American Society of Mechanical Engineers BPV Code (ASME BPV)
Mr. Scribner provided a report after the meeting. See attachment pages 194-209.

ii. American Welding Society (AWS)
Mr. Sekely's report was presented to the Committee. See attachment page 210.

15. Future Meetings

- January 2023 – Charleston, SC
- July 2023 – TBD
- January 2024 – Charlotte, NC

16. Adjournment
Mr. Galanes adjourned the meeting at 3:12pm local time.

Respectfully submitted,

Jonathan Ellis

Jonathan Ellis
NBIC Secretary

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD INSPECTION CODE COMMITTEE

ATTACHMENTS

NBIC Main Committee Member Attendance - 7/14/2022				
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NBIC Main Committee	Turner, Clark	cturner@cpmt.com

Title	Item Number	Cycle	NBICEdition	Assigned Committee
Prepare a guide for repair of tank vents	NB12-0901	A	2023	Subcommittee Pressure Relief Devices
Prepare a guide for repair of tank vents	NB12-0901	A	2023	Subcommittee Pressure Relief Devices
Create Guidelines for Installation of Pressure Relief Devices for Organic Fluid Vaporizers	NB15-0308	A	2023	Subcommittee Pressure Relief Devices
Create Guidelines for Installation of Pressure Relief Devices for Organic Fluid Vaporizers	NB15-0308	A	2023	Subcommittee Pressure Relief Devices
Review testing requirements for inservice testing of pressure relief devices	NB15-0321	A	2023	Subcommittee Pressure Relief Devices
Add practicable to the glossary and it's definition	20-51	A	2023	Subcommittee Repairs/Alterations
Add practicable to the glossary and it's definition	20-51	A	2023	Subcommittee Repairs/Alterations
Add practicable to the glossary and it's definition	20-51	A	2023	Subcommittee Repairs/Alterations
Add practicable to the glossary and it's definition	20-51	A	2023	Subcommittee Repairs/Alterations
Liquid Pressure Testing of Alterations	20-80	A	2023	Subcommittee Repairs/Alterations
Make it mandatory to install a temperature sensor in the stack of a thermal fluid heater	20-94	A	2023	Subcommittee Installation
Charpy Impact Test Temperature for Welding Method 2	20-75	A	2023	Subcommittee Repairs/Alterations
UT Thickness Check for a New Boiler	21-20	A	2023	Subcommittee Inspection
Review and clarify requirements for documented training program for VR and T/O programs.	19-2	A	2023	Subcommittee Pressure Relief Devices
Reword to provide clarity; contradictory requirement Part 3; 3.2.2 e)	19-16	A	2023	Subcommittee Repairs/Alterations
Reporting of Form NB-136	20-82	A	2023	Subcommittee Inspection
Update of SWPS Table 2.3	21-11	A	2023	Subcommittee Repairs/Alterations
Examples of repairs	20-55	A	2023	Subcommittee Repairs/Alterations
Correct Paragraph numbers in Section 3 Related to T/O Requirements	20-58	A	2023	Subcommittee Pressure Relief Devices
Contacting jurisdiction regarding de-rates.	21-30	B	2023	Subcommittee Repairs/Alterations
Contacting jurisdiction regarding de-rates.	21-30	B	2023	Subcommittee Repairs/Alterations
Add verbiage for use of Valves that do not have adjustable packing	21-01	B	2023	Subcommittee Installation
Riveted Stay bolt dimensions	18-6	B	2023	Subcommittee Inspection
Permanent nameplate removal from pressure vessel being removed from service	18-43	B	2023	Subcommittee Inspection
Revision adding heat exchanger tubes with an outside diameter of ¾" or smaller to NBIC Part 3.3.2 Routine Repairs	18-100	B	2023	Subcommittee Repairs/Alterations
Revision of the definition of ANIA in Section 9 of all Parts	20-47	B	2023	Subcommittee Repairs/Alterations
Additional requirements for thermal fluid heaters	19-88	B	2023	Subcommittee Inspection
Remove S6.15.1 - It is redundant and is not needed	20-88	B	2023	Subcommittee Repairs/Alterations
Welds Across Riveted Lap Seams	20-69	B	2023	Subcommittee Repairs/Alterations
Add a time frame for R forms (for completion of and submittal of forms)	21-10	C	2023	Subcommittee Repairs/Alterations
Add nomenclature to formula in Part 2, S10.10.4 c)	20-79	C	2023	Subcommittee Inspection
Safety Relief vlv for Hot Water Supply Boilers	20-43	C	2023	Subcommittee Installation
Revise Supplement 8	20-61	C	2023	Subcommittee Repairs/Alterations
Safety Valve Sizing (Correct Use of Capacity Charts)	20-71	C	2023	Subcommittee Inspection
Remove reasons for changes in 4.7.2 b)6) and 7)	21-72	C	2023	Subcommittee Pressure Relief Devices
Item 22-01. Add definitions for Interference Fit.	22-01	C	2023	Subcommittee Inspection
Repairs/Alterations of Impact Tested Vessels	21-77	C	2023	Subcommittee Repairs/Alterations
Review and clarify requirements training program for T/O holders	20-56	C	2023	Subcommittee Pressure Relief Devices
Review inspection requirements for pressure vessels designed for high pressures	18-63	C	2023	Subcommittee Inspection
Review 1.6 requirements for ANI's & ANII's to hold the R endorsement	19-68	C	2023	Subcommittee Repairs/Alterations
Use of Personnel from another VR Certificate Holder to perform VR Repairs	19-71	C	2023	Subcommittee Pressure Relief Devices
Safety and Safety Relief Valves for Steam and Hot Water Heating Boilers.	20-41	C	2023	Subcommittee Installation
ASME PCC-2 article references are incorrectly formatted	21-14	C	2023	Subcommittee Repairs/Alterations
Use of code cases pertaining to repairs and alterations	21-33	C	2023	Subcommittee Repairs/Alterations
NBIC Report Form certification clarification and NDE witnessing requirements.	21-07	C	2023	Subcommittee Repairs/Alterations
Corrections and revisions to "R" Forms.	21-15	C	2023	Subcommittee Repairs/Alterations
Encapsulation sect. to remove para. conflicts to other referenced codes	21-26	C	2023	Subcommittee Repairs/Alterations
Update ASME paragraph reference in Part 4, 3.2.4.3 and Part 2, 2.5.5.3	21-76	C	2023	Subcommittee Pressure Relief Devices
Update ASME paragraph reference in Part 4, 3.2.4.3 and Part 2, 2.5.5.3	21-76	C	2023	Subcommittee Pressure Relief Devices
Provision of Exemption for original COC NDE requirements	21-27	C	2023	Subcommittee Repairs/Alterations
Temporary nameplate removal for external inspection.	20-59	C	2023	Subcommittee Inspection
Incorrect paragraph reference in Part 4 4.4.7 b)1)	21-83	C	2023	Subcommittee Pressure Relief Devices
Correction of references in S2.6.3.4 a) 1) and 2).	21-48	C	2023	Subcommittee Inspection

Incorrect paragraph reference at end of Part 4 2.5.3 a) and Part 1 4.5.3 a)	21-52	C	2023	Subcommittee Pressure Relief Devices
Incorrect paragraph reference at end of Part 4 2.5.3 a) and Part 1 4.5.3 a)	21-52	C	2023	Subcommittee Pressure Relief Devices
Isolation valve requirement	21-55	C	2023	Subcommittee Installation
inspecting riveted joints for failure	19-84	C	2023	Subcommittee Inspection
Change 3.3.3.4 l) 5) to be consistent with 4.8.5.4 n) 5)	21-49	D	2023	Subcommittee Pressure Relief Devices
Example of Alteration	22-21	D	2023	Subcommittee Repairs/Alterations
Removing Section 8 from all 4 Parts	22-23	D	2023	
Require unique identifier marked on Pilots in addition to main valves	21-63	D	2023	Subcommittee Pressure Relief Devices
Update duplicate nameplate marking requirements to reflect new Section XIII	21-84	D	2023	Subcommittee Pressure Relief Devices
Clarify relief valve term to be pressure relief valve in Supplement 3	21-51	D	2023	Subcommittee Pressure Relief Devices
Part 3, Table S1.1.3.1, Threaded Staybolts and Patch Bolts is incorrect	21-35	D	2023	Subcommittee Repairs/Alterations
Defining Listed and Labeled	21-46	D	2023	Subcommittee Inspection
Rvw NR requirements for ASME Section XI Div. 2 potential applications	20-52	D	2023	Subcommittee Repairs/Alterations
Updates to Forms NB-5, NB-6, & NB-7	20-46	D	2023	Subcommittee Inspection
Changes to the Yankee Dryer Supplement	19-46	D	2023	Subcommittee Inspection
Routine repair requirements for nozzles on graphite PVs	19-74	D	2023	Subcommittee Repairs/Alterations
Simplify paragraph 4.7.3	21-73	D	2023	Subcommittee Pressure Relief Devices
Updating Table 2.3 in Part 3 with newest SWPSs	21-70	D	2023	Subcommittee Repairs/Alterations
G-mark requirements for various repairs/alterations to graphite boilers/pressure vessels	18-94	D	2023	Subcommittee Repairs/Alterations
Define "Remote" in the NBIC Glossary	21-40	D	2023	Subcommittee Inspection
Changes to Yankee Dryer P1_S1	22-10	D	2023	Subcommittee Installation
Changes to Yankee Dryer P3_S5	22-11	D	2023	Subcommittee Repairs/Alterations
Re-word Part 3, S3.5.4 h) to clarify cementing procedure for plugs	19-79	D	2023	Subcommittee Repairs/Alterations
Venting of gas train components	20-34	D	2023	Subcommittee Installation
Modular Boilers	20-39	D	2023	Subcommittee Installation
Review NR Program (1.6) to 2015 NQA-1 Edition	20-48	D	2023	Subcommittee Repairs/Alterations
Quality System For Qualification For The National Board “R” Certificate	19-60	D	2023	Subcommittee Repairs/Alterations
Add guidance for the safe installation of high pressure composite pressure vessels operating in close proximity to the public	NB11-1901	D	2023	Subcommittee Installation
Mandatory Shop Audits for VR Certificate Holders	21-05	D	2023	Subcommittee Pressure Relief Devices
Mandatory Shop Audits for VR Certificate Holders	21-05	D	2023	Subcommittee Pressure Relief Devices
Inspection of Furnace Slides	20-70	D	2023	Subcommittee Inspection

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NBIC Part 3

Advanced Materials and Engineered Weld Repairs

July 14, 2022 – NBIC Committee Meeting – Indianapolis
Robert V. Underwood, Global Quality Engineer (GQE)

NBIC Part 3, Advanced Materials and Engineered Weld Repairs

Task Group Members

- Bob Underwood, HSB (AIA)
- Brian Boseo, Burns & McDonnell (Oil/Chemical/Gas & Power Generation)
- John Seifert, EPRI (Power Generation)
- Mark Horbaczewski, Diamond Technical Services (Part 2, Inspection)
- Mike Quisenberry, Spartan Boiler & Mechanical (R Stamp Holder)

NBIC Part 3, Advanced Materials and Engineered Weld Repairs

The Rationale for new Supplement

The NBIC Part 3 has become a “catch-all” for items relating to engineered repair activities and advanced materials within the petrochemical and power generation industries.

- Incomplete removal of defects
- Encapsulation
- Welding Methods 6 and 7
- Supplement 8
- Proposed Oil/Gas/Chemical Industry repair activities (PCC-2)

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NBIC Part 3, Advanced Materials and Engineered Weld Repairs

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The Rationale for new Supplement

- Part 3 should contain rules for common repair/alteration requirements and methods used by the majority of R stamp holders.
- A new Part 3 Supplement would enable the NBIC to **keep up with advanced material technology** as these materials are developed and provide guidance for **engineered weld repair methods** that are not addressed in the construction codes.
- Alternative weld repair methods are primarily developed, maintained and enhanced by Power, Petrochem and Process industries. The materials and interests in these methods are driven solely by these industries. (API, EPRI …)

NBIC Part 3, Advanced Materials and Engineered Weld Repairs

The Concept for new Supplement

- To address unique challenges in the Power/Petrochem/Process industries
  - Weld Repair Methods
  - Inspection (including post-repair inspections)
  - Fitness for Service
    - Primarily in Part 2, but also referenced in Part 3, *(Repair without complete removal of defect and Encapsulation)*
    - Can we harmonize language/needs?

NBIC Part 3, Advanced Materials and Engineered Weld Repairs

The Concept for new Supplement

- Present a unique opportunity to market this book worldwide.
  - Most markets outside of the U.S. and Canada rely on the OEM (new construction guidance)
  - There is increasing interest in NBIC from international end-users (South America, India, Europe, Malaysia…)

NBIC Part 3, Advanced Materials and Engineered Weld Repairs

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Content of new Supplement

- Items that could be moved from **Part 3**
  - Alternative welding methods (2.5.3)
  - Repair of pressure retaining items without removal of defect (3.3.4.8)
  - Encapsulation (3.4.3)
  - Weld and Post Weld Repair Inspection of CSEF material (Supplement 8)
  - Proposed Oil/Gas/Chemical Supplement (ASME PCC-2 Repairs)

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NBIC Part 3, Advanced Materials and Engineered Weld Repairs

Content of new Supplement

- Items that could be moved from **Part 3**
  - Repair/alterations to Section VIII, Div. 2 and 3 vessels

NBIC Part 3, Advanced Materials and Engineered Weld Repairs

Content of new Supplement

- Items to be moved from **Part 2** (or provide more detail)
  - Covered Piping Systems (2.4.9)
  - Methods to Assess Damage Mechanisms (4.4)
  - Risk-Based Inspection assessment programs (4.5)
  - Quantitative Engineering Assessments (Including FEA)
  - Review of FEA guidelines (Supplement 11)

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NBIC Part 3, Advanced Materials and Engineered Weld Repairs

Content of new Supplement

- **New items** for consideration
  - FEA in lieu of pressure testing
  - Risk-informed inspection (post-work) vs risk-based inspection (pre-work)
  - Engineering evaluation vs Rules for repair activities (Think VIII-1 vs VIII-2)
    - This would permit repair activities using engineering evaluations (FEA…) in lieu of rules of the original code of construction. Similar to what Section XI permits.

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NBIC Part 3, Advanced Materials and Engineered Weld Repairs

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Other Options

- NBIC Part 5
- NBIC Part 3 Division 1
- New NBIC Part 3 Appendix

- Currently going with moving these items to a new Supplement in Part 3.

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Global Inspection and Engineering Services

Thank you

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

National Board Inspection Code Procedure

Approved by NBIC Committee: ~~**September 15, 2021**~~
Approved by the Board of Trustees: ~~**October 5, 2021**~~
Approved by ANSI: ~~**January 12, 2022**~~

The National Board of Boiler & Pressure Vessel Inspectors
1055 Crupper Avenue
Columbus, OH 43229-1183
Phone: (614)888-8320

Table of Contents

1.0 Purpose

This procedure defines the organization, scope, duties, and responsibilities of the NBIC Committee, subcommittees, subgroups, and task groups. The NBIC Committee is established by the National Board of Boiler and Pressure Vessel Inspectors (NBBPVI) Board of Trustees for the purpose of maintaining the NBIC. NBBPVI is accredited by the American National Standards Institute (ANSI) as a "developer of American National Standards" in accordance with the ANSI Essential Requirements. This procedure also describes the administrative process for the publication of the National Board Inspection Code.

Revisions to this procedure must be approved by the NBIC Committee, the Board of Trustees, and ANSI.

A copy of this procedure or any referenced document is either available on the National Board's website (nbbi.org) or may be obtained from the NBIC Secretary.

2.0 Responsibilities

The Executive Director of the National Board is responsible for ensuring that the requirements of this procedure are met. The Secretary of the NBIC Committee is responsible for the day-to-day implementation of this procedure. Other responsibilities are described throughout this procedure.

3.0 Definitions

The following are terms and their definitions used throughout this document.

ANSI	American National Standards Institute.
Authorized Inspection Agency	An authorized inspection agency recognized by the National Board.
Board	The Board of Trustees of the National Board.
Code	The National Board Inspection Code (NBIC).
Code Work	Performing a job that requires ASME BPVC or NBIC Certification.
Committee	The NBIC Committee and all subcommittees, subgroups, and standing task groups.
General Interest	Individuals who do ~~are~~ not ~~employed by an organization~~ fall into the interest categories ~~characterized~~ defined as Manufacturer, Authorized Inspection Agency, Jurisdictional Authority, National Board Certificate Holder, User, or Labor.

Jurisdictional Authority	A National Board member.~~,~~
Labor	Individuals representing labor organizations whose members are skilled workers in boiler or pressure vessel manufacturing or repairing (e.g., the United Association of Journeymen and Apprentices of Plumbing and Pipe Fitting Industry of the United States and Canada or the International Brotherhood of Boilermakers, Ship Builders, Blacksmiths, Forgers and Helpers).
Manufacturers	Any organization holding a Certificate of Authorization by ASME.
Meeting Attendance	To be present at a meeting either in person or virtually via an online meeting platform approved by the Executive Director of the National Board.
National Board Certificate Holders	Repair organizations accredited by the National Board to hold a **R**, **NR,** or **VR** certification.
NBIC Committee	The NBIC Main Committee is the final consensus body for the purpose of approving American National Standards.
National Board	The National Board of Boiler and Pressure Vessel Inspectors (NBBPVI) is the ANSI-Accredited Standards Developer.
NBIC	The National Board Inspection Code, which was established to provide rules and guidelines for the repair, alteration, inspection, installation, maintenance, and testing of boilers, pressure vessels, and other pressure-retaining items.
Project Manager	Individual assigned the responsibility of developing, monitoring, and developing proposed responses to technical items.
Secretary	NBIC Committee, subcommittees, subgroups, and standing task group secretaries are appointed by the Executive Director of the National Board. All secretaries are considered non-voting members of the Committee, subcommittee, subgroup, or standing task group without any interest affiliation.
Standing Task Group	A unit established to address recurring topics dealing with one subject or type of pressure-retaining item. These topics may be specific to one or more subcommittees. A standing task group may be established by the NBIC Committee or subcommittee.

Subcommittee	A unit established to address recurring functions and specific issues, or to maintain specific sections of the NBIC. A subcommittee is established by the NBIC Committee. Each subcommittee will follow rules for consensus approval insofar as possible but is not considered the final consensus body for the purpose of approving American National Standards.
Subgroup	A unit established to address recurring topics or functions specific to a subcommittee. A subgroup is established by the NBIC Committee. Subgroup actions are reported to the subcommittee for approval.
Task Group	A unit established to address a specific topic. A task group may be established by the NBIC Committee, subcommittee, or subgroup.
Users	Owners or users of boilers/pressure vessels.

4.0 Committee Structure

The committee structure consists of the NBIC Committee, subcommittees, and subgroups appointed by the NBIC Committee and task groups appointed by the NBIC Committee, a subcommittee, or subgroup. The duties, responsibilities, and administration of each are described below.

4.1 NBIC Committee

4.1.1 Responsibilities

The NBIC Committee is responsible for:

a. approving new rules and revising existing rules of the Code and voting on such additions and revisions;

b. approving interpretations of the rules of the Code;

c. hearing requests for reconsideration regarding interpretations and revisions to the Code; and

d. acting on any matter related to the scope of the Code as may be assigned by the Board.

4.1.2 Membership

The NBIC Committee shall consist of not more than 26 voting members within the interest categories described in paragraph 4.6.

a. At least one individual representing manufacturers shall be employed by a manufacturer of safety relief devices.

b. At least one individual representing National Board Certificate Holders shall be employed by an organization holding a valid **R** Certificate of Authorization.

c. At least one individual representing National Board Certificate Holders shall be employed by an organization holding a valid **VR** Certificate of Authorization.

d. Not more than one-third of the total NBIC Committee membership shall represent any single category of interest. The chair and vice chair of the NBIC Committee are considered within this membership.

e. Each member of the NBIC Committee may recommend a person, within the same interest category, as a representative to serve in the absence of the member at a specific meeting. Representatives have the same privileges and responsibilities as the member when serving in the member's capacity. The representative's involvement terminates at the conclusion of the specific meeting requested by the member.

f. Upon change of employment status affecting the member's category of interest, NBIC Committee members shall notify the NBIC Committee Secretary and will be deemed to have submitted their resignations from the NBIC Committee. Reappointment to the NBIC Committee shall follow the requirements of paragraph 4.1.3.

4.1.3 NBIC Committee Member Selection, Approval, and Term

a. A candidate for appointment or reappointment as a voting member of the NBIC Committee is selected by a majority vote of the NBIC Committee membership. The candidate's name is then submitted to the Chair~~man~~ of the Board of Trustees for consideration. All voting members of the NBIC Committee must be appointed by the Chair~~man~~ of the Board of Trustees.

b. A candidate for appointment or reappointment as the NBIC Committee Chair or Vice Chair is selected by a majority vote of the NBIC Committee membership. Only voting members with more than two years of service on the Committee are eligible to be appointed NBIC Committee Chair or Vice Chair. The candidate's name is then submitted to the Chair~~man~~ of the Board of Trustees for consideration. The Chair and Vice Chair must be appointed by the Chair~~man~~ of the Board of Trustees.

c. A candidate for membership on the NBIC Committee must provide a work history/resume to the NBIC Committee Secretary.

d. The term of all voting members is three years. Voting members are eligible for reappointment.

e. NBIC Committee Chair and Vice Chair

Each term of office shall not exceed three years and no more than two consecutive three-year terms in each office may be served.

This limit can be exceeded for special circumstances, provided the candidate's name and an explanation of the special circumstances are submitted to the Board of Trustees for consideration. If approved by the Board of Trustees, the candidate will be appointed by the Chair~~man~~ of the Board of Trustees. An example of a special circumstance is that there is no other qualified candidate who is willing to serve.

At the time of appointment, the expiration date for the Chair's and Vice Chair's membership term shall be adjusted to match the term of office.

4.2 Subcommittees

4.2.1 Responsibilities

Subcommittees are responsible for:

a. maintaining (e.g., adding new requirements, revising existing requirements) those sections of the NBIC that are assigned to the subcommittee;

b. acting on requests for interpretations of the rules for those assigned sections of the NBIC;

c. acting on any matter related to the scope of the NBIC as may be assigned by the NBIC Committee; and

d. forwarding all subcommittee actions to the NBIC Committee.

4.2.2 Membership

a. The number of members appointed to each subcommittee shall be as necessary to carry out the assigned responsibility. The size of subcommittees will be limited to numbers which will best serve operational needs, and shall be acceptable to the Chair of the NBIC Committee. Voting members must be within the interest categories described in paragraph 4.6.

b. Not more than one-third of a total subcommittee's membership shall represent any single category of interest. The Chair and Vice Chair of a subcommittee are considered within this membership.

c. Each member of the NBIC subcommittee may recommend a person, within the same interest category, as a representative to serve in the absence of the member at a specific meeting. Representatives shall have the same privileges and responsibilities as the member when serving in the member's capacity. The representative's involvement automatically terminates at the conclusion of the specific meeting requested by the member.

d. Upon change of employment status affecting the member's category of interest, NBIC subcommittee members shall notify the NBIC Committee Secretary and will be deemed to have submitted their resignations from the subcommittee. Reappointment to the NBIC subcommittee shall follow the requirements of paragraph 4.2.3.

4.2.3 Subcommittee Member Selection, Approval, and Term

a. A candidate for appointment or reappointment as a voting member of the subcommittee is selected by majority vote of the NBIC Committee membership. Subcommittee members need not necessarily be members of the NBIC Committee or subgroup. The candidate's name is then submitted to the Chair~~man~~ of the Board of Trustees for consideration. All voting members of the subcommittee must be appointed by the Chair~~man~~ of the Board of Trustees.

b. Candidates for appointment or reappointment as the subcommittee Chair and Vice Chair are selected by a majority vote of the subcommittee membership. Only voting members with more than two years of service on the committee are eligible to be appointed subcommittee Chair or Vice Chair. The candidate's names are then submitted to the Chair~~man~~ of the Board of Trustees for consideration. The Chair and Vice Chair must be appointed by the Chair~~man~~ of the Board of Trustees.

c. A candidate for membership on the subcommittee must provide a work history/resume to the NBIC Committee Secretary.

d. The term for all voting members is three years. Voting members are eligible for reappointment.

e. Subcommittee Chair and Vice Chair

Each term of office shall not exceed three years and no more than two consecutive three-year terms in each office may be served.

This limit can be exceeded for special circumstances, provided the candidate's name and an explanation of the special circumstances are submitted to the Board of Trustees for consideration. If approved by the Board of Trustees, the candidate will

be appointed by the Chair~~man~~ of the Board of Trustees. An example of a special circumstance is that there is no other qualified candidate who is willing to serve.

At the time of appointment, the expiration date for the Chair's and Vice Chair's membership term shall be adjusted to match the term of office.

4.3 Subgroups

4.3.1 Responsibilities

Subgroups are responsible for:

a. developing new rules and revising existing rules for specific Code sections or paragraphs;

b. acting on requests for interpretations of the rules for specific Code sections or paragraphs;

c. acting on any matter related to the scope of the Code as may be assigned by the Committee or subcommittee; and

d. forwarding all subgroup actions to the subcommittee, as appropriate.

4.3.2 Membership

a. The number of members appointed to each subgroup shall be as necessary to carry out the assigned work. The size of subgroups will be limited to numbers which best serve operational needs.

b. Each member of a subgroup may recommend a person as a representative to serve in the absence of the member at a specific meeting. Representatives shall have the same privileges and responsibilities as the member when serving in the member's capacity. The representative's involvement automatically terminates at the conclusion of the specific meeting requested by the member.

4.3.3 Subgroup Member Selection, Approval, and Term

a. A candidate for appointment or reappointment as a member of the subgroup is selected by the majority vote of the subcommittee membership. Subgroup members need not necessarily be members of the Committee or subcommittee. The candidate's name is then submitted to the Chair~~man~~ of the Board of Trustees for consideration. All voting members of the subgroup must be appointed by the Chair~~man~~ of the Board of Trustees.

b. Candidates for appointment or reappointment as subgroup Chair and Vice Chair are selected by a majority vote of the subcommittee membership. Only voting members with more than two years of service on the committee are eligible to be appointed Subgroup Chair or Vice Chair. The Chair and Vice Chair of each subgroup shall be appointed by the Chair~~man~~ of the Board of Trustees.

c. A candidate for membership on a subgroup must provide a work history/resume to the NBIC Committee Secretary.

d. The term for all voting members is three years. Voting members are eligible for reappointment.

e. Subgroup Chair and Vice Chair

Each term of office shall not exceed three years and no more than two consecutive three-year terms in each office may be served.

This limit can be exceeded for special circumstances, provided the candidate's name and an explanation of the special circumstances are submitted to the Board of Trustees for consideration. If approved by the Board of Trustees, the candidate will be appointed by the Chair~~man~~ of the Board of Trustees. An example of a special circumstance is that there is no other qualified candidate who is willing to serve.

At the time of appointment, the expiration date for the Chair's and Vice Chair's membership term shall be adjusted to match the term of office.

f. The name of a National Board Member who is a candidate to serve on a subgroup but is not a member of the NBIC Committee or a subcommittee, must be submitted to the Chair~~man~~ of the Board of Trustees for approval.

4.4 Standing Task Groups

4.4.1 Responsibilities

Standing Task Groups are responsible for:

a. developing new rules and revising existing rules for specific subjects or types of pressure-retaining items;

b. acting on requests for interpretations of the rules for specific topics or Code sections; and/or

c. acting on any matter related to the scope of the Code as may be assigned by the Committee or subcommittee Chair.

All standing task group actions shall be forwarded to the subcommittee, as appropriate.

4.4.2 Membership

a. The number of members appointed to each standing task group shall be as necessary to carry out the assigned work. The size of a standing task group will be limited to numbers which best serve operational needs.

b. Each member of a standing task group may recommend a person, as a representative to serve in the absence of the member at a specific meeting. Representatives shall have the same privileges and responsibilities as the member when serving in the member's capacity. The representative's involvement automatically terminates at the conclusion of the specific meeting requested by the member.

4.4.3 Standing Task Group Member Selection, Approval, and Term

a. A candidate for appointment or reappointment as a member of the standing task group is selected by the majority vote of the NBIC Committee or appropriate subcommittee membership. Standing task group members need not necessarily be members of the NBIC Committee, subcommittee, or subgroup.

b. Candidates for appointment or reappointment as standing task group Chair and Vice Chair are selected by a majority vote of the standing task group membership. The Chair and Vice Chair of each standing task group shall be appointed by the NBIC Committee Chair.

c. The term for all voting members is three years. Voting members are eligible for reappointment.

d. Task Group Chair and Vice Chair

   Each term of office shall not exceed three years.

   At the time of appointment, the expiration date for the Chair's and Vice Chair's membership term shall be adjusted to match the term of office.

e. The name of a National Board Member who is a candidate to serve on a standing task group but is not a member of the NBIC Committee, subcommittee, or subgroup, must be submitted to the Chair~~man~~ of the Board of Trustees for approval.

4.5 Task Groups

4.5.1 Responsibilities

Task groups are responsible for:

a. developing new rules and revising existing rules for specific Code topics or paragraphs;

b. acting on requests for interpretations of the rules for specific Code topics or paragraphs; and/or

c. acting on any matter related to the scope of the Code as may be assigned by committees.

All task group actions shall be forwarded to the committee as appropriate.

4.5.2 Membership

The number of members appointed to each task group shall be as necessary to carry out the assigned task. The size of task groups will be limited to numbers which will best serve operational needs.

4.5.3 Task Group Members Selection, Approval, and Term

a. When the committee agrees on the need or at the discretion of the Chair of a committee, a task group, members, and Project Manager shall be appointed by the committee Chair. Task group members need not necessarily be members of a committee.

b. The task group will be dismissed once the task has been completed or at the discretion of the Chair of the committee.

4.6 Interest Categories

NBIC Committee, subcommittee, subgroup, and standing task group members shall not be considered as representing any specific organization. Participation by individuals employed by governmental agencies or affiliated with industry is not to be interpreted as government or industry endorsement. Membership shall be selected from the categories of interest listed below:

a. General Interest

b. Manufacturers

c. Authorized Inspection Agency

d. Jurisdictional Authorities

e. National Board Certificate Holders

f. Users (This may include National Board Owner/User Certificate Holders.)

g. Labor

Lack of representation within any interest category at a meeting shall not preclude the committee from conducting its business when a quorum is present.

Individuals selected for the Manufacturers or National Board Certificate Holders interest categories should be supported by an organization that performs at least 51% of their Code Work in said category.

5.0 Duties of NBIC Committee, Subcommittee, Subgroup, and Task Group Membership

5.1 Chair

The Chair shall preside at meetings of the committee and shall perform other duties as are customarily assigned to that position.

The Chair of the NBIC Committee shall make an annual review of the activity of each voting member of the NBIC Committee, subcommittees, subgroups, and standing task groups regarding the member's contribution to the work, attention to correspondence, attendance at meetings, and voting on pending letter ballots. Based on this review, if a consistent lack of attendance, voting, or participation within the past year is noted, the Chair may recommend to the Chair~~man~~ of the Board of Trustees that the member's appointment to the NBIC Committee, subcommittee, subgroup, or standing task group be terminated. The Chair's report of NBIC Committee, subcommittee, subgroup, or standing task group members' activities shall be sent to the Chair~~man~~ of the Board of Trustees and the Executive Director of the National Board.

5.2 Vice Chair

The Vice Chair shall, in the absence of the Chair, fulfill the duties of the Chair.

5.3 Secretary

In addition to the responsibilities required by this procedure, the Secretary shall prepare agendas and record minutes of meetings and shall perform such other duties as are customarily assigned to such an office.

In the absence of the Chair and Vice Chair at a meeting, the Secretary shall take the Chair for the purpose of receiving nominations from the members present for election of a Chair Pro Tem, who shall then preside at that meeting.

5.4 Members

Each member is expected to thoroughly consider each subject brought before the committee for action, vote on acceptance or rejection of each proposal, and assist generally in carrying out the assigned functions. Such duties may be carried out by attendance at meetings, by correspondence, by telephone, and by online ballot voting.

6.0 Meetings

6.1 Scheduled Meetings

NBIC Committee meetings shall be held at the call of the Chair, as decided upon by a majority of NBIC Committee members, or as directed by the Chair~~man~~ of the Board of Trustees. Subcommittee, subgroup, and standing task group meetings held at times and locations other than in conjunction with the NBIC Committee meeting shall require the approval of the National Board Executive Director. Meeting requests shall be submitted in writing along with the subcommittee, subgroup, or standing task group's roster to the Executive Director.

6.2 Locations

The NBIC Committee shall meet in National Board member jurisdictions.

6.3 Meeting Notification

All committee meeting schedules shall be posted on the National Board website. The National Board member in whose jurisdiction the NBIC Committee is meeting shall be invited to attend the meeting.

A meeting agenda shall be made available to the members prior to the meeting and shall be subject to approval at the commencement of each meeting.

6.4 Public Meetings

Meetings at which the committee considers proposed revisions to the NBIC, reaffirmation of previously considered revisions, or withdrawal of previously approved revisions shall be open to the general public. Unless matters to be discussed by the committee are deemed to be of a confidential nature by the Chair, committee meetings shall be open to any interested person who shall be given an opportunity to participate in the discussions on subjects of interest to them.

6.5 Quorum

Fifty-one percent of the NBIC Committee, subcommittee, or subgroup voting membership eligible to vote must be present to conduct committee business.

6.6 Meeting Conduct

The committee shall conduct meetings in accordance with the latest available edition of *Roberts Rules of Order (Revised)* unless rules to the contrary are specified in these procedures.

6.7 Recording Meeting Proceedings

Taping of committee meetings, other than by the Secretary, is prohibited.

6.8 Minutes

All meetings of the NBIC Committee, subcommittees, subgroups, and standing task groups shall be documented in minutes of the meeting. The minutes are not to be considered a verbatim record of the meeting but rather a record of the voted actions and highlights of significant discussions or conclusions.

The title page of committee minutes shall include the following statements:

> "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."

Minutes of committee meetings will be distributed to the members of the committees, the Executive Director, National Board members, and Advisory Committee members, as requested. Copies of committee minutes will be made available on the National Board's website for review until the next scheduled meeting's minutes are available.

7.0 Voting

7.1 General

7.1.1 Each committee member shall exercise their vote within the presented time limits. When a committee member fails to report when due, or consistently abstains from voting, the committee member's appointment shall be subject to termination. The individual may appeal such action. Committee members are encouraged to vote as soon as possible.

7.1.2 Votes for committee actions may be obtained by recorded votes at meetings or electronic means. All committee members shall have an opportunity to vote. When recorded votes are taken at meetings, the committee members who are absent shall be given the opportunity to vote.

7.1.3 The vote of each committee member shall be in one of the following categories:

- Approved
- Disapproved
- Abstention
- Not voting (for possible conflict of interest)

A response of not voting signifies neither approval nor disapproval and should be executed only when the committee member believes that they have a conflict of interest or potential conflict of interest and is removing themselves from the voting process.

Committee members casting disapproved responses should include an alternate action that will resolve their disapproved vote.

Committee members casting abstained responses should include a reason for the abstention.

7.1.4 Approval of the following NBIC Committee or subcommittee actions shall require two-thirds of the committee membership voting affirmatively, excluding not voting responses:

- committee procedures and interest categories
- reaffirmation of the NBIC as an ANSI Standard
- NBIC revisions
- interpretation of the NBIC
- scope of the NBIC Committee or subcommittee
- New ANSI standard

Approval of all other committee actions shall be by a majority vote.

7.1.5 NBIC Committee members who are not present at a meeting shall be afforded the opportunity to submit their vote electronically within two weeks of the date of the NBIC Committee meeting.

7.2 Voting at Meetings

NBIC Committee members who are not present at a meeting for final approval of Code revisions shall be afforded the opportunity to submit their vote electronically within two weeks after the date of the NBIC Committee meeting.

It is the responsibility of the National Board to provide the information relating to the items prior to the meeting in the form of posted agendas. Disapproved actions at the meeting shall be placed on the subcommittee agenda for the next scheduled meeting.

7.3 Voting by Letter Ballot

Voting by letter ballot is performed using the National Board Letter Ballot System available on the National Board website.

7.3.1 A letter ballot on any subject requires a response of at least fifty-one percent of committee members eligible to vote and may be authorized by the Chair of the NBIC Committee, Chair of a subcommittee, subgroup, or standing task group, Chair~~man~~ of the Board of Trustees, or a majority vote of those present and voting at a NBIC Committee, subcommittee, subgroup, or standing task group meeting. The

voting period for a letter ballot may be four calendar weeks; however, to expedite the item, this period may be shortened to no less than two calendar weeks by the person authorizing the letter ballot. Voting periods shall be closed upon receipt of all responses, but not later than the established closing date. All letter ballots shall be coordinated by the NBIC Committee Secretary.

7.3.2 At the conclusion of the letter ballot period, the NBIC Committee or subcommittee Secretary shall tally the votes and report the results to the members. If the letter ballot is disapproved, the item shall be placed on the agenda for the next meeting. All comments may be reviewed electronically by the NBIC Committee, subcommittee, subgroup, or standing task group members during the letter ballot period.

The Project Manager shall respond in writing to all negative comments received. The response shall include a disposition to the comment, and reasons for that disposition. If a comment is submitted that does not pertain to the ballot under consideration, the comment shall be reviewed as a new revision request to the code. Upon Project Manager responses to negative comments, the letter ballot (with or without substantive revisions) and attempts at resolution shall be resubmitted for a two-week time period for members to respond, reaffirm, or change their original vote. NBIC Committee members who voted in the previous ballot are not required to vote in the recirculation ballot to reaffirm their vote. At the conclusion of the letter ballot period, the NBIC Committee Secretary shall tally the votes and report the results to the members. The Project Manager shall communicate with negative commenters to resolve their concerns, whenever possible.

If the required vote approval percentage is affirmative after this time period, the ballot shall be considered approved. Letter ballots not approved shall be placed on the agenda for the next scheduled meeting of the NBIC Committee, subcommittee, subgroup, or standing task group.

Letter ballots for review and comment only are not subject to the requirements of paragraphs 7.3.1 and 7.3.2 above.

7.4 Final Approval Vote

Prior to publication of a new edition of the NBIC, all substantive changes to the NBIC that have been approved by the NBIC Committee shall be gathered in a final draft standard document. A vote shall be taken by the NBIC Committee to approve the final draft standard document as the new edition of the NBIC. This vote serves as the final approval for all revisions to the NBIC. No substantive changes shall be made to the approved final draft standard unless the final draft standard is recirculated to the NBIC Committee to afford all members the opportunity to respond, reaffirm, or change their vote. The draft standard shall be submitted for an additional public review period if substantive changes are made to the document.

If an NBIC Committee member votes ‘Disapproved’ on the final vote, that member shall submit reasons for the ‘Disapproved’ vote in writing to the NBIC Secretary.

The NBIC Secretary shall provide the member with a written disposition and reason therefore. If the member remains unresolved in their objection, the ballot and attempts at resolution of the negative shall be resubmitted for a two-week time period for members to respond, reaffirm, or change their original vote. If the member remains unresolved with their 'Disapprove' vote after the two-week recirculation period, the member shall be notified in writing of their right to appeal the final Committee decision.

8.0 National Board Inspection Code Publication Information

8.1 ANSI Approval Process

NBBPVI is accredited by ANSI as a developer of American National Standards. The NBIC Committee, subcommittees, subgroups, and standing task groups must conduct activities in accordance with this procedure and the current rules and procedures of ANSI.

8.1.1 Documentation

a. The NBIC Committee approves individual revisions of NB-23 during multiple meeting votes and letter ballots instead of one vote or ballot before the BSR-8 form is submitted. After the NBIC Committee has approved the draft standard, the NBIC Committee Secretary shall prepare and submit a Standards Action Public Review Request (BSR-8) form. A notice of all revisions shall be posted on the National Board's website for public review and comment. This notice shall be posted for a minimum of forty-five days, or a minimum of sixty days if requested by an interested party. If the text under public review is five pages in length or less at a minimum, a thirty-day public review period may be held.

b. Any person wishing to submit a public review comment must do so on the National Board's Submission of Public Review Comment form. The commenter must provide the date of the comment, all personal contact information, and their proposed comment or recommendation on the form. The Secretary will return incomplete forms to the commenter with written notice indicating what information is needed for the form to be considered complete.

c. The Secretary shall coordinate the disposition of public review comments with the Project Manager.

d. The disposition of all public review comments shall be approved by the NBIC Committee.

e. The commenter shall be advised, in writing, of the disposition of the public review comment and the reasons for the disposition. The commenter shall be notified in writing of their right to appeal the NBIC Committee's decision.

f. All NBIC Committee members shall be notified of all unresolved public review comments and attempts at resolution to afford all members an opportunity to

respond, reaffirm, or change their vote. Any commenter with unresolved comments shall be notified in writing of their right to appeal.

g. Resolutions involving substantive changes to approved text shall be resubmitted for public review at the next scheduled public review and comment period or a new action shall be generated to address the commentor's recommended change as appropriate.

h. When the disposition of all comments has been completed, or if no comments were submitted, the Secretary shall prepare and submit the Formal Submittal Checklist for approval or withdrawal as an American National Standard (BSR-9) Form.

8.1.2 Secretariat

a. The National Board is the secretariat for the NBIC Committee. Its duties include:

1. providing administrative support for the activities of the Secretary, and
2. publishing and distributing the Code, minutes, and interpretations approved in accordance with these procedures.

b. It shall be the responsibility of the Secretary to:

1. ensure that the NBIC Committee adheres to these and other referenced or applicable procedures;
2. apply to ANSI for accreditation of the NBIC Committee by that organization;
3. maintain a committee roster of the members which shall include names of the officers, and members, their address, business affiliation, category of interest, and appointment expiration date;
4. comply with ANSI requirements for the NBIC Committee administration; and
5. submit proposed revisions to this procedure to ANSI for approval.

8.1.3 Internal Audits

At least once every three calendar years, the Executive Director of the National Board shall have an audit made of the NBIC Committee's activities to ensure these procedures are followed. The audit shall be conducted by person(s) who are not members of the NBIC Committee. The audit report and follow-up action of deficiencies uncovered by an audit shall be reported to the NBIC Committee and the Chair~~man~~ of the Board of Trustees.

8.1.4 Patent Policy

The National Board shall comply with the ANSI patent policy as described in the most current version of the ANSI Essential Requirements.

8.1.5 Commercial Terms

The National Board shall comply with the ANSI Commercial Terms and Conditions Policy as described in the most current version of the ANSI Essential Requirements.

8.1.6 Withdrawal of American National Standard

When required by ANSI Essential Requirements or the National Board elects to withdraw or discontinue an American National Standard or portion thereof, the National Board shall immediately notify ANSI for announcement in ANSI Standards Action. The National Board shall comply with all ANSI Essential Requirements for withdrawal of an American National Standard.

8.2 Revisions to the NBIC

8.2.1 Any interested person may request consideration of a revision to the NBIC by submitting such request electronically through the National Board's Business Center. If deemed editorial as determined by the Secretary, requests will be incorporated into the NBIC draft edition for distribution and public review. Comments which are editorial in nature need not be submitted to the NBIC Committee or subcommittees for consideration prior to inclusion in the edition. Any public review comments associated with these editorial comments will be handled as such and will be considered by the NBIC Committee and subcommittee at the next scheduled meetings for final approval.

Requests which are technical in nature will be forwarded to the appropriate subcommittee for consideration and recommendations made to the NBIC Committee, for their approval. Once approved, these revisions will be incorporated into the next draft. If approval is not reached, the item will be returned to the subcommittee for further action.

8.2.2 Following approval of a revision by the NBIC Committee and acceptance under ANSI procedures, the approved revision shall be published in the next edition.

8.3 Interpretations of the NBIC

8.3.1 The NBIC Committee has the responsibility for interpreting and replying to questions concerning the application of NBIC rules or guidelines. Any interested person may request, in writing, an interpretation of a rule or guideline contained in the NBIC through the National Board Business Center.

8.3.2 Upon receipt of such a request the NBIC Committee Secretary determines which subcommittee should develop a technical response.

When responding to questions concerning the interpretation of a rule or guideline, the following is to be used as a response:

> "The NBIC was developed under procedures approved by the American National Standards Institute. The NBIC Committee that approved the NBIC and revisions thereto is a consensus NBIC Committee balanced to assure that individuals from competent and concerned interests have been afforded the opportunity to participate. Further, all proposed revisions to the NBIC are made available for public review and comment which provides an opportunity for additional input from jurisdictions, industry, and the public at large."

From time to time a request for interpretation regarding a superseded edition of the NBIC may be submitted to the NBIC Committee. If in the opinion of the members of the NBIC Committee, a response can be formulated, the NBIC Committee should respond to the inquirer's question. However, when it is the consensus of the NBIC Committee that a response cannot be formulated, the NBIC Committee should respond as follows:

> "The [edition of the NBIC] has been superseded. The historical knowledge that the NBIC Committee feels is needed to respond to your request for interpretation is no longer available to the NBIC Committee."

Intent interpretations are permitted only to resolve conflicting or incorrect wording. Intent interpretations shall not revise existing requirements or establish new requirements.

8.3.3 All interpretations of the NBIC shall be approved by the NBIC Committee.

8.3.4 Intent interpretations along with the revision(s) to the NBIC that corrects the conflicting or incorrect wording, shall be submitted to the NBIC Committee for approval. Both the intent interpretation and the revision(s) to the NBIC must be approved by the NBIC Committee for the interpretation to be issued.

8.3.5 All interpretations of the NBIC shall be posted on the National Board website. A written response will also be sent to the inquirer.

8.3.6 The National Board accepts responsibility for and recognizes only those interpretations approved by the NBIC Committee.

8.4 Publications

8.4.1 NBIC

The NBIC shall be identified as "An American National Standard" and "ANSI/NB-23" on the cover of all Parts of the NBIC in accordance with ANSI procedures.

A new edition of the NBIC shall be published every two years.

Each edition shall have a date of issue. The NBIC may be used beginning with the date of issue. Six months after the date of issue, the edition becomes the requirement for compliance with the NBIC.

Complimentary copies of the NBIC will be provided to the members of the NBIC Committee, subcommittees, and subgroups.

8.4.2 Discontinuance of the NBIC

The National Board reserves the right to abandon the process of a proposed new or revised NBIC or portion thereof at its own discretion and without a vote of the NBIC Committee. The National Board shall notify ANSI immediately of such actions which will be announced in Standard Action.

8.4.3 Forms

National Board forms are part of the standard and follow the same requirements for revision as outlined in this procedure.

8.5 General

8.5.1 Referencing Other Standards

When the NBIC Committee wishes to reference another code or standard, the date of the specific, referenced code or standard shall not be cited unless required.

8.5.2 Copyrights

Copyright and all rights in all materials produced by the Committee are owned by the National Board.

9.0 Due Process

The National Board provides due process for the impartial handling of complaints regarding procedural or technical issues for any action or inaction. As part of this due process there are several levels to which an aggrieved party may appeal. This section gives criteria regarding right to appeal, how appeals are made, and what may be appealed.

At any level of the appeal process, there shall be no informal discussions between the body hearing the appeal and representatives of the appellant.

Persons who have directly and materially affected interests and who have been or will be adversely affected by any procedural or technical action or inaction regarding the development of a proposed American National Standard or the revision, reaffirmation, or withdrawal of the NBIC, have the right to appeal. Appeals shall be addressed promptly, and a decision made expeditiously. The following process shall be followed:

a. Any person aggrieved by an interpretation, disposition of comments, or procedural or technical issues, may appeal to the NBIC Committee.

b. The aggrieved person shall first request a reconsideration hearing by the NBIC Committee. Such request shall be in writing, addressed to the NBIC Committee Secretary, and shall state the reasons for requesting reconsideration. Such request must be submitted within seven calendar days of the action of the NBIC Committee that aggrieved the person.

c. The appellant shall be given written notice of the time, place, and date when the reconsideration hearing is to be heard by the NBIC Committee. The NBIC Committee may choose to hold the reconsideration hearing in person or on a social media platform approved by the Executive Director. The appellant shall have the right to appear in person and be heard, and to be represented by a person of the appellant's own choosing at the appellant's own expense. The appellant may request that a stenographic record of the proceedings be made and if such a stenographic record of the proceedings is made at the request of the appellant, it shall be at the appellant's expense. The appellant must provide the National Board with a copy of the stenographic record at no cost within seven days of the hearing.

d. The NBIC Committee Secretary will notify the appellant of the NBIC Committee's decision in writing within 7 calendar days of the conclusion of the hearing.

e. Should the person remain aggrieved following such reconsideration hearing by the NBIC Committee or should such reconsideration be denied, the aggrieved person then, in writing, addressed to the National Board's Executive Director, may request review by the National Board Appeals Committee (NBAC). Such request must be within 7 calendar days of the reconsideration or denied action of the NBIC Committee that aggrieved the person.

f. The appellant shall be given written notice of the time, place, and date when such appeal is to be considered by NBAC. The appellant shall have the right to appear in person and be heard, and to be represented by a person of appellant's own choosing at the appellant's own expense. The appellant may request that a stenographic record of the proceedings be made and if such a stenographic record of the proceedings is made at the request of the appellant, it shall be at the appellant's expense. The appellant must provide the National Board with a copy of the stenographic record at no cost within seven days of the hearing.

   The findings of the NBAC operating under these procedures, shall be binding on the NBIC Committee as to the specific item under appeal and it shall be incumbent upon the NBIC Committee to consider incorporating the NBAC findings.

g. The NBAC Secretary will notify the appellant of the NBAC's decision in writing within 14 calendar days of the conclusion of the hearing.

h. Should the person remain aggrieved following the NBAC's decision, further appeal may be taken to the Board. Such appeal is initiated by a written request within seven calendar days of the written notice from the NBAC's decision. The written request must be addressed to the National Board's Executive Director setting forth the grounds for such appeal. The

appeal shall be heard at the next regular or special meeting of the Board which is held at a time of sufficient duration following such request as to allow distribution of all relevant documents and materials to the Board members.

i. The appellant shall be given written notice of the time, place, and date when such appeal is to be considered by Board. The appellant shall have the right to appear in person and be heard, and to be represented by a person of the appellant's own choosing at the appellant's own expense. The appellant may request that a stenographic record of the proceedings be made and if such a stenographic record of the proceedings is made at the request of the appellant, it shall be at the appellant's expense. The appellant must provide the National Board with a copy of the stenographic record at no cost within seven days of the hearing.

j. The Board, upon considering such appeal, by affirmative majority vote of those present, may allow a variance, may direct the NBIC Committee to consider a revision, or may sustain the action of the NBAC. The decision of the Board on such appeal shall be final. The appellant will be notified in writing by the Board Secretary within 14 calendar days of the Board's decision.

k. An appeal relating to the inaction relating to due process may be made at any time by the aggrieved person.

10.0 Conflict of Interest

It shall be the duty of any NBIC Committee member, NBAC member, or Board member having a potential conflict of interest related to any action before the NBIC Committee, to notify the other members of their committee. The committee member who has a potential conflict of interest to any action before their committee should be recused from all deliberations and votes relating to that action.

Any committee member who feels that they are or could be directly and materially affected by any decision made on the appeal should be considered to have a potential conflict of interest.

11.0 Records

Records shall be retained for a minimum of five years or until approval of the subsequent revision or reaffirmation of the complete standard.

Records for withdrawn standards shall be retained for a minimum of five years after withdrawal or until the next ANSI audit, whichever is longer.

12.0 Antitrust Policy

The National Board of Boiler and Pressure Vessel Inspectors shall comply with the ANSI Antitrust Policy as described in the most current version of the ANSI Essential Requirements.

13.0 Metrication Policy

13.1 General

This policy provides guidance for the use of US customary units and metric units. Throughout the NBIC, metric units are identified and placed in parentheses after the US customary units referenced in the text and associated tables. For each repair or alteration performed, selection of units shall be based on the units used in the original code of construction. For example, items constructed using US customary units shall be repaired or altered using US customary units. The same example applies to items constructed using metric units. Whichever units are selected, those units are to be used consistently throughout each repair or alteration. Consistent use of units includes all aspects of work required for repairs or alterations (e.g., materials, design, procedures, testing, documentation, stamping, etc.).

13.2 Equivalent Rationale

The rationale taken to convert metric units and US customary units involves knowing the difference between a *soft* conversion and a *hard* conversion. A soft conversion is an exact conversion. A hard conversion is simply performing a soft conversion and then rounding off within a range of intended precision. When values specified in the NBIC are intended to be approximate values, a hard conversion is provided. If an exact value is needed to maintain safety or required based on using good engineering judgment, then a soft conversion will be used. In general, approximate accuracy is acceptable for most repairs or alterations performed using the requirements of the NBIC. Therefore, within the NBIC, metric equivalent units are primarily hard conversions.

The following examples are provided for further clarification and understanding of soft conversions versus hard conversions:

Example 1: Using 1 in. = 25.4 mm;
12 in. = 304.8 mm (soft conversion)

Example 2: Using the above conversion, a hard conversion may be 300 mm or 305 mm depending on the degree of precision needed.

13.3 Procedure for Conversion

The following guidelines shall be used to convert between US customary units and metric units within the text of the NBIC:

a) All US customary units will be converted using a soft conversion;

b) Soft conversion calculations will be reviewed for accuracy;

c) Based on specified value in the NBIC, an appropriate degree of precision shall be identified;

d) Once the degree of precision is decided, rounding up or down may be applied to each soft conversion in order to obtain a hard conversion; and

e) Use of hard conversion units shall be used consistently throughout the NBIC wherever soft conversions are not required.

NOTE: Care shall be taken to minimize percentage difference between units.

13.4 Referencing Tables

The following tables are provided for guidance and convenience when converting between US customary units and metric units.

SOFT CONVERSION FACTORS (US X FACTOR = METRIC)

US Customary	Metric	Factor
in.	mm	25.4
ft.	m	0.3048
$in.^2$	mm^2	645.16
$ft.^2$	m^2	0.09290304
$in.^3$	mm^3	16,387.064
$ft.^3$	m^3	0.02831685
US gal.	m^3	0.003785412
US gal.	liters	3.785412
psi	MPa	0.0068948
psi	kPa	6.894757
ft-lb	J	1.355818
°F	°C	5/9 x (°F–32)
R	K	5/9
lbm	kg	0.4535924
lbf	N	4.448222
in.-lb	N-mm	112.98484
ft.-lb	N-m	1.3558181
ksi√in	MPa√m	1.0988434
Btu/hr	W	0.2930711
lb/ft^3	kg/m^3	16.018463
in.-wc	kPa	0.249089

NOTE: The actual pressure corresponding to the height of a vertical column of fluid depends on the local gravitational field and the density of the fluid, which in turn, depends upon the temperature. This conversion factor is the conventional value adopted by ISO. The conversion assumes a standard gravitational field (gn – 9.80665 N/kg) and a density of water equal to 1,000 kg/m3. 12.4-a through 12.4-j.

Temperature shall be converted to within 1°C.

TEMPERATURE EQUIVALENTS

Temperature °F	Temperature °C
60	16
70	21
100	38
120	49
350	177
400	204
450	232
800	427
1,150	621

Fractions of an inch shall be converted to the following table. Even increments of inches are in even multiples of 25 mm. For example, 40 inches is equivalent to 1,000 mm. Intermediate values may be interpolated rather than converted and rounded to the nearest mm.

US FRACTIONS/METRIC EQUIVALENTS

Inches	Millimeters
1/32	0.8
3/64	1.2
1/16	1.5
3/32	2.5
1/8	3
5/32	4
3/16	5
7/32	5.5
1/4	6
5/16	8
3/8	10
7/16	11
1/2	13
9/16	14
5/8	16
11/16	17
3/4	19
7/8	22
1	25

For nominal pipe sizes, the following relationships were used:

PIPE SIZES/EQUIVALENT

US Customary Practice	Metric Practice
NPS 1/8	DN 6
NPS 1/4	DN 8
NPS 3/8	DN 10
NPS 1/2	DN 15
NPS 3/4	DN 20
NPS 1	DN 25
NPS 1-1/4	DN 32
NPS 1-1/2	DN 40
NPS 2	DN 50
NPS 2-1/2	DN 65
NPS 3	DN 80
NPS 3-1/2	DN 90
NPS 4	DN 100
NPS 5	DN125
NPS 6	DN 150
NPS 8	DN 200
NPS 10	DN 250
NPS 12	DN 300
NPS 14	DN 350
NPS 16	DN 400
NPS 18	DN 450
NPS 20	DN 500
NPS 22	DN 550
NPS 24	DN 600
NPS 26	DN 650
NPS 28	DN 700
NPS 30	DN 750
NPS 32	DN 800
NPS 34	DN 850
NPS 36	DN 900
NPS 38	DN 950
NPS 40	DN 1000
NPS 42	DN 1050
NPS 44	DN 1100
NPS 46	DN 1150
NPS 48	DN 1200
NPS 50	DN 1250
NPS 52	DN 1300
NPS 54	DN 1350
NPS 56	DN 1400
NPS 58	DN 1450
NPS 60	DN 1500

Areas in square inches (in^2) were converted to square mm (mm^2) and areas in square feet (ft^2) were converted to square meters (m^2).

Area (US Customary)	Area (Metric)
3 in^2	650 mm^2

6 in^2	3,900 mm^2
10 in^2	6,500 mm^2

Area (US Customary)	Area (Metric)
5 ft^2	0.46 m^2

Volumes in cubic inches ($in.^3$) were converted to cubic mm (mm^3) and volumes in cubic feet (ft^3) were converted to cubic meters (m^3).

Volume (US Customary)	Volume (Metric)
1 in^3	16,000 mm^3
6 in^3	96,000 mm^3
10 in^3	160,000 mm^3

Volume (US Customary)	Volume (Metric)
5 ft^3	0.14 m^3

Although the pressure should always be in MPa for calculations, there are cases where other units are used in the text. For example, kPa is used for small pressures. Also, rounding was to two significant figures. Note that 14.7 psi converts to 101 kPa, while 15 psi converts to 100 kPa. While this may seem at first glance to be an anomaly, it is consistent with the rounding philosophy.

PRESSURE/EQUIVALENTS

Pressure (US Customary)	Pressure (Metric)
0.5 psi	3 kPa
2 psi	15 kPa
3 psi	20 kPa
10 psi	70 kPa
15 psi	100 kPa
30 psi	200 kPa
50 psi	350 kPa
100 psi	700 kPa
150 psi	1.03 MPa
200 psi	1.38 MPa
250 psi	1.72 MPa
300 psi	2.10 MPa

350 psi	2.40 MPa
400 psi	2.8 MPa
500 psi	3.45 MPa
600 psi	4.14 MPa
1,200 psi	8.27 MPa
1,500 psi	10.34 MPa

Strength (US Customary)	Strength (Metric)
95,000 psi	655 MPa

Material properties that are expressed in psi or ksi (e.g., allowable stress, yield and tensile strength, elastic modulus) were generally converted to MPa to three significant figures.

Item 22-23

Subject: Removing Section 8 from all 4 Parts of the NBIC

Explanation of Need: The current wording in Section 8 is obsolete and the actual process for submitting Interpretations, Code Revisions, and Code Additions is now located in the Introduction of the NBIC.

Project Manager: Gary Scribner

Proposed Change:

All text in Section 8 will be deleted and replaced with the following:

The process for submitting requests for Interpretations, Code Revisions, and Code Additions has been moved to the Introduction of this book.

Item No # NB15 – 0308 Part 4 8-3-20

Editorial Note: Add following for Installation of pressure relief valves for Organic Fluid Vaporizers in Part 4, Section 2 and renumber existing paragraphs 2.4, 2.5, 2.6 to 2.5, 2.6 and 2.7 respectively.

Proposal:

Part 4

2.4 OVERPRESSURE PROTECTION FOR ORGANIC FLUID VAPORIZERS

2.4.1 GENERAL

Organic Fluid Vaporizers shall be provided with overpressure protection in accordance with the code of Construction. The vaporizer shall be designed in accordance with the rules of the Code of Construction for vaporizer for a working pressure of at least 40 psi (280 kPa) above the operating pressure at which it will be used.

2.4.2 Pressure Relief Devices

2.4.2.1 Organic Fluid Vaporizers shall be equipped with one or more pressure relief devices unless the option for overpressure protection by system design is utilized (when permitted by the original code of construction).

When pressure relief devices are used, the following shall apply:

a) Pressure relief valve(s) shall be of a totally enclosed type.
b) A lifting lever shall not be used in Pressure relief valve(s). A body drain is not required.
c) Pressure relief valves and rupture disks shall be in accordance with the code of construction and designed for liquid, vapor, or combination service as required for the specific installation, service fluids, and overpressure conditions.
d) Cast iron fittings shall not be used.
e) Copper and Copper Alloys shall not be used.
f) The inlet connection to the valve shall be not less than NPS ½ (DN 15).

2.4.3 LOCATION

Pressure relief devices shall be connected to the vaporizers in accordance with the original code of construction.

2.4.4 CAPACITY

The pressure relief device(s) shall have sufficient capacity to prevent the pressure vessel from exceeding the maximum pressure specified in the vessel code of construction.

2.4.5 SET PRESSURE

a) When a single relief device is used, the set pressure marked on the device shall not exceed the maximum allowable working pressure.

b) When more than one pressure relief device is provided to obtain the required capacity, only one pressure relief device set pressure needs to be set at or below the maximum allowable working pressure. The set pressure of the additional relief devices shall be such that the pressure cannot exceed the maximum pressure permitted by the code of construction.

2.4.6 INSTALLATION

The pressure relief devices and its associated discharge piping shall be installed in accordance with original code of construction. The installation of pressure relief devices for organic fluid vaporizers shall include but not limited to following requirements.

a) A rupture disk may be installed between the pressure relief valve and the vaporizer to minimize the loss by leakage of material through the pressure relief valve, provided the following requirements are met:

1. The cross-sectional area of the piping to a vaporizer shall be not less than the required relief area of the rupture disk.

2. The maximum pressure of the range for which the disk is designed to rupture does not exceed the opening pressure for which the pressure relief valve is set or the maximum allowable working pressure of the vessel.

3. The opening provided through the rupture disk, after breakage, is sufficient to permit a flow equal to the capacity of the attached valve, and there is no chance of interference with the proper functioning of the valve, but in no case shall this area be less than the inlet area of the valve.

4. A pressure gage, try cock, free vent, or a suitable telltale indicator should be provided in space between a rupture disk and the pressure relief valve. This arrangement permits the detection of disk rupture or leakage.

5. Every rupture disk shall have a specified bursting pressure at a specified temperature, and shall be marked with a lot number.

6. Every rupture disk shall be guaranteed by its manufacturer to burst within 5%(plus or minus) of its specified bursting pressure.

b) The pressure relief valve should be provided with suitable discharge piping in accordance with the vaporizer manufacturer's recommendations, the fluid manufacturer's recommendations and should consider any applicable safety concerns and any applicable codes and standards. Any discharge piping should not affect the performance or capacity of the relief valve.

c) A suitable condenser that will condense all the vapors discharged from the pressure relief valve or other safe catchment may be used.

d) Pressure relief valves shall be disconnected from the vaporizer at least once yearly for inspection and repair if necessary. Pressure relief valves shall be tested after repair and then replaced on the vaporizer.

e) Pressure relief valve discharge capacity shall be determined from the following equation:

$$W = CKAP\sqrt{(M/T)}$$

Where
A = Discharge Area of Pressure relief Valve,in² (mm²)
C = Constant for vapor that is a function of
Specific Heats k=Cp/Cv (See Figure x.x.x.d).
Note: Where k is not known, k=1.001

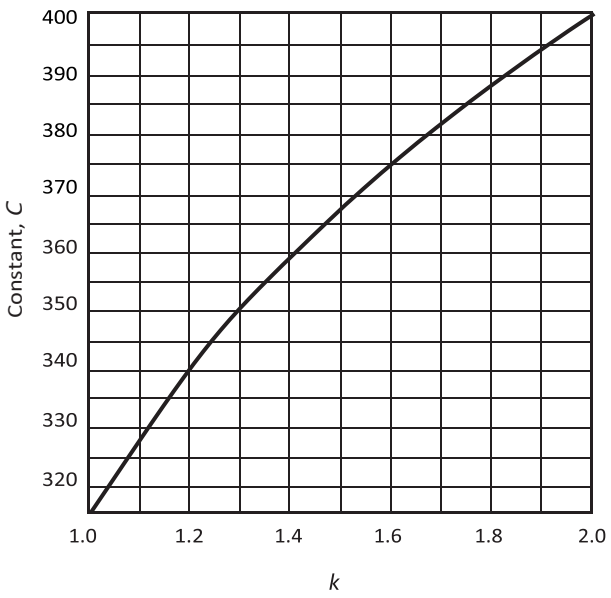
K = coefficient of discharge for valve design
M = molecular weight
P = (set pressure+ OP+ atmosphere pressure), psia (Mpa)
T = absolute temperature at inlet, °F + 460 (°C + 273).
W = flow of vapor, lb/hr (kg/hr)
OP = Overpressure required for Pressure Relief Valve to reach capacity specified in code of construction

The required minimum pressure relief valve relieving capacity shall be determined from the following equation:

W = (C X H X 0.75)/h

Where
C = maximum total weight or volume of fuel burned per hour, lb (kg) or ft^3 (m^3).
H = heat of combustion of fuel, Btu/lb (J/kg) or Btu/ft^3 (J/m^3)
h = latent heat of heat transfer fluid at relieving pressure, Btu/lb (J/kg)
W = weight of organic fluid vapor generated lb per hour (kg per hour)

Figure X.X.X.d (U.S. Customary Units)
Constant, C, for Vapor Related to Ratio of Specific Heats ($k = c_p/c_v$)



$$W = K\left(CAP\sqrt{M/T}\right)$$

(U.S. Customary Units)

$$C = 520\sqrt{k\left(\frac{2}{k+1}\right)^{\frac{k+1}{k-1}}}$$

(SI Units)

$$C = 39.48\sqrt{k\left(\frac{2}{k+1}\right)^{\frac{k+1}{k-1}}}$$

The sum of the pressure relief valve capacities marked on the valves shall be equal to or greater than W.

XXXXXXXXXX See Proposal for Part 1 in next Page XXXXXXXXXX

PROPOSAL:

Part 1 SUPPLEMENT XX, GUIDELINES FOR INSTALLATION OF ORGANIC FLUID VAPORIZERS

SXX OVERPRESSURE PROTECTION FOR ORGANIC FLUID VAPORIZERS

SXX.1 GENERAL REQUIREMENTS

Organic Fluid Vaporizers shall be provided with overpressure protection in accordance with the code of Construction. The vaporizer shall be designed in accordance with the rules of the Code of Construction for vaporizer for a working pressure of at least 40 psi (280 kPa) above the operating pressure at which it will be used.

SXX.2 PRESSURE RELIEF DEVICES

SXX.2.1 Organic Fluid Vaporizers shall be equipped with one or more pressure relief devices unless the option for overpressure protection by system design is utilized (when permitted by the original code of construction).

When pressure relief devices are used, the following shall apply:

a) Pressure relief valve(s) shall be of a totally enclosed type.
b) A lifting lever shall not be used in Pressure relief valve(s). A body drain is not required.
c) Pressure relief valves and rupture disks shall be in accordance with the code of construction and designed for liquid, vapor, or combination service as required for the specific installation, service fluids, and overpressure conditions.
d) Cast iron fittings shall not be used.
e) Copper and Copper Alloys shall not be used.
f) The inlet connection to the valve shall be not less than NPS ½ (DN 15).

SXX.3 LOCATION

Pressure relief devices shall be connected to the vaporizers in accordance with the original code of construction.

SXX.4 CAPACITY

The pressure relief device(s) shall have sufficient capacity to prevent the pressure vessel from exceeding the maximum pressure specified in the vessel code of construction.

SXX.5 SET PRESSURE

a) When a single relief device is used, the set pressure marked on the device shall not exceed the maximum allowable working pressure.

b) When more than one pressure relief device is provided to obtain the required capacity, only one pressure relief device set pressure needs to be set at or below the maximum allowable working pressure. The set pressure of the additional relief devices shall be such that the pressure cannot exceed the maximum pressure permitted by the code of construction.

SXX.6 INSTALLATION

The pressure relief devices and its associated discharge piping shall be installed in accordance with original code of construction. The installation of pressure relief devices for organic fluid vaporizers shall include but not limited to following requirements.

a) A rupture disk may be installed between the pressure relief valve and the vaporizer to minimize the loss by leakage of material through the pressure relief valve, provided the following requirements are met:

1. The cross-sectional area of the piping to a vaporizer shall be not less than the required relief area of the rupture disk.

2. The maximum pressure of the range for which the disk is designed to rupture does not exceed the opening pressure for which the pressure relief valve is set or the maximum allowable working pressure of the vessel.

3. The opening provided through the rupture disk, after breakage, is sufficient to permit a flow equal to the capacity of the attached valve, and there is no chance of interference with the proper functioning of the valve, but in no case shall this area be less than the inlet area of the valve.

4. A pressure gage, try cock, free vent, or a suitable telltale indicator should be provided in space between a rupture disk and the pressure relief valve. This arrangement permits the detection of disk rupture or leakage.

5. Every rupture disk shall have a specified bursting pressure at a specified temperature, and shall be marked with a lot number.

6. Every rupture disk shall be guaranteed by its manufacturer to burst within 5%(plus or minus) of its specified bursting pressure.

b) The pressure relief valve should be provided with suitable discharge piping in accordance with the vaporizer manufacturer's recommendations, the fluid manufacturer's recommendations and should consider any applicable safety concerns and any applicable codes and standards. Any discharge piping should not affect the performance or capacity of the relief valve.

c) A suitable condenser that will condense all the vapors discharged from the pressure relief valve or other safe catchment may be used.

d) Pressure relief valves shall be disconnected from the vaporizer at least once yearly for inspection and repair if necessary. Pressure relief valves shall be tested after repair and then replaced on the vaporizer.

Item Number: NB15-0308
Title: Create Guidelines for Installation of Pressure Relief Devices for Organic Fluid Vaporizers
Project Manager: Thakor Patel
Balloted To: NBIC Main Committee
Voting Start: 2020-09-10
Voting End: 2020-10-09
Result: Pass

Committee Member	Vote	Member Comment	PM Response
Austin, Randall Duane/Los Alamos National Laboratory	Approved		
Brodeur, Marianne/International Valve & Instrument	Approved		
Edwards, Paul D.	Approved		
Galanes, George/Diamond Technical Services, Inc.	Approved	GWG comments 9/14/2020;I approve the action with recommended editorial revisions. Under 2.4.1 delete the words "for vaporized" after the Code of Construction words to avoid redundant language. This same recommendation applies to SXX.1. Next comment; under 2.4.6 (3) delete the words "no chance" after of the attached valve... so it would read that there is no interference... this same recommendation applies to Sxx.6. Finally, instead of using "T" in the equation for absolute temperature, it is better to use R to denote Rankine temperature scale.	Thanks for your comments. 2.4.1/Sxx.1. Agree. It is an editorial change and will be taken care of. 2.4.6 (3)/Sxx.6. Agree. It is an editorial change and will be taken care of. 2.4.6 (e). "T" is used in the equation to be consistent with equation in original code of construction.
Getter, Jim/Worthington Industries	Approved		
Hopkins, Craig/Seattle Boiler Works, Inc.			
LeSage, Donnie/State of Louisiana			
Morelock, Brian R./Eastman Chemical Company	Approved	In 2.4.1 and SXX.1, do not capitalize "code of construction".	Thanks for the comment. Agree. It is an editorial change and will be taken care of.
Newton, Venus G./XL Insurance America, Inc.	Disapproved	I don't understand why Part 4 would talk about the design criteria for a vaporizer since they only deal with PRD's. Why is this passage included: "The vaporizer shall be designed in accordance with the rules of the Code of Construction for vaporizer for a working pressure of at least 40 psi (280 kPa) above the operating pressure at which it will be used." This passage is outside the scope of Part 4.	Thank you for comment. Part 4 is not adding any design rules or requirements for fluid vaporizers but It is a general statement that refers to original code of construction for vaporizer design.
Patel, Thakor	Approved		
Richards, H. Michael			
Sansone, Matthew/NYS Department of Labor	Approved		
Seime, Trevor/State of North Dakota	Approved		
Sekely, James	Approved		
Sturm, Rick/State of Utah	Disapproved	I have the same concerns as Marty Toth, Rob Troutt and Venus Newton.	Thanks for the comments. Part 4 is not adding any requirements for design of vaporizers. It is general statement which refers to original code of construction for design of vaporizers.

Item Number: NB15-0308
Title: Create Guidelines for Installation of Pressure Relief Devices for Organic Fluid Vaporizers
Project Manager: Thakor Patel
Balloted To: NBIC Main Committee
Voting Start: 2020-09-10
Voting End: 2020-10-09
Result: Pass

Committee Member	Vote	Member Comment	PM Response
Toth, Marty R.	Disapproved	I have the some of the same concerns that Venus and Rob have. Also, I may be confused but doesn't OFH fall under Thermal Fluid Heaters that already has a section in NBIC?	Thank you for the comments. Part 4 is not adding any requirements for design of Vaporizers. It is general statement which refers to original code of construction for design of vaporizers. The thermal Fluid Heaters and Vaporizers are not the same. The Vaporizers installation requirements are not in NBIC code which we are trying to add with this item.
Troutt, Robby/State of Texas	Disapproved	I agree with Venus Newton, it does not make sense to state the vaporizer shall be designed in accordance with the rules of the Code of Construction for vaporizer for a working pressure of at least 40 psi. NBIC Part 4 ,Paragraphs 2.2.1 and 2.3.1 are titled "General Requirements". 2.4.1 should also be titled "General requirements" and not just "General". Also, when looking at 2.2.1 and 2.3.1, we do not add in requirements for the code of construction for boilers or thermal fluid heaters. In my opinion, this is well beyond the scope of NBIC as only the Jurisdictional Authority has the ability to require a code of construction at any pressure.	Thanks for the comments. Part 4 is not adding any requirements for design of vaporizers. It is general statement which refers to original code of construction for design of vaporizers. 2.4.1 Agree. Title will be changed to General requirements.
Wadkinson, Melissa/Fulton Thermal Corporation	Approved		
Washington, Milton/State of New Jersey, Department of Labor and Workforce Development,			
Welch, Paul J./ARISE Boiler Inspection and Insurance Company Risk Retention Group	Approved		
Wielgoszinski, Robert V./The Hartford Steam Boiler Inspection and Insurance Company			

NB15-0321
Final SG+SC Approved
7-14-20

PART 4

3.2.4.4 ~~RUPTURE DISKS~~NON-RECLOSING PRESSURE RELIEF DEVICES

g) For rupture disks and other non-reclosing devices, the following additional items should be considered
during inspections.

No changes under 3.2.4.4 g)1) through g)10). New text as follows under 3.2.4.4 g)11) through g)14).

11) For pin devices, pins or bars shall be checked for permanent deformation (e.g., bent ~~ds~~/deflection), cracks, or corrosion. Pin deflection may be the result~~s~~ of pin fasteners being overtightened.

12) For pin devices, markings on replaceable pins or bars shall be checked against information on the device nameplate to ensure that they are installed on the correct device. If markings are illegible or missing, the device should be taken out of service and the pin or bar should be replaced with a component specified by the manufacturer. Replacement shall not be performed while the device is pressurized.

13) For pin devices, check that there is no foreign object present that could interfere with the bar or pin, prevent proper operation of the device, or hold the device shut.

3.2.5 GENERAL CONSIDERATIONS FOR TESTING AND OPERATIONAL INSPECTION OF PRESSURE RELIEF DEVICES

a) Pressure relief devices shall be subject to periodic inspection and/or testing based upon the type of device. ~~valves shall be tested periodically to ensure that they are free to operate and will operate in accordance with the requirements of the original code of construction. Testing should include device set or opening pressure, reclosing pressure, where applicable, and seat leakage evaluation. Tolerances specified for these operating requirements in the original code of construction shall be used to determine the acceptability of test results.~~

b) Testing may be accomplished by the owner on the unit where the valve is installed or at a qualified test facility. In many cases, testing on the unit may be impractical, especially if the service fluid is hazardous or toxic. Testing on the unit may involve the bypassing of operating controls and should only be performed by qualified individuals under carefully controlled conditions. It is recommended that a written procedure be available to conduct this testing.

1) The Inspector should ensure that calibrated equipment has been used to perform this test and the results should be documented by the owner.

2) If the testing ~~was~~ is performed at a test facility, the record of this test should be reviewed to ensure the ~~valve~~ device meets the requirements of the original code of construction. ~~Valves~~ Devices which have been in toxic, flammable, or other hazardous services shall be carefully decontaminated before being tested. In particular, the closed bonnet of valves in these services may contain fluids that are not easily removed or neutralized. If a test cannot be safely performed, the ~~valve~~ device shall be disassembled, cleaned, ~~and~~ decontaminated, repaired, and reset.

3) If a ~~valve~~ device has been removed for testing, the inlet and outlet connections should be checked for blockage by product buildup or corrosion.

3.2.5.1 TESTING AND OPERATIONAL INSPECTION OF PRESSURE RELIEF VALVES

In addition to 3.2.5, the following apply to testing and operational inspection of pressure relief valves.

a) Pressure relief valves shall be tested periodically to ensure that they are free to operate and will operate in accordance with the requirements of the original code of construction. Testing should include device set or opening pressure, reclosing pressure, where applicable, and seat leakage evaluation. Tolerances specified for these operating requirements in the original code of construction shall be used to determine the acceptability of test results.

b) Valves may be tested using lift assist devices when testing at full pressure may cause damage to the valve being tested, or it is impractical to test at full pressure due to system design considerations. Lift assist devices apply an auxiliary load to the valve spindle or stem, and using the measured inlet pressure, applied load and other valve data allow the set pressure to be calculated. If a lift assist device is used to determine valve set pressure, the conditions of 4.6.3 shall be met. It should be noted that false set pressure readings may be obtained for valves which are leaking excessively or otherwise damaged.

~~c~~c) If valves are not tested on the system using the system fluid, the following test mediums shall be used:

1) High pressure boiler pressure relief valves, high temperature hot-water boiler pressure relief valves, low pressure steam heating boilers: steam;

2) Hot-water heating boiler pressure relief valves: steam, air, or water;

3) Hot water heater temperature and pressure relief valves: air or water;

4) Air and gas service process pressure relief valves: air, nitrogen, or other suitable gas;

5) Liquid service process pressure relief valves: water or other suitable fluid;

6) Process steam service pressure relief valves: steam or air with manufacturer's steam to air correction factor.

Note: Valves being tested after a repair must be tested on steam except as permitted by 4.6.2.

~~d~~d) As an alternative to a pressure test, the valve may be checked by the owner for freedom of operation by activating the test or "try" lever (manual check). For high pressure boiler and process valves, this test should be performed only at a pressure greater than 75% of the stamped set pressure of the valve or the lifting device may be damaged. This test will only indicate that the valve is free to operate and does not provide any information on the actual set pressure. All manual checks should be performed with some pressure under the valve in order to flush out debris from the seat that could cause leakage.

Note: The manual check at 75% or higher is based on lift lever design requirements for ASME Section I and VIII valves. Code design requirements for lifting levers for Section IV valves require that the valve be capable of being lifted without pressure.

~~f~~e) Systems with multiple valves will require the lower set valves to be held closed to permit the higher set valves to be tested. A test clamp or "gag" should be used for this purpose. The spring compression screw shall not be tightened. It is recommended that the test clamps be applied in accordance with the valve manufacturer's instructions when the valve is at or near the test temperature, and be applied hand tight only to avoid damage to the valve stem or spindle.

~~g~~f) Upon completion of set pressure testing, all pressure relief valve gags shall be removed. Any stop valves used to isolate lower set pressure relief devices shall be reopened (and locked, if applicable).

3.2.5.2 TESTING AND OPERATIONAL INSPECTION OF NON-RECLOSING PRESSURE RELIEF DEVICES WITH PINS OR BARS

In addition to 3.2.5, the following apply to testing and operational inspection of non-reclosing PRDs with pins or bars.

a) Periodic set point testing is not required since pins or bars are single use.

b) Periodic inspection shall be per 3.2.4.4.

c) Non-reclosing PRDs shall be periodically inspected by the owner for freedom of motion. Freedom of motion inspection frequency shall be per 3.2.6.

1) Remove pressure from the PRD, or remove the PRD from service, prior to performing this check.

2) Remove the pin or bar.

3) Manually exercise the sealing mechanism to ensure it is capable of its full range of motion.

4) Reinstall the pin or bar or replace with new. Replacement pin or bar shall be per manufacturer recommendation.

5) Restore pressure to the PRD.

6) The PRD should be checked for seat leakage following restoration of pressure.

d) The owner may elect to have a non-reclosing PRD tested periodically in order to determine service life of the device. Such tests should ensure that the PRD is free to operate and will operate in accordance with the requirements of the original code of construction. Testing should include device set or opening pressure and seat leakage evaluation. Tolerances specified for these operating requirements in the original code of construction should be used to determine the acceptability of test results.

3.2.5.3 TESTING AND OPERATIONAL INSPECTION OF RUPTURE DISKS

In addition to 3.2.5, the following apply to testing and operational inspection of rupture disks.

a) Periodic testing of rupture disks is not required

b) Rupture disks shall be subject to periodic inspection per 3.2.4.4.

c) The owner may elect to have a rupture disks tested periodically in order to determine service life. Such tests should ensure that the disk is free to operate inside its holder and will operate in accordance with the requirements of the original code of construction. Testing should include an evaluation of leakage through the disk (e.g. due to cracks or porosity), followed by device opening or burst pressure at rated temperature. Tolerances specified for these operating requirements in the original code of construction should be used to determine the acceptability of test results.

d) If PRDs are not tested on the system using the system fluid, the following test mediums shall be used:

1) Air and gas service PRDs: air, nitrogen, or other suitable gas;

2) Liquid service PRDs: water or other suitable fluid.

3.2.5.~~1~~ 4 CORRECTIVE ACTION

a) If a ~~valve~~ pressure relief valve or a pin device is found to be stuck closed, the system should immediately be taken out of service until the condition can be corrected, unless special provisions have been made to operate on a temporary basis (such as additional relief capacity provided by another valve.) The owner shall be notified and corrective action such as repairing or replacing the inoperable ~~valve~~ device shall be taken.

b) If a pressure relief device leaks, the owner shall be notified and decide what corrective action (if any) will be taken.

PART 2

2.5.5.4 ~~RUPTURE DISKS~~NON-RECLOSING PRESSURE RELIEF DEVICES

g) For rupture disks and other non-reclosing devices, the following additional items should be considered
during inspections.

No changes under 2.5.5.4 g)1) through g)10). New text as follows under 2.5.5.4 g)11) through g)14).

11) For pin devices, pins or bars shall be checked for permanent deformation (e.g., bent~~ds~~/deflection), cracks, or corrosion. Pin deflection may be the results of pin fasteners being overtightened.

12) For pin devices, markings on replaceable pins or bars shall be checked against information on the device nameplate to ensure that they are installed on the correct device. If markings are illegible or missing, the device should be taken out of service and the pin or bar should be replaced with a component specified by the manufacturer. Replacement shall not be performed while the device is pressurized.

13) For pin devices, check that there is no foreign object present that could interfere with the bar or pin, prevent proper operation of the device, or hold the device shut.

2.5.7 GENERAL CONSIDERATIONS FOR TESTING AND OPERATIONAL INSPECTION OF PRESSURE RELIEF DEVICES

a) Pressure relief devices shall be subject to periodic inspection and/or testing based upon the type of device. ~~valves shall be tested periodically to ensure that they are free to operate and will operate in accordance with the requirements of the original code of construction. Testing should include device set or opening pressure, reclosing pressure, where applicable, and seat leakage evaluation. Tolerances specified for these operating requirements in the original code of construction shall be used to determine the acceptability of test results.~~

b) Testing may be accomplished by the owner on the unit where the valve is installed or at a qualified test facility. In many cases, testing on the unit may be impractical, especially if the service fluid is hazardous or toxic. Testing on the unit may involve the bypassing of operating controls and

should only be performed by qualified individuals under carefully controlled conditions. It is recommended that a written procedure be available to conduct this testing.

1) The Inspector should ensure that calibrated equipment has been used to perform this test and the results should be documented by the owner.

2) If the testing ~~was~~ is performed at a test facility, the record of this test should be reviewed to ensure the ~~valve~~ device meets the requirements of the original code of construction. ~~Valves~~ Devices which have been in toxic, flammable, or other hazardous services shall be carefully decontaminated before being tested. In particular, the closed bonnet of valves in these services may contain fluids that are not easily removed or neutralized. If a test cannot be safely performed, the ~~valve~~ device shall be disassembled, cleaned, ~~and~~ decontaminated, repaired, and reset.

3) If a ~~valve~~ device has been removed for testing, the inlet and outlet connections should be checked for blockage by product buildup or corrosion.

2.5.7.1 TESTING AND OPERATIONAL INSPECTION OF PRESSURE RELIEF VALVES

In addition to 2.5.7, the following apply to testing and operational inspection of pressure relief valves.

a) Pressure relief valves shall be tested periodically to ensure that they are free to operate and will operate in accordance with the requirements of the original code of construction. Testing should include device set or opening pressure, reclosing pressure, where applicable, and seat leakage evaluation. Tolerances specified for these operating requirements in the original code of construction shall be used to determine the acceptability of test results.

b) Valves may be tested using lift assist devices when testing at full pressure may cause damage to the valve being tested, or it is impractical to test at full pressure due to system design considerations. Lift assist devices apply an auxiliary load to the valve spindle or stem, and using the measured inlet pressure, applied load and other valve data allow the set pressure to be calculated. If a lift assist device is used to determine valve set pressure, the conditions of 4.6.3 shall be met. It should be noted that false set pressure readings may be obtained for valves which are leaking excessively or otherwise damaged.

~~c~~c) If valves are not tested on the system using the system fluid, the following test mediums shall be used:

1) High pressure boiler pressure relief valves, high temperature hot-water boiler pressure relief valves, low pressure steam heating boilers: steam;

2) Hot-water heating boiler pressure relief valves: steam, air, or water;

3) Hot water heater temperature and pressure relief valves: air or water;

4) Air and gas service process pressure relief valves: air, nitrogen, or other suitable gas;

5) Liquid service process pressure relief valves: water or other suitable fluid;

6) Process steam service pressure relief valves: steam or air with manufacturer's steam to air correction factor.

Note: Valves being tested after a repair must be tested on steam except as permitted by 4.6.2.

~~e~~d) As an alternative to a pressure test, the valve may be checked by the owner for freedom of operation
by activating the test or "try" lever (manual check). For high pressure boiler and process valves, this test
should be performed only at a pressure greater than 75% of the stamped set pressure of the valve or the lifting device may be damaged. This test will only indicate that the valve is free to operate and does not provide any information on the actual set pressure. All manual checks should be performed with some pressure under the valve in order to flush out debris from the seat that could cause leakage.

Note: The manual check at 75% or higher is based on lift lever design requirements for ASME Section I and VIII valves. Code design requirements for lifting levers for Section IV valves require that the valve be capable of being lifted without pressure.

~~f~~e) Systems with multiple valves will require the lower set valves to be held closed to permit the higher set valves to be tested. A test clamp or "gag" should be used for this purpose. The spring compression screw shall not be tightened. It is recommended that the test clamps be applied in accordance with the valve manufacturer's instructions when the valve is at or near the test temperature, and be applied hand tight only to avoid damage to the valve stem or spindle.
~~g~~f) Upon completion of set pressure testing, all pressure relief valve gags shall be removed. Any stop valves used to isolate lower set pressure relief devices shall be reopened (and locked, if applicable).

2.5.7.2 TESTING AND OPERATIONAL INSPECTION OF NON-RECLOSING PRESSURE RELIEF DEVICES WITH PINS OR BARS

In addition to 2.5.7, the following apply to testing and operational inspection of non-reclosing PRDs with pins or bars.

a) Periodic set point testing is not required since pins or bars are single use.

b) Periodic inspection shall be per 2.5.5.4.

c) Non-reclosing PRDs shall be periodically inspected by the owner for freedom of motion. Freedom of motion inspection frequency shall be per 2.5.5.4.

1) Remove pressure from the PRD, or remove the PRD from service, prior to performing this check.

2) Remove the pin or bar.

3) Manually exercise the sealing mechanism to ensure it is capable of its full range of motion.

4) Reinstall the pin or bar or replace with new. Replacement pin or bar shall be per manufacturer recommendation.

5) Restore pressure to the PRD.

6) The PRD should be checked for seat leakage following restoration of pressure.

d) The owner may elect to have a non-reclosing PRD tested periodically in order to determine service life of the device. Such tests should ensure that the PRD is free to operate and will operate in accordance with the requirements of the original code of construction. Testing should include device set or opening pressure and seat leakage evaluation. Tolerances specified for these operating requirements in the original code of construction should be used to determine the acceptability of test results.

2.5.7.3 TESTING AND OPERATIONAL INSPECTION OF RUPTURE DISKS

In addition to 2.5.7, the following apply to testing and operational inspection of rupture disks.

a) Periodic testing of rupture disks is not required

b) Rupture disks shall be subject to periodic inspection per 2.5.5.4.

c) The owner may elect to have a rupture disks tested periodically in order to determine service life. Such tests should ensure that the disk is free to operate inside its holder and will operate in accordance with the requirements of the original code of construction. Testing should include an evaluation of leakage through the disk (e.g. due to cracks or porosity), followed by device opening or burst pressure at rated temperature. Tolerances specified for these operating requirements in the original code of construction should be used to determine the acceptability of test results.

d) If PRDs are not tested on the system using the system fluid, the following test mediums shall be used:

1) Air and gas service PRDs: air, nitrogen, or other suitable gas;

2) Liquid service PRDs: water or other suitable fluid.

2.5.7.~~1~~ 4 CORRECTIVE ACTION

a) If a ~~valve~~ pressure relief valve or a pin device is found to be stuck closed, the system should immediately be taken out of service until the condition
can be corrected, unless special provisions have been made to operate on a temporary basis (such as additional relief capacity provided by another valve.) The owner shall be notified and corrective action such as repairing or replacing the inoperable ~~valve~~ device shall be taken.

b) If a pressure relief device leaks, the owner shall be notified and decide what corrective action (if any) will be taken.

Item Number: NB15-0321
Title: Review testing requirements for inservice testing of pressure relief devices
Project Manager: Adam Renaldo
Balloted To: NBIC Main Committee
Voting Start: 2020-09-24
Voting End: 2020-10-23
Result: Pass

Committee Member	Vote	Member Comment	PM Response
Austin, Randall Duane/Los Alamos National Laboratory	Approved		
Brodeur, Marianne/International Valve & Instrument	Approved		
Edwards, Paul D.	Approved		
Galanes, George/Diamond Technical Services, Inc.	Approved		
Getter, Jim/Worthington Industries	Approved		
Hopkins, Craig/Seattle Boiler Works, Inc.			
LeSage, Donnie/State of Louisiana			
Morelock, Brian R./Eastman Chemical Company	Approved		
Newton, Venus G./XL Insurance America, Inc.	Disapproved	I am in agreement with Sansone and Sturm. Either the periodicity needs to be defined here or directed where to find the periodicity elsewhere in the Code. Getting owners and operators to inspect and test these devices is very challenging in the field and more clarity in the Code is needed on how often it has to performed.	Thanks for the input. This issue has been addressed.
Patel, Thakor	Approved		
Richards, H. Michael	Approved		
Sansone, Matthew/NYS Department of Labor	Disapproved	I feel that 3.2.5 (a) is not giving enough information. "periodic inspection and or testing" I think that periodic needs to be defined that the very least.	3.2.5 says that they are subject to periodic inspection and/or testing based upon the type of device. The device-specific sections define periodic. The section of relief valve inspection has a detailed table based upon fluid service and several paragraphs on how to determine periods. There are also recommendations on periods for non-reclosing devices.
Seime, Trevor/State of North Dakota	Approved		
Sekely, James	Approved		
Sturm, Rick/State of Utah	Disapproved	I agree with Mr. Sansone, the time needs to be defined	Please refer to my response to Mr. Sonsone's comment. The time is defined elsewhere in the standard. This paragraph simply lets the reader know that the time will be different based upon the type of device. The later device-specific paragraphs define the time.
Toth, Marty R.			

Item Number: NB15-0321
Title: Review testing requirements for inservice testing of pressure relief devices
Project Manager: Adam Renaldo
Balloted To: NBIC Main Committee
Voting Start: 2020-09-24
Voting End: 2020-10-23
Result: Pass

Committee Member	Vote	Member Comment	PM Response
Troutt, Robby/State of Texas	Approved		
Wadkinson, Melissa/Fulton Thermal Corporation	Approved		
Washington, Milton/State of New Jersey, Department of Labor and Workforce Development,			
Welch, Paul J./ARISE Boiler Inspection and Insurance Company Risk Retention Group	Approved		
Wielgoszinski, Robert V./The Hartford Steam Boiler Inspection and Insurance Company			

Action Item Request Form

CODE REVISIONS OR ADDITIONS

Request for Code revisions or additions shall provide the following:

a) Proposed Revisions or Additions

Current text is incomplete with respect to inspecting riveted joints for failure. This proposal suggests adding more text, found in historic inspection documents, to further assist and direct the field inspector for assessing the condition of a riveted joint.

Existing Text:

S2.10.7 LIMITATIONS

a) The maximum allowable working pressure shall be the lesser of that calculated in accordance with NBIC Part 2, S2.10, or the MAWP established by the original manufacturer.

b) The shell or drum of a boiler in which a "lap seam crack" extending parallel to the longitudinal joint and located either between or adjacent to rivet holes, when discovered along a longitudinal riveted joint for either butt or lap joint, shall be permanently discontinued for use under steam pressure, unless it is repaired with jurisdictional approval.

Provide a brief explanation of the need for the revision or addition.

The text covers cracks parallel to a longitudinal joint, but there is no text covering inspection of plate material around a rivet.

~~c~~b) Background Information

Review of the NBIC shows that failure indicators of riveted seams have not been identified or itemized. This proposal addresses this oversite.

Referenced standards, related discussion follow proposed wording.

Proposed wording

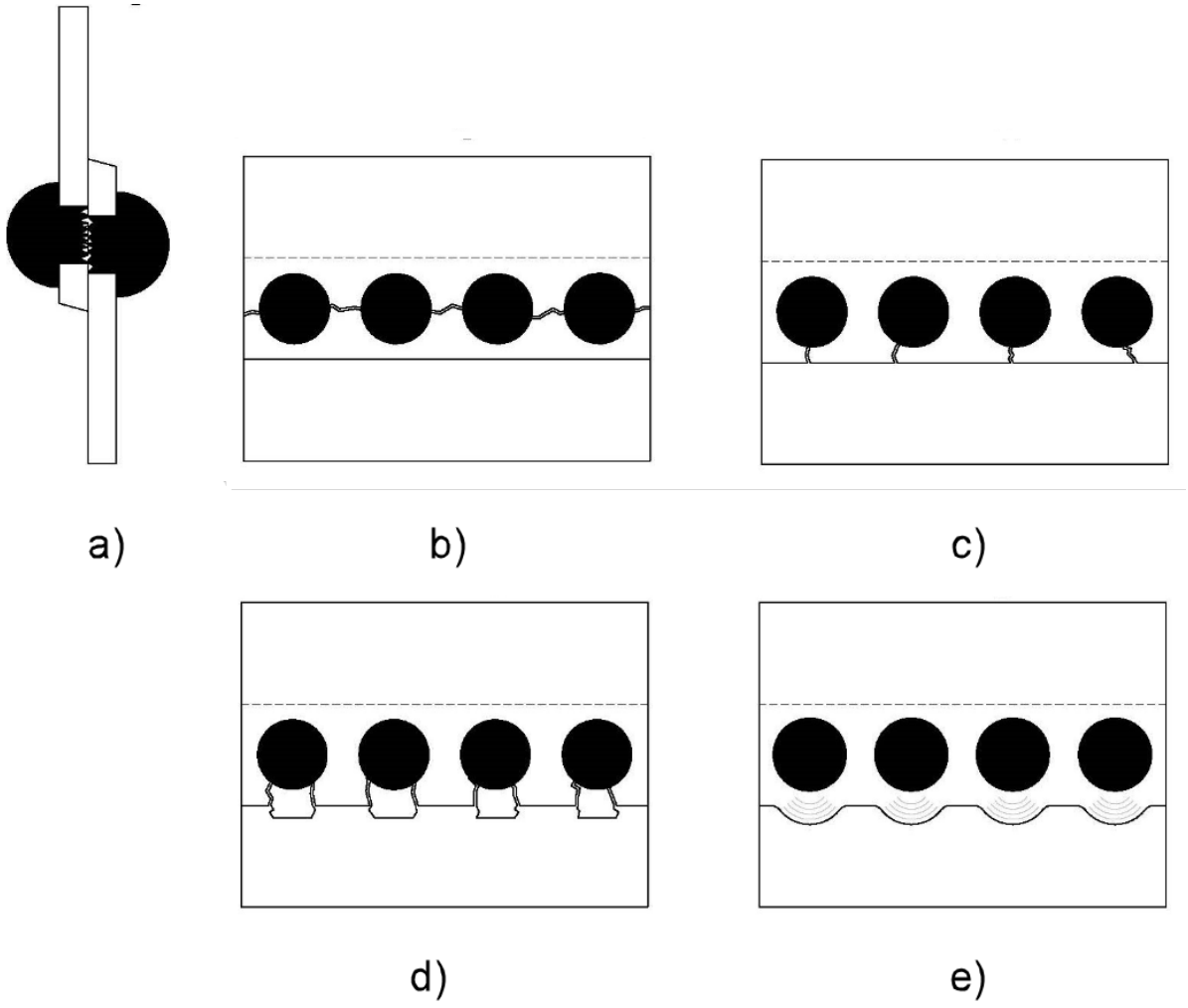
S2.10.2.3 INSPECTION OF RIVETED SEAMS

A riveted joint in a vessel subjected to pressure may fail in a number of different ways, depending on the type and relative proportions of the joint. Some methods of failure may be classified as follows:

a.) Rivets may shear off;
b.) The plate may tear along the centerline of the row of rivets;
c.) The plate may shear in front of the rivets;
d.) The plate may tear from the outer edge of the rivet hole to the caulking edge; or
e.) The plate may crush in front of the rivets.~~; or~~
~~The plate may fail at the caulking edge.~~

Figure S2.10.2.3 illustrates visual indicators of (a), (b), (c), (d), and (e). The Inspector shall visually inspect for cracked or stressed plate material along a riveted joint. Indications of failure shall be monitored or repaired, at the discretion of the Inspector and jurisdiction, when applicable.

FIGURE S2.10.2.3



Referenced text:

Steam Boiler Design, Part 2, Great Britain, 1922:

20. Methods of Failure of Riveted Joint.—A riveted joint in a vessel subjected to pressure may fail in a number of different ways, depending on the type and relative proportions of the joint; but the simplest methods of failure may be illustrated by taking a single-riveted lap joint as an example. With such a joint, the methods of failure may be classified as follows:

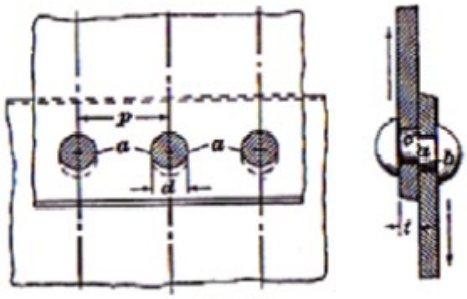


FIG. 19

1. The rivets may shear off, as shown in Fig. 19.

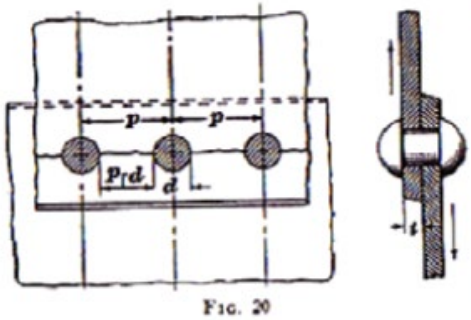


FIG. 20

2. The plate may tear along the center line of the row of rivets, as shown in Fig. 20.

3. The plate may crush in front of the rivets, as shown in Fig. 21.

4. The plate may shear in front of the rivets, as shown in Fig. 22 (*a*).

5. The plate may tear from the outer edge of the rivet hole to the calking edge, as shown in Fig. 22 (*b*).

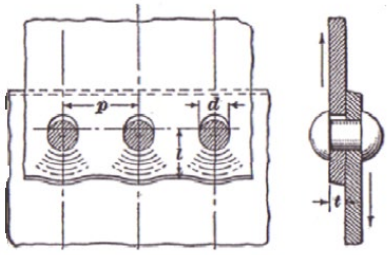


FIG. 21

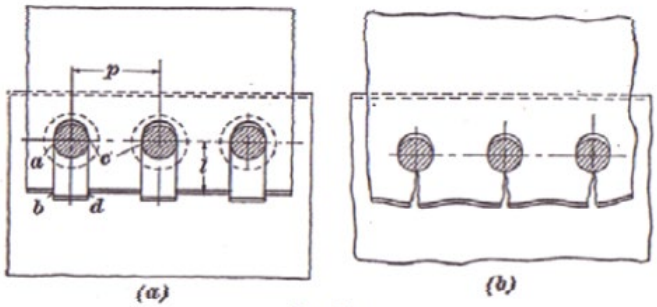


FIG. 22

The provided Note is also important, because a design that does not adhere to this rule may need a different joint efficiency value than what is provided in TABLE S2.10.6. This rule has existed but is not necessarily followed in pre-code boilers.

ASME, 1914:

183 On longitudinal joints, the distance from the centers of rivet holes to the edges of the plates, except rivet holes in the ends of butt straps, shall be not less than one and one-half times the diameter of the rivet holes.

Canadian Interprovincial Standard, 1931:

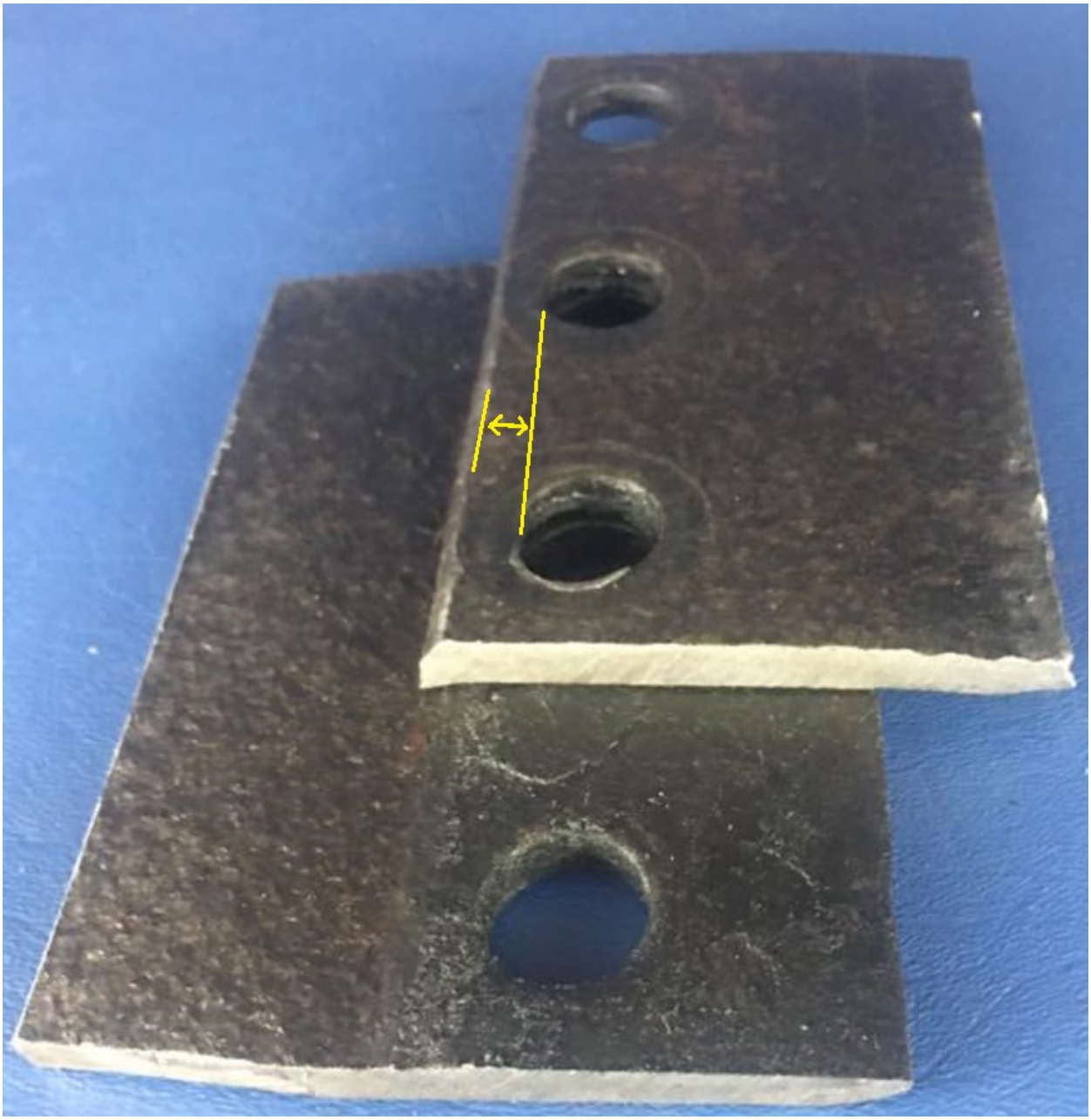
Lap Outside Rivet Holes

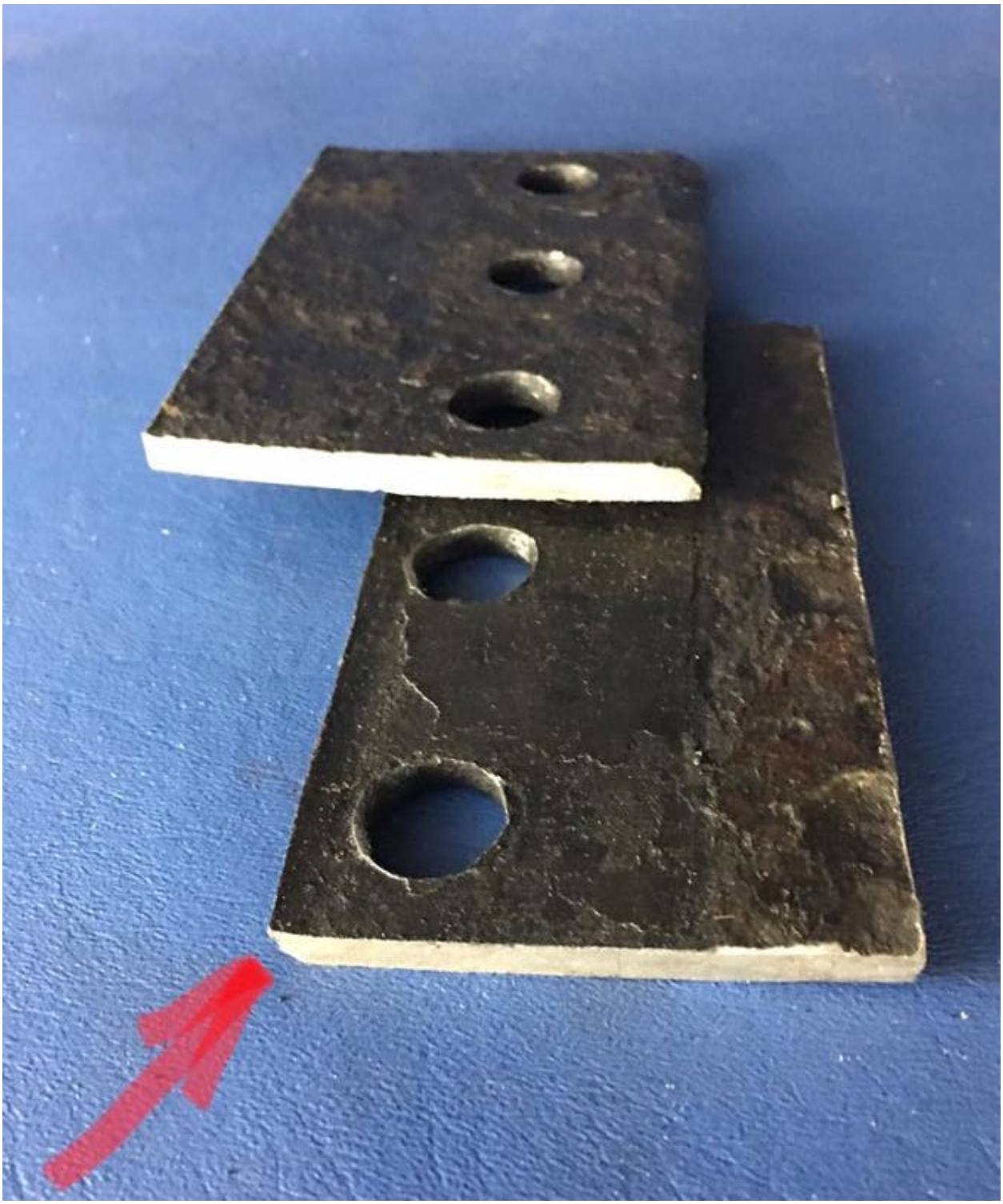
199. The lap of plate outside rivet holes measured from the outer edge of the rivet holes to edge of plate must be at least equal to diameter of rivet hole, and must not be more than 1/8 inch in excess of the diameter of the rivet hole.

Thurston, 1888:

tion. The joint is so proportioned that the fracture will occur by shearing the rivets rather than by breaking out the edge of the sheet or tearing away the lap bodily. The lap usually extends beyond the rivet-hole about 1.5 times the diameter of the rivet.

Single-row lap seam from an 1881 6hp Russell traction engine:





Item Number: 19-84
Title: inspecting riveted joints for failure
Project Manager: Frank Johnson
Balloted To: NBIC Main Committee
Voting Start: 2021-08-09
Voting End: 2021-09-08
Result: Pass

Committee Member	Vote	Member Comment	PM Response
Austin, Randall Duane/Los Alamos National Laboratory	Approved		
Brodeur, Marianne/International Valve & Instrument	Approved		
Galanes, George/Diamond Technical Services, Inc.	Disapproved	I support the action. However, I believe we should use the word damage instead of failure in the original proposed revision...Indications of damage... you don't monitor failure.	Thank you for your comment. "Indications of failure" will be changed to "Indications of damage".
Getter, Jim/Worthington Industries	Approved		
Hopkins, Craig/Seattle Boiler Works, Inc.	Approved		
LeSage, Donnie/State of Louisiana	Approved		
Morelock, Brian R./Eastman Chemical Company	Approved		
Newton, Venus G./XL Insurance America, Inc.	Approved		
Patel, Thakor	Approved	I support George Galanes's comments.	See response to Mr. Galanes' comment.
Richards, H. Michael	Approved		
Sansone, Matthew/NYS Department of Labor	Approved		
Seime, Trevor/State of North Dakota	Approved		
Sekely, James	Approved	I agree with George; replace the word failure with the word damage.	See response to Mr. Galanes' comment.
Sturm, Rick/State of Utah			
Toth, Marty R.	Approved		
Wadkinson, Melissa/Fulton Thermal Corporation	Approved		
Washington, Milton/State of New Jersey, Department of Labor and Workforce Development,	Approved		
Welch, Paul J./ARISE Boiler Inspection and Insurance Company Risk Retention Group	Disapproved	The word monitored needs to be removed Failures need to be repaired.	See response to Mr. Galanes' comment.
Wielgoszinski, Robert V./The Hartford Steam Boiler Inspection and Insurance Company			
Wiggins, Edward F./State of Alabama	Approved		

2.2.12.7 THERMAL FLUID HEATERS

a) Design and Operating Features

1) Many thermal fluid heaters are pressure vessels in which a synthetic or organic fluid is heated or vaporized. Some thermal fluid heaters operate at atmospheric pressure. The fluids are typically flammable, are heated above the liquid flash point, and may be heated above the liquid boiling point. The heaters are commonly direct-fired by combustion of a fuel or by electric resistance elements. Heater design may be similar to an electric resistance heated boiler, to a firetube boiler or, more commonly, to a watertube boiler. Depending on process heating requirements, the fluid may be vaporized with a natural circulation, but more often, the fluid is heated and circulated by pumping the liquid. Use of thermal fluid heating permits heating at a high temperature with a low system pressure (600°F to 700°F [316°C to 371°C] at pressures just above atmospheric). To heat water to those temperatures would require pressures of at least 1,530 psig (10.6 MPa).

2) Nearly all thermal heating fluids are flammable. Leaks within a fired heater can result in destruction of the heater. Leaks in external piping can result in fire and may result in an explosion. Water accumulation in a thermal heating system may cause upsets and possible fluid release from the system if the water contacts heated fluid (remember, flashing water expands approximately 1,600 times). It is essential for safe system operation to have installed and to maintain appropriate fluid level, temperature and flow controls for liquid systems, and level, temperature, and pressure controls for vapor systems. Expansion tanks used in thermal heater systems, including vented systems, should be designed and constructed to a recognized standard such as ASME Section VIII, Div. 1, to withstand pressure surges that may occur during process upsets. This is due to the rapid expansion of water exceeding the venting capability.

3) Because heat transfer fluids contract and become more viscous when cooled, proper controls and expansion tank venting are required to prevent low fluid level and collapse of the tank. Some commonly used fluids will solidify at temperatures as high as 54°F (12°C). Others do not become solid until -40°F (-40°C) or even lower. The fluids that become viscous will also become difficult to pump when cooled. Increased viscosity could cause low flow rates through the heater. The heater manufacturer recommendations and the fluid manufacturer's Material Safety Data Sheets (MSDS) should be reviewed for heat tracing requirements.

4) Verify the thermal fluid heaters have stack gas temperature indicators, alarms and safety shut down devices. Stack gas temperatures shall be monitored and recorded daily while in operation.

b) Industrial Applications

Thermal fluid heaters, often called boilers, are used in a variety of industrial applications such as solid wood products manufacturing, resins, turpentine~~s~~, and various types of chemicals, drugs, plastics, corrugating plants, and wherever high temperatures are required. They are also frequently found in asphalt plants for heating of oils, tars, asphalt pitches, and other viscous materials. Many chemical plants use this type of heater in jacketed reactors or other types of heat exchangers.

c) Inspection

~~1) Inspection of thermal fluid heaters typically is done in either the operating mode or the shutdown mode. Internal inspections, however, are rarely possible due to the characteristics of the fluids and the need to drain and store the fluid. Reliable and safe operation of a heater requires frequent analysis of the fluid to determine that its condition is satisfactory for continued operation. If the fluid begins to break down, carbon will form and collect on heat transfer surfaces within the heater. Overheating and pressure boundary failure may result. Review of fluid test results and control and safety device maintenance records are essential in determining satisfactory conditions for continued safe heater operation.~~

~~2)~~1) Due to the unique design and material considerations of thermal fluid heaters and vaporizers, common areas of inspection are:

a. Design — Specific requirements outlined in construction codes must be met. Some jurisdictions may require ASME Section I or Section VIII construction. Code requirements for the particular Jurisdiction should be reviewed for specific design criteria;

b. Materials — For some thermal fluids, the use of aluminum or zinc anywhere in the system is not advisable. Aluminum acts as a catalyst that will hasten decomposition of the fluid. In addition, some fluids when hot will cause aluminum to corrode rapidly or will dissolve zinc. The zinc will then form a precipitate that can cause localized corrosion or plug instrumentation, valves, or even piping in extreme cases. These fluids should not be used in systems containing aluminum or galvanized pipe. The fluid specifications will list such restrictions;

Note: Some manufacturers of these fluids recommend not using aluminum paint on valves or fittings in the heat transfer system.

c. Corrosion — When used in applications and installations recommended by fluid manufacturer, heat transfer fluids are typically noncorrosive. However, some fluids, if used at temperatures above 150°F (65°C) in systems containing aluminum or zinc, can cause rapid corrosion;

d. Leakage — Any sign of leakage could signify problems since the fluid or its vapors can be hazardous as well as flammable. Areas for potential leaks include cracks at weld attachment points and tube thinning in areas where tubes are near soot blowers. The thermal fluid manufacturer specifications will list the potential hazards;

e. Solidification of the fluid — Determine that no conditions exist that would allow solidification of the thermal fluid. When heat tracing or insulation on piping is recommended by the heater manufacturer, the heat tracing and insulation should be checked for proper operation and installation;

f. Pressure relief ~~devices~~ valves — Pressure relief valves shall be a closed bonnet design with no manual lift lever. Pressure relief valves shall be periodically tested by a VR or T/O Certificate Holder with a frequency in accordance with jurisdictional

requirements or an initial frequency of 1 year or less. Testing intervals shall be evaluated and may be adjusted based on inspection history up to a maximum of 3 years. ~~The Pressure relief valve discharge should be connected to a closed, vented storage tank or blowdown tank with solid piping (no drip pan elbow or other air gap). When outdoor discharge is used, the following should be considered for discharge piping at the point of discharge:~~ The pressure relief valve installation shall meet the requirements of NBIC Part 4, 2.3. Inspection and testing of the pressure relief ~~device~~valve shall meet the requirements of NBIC Part 4, 3.0.

~~1. Both thermal and chemical reactions (personnel hazard);~~

~~2. Combustible materials (fire hazard);~~

~~3. Surface drains (pollution and fire hazard);~~

~~4. Loop seal or rain cap on the discharge (keep both air and water out of the system);~~

~~5. Drip leg near device (prevent liquid collection); and~~

~~6. Heat tracing for systems using high freeze point fluids (prevent blockage).~~

g. Inspection of thermal fluid heaters shall include verifying that fluid testing is conducted annually and that results are compared to the fluid manufacturer's standard. The inspector shall annually verify the documentation of testing of controls and safety devices.

h. Vapor phase systems must have a documented vessel and piping risk based inspection assessment program in accordance with NBIC Part 2, 4.5.

Item Number: 19-88
Title: Additional requirements for thermal fluid heaters
Project Manager: Vincent Scarcella
Balloted To: NBIC Main Committee
Voting Start: 2021-02-09
Voting End: 2021-03-10
Result: Pass

Committee Member	Vote	Member Comment	PM Response
Austin, Randall Duane/Los Alamos National Laboratory			
Brodeur, Marianne/International Valve & Instrument	Approved		
Edwards, Paul D.	Approved		
Galanes, George/Diamond Technical Services, Inc.	Approved		
Getter, Jim/Worthington Industries	Approved		
Hopkins, Craig/Seattle Boiler Works, Inc.	Approved		
LeSage, Donnie/State of Louisiana			
Morelock, Brian R./Eastman Chemical Company	Approved		
Newton, Venus G./XL Insurance America, Inc.	Approved		
Patel, Thakor	Approved		
Richards, H. Michael	Approved		
Sansone, Matthew/NYS Department of Labor	Disapproved	shall be periodically tested by a VR or T/O Certificate Holder with a frequency in accordance with jurisdictional requirements or an initial frequency of 1 year or less. Testing intervals shall be evaluated and may be adjusted based on inspection history up to a maximum of 3 years.I am not sure about the wording on this to say "periodically" then to go on and say frequency of 1 year or less makes no sense to me.	The key term is "initial", we need to have some understanding of how the operating conditions impact the valve conditions, for instance if the thermal fluid has become acidic and is causing the seat to corrode you can mandate six month intervals.
Seime, Trevor/State of North Dakota	Approved		
Sekely, James	Approved		
Sturm, Rick/State of Utah			
Toth, Marty R.	Approved		
Troutt, Robby/State of Texas	Approved		
Wadkinson, Melissa/Fulton Thermal Corporation	Approved		
Washington, Milton/State of New Jersey, Department of Labor and Workforce Development,			

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Result: Pass

Committee Member	Vote	Member Comment	PM Response
Welch, Paul J./ARISE Boiler Inspection and Insurance Company Risk Retention Group	Approved		
Wielgoszinski, Robert V./The Hartford Steam Boiler Inspection and Insurance Company			

ITEM 20-34, 20-35 (and 20-40) COMBINED

Jan 2022 Proposal with Comments.

All fuel systems shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, such as ASME CSD-1, ANSI Z/CSA, NFPA 85 or others, as applicable. The following are requirements for Natural Gas, Propane and #2 fuel oil. [JPHH1]

a) Natural Gas and Propane[JPHH2]

1) Cleaning

a. It is recommended that strainers be installed in the main gas line leading to the boiler control equipment.

b. A sediment trap is required prior to the gas controls. This trap shall be located in a vertical section of pipe as close as practical upstream of the gas controls.

2) Manual Valves

a. A manual valve is required upstream of all controls and as close as practical to the boiler to isolate the fuel train when required[JPHH3]. If a pilot line is upstream of the manual valve on the main fuel train, it shall also have a manual valve.

b. These manual valves shall be accessible from the a floor, platform, walkway or runway. Accessibility shall mean within a 6 ft (1.8m) elevation of the standing space and not more than 12 in. (305 mm) horizontally from the standing space edge.[JPHH4] The manual valves shall be designed to be opened/closed without additional tools. They shall be ball or a lubricated plug type with a non-removable handle that is perpendicular to the gas flow when closed and parallel when open and the valves shall have stops.

c. If the non-removable handle creates a hazard, the handle can be designed to be temporarily removed provided all of the following are incorporated:

i. the valve handle is always on while the valve is in the open position.

ii. At all times, the position of the valve shall be indicated.

iii. When the valve is in the closed position and the handle is not attached, the valve shall be tagged/locked out and the handle shall be tethered and accessible.[JPHH5]

d. If the valve is not part of a listed and labeled assembly, the valve shall comply with a nationally recognized standard.

3) Vents

For gas components that are vented or bled, the following requirements apply:

a. All vent or bleed lines from natural gas equipment such as regulators, controls, switches, relief, vent valves, etc. shall be vented outside to a safe point of discharge per the manufacturer's requirements or the authority having jurisdiction.

b. Vent and bleed line shall be sized in accordance with a nationally recognized standard.

c. Manifold of vent lines or of bleed lines shall be in accordance with a nationally recognized standard. Vent lines shall not be manifolded with bleed lines.

d. No vent or bleed line shall discharge into a flue.

e. Vent materials shall be selected such that they shall have suitable strength and durability for their intended purpose and shall be listed for the intended purpose by the jurisdiction having authority or a nationally recognized standard.

b) Fuel Oil -

A properly sized and rated oil strainer or filter [JPHH6]shall be installed upstream of the safety shutoff valves.

MAJOR COMMENTS

nber: Randall Austin **Vote Date:** 2021-09-09 **Vote:** Disapproved **Uploads:**

ent: I feel the proposal falls short of CSD-1 Part CF and NFPA 85, 86, 54. Things like leak test valves installed on SSOV's, and the need for performing leak test per manufacturers instructions, use of approved vent limiting devices for gas pressure regulators, proper installation of the end of piping of vents outside of building.

Thanks for the feedback. This will all be considered in the next version for discussion. Note that NFPA 85,86 54 are not in the body of knowledge for inservice inspectors and are outside the scope. Please see comment to Mr. Clark also.

Tom Clark **Vote Date:** 2021-09-09 **Vote:** Disapproved **Uploads:** 6248.BALREPLY.6700.docx

See the attached document for my thoughts. My main concern is the potential scope creep of addressing fuel sources.

Thanks for the thoughtful feedback. Currently CSD-1 is in the body of knowledge document (NB-331). CSD-1 is only for oil and gas, but it doesn't clarify Natural Gas.

The intent as I understood the CSD-1 task groups (including this one) was to incorporate what the inspector could reasonably verify.

Don Patten **Vote Date:** 2021-09-02 **Vote:** Disapproved **Uploads:**

In looking at this the verbiage is only related to Natural Gas. I sell equipment that can fire on LPG, Bio-Gas, Landfill Gas, Digester Gas, Methane & other non-standard gaseous fuels. I think we should try to address this! The Fuel Oil section I recommend what is in NFPA 31. "A properly sized and rated oil filter or strainer shall be installed in the oil supply line to the burner." This covers a pump that may be install on the burner upstream of the safety shutoff valve(s).

Thank you for your comment. This is a good concern. While NG is the most common fuel, it is not exclusive. We will look at this and come back with proposed wording.

Melissa Wadkinson **Vote Date:** 2021-09-27 **Vote:** Disapproved **Uploads:**

Based on the comments, this needs to be taken back for more work. Regarding the fuels, I recommend that we have a statement that this is for natural gas, propane gas and #2 fuel oil. I believe that is the intent. For the other fuels, we may consider wording along the lines of "For fuels other than natural gas, propane gas or #2 fuel oil, follow the vessel and burner manufacturers' recommendations."

Thank you Ms. Wadkinson for the comments. After consideration, I do believe this is the best track. Due to the wide variety of fuel characteristics, it would be difficult to address other fuels than "standard" fuels.

Tom Clark

9/7/2021

Potential Scope Creep?

This item has me a little concerned with scope creep. I think it's a good thing to ensure our code is aligned with (or at least doesn't directly contradict) CSD-1, but I'm not sure parroting CSD-1 and other fuel codes is really adding value to Part 1. If we do pursue this, where do we draw the line? If we address natural gas, do we need to address other gaseous fuels? What about solid fuels? Do we also need to talk about other energy sources such as electrical and nuclear? This may be a rabbit hole we don't want to go down. I would be interested in having a conversation about the overall goal and expectations for revising 1.6.5 and what limitations we would like to set for ourselves.

BACKGROUND

JULY 2021

PROPOSED CHANGES – The following proposal is based on the comments recorded during the R&C ballot. Comments show where the changes were incorporated or felt they were already addressed. All comments are presented in the background information.

1.6.5 FUEL

All fuel systems shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations[JP-H7], and/or industry standards, such as ASME CSD-1, ANSI Z/CSA, NFPA 85 or others, as applicable[JP-H8]

c) Natural Gas

4) Cleaning

a. It is recommended that strainers be installed in the main gas line leading to the boiler control equipment.

b. A sediment trap is required prior to the gas controls. This trap shall be located in a vertical section of pipe as close as practical upstream of the gas controls.

5) Manual Valves

a. A manual valve is required upstream of all controls and as close as practical to the boiler to isolate the fuel train when required. If a pilot line is upstream of the manual valve on the main fuel train, it shall also have a manual valve.

b. These manual valves shall be accessible from the floor and designed to be opened/closed without additional tools. They shall be ball or a lubricated plug type with a non-removable handle that is perpendicular to the gas flow when closed and parallel when open and the valves shall have stops.

c. If the non-removable handle creates a hazard, the handle can be temporarily removed provided the valve handle is always on while the valve is in the open position. At all times, the position of the valve shall be indicated. When the valve is in the closed position and the handle is not attached, the valve shall be tagged/locked out and the handle shall be tethered and accessible.

d. If the valve is not part of a listed and labeled assembly, the valve shall comply with a nationally recognized standard.

6) Vents

For gas components that are vented or bled, the following requirements apply:[JP-H9]

a. All vent or bleed lines from natural gas equipment such as regulators, controls, switches, relief, vent valves, etc. shall be vented outside to a safe point of discharge per the manufacturer's requirements [JP-H10]or the authority having jurisdiction.

b. Vent and bleed line shall be sized in accordance with a nationally recognized standard.

c. Manifold of vent lines or of bleed lines shall be in accordance with a nationally recognized standard. Vent lines shall not be manifolded with bleed lines.

d. No vent or bleed line shall discharge into a flue.

e. Vent materials shall be selected such that they shall have suitable strength and durability for their intended purpose and shall be listed for the intended purpose by the jurisdiction having authority or a nationally recognized standard.

d) Fuel Oil -

A strainer or filter shall be installed upstream of the safetyshutoff valves.[JP-H11]

BACKGROUND INFORMATION

Comments to R&C ballot 4-22 to 05/21 2021

1) Don Patten

Committee Member:	Don Patten	**Vote Date:**	2021-04-29	**Vote:**	Approved	**Uploads:**	
Member Comment:	See below information. Something needs to be inserted in 3) Vents allowing for ventless gas components & trains. Exception: A regulator and vent limiting means combination listed as complying with ANSI Z21.80/CSA 6.22, Line Pressure Regulators, shall be permitted to be used without a vent to the outdoors. Also some gas valves and switches are certified as ventless (Siemens, Dungs, etc.).						
PM Reply:	Thank you for the comment. You are correct, there are many components that don't require vents. We already reference national standards in the opening, so perhaps an introductory statement such as the following would suffice: For gas components that are vented, the following requirements apply:						

2) Melissa Wadkinson

Committee Member:	Melissa Wadkinson	**Vote Date:**	2021-05-19	**Vote:**	Approved	**Uploads:**	
Member Comment:	I'll approve this but upon reading do we want to add some language "or in accordance with the manufacturer's instructions"?						
PM Reply:	Thank you for the comment and support. In the lead paragraph of 1.6.5, the existing words include manufacturer's recommendations. "All fuel systems shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, such as....." Everything added regarding Natural Gas is a subset to the lead in, so I believe that it is already covered. This raises a good question however. There is no guidance on how to resolve a conflict between the NBIC and the manufacturer's recommendation however.						

3) Eddie Wiggins

1.6.5 FUEL

All fuel systems shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, such as ASME CSD-1, applicable ANSI Z/CSA, NFPA 85 or others as applicable.

WE **Wiggins, Ed**
Pat, should t
word of the s

4) H. Michael Richards

Committee Member:	H. Michael Richards	**Vote Date:**	2021-05-12	**Vote:**	Approved	**Uploads:**	
Member Comment:	As edited 5/12/2021						
PM Reply:	Mr. Richards. I am sorry, but I don't understand your comment.						

REVIEW – The following is the original review that led to the above.

NBIC part 1 addresses fuel for all boilers in 1.6.5. Controls are part of 2.5.3.3 and 3.5.3.3. The intent here is to address fuel train related items. It does not make sense to break up the equipment between fuel supply equipment (sediment trap, shutoff valves) and the controls equipment (vents). They are fuel related equipment, so the new requirements should be located in 1.6.5.

FOLLOWING is the Review of CSD-1 and what was suggested in the January 20 meeting.

CF - 120

CSD – 1 Summary	NBIC – Yes/No and words.	Should it cover
CF-120 – Fuel Train		
a) Non-mandatory appendix provides typical fuel train examples. Fuel trains other than those pictured, but meeting the standard shall be permitted.	Following are the current wording in NBIC. 1.4.5.1.1 Guide for Completing National Board Boiler Installation Report 40) External Piping ASME CODE AND FUEL TRAIN: Indicate if external piping is ASME Code, if not, indicate what code or standard external piping is manufactured to. Indicate if the fuel train meets the requirements of CSD-1 or… 1.6.5 Fuel – All fuel systems shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, such as ASME CSD-1, applicable ANSI Z/CSA, NFPA 85 or others as applicable. Fuel train component requirements will be based on the standard, fuel fired and the heat input. 2.5.2 Fuel See NBIC Part 1, Section 1.6.5, *Fuel*. 2.5.3.3 and 3.5.3.3 – Controls and Heat-Generating Apparatus a) Oil and gas-fired and electrically heated boilers shall be equipped with suitable primary (flame safeguard) safety controls, safety limit switches and controls, and burners or electric elements as required	YES

	by a nationally or internationally recognized standard. b) The symbol of the certifying organization that has investigated such equipment as having complied with a nationally recognized standard shall be affixed to the equipment and shall be considered as evidence that the unit was manufactured in accordance with that standard. c) These devices shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, as applicable. 3.5.2 Fuel See NBIC Part 1, Section 1.6.5, *Fuel*.	
c) Thread sealing compound resistant to LPG	No mention of thread sealing compound, etc. in NBIC Part 1, Installation.	No.

CF-130 – Filters or Strainers

CSD – 1 Summary	NBIC – Yes/No and words.	Should it cover
CF-130 – Filters or Strainers		
Filters or strainers are recommended in the main gas supply line.	Not mentioned.	Yes.

CF-140 – Sediment Traps and Drips

CSD – 1 Summary	NBIC – Yes/No and words.	Should it cover
CF-140 – Sediment Traps and Drips		
a) A sediment trap shall be installed before the controls. On a vertical. Manufacture supplies or specifies that the sediment trap is installed as close as practicable to the controls.	Also covered in NFGC NFPA 54 No mention of sediment traps and drips in NBIC Part 1, Installation.	Yes
b) If the gas is not dry, a drip shall be provided at any point where condensate could collect.	No – How do we know if its wet or dry	No

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CF-150 Manually Operated Gas shutoff valves

CF-150 Manually operated gas shutoff valves a) Unless provided as part of an assembly, each valve shall comply with ANSI, CSA, UL or a nationally recognized standard and be suitable	Not currently – Manually operated gas shutoff valves shall be provided and comply with a national standard and a symbol……	Yes
b) Manual shutoff valves shall be ball or lubricated plug type with stops.	Gas shut off valves shall be ball or lubricated plug type	Yes
c) Manually operated valves shall be T-handle or lever-handled with handle parallel to the gas flow when open and perpendicular when closed. Valve shall be accessible and indicate open/closed. Adequate size to be operated without using tools. Maintained and exercised in accordance with manufacturer's instructions.	Handles attached so the handle is parallel when open and perpendicular when closed. Valve shall be accessible and indicate open/closed. Adequate size.	Yes
d) Except as allowed in e) below the handle shall be permanently attached.	Similar to CF-150 d) and e) Handle permanently attached unless it creates a hazard. Handle can be **temporarily** (must be reattached before operator leaves) removed and reattached, must be attached when open.	Yes Do we want to define temporarily[RA12].
e) A removable handle is permitted in certain conditions (creates a personnel hazard or obstruction). In these cases, the handle must meet all of the following: 1) Handle remains installed when valve is open 2) Handle can only be reattached so the handle is perpendicular to the flow in a closed position 3) Valve position is indicated, with or without handle 4) Upon removal, the handle must be turned and reattached180 deg to remove hazard or tethered no more than 3 ft away and usable trouble free without untethering 5) A handle tethered in 4) above shall only be permitted when the line is	Do we want to go into this level of detail?	MAYBE[RA13]

tagged/locked out to prevent operation		
f) A manually operated valve shall be provided upstream from all other main gas controls to isolate the fuel train 1) Valve shall be within 6 ft of the boiler and accessible from the floor 2) When a valve is not required per h), then the valve require by f) shall be located immediately external to the boiler/burner unit		Yes
g) When the pilot gas is obtained independently or upstream of the manual shutoff valve, a separate manual valve (per a-e) shall be located in the gas supply line to the pilot. When the pilot is downstream of f) one or more manual valves or other means to permit turndown tests and/or pressurization of the pilot without pressurizing the main fuel train.	But only on the pilot being independent or upstream of the manual shut off valve.	Yes
h) A manually operated shutoff valve in 1-e shall be provided after the downstream SSV to the main burner or group of burners if required by the boiler/burner mfgr for testing or maintenance.	How does the inspector know what the Mfgr requirements are.	No

I would suggest a paragraph in the following manner.

A manual valve is required upstream of all controls and within 6 ft of the boiler [RA14]to isolate the fuel train. If a pilot line is independent from the main gas train, it shall also have a manual valve. These manual valves shall be accessible from the floor and designed to be opened/closed without additional tools. They shall be valve ball or plug type with a non-removable handle that is perpendicular to the gas flow when closed and parallel when open. The handle can be temporarily removed if…. At all times, the position of the valve shall be indicated.

CF-160 – Gas pressure Regulators[RA15]

CF-160 Gas Pressure Regulators		
a) Individual Gas pressure regulators or regulators that are part of a combination valve shall be used for both the pilot and main gas per ANSI Z21.78/CSA 6.2. Regulated pressure shall be within +/- 10% set pressure at all firing rates. Pressure test port required	Do we need to specify equipment downstream of the gas shutoff valve or rely on the 1.6.5 and the reliance on an industry standard?	Committee Question

b) Regulators with integral vent limiters – meet ANSI Z21.18/CSA 6.3.		No
c) Second stage regulators for LPG gas (alone or in combo) must comply with UL 144 and installed per NFPA 58		No

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CF-161 – Overpressure Protection		
a) If the MAWP of any component is less than the entering gas pressure so a regulator failure would produce pressure above the MAWP, the downstream piping system shall have overpressure protection.	See CF 160	
b) If OP protection is require, it shall be located upstream of all controls for both the burner and the Pilot. OP devices shall be vented to safe point of discharge, if required.		
c) CG-210 is referenced. (NFPA 54 gas, NFPA 31 oil and NFPA 58 LP gas)		
d) OP, if required, may be provided by any device listed in the latest NFPA 54/ANSI Z223.1		

CF-162 – Gas Pressure Supervision		
a) Gas pressure supervision shall be provided based on heat input and firing system type (power, mech draft, pulse – or – natural draft.) to accomplish a safety shutdown and lockout in the event of either high or low gas pressure.	See CF 160	
b) Location 1) High pressure downstream of main regulator – Switch locks		

out before the manifold gas pressure exceeds a) The boiler/burner manufacturer's specified setting b) 150% of the boiler/burner main manifold gas pressure if not specified by manufacturer		
2) High pressure upstream of main regulator – the regulator must be a zero governor pressure regulator. The high pressure switch locks out when the supply pressure exceeds a) The setting of the OP protection device in CF 161 if equipped. b) The boiler/burner manufacturers specified setting c) 150% of the boiler/burner main manifold gas pressure if not specified by manufacturer A high gas pressure switch is not required when a boiler unit incorporates a listed shutoff valve with a zero governor pressure regulator that causes a safety shutdown if the zero governor pressure regulator fails due to a ruptured diaphragm		
c) Low gas pressure shall function to accomplish a safety shutdown before the main manifold gas pressure is less than 1 The boiler/burner manufacturer's specified setting 2 50% of the boiler/burner's main manifold gas	See CF-160 No – Even if we do agree that switches should be included.	

pressure if the setting is not specified. The low gas pressure switch shall be located upstream of the SSVs. When the low gas-pressure switch is located upstream of the main gas-pressure regulator, the burner or boiler unit shall be labeled and listed by a nationally recognized testing agency for this arrangement.		
d) Pressure test port(s) are required		
e) Gas-pressure switches shall be labeled and listed	As part of 1.6.5?	
f) Switches shall be capable of withstanding a pressure not less than 10% above the relieving pressure of the nearest upstream OP device. When no relief is provided, the switches shall be capable a pressure not less than the maximum inlet pressure of the nearest gas-pressure regulator. When the high gas-pressure switch is located downstream of the SSV, the switch shall be capable of withstanding a pressure no less than 50% above it's upper set point limit.	No. Even in we do agree that switches should be included.	
g) Gas-pressure switches of the automatic or manual reset type shall be electrically connected in accordance with CE-110(j)	No	

Part 1

CF-170 – Control Valves

CF – 170 – Control Valves		

a) An automatic input, complete closure, control valve may be combined with a SSV.	See CF 160	
b) A bypass valve may be installed only around a control valve, not any valve that is a shutoff		

CF-180 Safety Shutoff Valves (SSV)

CF-180 Safety Shutoff Valves (SSV)		
a) Each main and pilot shall have a SSV that is compliant with one of the ANSI/CSA or UL 429	See CF 160	
b) Single burners main burner supply line shall be equipped as follows 1) <= 500K, Two safety shutoff in series (can be single body) or one safety shutoff with a proof of closer interlock. If the two shutoff valves are in on body, they shall be in series with independently operated shafts 2) >= 500 K up to 12.5 million, Two SSVs in series that may be in a single valve body. At least one shall incorporate a proof of closure interlock. If the two shutoff valves are in on boy, they shall be in series with independently operated shafts 3) If there is a branch line to a second burner, either a or b following apply a. <500K b) 1) applies b. >500K up to 12.5 million – 1) Safety shutoff in b)1) applies to each branch or 2) At least one SSV on the main and one on the branch shall incorporate a proof of closure interlock		
c) For multiple burner units the main burner shall be equipped as follows 1) <= 500 k safety shut off in b)1) applies to each individual line 2) >500K up to 12.5 million, either of the following applies		

a. SSV requirements in b)2) applies to each line b. SSV requirements in b)1) apply to each line and the main burner supply line has at least one SSV with proof of closure interlock.		
d) The valve seal overtravel (proof of closure) interlock shall prevent boiler ignition if the switch does not prove the valve closed during the startup		
e) Pilot supply line shall be equipped with at least one SSV		
f) SSVs labeled, listed by a national…		
g) SSVs shall have a shutoff time not to exceed that specified in Tables CF1-4		
h) SSV's shall be capable of withstanding a pressure not less than 10% above closest upstream OP device. If no OP device, the valves can withstand a pressure not less than maximum inlet to regulator		
i) Provisions to independently test each SSV for seal leakage. Any special equipment made available to boiler/burner mfgr.		

CF-190 – Vent, Bleed, Gas-pressure relief, vent valve, and feedback LINES for fuel train components.

a) Vent Lines 1) Regulators, combination controls, pressure interlock switches and all components requiring atmosphere air pressure shall have the atmospheric side of the diaphragm connected to a vent line that shall be pipe outside to a safe point of discharge as determined by the AHJ unless allowed in c) or h) below. 2) Where there is more than one fuel train component requiring a vent, each component shall have a separate vent piped outside to the	Yes. Maybe combine all into one paragraph.[RA16] Vent or bleed lines coming from gas equipment such as regulators, controls, etc. shall be vented outside to a safe point of discharge. Sizing of vents, manifolding etc. should be per the applicable accepted standard. Vent to safe point of discharge per the standard or the AHJ.	

safe place of discharge (per AHJ) unless otherwise permitted by f) or h).		
b) Bleed lines 1) Regulators, combination controls, pressure interlock switches and all components requiring atmosphere air pressure and periodically release gas shall have the atmospheric side of the diaphragm connected to a bleed line that shall be piped outside to a safe point of discharge as determined by the AHJ unless allowed in c) or h) below. 2) Where there is more than one fuel train components requiring a bleed line at a location, each component shall have a separate bleed line piped outside to the safe place of discharge (per AHJ) unless otherwise permitted by f) or h).		
c) *Components with Vent Limiters.* A listed and labeled gas-pressure regulator, etc. or other fuel train component incorporating a vent limiter shall be permitted to vent directly into ambient space		
d) Gas-pressure relief lines 1) If an OP device incorporates a gas-pressure relief device, the outlet shall be connected to a relief line piped outside to the safe place of discharge (per AHJ) 2) The relief line shall be sized in accordance with the component manufacturer's instructions and shall be at least the same size as the outlet connection of the relief valve 3) Where there is more than one gas-pressure relief valve, each relief valve shall have a separate line piped outside to the safe place of discharge (per AHJ) unless otherwise permitted by f).		
e) Lines from vent valves 1) A vent valve, if installed shall be piped outdoors to a safepoint of discharge as determined by the AHJ		

2) Vent line shall be >= to the outlet connection 3) Where there is more than one vent valve at a location, each vent valve shall be piped outside to the safe place of discharge (per AHJ) unless otherwise permitted by f).		
f) Manifolding of Lines If approved by the AHJ, same type lines (vent, bleed) shall be permitted and vent and bleed manifolding is permitted. To minimize backpressure, the manifolded line shall have a cross- sectional area of not less than the area of the largest branch line piped+ 50% of the additional cross-sectional areas. The following manifolding is not permitted 1) Gas-pressure relief with vent line, bleed lines or vent valve lines 2) Vent valve lines with vent lines or bleed lines 3) No vent lines of any type from one boiler to another		
g) Connecting lines to Flue Passages No vent lines of any type shall connect to a boilers flue passages		
h) Points of discharge: Outdoor requirements, special exceptions, and prohibited practices 1) Unless terminated per 2) or 4) all lines shall be piped outside to the safe place of discharge (per AHJ). The point of discharge shall be protected from foreign material. 2) A combination gas control integrating an internal gas bleed line shall be permitted to discharge its bleed line back into the valve body – if designed to not leak into burner. 3) If prone to floods, the discharge shall be protected (anti-flood or raise height) 4) A bleed or vent line can be discharged into a pilot if it is not a manifolded line and the discharge uses a burner tip. 5) Bleed or vent line shall not discharge into a positive pressure combustion chamber		

i) *Clearance for Points of Discharge* The point of discharge from the referenced vents piped outside shall have clearance as determined by the AHJ and the point of discharge shall extend above boiler and structures to prevent gaseous discharge from being drawn into combustion air intakes, ventilating systems, mechanical air intakes, windows of the boiler room or of an adjacent building.		
j) Burner tips 1) If used per h)4) – metal with a melting point of +1,450 F and its length shall extend from location in 3) to the outer wall of the combustion chamber. 2) Installer to document compliance and provide documention accompanying the boiler 3) Burner tip location shall be located so the gas is readily ignited and the tips securely held in relation to the pilot.		
k) Feedback Lines for Fuel Train components Feedback lines – Piped per manufacturer's instructions		
l) Bleed, Vent, and Relief lines All materials for these lines must be strong and durable enough and suitable for the environmental stresses. Materials shall be listed for intended purpose by a nationally recognized standard as accepted by the AHJ. In the absence of a standard NFPA 54 shall be used.		

Reminder

FROM NBIC PART 1

1.4.1 RESPONSIBILITY

a) The owner is responsible for satisfying jurisdictional requirements for certification and documentation. When required by jurisdictional rules applicable to the location of installation, the boilers, pressure vessels, piping, and other pressure-retaining items shall not be operated until the required documentation has been provided by the installer to the owner and the Jurisdiction.

b) The National Board Commissioned Inspector providing inservice inspection for the facility in which the

pressure-retaining item is installed has the following responsibilities:

1) Verify the *Boiler Installation Report* (I-1 Report) has been completed and signed by the installer, when required by the Jurisdiction;
2) Verify pressure-retaining items comply with the laws and regulations of the Jurisdiction governing
the specific type of boiler or pressure vessel;
3) Verify any repairs or alterations to pressure-retaining items, which are conducted prior to, or during,
the initial installation, are in accordance with the NBIC;
4) Request or assign jurisdictional identification number, when required by the Jurisdiction; and
5) Complete and submit the first inservice inspection/certificate report to the Jurisdiction when required
by the Jurisdiction.

c) Unless otherwise specifically required by the Jurisdiction, the duties of the inservice inspector do not include the installation's compliance with manufacturer's recommendations or applicability of, or compliance with, other standards and requirements (e.g., environmental, construction, electrical, undefined industry standards, etc.) for which other regulatory agencies have authority and responsibility to oversee.

Item Number: 20-34
Title: Venting of gas train components
Project Manager: Patrick Jennings
Balloted To: NBIC Main Committee
Voting Start: 2022-04-27
Voting End: 2022-05-26
Result: Pass

Committee Member	Vote	Member Comment	PM Response
Austin, Randall Duane/Los Alamos National Laboratory	Approved		
Brodeur, Marianne/International Valve & Instrument	Approved		
Galanes, George/Diamond Technical Services, Inc.	Approved		
Getter, Jim/Worthington Industries	Approved		
Hopkins, Craig/Seattle Boiler Works, Inc.	Approved		
LeSage, Donnie/State of Louisiana			
Morelock, Brian R./Eastman Chemical Company			
Newton, Venus G./XL Insurance America, Inc.			
Patel, Thakor			
Richards, H. Michael	Approved		
Sansone, Matthew/NYS Department of Labor	Approved		
Seime, Trevor/State of North Dakota	Approved		
Sekely, James	Approved		
Simmons, Timothy	Approved		
Toth, Marty R.	Abstention	I have no issue with referencing standards such as CSD-1 and NFPA; however, I believe we're getting to the point where we're cherry-picking from those Codes and simply repeating them here. In doing so, there are a few things we'd be missing that falls in this area (such as a manual test valve, etc.) Again, I'm not so against this to disapprove; I believe we're going down a slippery slope therefore I can not wholly support it.	Thank you for the comment. As I understand the intent of the project (multiple items) and therefore this item is to identify what items can be reasonably seen by an inspector. Special equipment or functions were outside the "box".
Wadkinson, Melissa/Fulton Thermal Corporation	Approved		
Washington, Milton/State of New Jersey, Department of Labor and Workforce Development,	Approved		
Wielgoszinski, Robert V./The Hartford Steam Boiler Inspection and Insurance Company			
Wiggins, Edward F./State of Alabama	Approved		

Item 20-56

3.3.5 ~~3.4~~ COMPETENCY, TRAINING AND QUALIFICATION OF PERSONNEL

3.3.5.1 COMPETENCY OF PERSONNEL

The test organization shall establish the skills, knowledge, competencies, and method to evaluate competencies required for each position within the organization having direct effect on the quality of pressure relief valve testing and adjustment performed in accordance with the Certificate of Authorization.

3.3.5.2 ~~3.4.1~~ CONTENTS OF TRAINING PROGRAM

The test organization ~~applicant~~ shall establish a documented ~~in-house~~ training program to ensure the defined skills, knowledge and competencies are achieved. ~~This program shall establish training objectives and provide a method of evaluating training effectiveness.~~ As a minimum, training objectives for each position ~~knowledge level~~ shall include:

a) Applicable ASME Code ~~and NBIC~~ requirements;
~~a)~~b) Applicable NBIC requirements
~~b)~~c) Individual r~~R~~esponsibilities of each function described within the organization's quality system; ~~and~~
~~c)~~d) ~~Knowledge of the~~ T~~t~~echnical aspects for the applicable position held: ~~and mechanical skills for making set pressure and/or blowdown adjustments to pressure relief valves;~~
~~d)~~e) ~~Knowledge of the technical aspects and~~ M~~m~~echanical skills for applicable position held.~~marking and sealing of pressure relief valve adjustments.~~

3.3.5.3 INITIAL EVALUATION AND ACCEPTANCE OF PERSONNEL

The test organization shall complete an initial evaluation and acceptance of each individual's skills and competency prior to the individual being assigned to work without direct supervision. This evaluation and acceptance shall be documented.

3.3.5.4 ANNUAL EVALUATION AND ACCEPTANCE OF PERSONNEL

The test organization shall complete an annual evaluation and acceptance of each individual's skills and competency to verify proficiency as well as compliance with the Certificate Holder's quality system. This evaluation shall include training records, documented evidence of work performed and on-the-job observations to demonstrate competency. The evaluation shall be documented.

Item Number: 20-56
Title: Review and clarify requirements training program for T/O holders
Project Manager: Alfred Donaldson
Balloted To: NBIC Main Committee
Voting Start: 2021-10-26
Voting End: 2021-11-19
Result: Pass

Committee Member	Vote	Member Comment	PM Response
Austin, Randall Duane/Los Alamos National Laboratory			
Brodeur, Marianne/International Valve & Instrument	Approved		
Galanes, George/Diamond Technical Services, Inc.	Approved	GWG comment 10/27/2021. I approve this action. The only comment I have is the annual evaluation in 3.3.5.4 to be kept as part of the Quality System records for joint reviews?	Thank you for the feedback, The table 3.3.5.4 describes the records generally but based on your comment we will specifically add that the annual review is one of the records covered under that section. I discussed with the Staff Secretary and we can add that after the ballot closes as it is not necessarily a technical change.
Getter, Jim/Worthington Industries	Approved		
Hopkins, Craig/Seattle Boiler Works, Inc.	Approved		
LeSage, Donnie/State of Louisiana			
Morelock, Brian R./Eastman Chemical Company	Approved		
Newton, Venus G./XL Insurance America, Inc.	Approved		
Patel, Thakor			
Richards, H. Michael	Approved		
Sansone, Matthew/NYS Department of Labor	Approved		
Seime, Trevor/State of North Dakota	Approved		
Sekely, James	Approved		
Toth, Marty R.	Approved	I agree with GG...	Thank you for the comment. We will specify that this new record in the document table after the ballot closes.
Wadkinson, Melissa/Fulton Thermal Corporation	Approved		
Washington, Milton/State of New Jersey, Department of Labor and Workforce Development,	Approved		

Item Number: 20-56

Title: Review and clarify requirements training program for T/O holders

Project Manager: Alfred Donaldson

Balloted To: NBIC Main Committee

Voting Start: 2021-10-26

Voting End: 2021-11-19

Result: Pass

Committee Member	Vote	Member Comment	PM Response
Welch, Paul J./ARISE Boiler Inspection and Insurance Company Risk Retention Group	Approved	Change word (The)in the last sentence to read (This evaluation shall be documented)3.3.5.4 ANNUAL EVALUATION AND ACCEPTANCE OF PERSONNELThe test organization shall complete an annual evaluation and acceptance of each individual's skills and competency to verify proficiency as well as compliance with the Certificate Holder's quality system. This evaluation shall include training records, documented evidence of work performed and on-the-job observations to demonstrate competency. The evaluation shall be documented.	Thank you for the feedback. We will change the last sentence to say "This Evaluation shall be documented."
Wielgoszinski, Robert V./The Hartford Steam Boiler Inspection and Insurance Company			
Wiggins, Edward F./State of Alabama	Approved		

ITEM 21-51 Proposal 10-5-21

SUPPLEMENT 3
PRESSURE RELIEF AND PILOT VALVE STORAGE & SHELF LIFE

S3.1 SCOPE
This supplement provides guidance for proper conditions and duration of pressure relief valve storage. This guidance applies to pressure relief valves, temperature & pressure relief valves, and pilot operated pressure relief valves (including the main body valve and the pilot valve).

S3.2 PRESSURE RELIEF VALVE STORAGE
Pressure relief valve set pressure and/or seat tightness can deviate during storage. The manufacturer's recommendations should be followed regarding shelf life. In some cases, it may be necessary to retest the pressure relief valve prior to installation or reduce maintenance interval if the pressure relief valve was in storage for an extended period. When storing pressure relief valves, a first in / first out policy should be followed.

S3.3 PRESSURE RELIEF VALVE STORAGE CONDITIONS
Pressure ~~R~~relief valves should be stored per manufacturer recommendations. Storage temperature should be within the operating or storage temperature range provided by the manufacturer. Where the manufacturer has no recommendations, the following guidelines should be followed.

a) Storage temperature should be between 40 and 72 °F, where practical.
b) Ideal relative humidity in the storage area should be 70 percent or less. For pressure relief valves with soft seats, relative humidity should be kept between 30 and 70 percent. Some soft materials require a minimum humidity level to prevent material degradation.
c) Storage area should have a non-corrosive atmosphere. Otherwise, stored pressure relief valves should be protected from the atmosphere.
d) Pressure ~~R~~relief valves that utilize spindles or weights should be stored in a vertical position.
e) Temperature and pressure relief valves should have their probes supported to prevent bending or detachment.
f) All ports should be plugged, blanked, or capped.
g) Pressure ~~R~~relief valves that have been cleaned for oxidizing gas or other specialty service should be sealed in a plastic bag. Plastic wrapping may be acceptable for larger pressure relief valves.
h) Storage should be off the ground (e.g. on a shelf or pallet).
i) Storage area should limit exposure to direct sunlight
j) Pressure ~~R~~relief valves constructed of materials subject to corrosion (such as carbon steel) should be painted or otherwise protected against the environment prior to storage.

S3.4 PRESSURE RELIEF VALVE SHELF LIFE
Pressure Relief valve shelf life shall be determined based upon manufacturer's recommendations and performance history. Shelf life may increase or decrease based upon storage conditions and performance history. In the absence of manufacturer or service provider recommendations, and performance history, the shelf life recommendations per table S3.4 should be used when stored in accordance with S3.3. Shelf life may be increased or decreased, from the recommended values, once performance history is established.

TABLE S3.4

RECOMMENDED PRESSURE RELIEF VALVE SHELF LIFE (IF NOT PROVIDED BY MANUFACTURER)

Pressure Relief Valve Description/Recommended Shelf Life (years)

Temperature and pressure relief valve/2
Pressure relief valve with metal-to-metal seat/5
Pressure relief valve with nonmetal seat/2

S3.4.1 EXCEEDING SHELF LIFE

If shelf life is exceeded, the pressure relief valve shall either be tested prior to installation or tested using its lift lever (if applicable) following installation. Storage for a length of time less than the shelf life of the pressure relief valve does not reduce the time before the first regularly scheduled retest. If performance history shows that time in storage less than shelf life causes the device to function outside of acceptable tolerance, then the shelf life shall be reduced.

Item Number: 21-51
Title: Clarify relief valve term to be pressure relief valve in Supplement 3
Project Manager: Thomas Beirne
Balloted To: NBIC Main Committee
Voting Start: 2022-03-22
Voting End: 2022-04-20
Result: Pass

Committee Member	Vote	Member Comment	PM Response
Austin, Randall Duane/Los Alamos National Laboratory	Approved		
Brodeur, Marianne/International Valve & Instrument	Approved		
Galanes, George/Diamond Technical Services, Inc.	Approved		
Getter, Jim/Worthington Industries	Approved		
Hopkins, Craig/Seattle Boiler Works, Inc.	Approved		
LeSage, Donnie/State of Louisiana			
Morelock, Brian R./Eastman Chemical Company	Approved		
Newton, Venus G./XL Insurance America, Inc.			
Patel, Thakor	Approved		
Richards, H. Michael	Approved		
Sansone, Matthew/NYS Department of Labor	Approved		
Seime, Trevor/State of North Dakota	Approved		
Sekely, James	Approved		
Simmons, Timothy	Approved		
Toth, Marty R.	Approved	I agree with Melissa W. Those temps seem a little too restrictive, even though they are recommendations. As we're aware, "Should" could be made mandatory in some jurisdictions. I could not find any rationale on why this is even in there?!	Thank you for your comment. While the temperatures were not part of this item. After replying to Melissa's comment, I did reach out to the original PM who worked on developing this supplement and he stated that plastic seats will start to experience creep at 77 F. This was why a lower storage temperature was selected. However these are very general recommendations. If the manufacturer has recommendations for a specific valve then those should be followed.

Item Number: 21-51

Title: Clarify relief valve term to be pressure relief valve in Supplement 3

Project Manager: Thomas Beirne

Balloted To: NBIC Main Committee

Voting Start: 2022-03-22

Voting End: 2022-04-20

Result: Pass

Committee Member	Vote	Member Comment	PM Response
Wadkinson, Melissa/Fulton Thermal Corporation	Approved	Approved, however, I do have a comment. Is the statement that storage should be between 40F and 72F really practicle? It's the 72F that I question. I realize this is a recommendation but 72F seems low. What is the reason for that temperature?	Thank you for your comment. I know the original PM who developed this supplement did extensive research with several manufacturers. I am not sure where the 72 F for the upper limit came from. Personally I agree that it is probably too low. Even indoor conditioned spaces can be a little warmer than that (I know the A/C in my office is set at 74 in the summer). I will discuss this with our group at the next meeting and see if they agree that an action item be opened to raise the upper limit to something that is more reasonable.
Washington, Milton/State of New Jersey, Department of Labor and Workforce Development,			
Wielgoszinski, Robert V./The Hartford Steam Boiler Inspection and Insurance Company	Approved		
Wiggins, Edward F./State of Alabama	Approved		

Item 21-63 Proposal 7-12-22

Part 4, 4.8.5.4 i)2)

The document referred to above shall describe the original nameplate information, including the ASME Code symbol stamping and the repair nameplate information, if applicable. For pilot operated valves, the manufacturer's unique identifier on the pilot and main valve shall also be recorded. In addition, ~~it~~ the document shall include material checks, replacement parts, conversion parts (or both), reference to items such as the welding procedure specifications (WPS), fit up, NDE technique, heat treatment, and pressure test methods to be used. Application of the "VR" stamp to the repair nameplate shall be recorded in this document. Specific conversions performed with the new Type/Model number shall be recorded on the document. There shall be a space for "signoffs" at each operation to verify that each step has been properly performed.

ITEM 21-84 7/12/22

Part 4

4.7.4 ILLEGIBLE OR MISSING NAMEPLATES

The VR Certificate Holder shall not perform repairs under the VR Program on any pressure relief valve (PRV) that cannot be positively identified by the manufacturer or through in-house sources. Such identification shall include the verification of the original ASME Stamping. Pressure relief valves that have missing or illegible nameplates and can be positively identified shall be equipped with a nameplate marked “DUPLICATE”, which contains all original nameplate data. The duplicate nameplate shall not bear the “NB” Mark or the ASME Certification Mark. ~~with the “V”, “HV”, or “UV” Designator or the supplanted “V”, “HV”, or “UV” Symbol. Instead, the~~ To indicate the original designator or code stamping, the duplicate nameplate shall be stamped with a “V“, “HV“, or “UV“, ~~“Sec. I”, “Sec. IV”, or “Sec. VIII”,~~ as applicable. ~~, to indicate the original stamping.~~ Illegible nameplates, if applicable, shall not be removed.

SUPPLEMENT 1
INSTALLATION OF YANKEE DRYERS ~~(ROTATING PRESSURE VESSELS) WITH FINISHED SHELL OUTER SURFACES~~

S1.1 SCOPE

(21)

This supplement provides guidelines for the installation of a yankee dryer. ~~-~~Additional guidelines are found in Part 2 for Inspection, and Part 3 for Repair and Alteration.

~~A yankee dryer has the following characteristics:~~

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

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 ~~Yankee~~yankee dryer~~,~~; and a steam-heated or fuel-fired hood. After drying, the paper web is removed from the dryer.

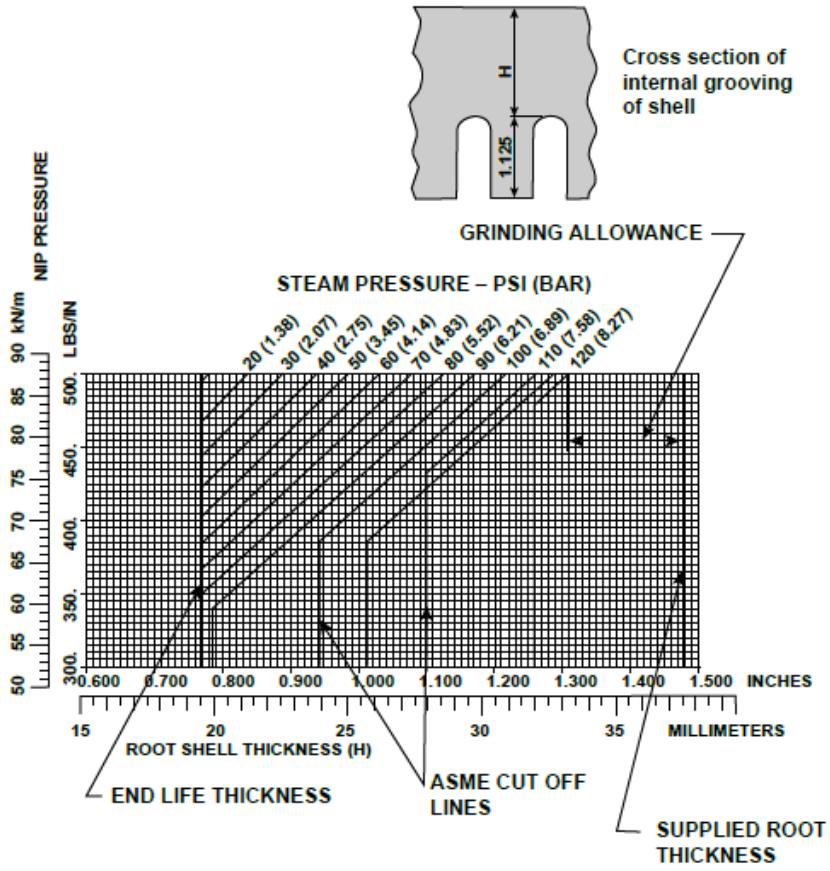
c) ~~A yankee~~The dryer is typically manufactured in a range of outside diameters from 8 to 23 ft. (2.4 m to 7 m), widths from 8 to 28 ft. (2.4 m to 8.5 m), pressurized and heated with steam up to 160 psi (1,100 kPa), and rotated at speeds up to 7,000 ft~~/~~./min (2,135 m/min). Typical pressure roll loads against the ~~Yankee~~yankee 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).

d) The typical yankee dryer is an assembly of several large components. The cylindrical shell is commonly ASME SA-278 gray cast iron~~,~~ or SA-516 steel. ~~Shells internally~~Internally, shells may be smooth bore or ribbed. Heads, center shafts, and journals may be gray cast iron, ductile cast iron, or steel.

~~**FIGURE S1.1**~~

~~A TYPICAL MANUFACTURER'S "DE-RATE CURVE"~~

~~NOTE: There are several safe operating pressures for a given shell thickness.~~



S1.2 ~~ASSESSMENT OF~~ INSTALLATION ASSESSMENT

a) The Inspector verifies that the owner or user is prepared to properly ~~controlling~~control the operation of the dryer such that maximum operating conditions ~~of the dryer.~~are not exceeded. The maximum operating conditions are provided by the dryer manufacturer or a source acceptable to the Inspector ~~does this by reviewing the owner's comprehensive assessments~~and can be in the form of ~~the complete installation~~a derate curve or drawing with listed parameters.

b) The dryer is subjected to a variety of loads over its life. Some of the loads exist individually, while others are combined. Considerations of all the loads that can exist on a Yankee dryer are 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 loads and the associated protection devices provided to limit these loads are:

1) Pressure load due to internal steam pressure. Overpressure protection is provided by a safety relief valve;

2) Inertial load due to dryer rotation. Over-speed protection is usually provided by an alarm that indicates higher-than-allowable machine speed;

3) Thermal gradient load due to the drying of the web. Protection against unusual drying loads is usually provided by logic controls on the machine, primarily to detect a "sheet-off" condition that changes the thermal load on the shell exterior from being cooled by the tissue sheet to being heated by the hot air from the hood; and

4) Pressure roll load (line or nip load) due to pressing the wet web onto the dryer. Overload protection is usually provided by a control valve that limits the pneumatic or hydraulic forces on

the roll loading arms such that the resultant nip load does not exceed the allowable operating nip load.

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 or speed of the dryer is changed.

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, ~~Division~~Div. 1, ~~of the ASME Code~~ 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 1, Figure S1.1~~).~~ ~~.~~ In cases where no de-rate curve is provided the manufacturer, or another qualified source, shall provide operating conditions that include 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. Shell thickness shall be verified prior to metallizing. 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.

~~g)~~h) In addition to the loads on the ~~Yankee~~yankee dryer due to operation, other nonstandard load events can occur during shipment and installation into the paper machine. These nonstandard load events should be recorded in an incident log. Examples of nonstandard load events include:

1) Damage to the protective packaging of the Yankee dryer during transport~~;~~ and installation

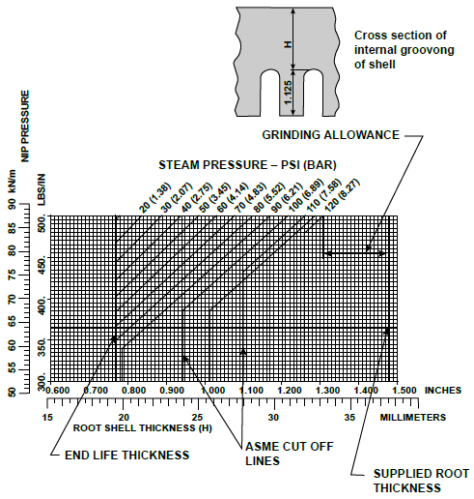
2) Scratches, gouges, dents ~~in~~of the ~~Yankee~~yankee dryer ~~shell~~ during packaging removal or installation into the paper machine~~;~~, or undesirable mechanical contact between the yankee and other surfaces

3) Excessive heating of the ~~Yankee~~yankee dryer shell during the installation and testing of the hot air hood. If the hot air hood will be generating air that is hotter than the ~~Yankee~~yankee dryer shell material's maximum allowable working temperature (MAWT), then temperature sensors should be installed to monitor and record the ~~Yankee~~yankee dryer shell temperature during the hood testing; and

4) Impact load from improperly installed rolls, wires, nuts, dropped wrenches, etc., that may travel through the pressure roll nip causing external impact loads on the ~~Yankee~~yankee dryer shell.

~~h)~~i) If nonstandard ~~load~~ events (incidents) have occurred during installation, then the Inspector should ensure that an appropriate assessment of the structural integrity of the ~~Yankee~~yankee dryer has been performed. For additional details see ~~Yankee~~yankee dryer supplements in NBIC Part 2 and Part 3.

FIGURE S1.1



S1.3 DETERMINATION OF ALLOWABLE OPERATING PARAMETERS

a) A ~~Yankee~~yankee dryer is designed and intended to have its shell thickness reduced over the life of the vessel through routine wear and grinding ~~and machining.~~. The ~~Yankee~~yankee dryer shell is ground ~~or machined~~ 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~~, called the "De-rate Curve,"~~ is required ~~and~~that dictates the maximum allowable operating parameters as shell thickness is reduced ~~(see NBIC Part 1, Figure S1.1).~~. Calculations~~,~~ used to determine those parameters~~,~~ are in accordance with ASME Code requirements for primary membrane stress ~~by the vessel manufacturer or~~and design criteria based ~~on~~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 ~~Yankee~~yankee 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 ~~Yankee~~yankee 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 ~~loadings~~loading also ~~occur~~occurs on a ~~Yankee~~yankee 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 ~~produce~~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-~~retaining~~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) ~~Nip~~Line Load — The ~~nip~~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.

S1.4 ASME CODE PRIMARY MEMBRANE STRESS CRITERIA

a) Yankee dryers are typically designed and fabricated in accordance with ASME Section VIII, Division 1~~, The maximum allowable stress for cast iron is specified in UCI-23 and UG-22 of the ASME Code~~.

b) ASME Section VIII, Division 1, requires design stresses to be calculated such that any combination of loading expected to occur simultaneously during normal operation of the ~~Yankee~~yankee dryer will not result in a general primary stress exceeding the maximum allowable stress value of the material. In the ASME Code, the combination of loading resulting in the primary membrane stress in the shell is interpreted to be only composed of the circumferential stress from steam pressure. Sometimes, the stress from the inertial loading is included in this consideration.

c) In ASME Section VIII, Division 1, it is very important to note that no formulas are given for determining the stresses from thermal operating loads and pressure roll nip load(s). Hence, additional criteria need to be incorporated to establish the maximum allowable operating parameters of the ~~Yankee~~yankee dryer. Two such additional criteria are based upon the maximum principal and fatigue stress.

1) Maximum Principal Stress Criteria

The maximum principal stress in a ~~Yankee~~yankee dryer shell is the sum of the stresses that are simultaneously applied to the shell and is always aligned in the circumferential direction. The purpose of these criteria is to recognize the paper making application of the ~~Yankee~~yankee dryer and to prevent catastrophic failure by including all stresses. The ASME Code does not provide specific formulas for the full array of ~~Yankee~~yankee dryer shell stresses encountered in tissue making.

2) Fatigue Stress Criteria

Under normal operation, the stresses due to the steam pressure, inertial and thermal operating loads are considered to be steady-state stresses. When acting simultaneously, the sum of these stresses must be judged against the cyclic, or alternating, stress due to the pressure roll nip load. Fatigue stress criteria limit the alternating stress at a given mean stress using fatigue failure criteria~~ described by the Goodman or Smith Diagram.~~. The purpose of this limitation is to prevent

crack initiation in the outside wall due to the combination of stresses. As the thickness of the shell is reduced, one or more of these criteria will control the various operating parameters.

S1.5 PRESSURE TESTING

a) Water pressure testing in the field is not recommended because of the large size of ~~Yankee~~yankee dryers and the resulting combined weight of the ~~Yankee~~yankee dryer and the water used in the testing. This combined weight can lead to support structure overload. Several failures of ~~Yankee~~yankee 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 ~~Yankee~~yankee dryer, the weight of the water filling the ~~Yankee~~yankee dryer, and the weight of the support structure used to hold the ~~Yankee~~yankee dryer during the test; and

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

b) When pressure testing is desired to evaluate the ~~Yankee~~yankee dryer for fitness for service, an alternative to water pressure testing is acoustic emission testing using steam or air pressure. Typically, the test pressure used is the operating pressure. Caution needs to be exercised to ensure personnel safety. Entry to the test area needs to be controlled and all personnel need to maintain a safe distance from the ~~Yankee~~yankee dryer during the test. The steam or air test pressure should never exceed the maximum allowable working pressure (MAWP) of the ~~Yankee~~yankee dryer.

S1.6 NONDESTRUCTIVE EXAMINATION

a) Nondestructive examination (NDE) methods should be implemented by individuals qualified and experienced with the material to be tested using written NDE procedures. ~~For Yankee 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 ~~Yankee~~yankee dryers. Magnetic Particle, specifically the wet fluorescent method, and Dye Penetrant methods are applicable in the evaluation of surface-breaking indications. Ultrasound testing is the standard method for evaluation of surface-breaking and embedded indications. Radiographic methods are useful in the evaluation of embedded indications. Acoustic ~~Emmission~~Emission Testing can be used to locate and determine if a linear indication is active, e.g., propagating crack. Metallographic Analysis is useful in differentiating between original casting discontinuities and cracks.

c) When nondestructive testing produces an indication, the indication is subject to interpretation as false, relevant, or nonrelevant. 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.

Remove NB5 from manual. Add first inspection Y/N field to NB6 and NB7 forms.

FORM NB-6 BOILER-FIRED PRESS

REPORT OF INSPECTION

1	DATE INSPECTED MO / DAY / YEAR	CERT EXP DATE MO / YEAR	CERTIFICATE POSTED [] YES [] NO	USER NUMBER	JURISDI
2	EQUIPMENT LOCATION NAME				N
	EQUIPMENT LOCATION STREET ADDRESS				EQUIP L
3	CERTIFICATE BUSINESS NAME				CERT C
	CERTIFICATE MAILING STREET ADDRESS				CERT CI
4	INVOICE BUSINESS NAME				CERT IN
	INVOICE STREET ADDRESS				INVOICE
5	TYPE [] FT []WT [] CI [OTHER_____		ASME/Other Code	YEAR BUILT	MANUFA
6	USE [] POWER [] PROCESS [] STEAM HEATING [] HWH [] HWS [] OTHER _____				FUEL Ty
7	Low Water Cut Out :Installed Yes [ ] No [ ] Tested Yes [ ] No [ ]		High Limit Temp/Pressure Installed Yes [ ] No [ ]	Was Boiler Fired Yes [ ] No [ ]	Combusti CSD-1 [ ]
8	ARE THERE ANY KNOWN OUTSTANDING (OPEN) VIOLATIONS FOR THIS EQUIPMENT? YES [ ] NO [ ] (IF YES, EXPLAIN FULLY UNDER ADVERSE CONDITIONS FOUND)				Log/Recc
9	Stamped MAWP		Min. PRD required Capacity	# OF PRD's _____ TOTAL CAPACITY SET PRESSURE _____ CAPACITY____ SET PRESSURE _____ CAPACITY____ SET PRESSURE _____ CAPACITY____	
10	INSPECTORS COMMENTS: **Verify any repairs were completed by a qualified repair company, and when applicable, the proper repair/alteration for**				
11	ADVERSE CONDITIONS FOUND:				
12	REQUIREMENTS:				
13	NAME AND TITLE OF PERSON TO WHOM REQUIREMENT WERE EXPLAINED				E-M
14	I HEREBY CERTIFY THIS IS A TRUE REPORT OF MY INSPECTION			NB COMMISSION #	EMPLOY
15	INSPECTOR SIGNATURE				

THIS FORM MAY BE OBTAINED FROM THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS, 1055 CRUPPER AVE, COLUMBU

SURE VESSEL

CTIONAL NO	NAT'L BD NO [] OR SERIAL # (IF CAST IRON) []	First Inspection Yes [ ] No [ ]
NATURE OF BUSINESS	KIND OF INSPECTION [] INT [] EXT	CERTIFICATE RENEWAL YES [ ] NO [ ]
OC CITY	EQUIP LOC STATE	Zip Code
ONTACT NAME	CERT CONTACT E-MAIL	
TY	CERT STATE	Zip Code
VOICE CONTACT NAME	INVOICE E-MAIL	
CITY	INVOICE STATE	Zip Code
ACTURER	Manhole [ ] Handhole [ ] Neither [ ]	Cert. Duration (Months)
pe	METHOD OF FIRING	LOCATION IN PLANT
ion Controls NFPA [ ] other [ ] _____	Combustion Air Verified Yes [ ] No [ ]	
rd review Yes [ ] No [ ]	PRESSURE TEST [] YES _____PSI DATE_____ [] NO	
_____ _____ _____ _____		

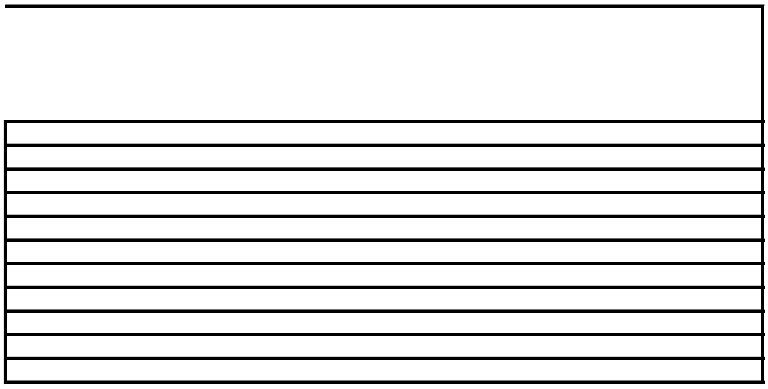
rms are completed.

AIL PHONE #

ED BY	IDENT. NO.

S, OH 43229

Removed 'Standard Form for Jurisdictions Opperating Under the ASME Code"



FORM NB-7 F
REPOF

1	DATE INSPECTED MO / DAY / YEAR	CERT EXP DATE MO / YEAR	CERTIFICATE POSTED [] YES [] NO	USER NUMBER	JURISDICTION
2	EQUIPMENT LOCATION NAME				N
3	EQUIPMENT LOCATION STREET ADDRESS				EQUIP LOC CI
4	CERTIFICATE BUSINESS NAME				CERT CONTA
5	CERTIFICATE MAILING STREET ADDRESS				CERT CITY
6	INVOICE BUSINESS NAME				CERT INVOICI
7	INVOICE STREET ADDRESS				INVOICE CITY
8	TYPE: [ ] Air Tank [ ] Water Tank [] OTHER_____		ASME/Other Code	YEAR BUILT	MANUFACTUF
9	USE [] STORAGE [] PROCESS [] HEAT EXCHANGE [] OTHER _____				VERTICAL / H
10	Stamped MAWP		Min. PRD required Capacity	# OF PRD's _____ TOTAL CAF SET PRESSURE _____ CAPACITY SET PRESSURE _____ CAPACITY [ ] Overpressure Protection by System Desi	
11	ARE THERE ANY KNOWN OUTSTANDING (OPEN) VIOLATIONS FOR THIS EQUIPMENT? YES [ ] NO [ ] (IF YES, E CONDITIONS FOUND)				
12	INSPECTORS COMMENTS: Verify any repairs were completed by a qualified repair company, and when applicable, the pr				
13	ADVERSE CONDITIONS FOUND:				
14	REQUIREMENTS:				
15	NAME AND TITLE OF PERSON T WHOM REQUIREMENTS WERE EXPLAINED				EMAIL
16	I HEREBY CERTIFY THIS IS A TRUE REPORT OF MY INSPECTION			NB COMMISSION #	EMPLOYED BY
17	INSPECTOR SIGNATURE				

THIS FORM MAY BE OBTAINED FROM THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTOR

PRESSURE VESSELS

RT OF INSPECTION

NAL NO	NAT'L BD NO [] OR SERIAL # (IF CAST IRON) []	First Inspection Yes [ ] No [ ]
NATURE OF BUSINESS	KIND OF INSPECTION [] INT [] EXT	CERTIFICATE RENEWAL YES [ ] NO [ ]
TY	EQUIP LOC STATE	Zip Code
CT NAME	CERT CONTACT E-MAIL	
	CERT STATE	Zip Code
E CONTACT NAME	INVOICE E-MAIL	
	INVOICE STATE	Zip Code
RER	Manhole [ ] Handhole [ ] Neither [ ]	Cert. Duration (months)
HORIZONTAL	LENGTH	DIAMETER
PACITY_____ Y_____ Y_____ ign	Size (CuFt or Gallons)	
XPLAIN FULLY UNDER ADVERSE	PRESSURE TEST [] YES _____PSI DATE_____ [] NO	

roper repair/alteration forms are completed.

PHONE#

Y	IDENT. NO.

RS, 1055 CRUPPER AVE, COLUMBUS, OH 43229

Removed 'Standard Form for Jurisdictions Opperating Under the ASME Code"

Item Number: 21-40

Add to the Glossary:

Remote Visual Inspection- the examination of a PRI via a camera affixed to a mobile platform not operated by the Inspector, where the Inspector does not have direct line of sight with the area being examined ~~by the camera~~.

Item 21-46

Add to the Glossary:

Labeled: Equipment or materials that comply with nationally or internationally recognized standards and are so labeled. The label of a nationally or internationally recognized testing agency that maintains periodic inspection of production of labeled equipment or materials has been applied.

Listed: Equipment or materials that are included in a list published by a nationally or internationally recognized testing agency that maintains periodic inspection of production of listed equipment or materials. Listing indicates compliance with nationally or internationally recognized standards.

INTENT INTERPRETATION 20-78

Repairs and Alterations of Tube Bundles

Inquiry No.	20-78
Source	Micah Davidian Email: mdavidian@dir.ca.gov Phone: +1 (559) 4456817
Subject	Submission is for R Certificate Holders we provide Repair Inspection services for Background Information: For questions 1-4, 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.
Edition	2019 Part 3 3.3.3 s) and 3.4.4 d)
Question	Question 1: When a tube bundle is replaced where the new tubesheet material is the same as the original bundle but has a thicker tubesheet due to adding corrosion allowance where the original design did not include corrosion allowance, is this considered a repair or alteration? Question 2: When a tube bundle is replaced where the new tubesheet material is the same as the original bundle but has a thicker tubesheet due to adding additional corrosion allowance to the original design, is this considered a repair or alteration? Question 3: When a tube bundle is replaced where the new tubesheet material is the same as the original bundle but has a thicker tubesheet due to adding thickness for future machining allowance, is this considered a repair or alteration? Question 4: For a tube bundle, does NBIC Part 3, 3.4.4 d) mean that any physical changes e.g. tubesheet thickness, tube wall thickness or length of tubes from the original design will be an alteration? Question 5: If a tube bundle is replaced where the new tubesheet material is the same as the original bundle but has a thicker tubesheet due to ASME Sec VIII, Div. 1, Part UHX tubesheet formulas, is this considered a repair or alteration. Proposed Reply: Question 1: Alteration (calculations required) Question 2: Alteration (calculations required) Question 3: Repair Question 4: Some may be repairs others alterations. Question 5: Alteration (calculations required)
Reply	

Committee's Question	~~Q1: When a tubesheet in a replacement tube bundle has the same material as the original design but is thicker due to adding corrosion allowance where the original design did not include corrosion allowance or adding additional corrosion allowance or adding a machining allowance, is this considered a repair or alteration?~~ ~~Q2: In the case of a tube bundle, does NBIC Part 3, 3.4.4 d) mean that any physical changes e.g. tubesheet thickness, tube wall thickness or length of tubes from the original design will be an alteration?~~ ~~Q3: When a replacement tube bundle has the same tubesheet material as the original design but is thicker due to a change in the analytic method, is this considered a repair or alteration.~~ **Q1: Is it the intent that a change in the dimensions or contour of a pressure-retaining item that decreases its pressure retaining capability be an alteration?**
Committee's Reply	~~A1: Alteration~~ ~~A2: Yes~~ ~~A3, Alteration~~ **A1; Yes.**
Rationale	~~Original questions 1,2 &3 have all be rolled up into Q&A1.~~ ~~All, per para 3.4.4 d) a change in dimension or contour of a PRI is an example of an alteration, the tube sheet getting thicker is a change in dimension. The glossary definition of PRI includes material so is not limited to the overall vessel/boiler~~ ~~Q3- I believe this is in reference to a heat exchanger built before Part UHX was adopted into Section VIII Div.1 so would have been built to TEMA rules which aren't 100 % the same as Part UHX. I do not think we should explain how to get around this in the answer to an interpretation.~~ Based on revision A22-21 this is the intent of the code
SC Vote	
NBIC Vote	
Negative Vote Comments	

PROPOSED INTERPRETATION

Item No.

21-39

Subject/Title

Routine repair scope

Project Manager and Task Group

Paul Shanks with Phillip Gilston

Source (Name/Email)

Paul Shanks / paul.shanks@onecis.com

Statement of Need

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?

Background Information

Repairs that exceed the limit listed in 33.2 e) 3) are being conducted which potentially places the public in harm's way.

Proposed Question

Q1, In a boiler water wall which has been subject to wastage and requires weld metal build up, does the fact that the tubes are 5" or smaller mean that said build up is always routine regardless of the area involved? Q2 or if the area of weld build up exceeds 100in2 does the size and nature of the component being repaired become irrelevant?

Proposed Reply

A1, No A2, Yes

Committee's Question 1

For a repair to be considered routine in nature must it meet all categories in 3.3.2 e)?

Committee's Reply 1

No, however one or more of the categories must be met.

Rationale

3.3.2 e) states routine repairs shall be limited to these categories, which are considered individually as discrete items

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

Item No.

21-60

Subject/Title

UDS requirements for repairs and alterations for Divisions 2 & 3

Project Manager and Task Group

Source (Name/Email)

Mark Lower / lowermd@ornl.gov

Statement of Need

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))?

Background Information

Interpretation 19-14 states a UDS cannot be recreated when lost/destroyed. It is not clear how repair organizations will comply with the requirements of 3.4.5.1(a). However, it appears the user would be allowed to alter an existing UDS based on current parameters as noted in 3.4.5.1(b).

Proposed Question

Q: May a User's Design Specification be generated for the purpose of ASME Section VIII Div 2 or Div 3 vessel repairs or alterations by the user or their designated agent in the event the original UDS was lost/destroyed?

Proposed Reply

A: Yes

Committee's Question 1

Committee's Reply 1

Rationale

Committee's Question 2

Committee's Reply 2

Rationale

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

CODE INTERPRETATIONS

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b) Reply
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A request seeking the rationale for code requirements.

PROPOSED INTERPRETATION

Item No.

21-75

Subject/Title

Routine Repairs

Project Manager and Task Group

Source (Name/Email)

Logan Somers / lsomers@harder.com

Statement of Need

The wording "but does not include nozzles to pressure-retaining items" could lead onto interpreting the nozzle as a whole including the joint attaching the nozzle to the PRI.

Background Information

When discussing scheduling of repairs this information is used by the owner to determine when the unit may be brought down for repair based on the availability of the Inspector.

Proposed Question

May the identical replacement of a waisted flange at the end of a nozzle off a PRI be considered a routine repair in accordance with the requirements of 3.3.2 when only the flange is replaced and not the joint attaching the nozzle to the PRI?

Proposed Reply

No

Committee's Question 1

May the in-kind replacement of a flange connected to a nozzle be considered a routine repair when only the flange is replaced, and not the weld joint attaching the nozzle to the pressure retaining item (PRI)~~, if~~when ~~and when~~ the nozzle meets the requirements ~~for tubes and pipes~~ in Part 3, 3.3.2 e)1)?
~~May the identical replacement in kind of a waisted flange at the end of a nozzle, NPS 5 (DN 125) in diameter or smaller, off attached to a PRI be considered a routine repair in accordance with the requirements of Part 3 Section 3.3.2 (e) (1) when neither postweld heat treatment nor NDE other than visual is required and only the flange is replaced and not the joint attaching the nozzle to the PRI?~~

Committee's Reply 1

Yes

Rationale

The replaced flange would be considered a fitting in the category of Part 3 Section 3.3.2 (e) (1).

Committee's Question 2

Committee's Reply 2

Rationale

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

CODE INTERPRETATIONS

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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
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A request seeking the rationale for code requirements.

PROPOSED INTERPRETATION

Item No.

21-79

Subject/Title

Mechanical Replacement of Shell or Head

Project Manager and Task Group

Source (Name/Email)

Robert Underwood / robert_underwood@hsb.com

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.

Background Information

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.

Proposed Question

Is mechanical replacement of a shell or head of a pressure retaining item considered a repair activity?

Proposed Reply

Yes, see Part 3, 3.3.3(h).

Committee's Question 1

Committee's Reply 1

Rationale

Committee's Question 2

Committee's Reply 2

Rationale

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

CODE INTERPRETATIONS

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b) Reply
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c) Background Information
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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.

22-14

Subject/Title

Overlaid Replacement Parts

Project Manager and Task Group

Source (Name/Email)

Harold Greer / Harold.greer32@yahoo.com

Statement of Need

Replacement parts that are documented using a Manufacturer's Partial Data report that have been inspected by an Authorized Inspector may still be supplied as a replacement part under paragraph 3.2.2 b) and therefore not require a Hydro test per Paragraph 3.2.2 e). Panels made from Overlaid tubes and for single overlaid tube Dutchman that contain only weld overlay, where the overlay is not considered to be pressure retaining when the overlay is not considered part of the strength of the boiler tube per ASME Section I PW-44. May be supplied as replacement parts under paragraph 3.2.2 b). The purpose of the overlay is to extend the life of boiler tubes in the waste to energy corrosive environment from external wear.

Background Information

ASME Section I PG-112.6 states that a P-4 is neither required nor prohibited for pressure parts that do not contain pressure-retaining welds. NBIC Part 3 section 3 paragraph 3.2.2 c) .....replacement parts subject to internal or external pressure fabricated by welding, "which require inspection by an Authorized Inspector".... An inspector could interpret this as, any replacement part that is certified with a form P-4 would therefore require inspection by an Authorized Inspector and would then require a Hydro test by paragraph 3.2.2 e) prior to installation in the boiler. It is the opinion of this manufacturer that Overlaid boiler tubes where the overlay is not considered as part of the strength of the boiler tube per PW-44 of ASME Section I, is not pressure retaining. Hydro testing of Weld Overlay would not provide meaningful data and would requires excessive costs for no benefit. Such as performance of 200 hydro tests at 1.5 x MAWP for section I, for 200 Overlaid tube Dutchmen, where each tube must be witnessed by the Inspector prior to installation in a boiler. Whereas, after installation there are 400 actual pressure retaining welds in a single test at a pressure that need only verify leak tightness and the acceptance of the inspector.

Proposed Question

Q1) May a boiler furnace wall panel that contains no pressure retaining welds and has been documented on a P-4 Manufacturer’s Partial Data Report in accordance with PG-112.6 of ASME Section I, be provided as a replacement part in accordance with NBIC Part 3, 3.2.2 b)? Q2) The same panel referred to in Q1 is manufactured with a weld overlay that is not part of the strength of the boiler tube (corrosion resistance, hard facing, etc…) and documented on a P4 Manufacturer’s Partial Data Report in accordance with PG-112.6 of ASME Section I. May this wall panel be provided as a replacement part in accordance with NBIC Part 3, 3.2.2 b)? Q3) May overlaid boiler tubes, where the overlay is not pressure retaining and is not considered part of the strength of the boiler tube per ASME Section I , PW-44, supplied individually, may these overlaid tubes be provided as a replacement part in accordance with Paragraph 3.2.2 b)?

Proposed Reply

Q1) YES Q2) YES Q3) YES

Committee's Question 1

Committee's Reply 1

Rationale

Committee's Question 2
Committee's Reply 2
Rationale

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

CODE INTERPRETATIONS

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b) Reply
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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.

Item 18-94: Requirements for spring alterations in a graphite pressure vessel

Explanation of Need:

- This item is needed 1) to clarify that both the initial spring compression and the spring stiffness are critical variables for establishing the stress state for graphite tubes and tubesheets, and 2) require that the corrected design rules in ASME Section VIII 2019 Edition or later be used. The use of 2019 or later edition will also prompt consideration of the spring rod stiffness, evaluation of the assembled (zero pressure) case, use of primary stress criteria for the operating cases owing to the large deflections involved, improved buckling analysis, and check for unloading of springs in the operating cases because of differential thermal expansion.

Background Information:

- Graphite shell and tube exchangers may be equipped with springs to counter forces from shell-side and tube-side pressures. The springs have a preload set at the time of assembly, and mechanically interact with the shell, tubes and tubesheet in the design and operating cases. Under ASME Section VIII Div. 1, the initial spring force is selected by the designer, and is determined by the spring stiffness multiplied by the initial compression (deflection); the resulting stresses in the tubes and tubesheets are calculated for the design and operating cases according to Part UIG-34(b). Prior to the 2019 Edition, the calculation considered the stiffness (spring rate) of the springs but did not account for the initial compression of the springs, so resulting stress calculations are not valid. Part UIG-34(b) was revised for the 2019 Edition to include the initial compression of the springs, along with other changes as described in the attached background document for ASME Record 16-1251 (see Item 18-94 folder in the July 2022 Meeting folder on nbfileshare.org).

Proposed Changes:

S3.4 ALTERATIONS

a) The requirements provided in this section shall apply, insofar as they are applicable to the materials discussed herein. Completed alterations shall be subjected to a pressure test not less than that required by the code of construction. The test pressure shall be maintained for a minimum of 30 minutes. The pressure shall be reduced to MAWP and maintained for inspection.

~~a)~~b) Alteration of the spring design (e.g. change in stiffness or the initial compression) of a graphite shell-and-tube heat exchanger shall be done only after revised calculations have been prepared in accordance with the "R" Certificate Holder's Quality Control System and accepted by the Inspector. When the standard governing the original construction is any edition of the ASME Code, the calculations shall comply with Section VIII, Div. 1 2019 Edition or later.

~~b)~~c) The nameplate shall be applied in accordance with Section 5 of this part. The letter "G" shall be applied to the nameplate under the "R" stamp when graphite alterations are made. The alternate procedure defined in 5.10 may be used in lieu of the stamping and nameplate attachment requirements of NBIC Part 3, Section 5.

~~c)~~d) Organizations performing alterations under an "R" stamp program shall register such alterations with the National Board.

Item 19-74: Routine repair requirements for partial nozzle replacement

Part 3, S3.3 ROUTINE REPAIRS

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

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

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

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

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

Item 19-79: Reword Part 3, S3.5.4 h) to clarify cementing procedure for plugs

S3.5.4 PLUGGING OF LEAKING OR DAMAGED TUBES

g) The cement shall be prepared per the cement manufacturer's instructions.

h) When cementing the plug(s), ~~100% of individual plugs~~all contact surfaces of each plug, as well as the inside diameter of the tube opening(s), shall be coated with cement. The plug(s) shall ~~then~~ be inserted ~~one by one, against each other,~~ into each end of the tube(s) being plugged.

i) Once the plugging is completed, and before the cement cures, the ~~end~~plug(s) may need to be held in place~~,~~ as newly cemented plugs may exhibit a tendency to dislodge from the ~~plugged~~ tube(s) prior to final curing of the cement.

Item No.: 20-48
Subject Title: Review “NR” Program requirements against NQA-1 2015 Edition
NBIC Location: Part 3
Project Manager and Task Group: Paul Edwards/Ray Spuhl, NR TG
Source Name and Email:

Statement of Need: The 2015 Edition of NQA-1 is currently referenced by the 2019 Edition of ASME Section III, Table NCA-7100-2 and by the 2019 Edition of ASME Section XI, Table IWA-1600-1. NBIC Item 20-48 has been opened to review the NR Program in Part 3, Section 1.6, for update to current ASME III and XI QA Program requirements.

Background Information:

Category 1 applications under the NR Program are established for repair / replacement activities on any ASME Section III certified item or system prior to fuel loading, regardless of physical location or installation status. By reference to ASME III, the NBIC QA Program criteria for NR Category 1 applications need to be consistent with the 2015 Edition of NQA-1.

Category 2 applications under the NR Program are established for repair / replacement activities on items or systems under the scope of ASME Section XI, regardless of physical location. By reference to ASME XI, the NBIC QA Program criteria for NR Category 2 applications need to be consistent with the 2015 Edition of NQA-1.

Category 3 requirements under the NR Program are established for other than ASME III or ASME XI applications and are therefore not directly impacted by NQA-1 - 2015. NBIC Part 3, 1.6.8.1, does, however, permit a Category 3 NR Certificate holder to optionally include QA Program requirements from Category 1 and/or 2 applications, to allow consistency in the NR Certificate holder's QA Program.

Existing Text:	Proposed Test:
Part 3, 1.6.6.2 d) d) Design Control The provisions identified in ASME NQA-1, Part 1, Requirement 3, shall apply except Paragraph 601. The following additional requirements shall be considered when applicable: 1) The "NR" Certificate Holder shall establish measures to ensure applicable requirements of the owner's design specifications, owner's requirements, and code of construction requirements are correctly translated into drawings, specifications, procedures and instructions. 2) All design documents, including revisions, shall be verified by the "NR" Certificate Holder to be correct and adequate in accordance with the owners requirements. 3) Repair/replacement plans shall be completed prior to performing any work, inspections, examinations or testing; however repair/replacement plans are not required for the design phase of a repair/ replacement activity including activities that require design only (except rerating).	**Part 3, 1.6.6.2 d)** d) Design Control The provisions identified in ASME NQA-1, Part 1, Requirement 3, shall apply except Paragraph 601. The following additional requirements shall be considered when applicable: 1) The "NR" Certificate Holder shall establish measures to ensure applicable requirements of the owner's design specifications, owner's requirements, and code of construction requirements are correctly translated into drawings, specifications, procedures and instructions. 2) All design documents, including revisions, shall be verified by the "NR" Certificate Holder to be correct and adequate in accordance with the owners requirements. 3) Repair/replacement plans shall be completed prior to performing any work, inspections, examinations or testing; however repair/replacement plans are not required for the design phase of a repair/ replacement activity including activities that require design only (except rerating).

4) The repair/replacement plan (see NBIC Part 3, Table 1.6.9) shall identify any applicable Code Edition/ Addenda and Code Cases, owner's requirements and the Construction Code Edition/Addenda utilized to perform the work. 5) The repair/replacement plan shall identify expected life of the item when less than the intended life as specified in the owner's design specification. 6) The "NR" Certificate Holder shall ensure that specifications, drawings, procedures and instructions do not conflict with the owner's design specifications. A system must be described in the Quality Assurance Manual to resolve or eliminate such conflicts. Resolution shall consider the Design Specification Requirements, as well as, the owner requirements, Jurisdictional and Regulatory Authority Requirements as applicable.	4) The repair/replacement plan (see NBIC Part 3, Table 1.6.9) shall identify any applicable Code Edition/ Addenda and Code Cases, owner's requirements and the Construction Code Edition/Addenda utilized to perform the work. 5) The repair/replacement plan shall identify expected life of the item when less than the intended life as specified in the owner's design specification. 6) The "NR" Certificate Holder shall ensure that specifications, drawings, procedures and instructions do not conflict with the owner's design specifications. A system must be described in the Quality Assurance Manual to resolve or eliminate such conflicts. Resolution shall consider the Design Specification Requirements, as well as, the owner requirements, Jurisdictional and Regulatory Authority Requirements as applicable. 7) Computer programs used for design analysis shall meet the requirements of NQA-1, Part II, Subpart 2.7 unless independently verified with the design analysis for each application.
Part 3, 1.6.6.2 d) s) Audits The provisions identified in ASME NQA-1, Part 1, and Requirement 18 shall apply and shall include the following: A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Audit frequency shall be specified in the organization's Quality Assurance Manual. Audits shall be conducted at least annually (within 12 months) for any ongoing code activity to verify compliance with Quality Assurance Program requirements, performance criteria and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the required annual audit need only include those areas of responsibility required to be continually maintained such as training, audits, organizational structure, and Quality Assurance Program revisions. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with the current requirements of ASME NQA-1; 3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program; 4) Requirements for follow-up actions shall be specified for any deficiencies noted during the audit;	**Part 3, 1.6.6.2 d)** s) Audits The provisions identified in ASME NQA-1, Part 1, ~~and~~ Requirement 18 shall apply and shall include the following: A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Internal and Supplier Audit frequenc~~y~~ies shall be specified in the organization's Quality Assurance Manual. Internal Audits shall be conducted at least annually (within 12 months) for any ongoing code activity to verify compliance with Quality Assurance Program requirements, performance criteria and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the ~~required annual~~ internal audit need only include those areas of responsibility required to be continually maintained such as training, audits, organizational structure, and Quality Assurance Program revisions etc. External audits (e.g., Supplier audits) of organizations with certification/accreditation permitted by ASME may not be required if acceptable to the Regulatory Authority. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with the current requirements of ASME NQA-1;

5) Audit records and applicable documentation shall be made available to the Authorized Nuclear Inspection Agency for review; and 6) Audit records shall include as a minimum; a. Written procedures; b. Checklists; c. Reports; d. Written replies; and e. Completion of corrective actions. Performance of Authorized Inspection Agency audits required by ASME QAI-1 and NB-263, RCI-1 shall be addressed in the Quality Assurance Manual.	3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program; 4) Requirements for follow-up actions shall be specified for any deficiencies noted during the audit; 5) Audit records and applicable documentation shall be made available to the Authorized Nuclear Inspection Agency for review; and 6) Audit records shall include as a minimum; a. Written procedures; b. Checklists; c. Reports; d. Written replies; and e. Completion of corrective actions. Performance of Authorized Inspection Agency audits required by ASME QAI-1 and NB-263, RCI-1 shall be addressed in the Quality Assurance Manual.
Part 3, 1.6.7.2 s) s) Audits A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Audit frequency shall be specified in the organization's Quality Assurance Manual. Audits shall be conducted at least annually (within 12 months) to verify compliance with Quality Assurance Program requirements, performance criteria and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the required annual audit need only include those areas of responsibility required to be continually maintained such as training, audits, organizational structure, Quality Assurance Program revisions, etc. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with the current requirements of NQA-1; 3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program; 4) Requirements for follow-up actions for any deficiencies noted during the audit; 5) Audit records and applicable documentation shall be made available to the Authorized Nuclear Inspection Agency for review; and 6) Audit records shall include as a minimum: a. written procedures; b. checklists; c. reports; d. written replies; and e. completion of corrective actions. Performance of Authorized Inspection Agency audits required by ASME QAI-1 and NB-263, RCI-1	**Part 3, 1.6.7.2 s)** s) Audits A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Internal and External Audit frequency shall be specified in the organization's Quality Assurance Manual. Internal Audits shall be conducted at least annually (within 12 months) to verify compliance with Quality Assurance Program requirements, performance criteria and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the ~~required annual~~ internal audit need only include those areas of responsibility required to be continually maintained such as training, audits, organizational structure, Quality Assurance Program revisions, etc. External audits (e.g., Supplier audits) shall be performed on a triennial basis and supplemented by annual evaluations of the Supplier's performance to determine if the regular schedule audit frequency shall be maintained or decreased or if other corrective action is required. A continuous or ongoing evaluation of the Supplier's performance may be conducted in lieu of the annual evaluations, provided that the results are reviewed in order to determine if corrective action is required. A grace period of 90 days may be applied to scheduled audits and annual evaluations of supplier performance. When the grace period is used, the next scheduled date for the activity shall be based on the activity schedule date and not on the date the activity was actually performed. If the activity is performed early, the next schedule date shall be based on the date the activity was actually performed. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel

shall be addressed in the Quality Assurance Manual.	not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with the current requirements of NQA-1; 3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program; 4) Requirements for follow-up actions for any deficiencies noted during the audit; 5) Audit records and applicable documentation shall be made available to the Authorized Nuclear Inspection Agency for review; and 6) Audit records shall include as a minimum: a. written procedures; b. checklists; c. reports; d. written replies; and e. completion of corrective actions. Performance of Authorized Inspection Agency audits required by ASME QAI-1 and NB-263, RCI-1 shall be addressed in the Quality Assurance Manual.
Part 3, 1.6.8.2 s) s) Audits A comprehensive system of planned and periodic audits of the “NR” Certificate Holder’s Quality Assurance Program shall be performed. Audit frequency shall be specified in the organization’s Quality Assurance Manual. Audits shall be conducted at least annually (within 12 months) to verify compliance with Quality Assurance Program requirements, performance criteria and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the required annual audit need only include those areas of responsibility required to be continually maintained such as training, audits, organizational structure, Quality Assurance Program revisions, etc. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with recognized standards, such as NQA-1; 3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program; 4) Requirements for follow-up actions for any deficiencies noted during the audit; 5) Audit records and applicable documentation shall be made available to the Authorized Nuclear Inspection Agency for review; 6) Audit records shall include as a minimum: a. written procedures; b. checklists;	**Part 3, 1.6.8.2 s)** s) Audits A comprehensive system of planned and periodic audits of the “NR” Certificate Holder’s Quality Assurance Program shall be performed. Audit frequency shall be specified in the organization’s Quality Assurance Manual. Audits shall be conducted at least annually (within 12 months) to verify compliance with Quality Assurance Program requirements, performance criteria and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the required annual audit need only include those areas of responsibility required to be continually maintained such as training, audits, organizational structure, Quality Assurance Program revisions, etc. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with recognized standards, such as NQA-1; 3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program; 4) Requirements for follow-up actions for any deficiencies noted during the audit; 5) Audit records and applicable documentation shall be made available to the Authorized Nuclear Inspection Agency for review; 6) Audit records shall include as a minimum: a. written procedures; b. checklists;

c. reports; d. written replies; and e. completion of corrective actions. Performance of Authorized Inspection Agency audits required by ASME QAI-1 and NB-263, RCI-1 shall be addressed in the Quality Assurance Manual.	c. reports; d. written replies; and e. completion of corrective actions. Performance of Authorized Inspection Agency audits required by ASME QAI-1 and NB-263, RCI-1 shall be addressed in the Quality Assurance Manual.

Form "R" Reports, Records, or Documents	Instructions	Minimum Retention Period
d) Administrative record review of the "R" Certificate Holder's administrative processes.	Records supporting completed administrative reviews or audits of procedures or processes required by the "R" Certificate Holder's Quality System Manual, or in combination with the applicable part of the NBIC Part 3, Supplement 6 as it applies to the identified scope listed on the "R" *Certificate of Authorization*.	Subject to review during the triennial evaluation of the certificate holder's Quality System.

1.6 "NR" PROGRAM REQUIREMENTS

1.6.1 SCOPE

a) This section provides requirements that must be met for an organization to obtain a National Board *Certificate of Authorization* to use the "NR" Symbol Stamp for repair/replacement activities to nuclear items constructed in accordance with the requirements of the ASME Code or other internationally recognized codes or standards for construction or inservice inspection of nuclear facilities.

b) For administrative requirements to obtain or renew a National Board "NR" *Certificate of Authorization* and the "NR" Symbol Stamp, refer to National Board Procedure NB-417, *Accreditation of "NR" Repair Organizations*.

1.6.2 GENERAL

a) An organization applying for an "NR" *Certificate of Authorization* shall have a written Quality Assurance Program (QAP) that details the specific requirements to be met based on the intended category of activities selected by that organization as described below and shown in Table 1.6.2. Controls used, including electronic capabilities, in the Quality Assurance Program shall be documented in a Quality Assurance Manual (QAM). Controls required to be included within the QAM shall include who, what, when, where, why and how with an understanding that the how can be a reference to an implementation procedure or instruction. Quality activities to be described in the Quality Assurance Program are identified in Section 1.6.5 of this part. Applicants shall address all requirements in their Quality Assurance Program based on the category of activity and scope of work to be performed (organization's capabilities) to which certification is requested.

1) Category 1

Any ASME Section III Code certified item or system requiring repair/replacement activities irrespective of physical location and installation status prior to fuel loading.

2) Category 2

After fuel loading, any item or system under the scope of ASME Section XI requiring repair/replacement activities irrespective of physical location. Based on regulatory or jurisdictional acceptance, Category 2 may be used prior to fuel loading.

REVISE TO READ: ASME Section XI Division 1

3) Category 3

Items other than those covered by Category 1 or Category 2, requiring repair/replacement activities irrespective of physical location, installation status and fuel loading.

b) Repair organizations performing repairs of pressure relief devices in nuclear service shall meet the additional requirements of NBIC Part 4, Section 4 and NBIC Part 4, Supplement 6.

TABLE 1.6.2

"NR" QUALITY ASSURANCE PROGRAM (QAP) REQUIREMENTS

Category of Activity	Owner	Organizations other than Owner
Category 1	10 CFR Part 50 Appendix B[1, 2] and ASME Section III NCA-4000 & NQA-1 Part 1	10 CFR Part 50 Appendix B[1, 2] and ASME Section III NCA-4000 & NQA-1 Part 1
Category 2	10 CFR Part 50, Appendix B[1, 2] or NQA-1[3], Part 1 and ASME Section XI, IWA-4142	10 CFR Part 50, Appendix B[1, 2] supplemented as needed with Owner's QA program; or ASME NQA-1[3], Part 1; or ASME Section III, NCA-4000
Category 3	ASME NQA-1[3], Part 1, or Specify the Standard to which certification is desired	ASME NQA-1[3], Part 1, or Specify the Standard to which certification is desired
Note 1: Code of Federal Regulations (CFR) – rules and regulations published by the executive departments and agencies of the federal government of the United States.		
Note 2: 10 CFR 50 Appendix B – Title 10 of the Code of Federal Regulations Part 50 Appendix B describes the quality assurance criteria for nuclear plants and fuel reprocessing plants.		
Note 3: The Edition (and Addenda, as applicable) of NQA-1 to be utilized shall be the latest endorsed by the Regulatory Authority, or as specified in the Owner's QA Program description reviewed and approved by the Regulatory Authority.		

Revise to read: ASME Section XI Division 1

Revise to read: ASME Section XI Division 1

1.6.2.1 DEFINITIONS

The NBIC terms and definitions shall be supplemented, as applicable, by the terms and definitions of ASME Section III, Section XI, NQA-1, or other standards specified by the Regulatory Authority.

The following terms are as defined in the NBIC Glossary of Terms Section 9:

a) Authorized Inspection Agency

b) Authorized Nuclear Inspection Agency

c) Jurisdiction

d) "NR" Certificate Holder

TABLE 1.6.2.1
ACRONYMS

ASME	American Society of Mechanical Engineers
Applicant	An Organization applying for "NR" *Certificate of Authorization* (new or renewal)
CFR	Code of Federal Regulations
Code	ASME Code of Construction, Section III, Division I, (NCA, NB, NC, ND, NE, NF, NG, and NH) or ASME Section XI Rules for Inservice Inspection of Nuclear Power Plant Components as applicable.
Jurisdiction	cement Authority
NB	er and Pressure Vessel Inspectors
NBIC	National Board Inspection Code
NB-263, RCI-1	Rules for Commissioned Inspectors
NCA	ASME Section III, Subsection NCA, General Requirements for Division 1 and Division 2
NQA–1*	ASME Quality Assurance Requirements for Nuclear Facility Applications
NR	Nuclear Repair
"NR" CH	"NR" Certificate Holder
QA	Quality Assurance
QAI–1	ASME Qualifications for Authorized Inspection
QAM	Quality Assurance Manual
QAP	Quality Assurance Program
QC	Quality Control
WA	ASME Section III, Division 3, Subsection WA, General Requirements

Revise to read: ASME Section XI Division 1

Note:

* Edition(s) endorsed by the Regulatory Authority

1.6.3 PREREQUISITES FOR ISSUING A NATIONAL BOARD "NR" *CERTIFICATE OF AUTHORIZATION* (21)

Before an organization can obtain a National Board "NR" *Certificate of Authorization*, the organization shall:

a) Have and maintain an inspection agreement with an Authorized Nuclear Inspection Agency accepted in accordance with NB-360, *National Board Acceptance of Authorized Inspection Agencies (AIA) Accredited by the American Society of Mechanical Engineers (ASME)*, with accreditation to perform repair and alteration acceptance inspections.

b) Have a written Quality Assurance Program which includes the quality assurance manual and any supporting procedures, instructions and specifications required to comply with this section. The Quality Assurance Program shall address all controls for the intended category and scope of activities requested.

c) Have a current edition of the NBIC.

d) Have available ASME Section XI, the code of construction and referenced code sections and standards appropriate for the scope of work to be performed. ASME Section XI and codes of construction (Editions/Addenda) shall meet the requirements of the Regulatory Authority and the owner.

Revise to read: ASME Section XI Division 1

AINING OR RENEWING A NATIONAL BOARD "NR" *CERTIFICATE OF AUTHORIZATION*

Revise to read: ASME Section XI Division 1

a) Before an "NR" *Certificate of Authorization* will be issued or renewed, the applicant must have the Quality Assurance Program and the implementation of the program reviewed and found acceptable by representatives of the National Board, the Jurisdiction, and the Authorized Nuclear Inspection Agency. The Jurisdiction will be the National Board Member Jurisdiction in which the applicant is located or the location where the Quality Assurance Program is demonstrated/implemented. At the request of the Jurisdiction, or where there is no National Board Member Jurisdiction, the National Board representative shall act on behalf of the Jurisdiction. The implementation of the Quality Assurance Program shall be satisfactorily demonstrated by the organization. Demonstration of implementation shall meet the most stringent (classification) code requirements for the scope and category of work to be specified on the *Certificate of Authorization* or as requested by the applicant.

b) If the applicant is an ASME "N" type *Certificate of Authorization* holder, has satisfactorily demonstrated within the last twelve (12) months the implementation of their Quality Assurance Program and can provide documentation that the organization is capable of implementing its Quality Assurance Program as being in compliance with this section, a further hardware verification implementation may not be necessary.

c) The Regulatory Authority or Jurisdiction, upon request to the National Board, may attend the survey process for an "NR" *Certificate of Authorization* to be issued or renewed.

d) The "NR" *Certificate of Authorization* holder shall be subject to an audit annually by the Authorized Nuclear Inspection Agency to ensure compliance with the Quality Assurance Program.

1.6.5 QUALITY ASSURANCE PROGRAM

a) An applicant or a holder of a National Board "NR" *Certificate of Authorization* ("NR" Certificate Holder) shall have and maintain a written Quality Assurance Program. The Quality Assurance Program shall satisfactorily meet the requirements of this section, and Jurisdictional and Regulatory requirements as applicable. The Quality Assurance Program may be brief or voluminous, depending on the circumstances. It shall be treated confidentially by the National Board and available for review by the Survey Team.

b) Each applicant or "NR" Certificate Holder is responsible for establishing and executing a Quality Assurance Program. The applicant or "NR" Certificate Holder may subcontract activities needed to implement the Quality Assurance Program, as limited by ASME Section III and XI, but responsibility for adherence to the Quality Assurance Program remains with the Applicant or "NR" Certificate Holder.

Revise to read: ASME Section XI Division 1

c) These rules set forth the requirements for planning, managing, and implen's Quality Assurance Program to control and ensure quality is performed and maintained during repair/replacement activities of components, items, parts, and systems for nuclear facilities. These rules are to be the basis for evaluating such programs prior to the issuance or renewal of the National Board "NR" *Certificate of Authorization*. Rules identified in subsections 1.6.6, 1.6.7 and 1.6.8 of this section detail the Quality Assurance Program requirements for each category of activity. These rules are established to meet and follow the requirements specified in NBIC Part 3, Table 1.6.2 of this section.

1.6.6 QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR CATEGORY 1 ACTIVITIES

1.6.6.1 SCOPE

Owners or organizations other than owners shall have a written Quality Assurance Program meeting the criteria specified in NBIC Part 3, Table 1.6.2 for Category 1 activities. The following quality elements shall be specified and described within the QAM.

1.6.6.2 QUALITY PROGRAM ELEMENTS (21)

a) Organization

The provisions identified in ASME NQA-1, Part 1, Requirement 1, shall apply in its entirety. The authority and responsibility for individuals involved in activities affecting quality shall be clearly established and documented throughout the Quality Assurance Program and identified on a functional organizational chart contained within the QA Manual.

b) Statement of Policy and Authority shall:

1) identify the titles of individuals who have the authority and responsibility charged with ensuring the quality program is implemented as described;

2) confirm their freedom in the organization to identify quality problems and to initiate, recommend and provide solutions;

3) include a statement that if there is a disagreement in the implementation of the quality assurance program, the matter is to be referred for resolution to a higher authority and shall be resolved in a manner that will not conflict with code, jurisdiction/regulatory authority or quality program requirements;

4) include a statement of the full support of management; and

5) be dated and signed by a senior management official within the organization.

c) Quality Assurance Program (QAP)

The provisions identified in ASME NQA-1, Part 1, Requirement 2, shall apply, except paragraph 301. Additionally, the following criteria shall be used when developing and maintaining the QAP.

1) The Quality Assurance Program as used in this section shall include a written Quality Assurance Manual, with supporting procedures and instructions used to meet all the requirements of this Section.

2) Qualification of non-destructive examination personnel shall be as required by the code of construction or as specified in the owner's Quality Assurance Program.

3) The "NR" Certificate Holder shall be responsible for advising the Authorized Nuclear Inspection Agency of proposed changes to the Quality Assurance Manual to obtain acceptance of the Authorized Nuclear Inspector Supervisor before putting such changes into effect. The "NR" Certificate Holder shall make a current controlled copy of the Quality Assurance Manual available to the Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor. The Certificate Holder shall be responsible for notifying the Authorized Nuclear Inspector of QAM changes, including evidence of acceptance by the Authorized Nuclear Inspector Supervisor.

4) The Quality Assurance Manual need not be in the same format or sequential arrangement as the requirements in these rules as long as all applicable requirements have been covered.

5) The “NR” Certificate Holder shall implement and maintain a program for qualification, indoctrination, training and maintaining proficiency of personnel involved with quality functions, including personnel of subcontracted services.

6) The “NR” Certificate Holder shall address in their QAM the requirements for interfacing with the owner specified in NBIC Part 3, 1.6.9.

7) Specified controls including responsibilities for personnel shall be described in the quality assurance program.

d) Design Control

The provisions identified in ASME NQA-1, Part 1, Requirement 3, shall apply except Paragraph 601. The following additional requirements shall be considered when applicable:

1) The “NR” Certificate Holder shall establish measures to ensure applicable requirements of the owner’s design specifications, owner’s requirements, and code of construction requirements are correctly translated into drawings, specifications, procedures and instructions.

2) All design documents, including revisions, shall be verified by the “NR” Certificate Holder to be correct and adequate in accordance with the owners requirements.

3) Repair/replacement plans shall be completed prior to performing any work, inspections, examinations or testing; however repair/replacement plans are not required for the design phase of a repair/replacement activity including activities that require design only (except rerating).

4) The repair/replacement plan (see NBIC Part 3, Table 1.6.9) shall identify any applicable Code Edition/Addenda and Code Cases, owner’s requirements and the Construction Code Edition/Addenda utilized to perform the work.

5) The repair/replacement plan shall identify expected life of the item when less than the intended life as specified in the owner’s design specification.

6) The “NR” Certificate Holder shall ensure that specifications, drawings, procedures and instructions do not conflict with the owner’s design specifications. A system must be described in the Quality Assurance Manual to resolve or eliminate such conflicts. Resolution shall consider the Design Specification Requirements, as well as, the owner requirements, Jurisdictional and Regulatory Authority Requirements as applicable.

e) Procurement Document Control

The provisions identified in ASME NQA-1, Part 1, Requirement 4, shall apply. Procurement documents shall require suppliers to provide a Quality Assurance Program consistent with the applicable requirements of ASME Section III and this section.

f) Instructions, Procedures, and Drawings

The provisions identified in ASME NQA-1, Part 1, Requirement 5, shall apply. All activities affecting quality shall be prescribed by documented instructions, procedures or drawings appropriate for the scope of work to be performed. Instructions, procedures or drawings shall describe acceptance criteria to ensure quality activities are accomplished.

g) Document Control

The provisions identified in ASME NQA-1, Part 1, Requirement 6, shall apply. The Quality Assurance Program shall detail measures to control the preparation, review, issuance, use, approval and distribution of all documents related to quality as identified in the applicants Quality Assurance Program. Revisions shall meet the same requirements as the originals unless the applicant specifies other

measures within their program. Measures shall ensure the latest approved documents represent the repair/replacement activities performed.

h) Control of Purchased Material, Items, and Services

The provisions identified in ASME NQA-1, Part 1, Requirement 7 shall apply, except:

1) Procurement of Authorized Inspection Agency services is not applicable as specified in paragraph 507.

2) The decision to perform bid evaluation as described in paragraph 300 is the responsibility of the “NR” Certificate Holder.

3) For Certificates of Conformance specified in paragraph 503 changes, waivers, or deviations including resolution of non-conformances must meet the requirements of ASME Section III and this Section.

4) The provisions identified in ASME NQA-1, Part 1, Requirement 7, paragraph 700 are not applicable to this section.

5) Documentary evidence for items shall conform to the requirements of ASME Section III, NCA and this Section. Materials shall meet the material certification requirements as specified in ASME Section III, NCA-3800 or NCA-4470 as applicable. Documented evidence for ASME stamped items is satisfied by a Manufacturer’s Data Report. Utilization of unqualified source material shall meet the requirements of ASME Section III, NCA-4255.5.

6) The “NR” Certificate Holder may obtain items from an owner, provided the owner provides the required documentation and items are identified to meet Code and the Certificate Holders Quality Assurance Program. The “NR” Certificate Holder shall not be required to audit the owner as an approved supplier, provided the items used are exclusively for the owner and the owner procured and controlled the items under the owner’s Quality Assurance Program.

7) The Quality Assurance Program shall establish controls to ensure all purchased materials, items, and services conform to the requirements of the owner’s design specifications and the code of construction Edition/Addenda used to perform the work. Materials shall meet the requirements specified in ASME Section III, NCA-3800 or NCA-4470 as applicable.

i) Identification and Control of Items

The provisions identified in ASME NQA-1, Part 1, Requirement 8, shall apply and include the following additional requirements:

1) Controls shall assure only correct and acceptable items, parts and components are used or installed when performing repair/replacement activities.

2) Welding, brazing and fusing materials shall be identified and controlled.

3) Required Certified Material Test Reports and Certificates of Conformance shall be received, traceable to the items, reviewed to comply with the material specification and found acceptable.

4) The “NR” Certificate Holder shall utilize checklists to identify required characteristics using accepted procedures, compliance with records received, results of examinations and tests performed, range of values when required, and spaces for inclusion of document numbers and revision levels, signatures initials / stamps and dates of examinations or tests performed, verified, and/or witnessed by the “NR” Certificate Holder’s qualified Representative and Authorized Nuclear Inspector.

j) Control of Processes

The provisions identified in ASME NQA-1, Part 1, Requirement 9, shall apply. Documents used to control processes shall include spaces for signatures, initials, stamps and dates that activities were performed by the Certificate Holder's representative and the Authorized Nuclear Inspector when the processes conforms to the specified acceptance criteria as listed on drawings, procedures, instructions, specifications or other appropriate documents including revisions.

k) Examinations, Tests, and Inspections

The provisions identified in ASME NQA-1, Part 1, Requirement 10, shall apply, except paragraph 700 for inspections during operations is not required.

1) A repair/replacement plan shall be described in the Quality Assurance Manual that addresses required information to perform the work needed for repair/replacement activities. Spaces shall be included for mandatory hold points where witnessing is required by the "NR" Certificate Holder's Qualified Representative, the Authorized Nuclear Inspector or the owner's representative, if required. Work shall not proceed beyond designated mandatory hold points without documented consent as appropriate.

2) The following guidance is provided for information to be included within the repair/replacement plan:

a. A detailed description of repair/replacement activities to be performed;

b. Describe any defects and examination methods used to detect the defects;

c. Defect removal method and requirements for identifying reference points;

d. Any procedures including revisions utilized; (e.g. welding, brazing, heat treat, examination, testing) and material requirements;

e. Required documentation and stamping;

f. Acceptance criteria used to verify acceptability; and

g. Applicable Code editions/addenda and code cases.

3) Repair/Replacement plans and evaluations shall be subject to review by the Jurisdictional and Regulatory Authority when required.

l) Test Control

The provisions identified in ASME NQA-1, Part 1, Requirement 11 shall apply. Testing shall be performed in accordance with written test procedures with acceptance criteria clearly defined. Prerequisites for performing each test to include calibration, equipment, trained personnel, environmental conditions and provisions for data acquisition shall be described. Test results shall be documented and evaluated by qualified personnel.

m) Control of Measuring and Test Equipment

The "NR" Certificate Holder may utilize calibration and test activities performed by subcontractors when surveys and audits are performed. As an alternative to performing a survey and audit for procuring Laboratory Calibration and Test Services, the "NR" Certificate Holder as documented in their Quality Program may accept accreditation of an International Calibration and Test Laboratory Services by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) provided this alternative method is described in the "NR" Certificate Holder's Quality Program and the following requirements are met:

1) The “NR” Certificate Holder shall review and document verification that the supplier of calibration or test services was accredited by an accredited body recognized by the ILAC MRA encompassing ISO/IEC-17025:2005 or 2017, “General Requirements for the Competence of Testing and Calibration Laboratories”.

2) For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges and uncertainties.

3) For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty.

4) The “NR” Certificate Holder’s purchase documents shall include:

   a. Service provided shall be in accordance with their accredited ISO/IEC-17025:2005 or 2017 program and scope of accreditation;

   b. As-found calibration data shall be reported in the certificate of calibration when items are found to be out-of-calibration;

   c. Standards used to perform calibration shall be identified in the certificate of calibration;

   d. Notification of any condition that adversely impacts the laboratories ability to maintain the scope of accreditation;

   e. Any additional technical and/or quality requirements, as necessary, which may include tolerances, accuracies, ranges, and standards; and

   f. Service suppliers shall not subcontract services to any other supplier.

5) The “NR” Certificate Holder shall upon receipt inspection, validate that the laboratory documentation certifies that:

   a. Services provided by the laboratory has been performed in accordance with their ISO/IEC-17025:2005 or 2017 program and performed within their scope; and

   b. Purchase order requirements have been met.

n) Handling, Storage, and Shipping

The provisions of ASME NQA-1, Part 1, and Requirement 13 shall apply.

o) Quality Assurance Records

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

1) Records shall be identifiable and retrievable;

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

3) Forms NR-1 and NVR-1 as applicable shall be completed by the “NR” Certificate Holder upon completion of all repair/replacement activities. Completion of forms, registrations and stamping of the “NR” symbol stamp shall meet the requirements of NBIC Part 3, Section 5. A log shall be maintained in accordance with NBIC Part 3, 5.6;

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

5) Radiographs (digital images or film) may be reproduced provided that:

a. The process shall be subject to owner's approval;

b. The "NR" Certificate Holder is responsible for the process used and shall include a system for controlling and monitoring the accuracy so that the image will provide the same information as the original; and

c. Procedures shall contain requirements for exposure scanning, focusing, contrast, resolution and distinguishing film artifacts as applicable for reproduced images.

6) Records shall be classified, maintained and indexed and shall be accessible to the owner, owner's designee, and the Authorized Nuclear Inspector; and

7) When the "NR" Certificate Holder is the owner, designated records and reports received by the owner, shall be filed and maintained in a manner to allow access by the Authorized Nuclear Inservice Inspector. Suitable protection from deterioration and damage shall be provided by the owner. All records and reports shall be retained as specified in the owners QAP for the lifetime of the component or system.

p) Corrective Action

The provisions identified in ASME NQA-1, Part 1, Requirement 16 shall apply.

1) Measures shall be established to ensure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and other non-conformances are promptly identified and corrected.

2) In the case of significant conditions adverse to quality, the measures shall also ensure that the cause of these conditions be determined and corrected to preclude repetition. The identification of significant conditions adverse to quality, the cause, condition, and the corrective action taken shall be documented and reported to the appropriate levels of management.

3) These requirements shall also extend to the performance of subcontractors' corrective action measures.

q) Inspection or Test Status (not to include operating status)

The provisions identified in ASME NQA-1, Part 1, Requirement 14 shall apply. Measures shall be established to indicate inspection and test status of parts, items, or components during the repair/replacement activity. The system used shall provide positive identification of the part, item, or component by means of stamps, labels, routing cards, or other acceptable methods. The system shall include any procedures or instructions necessary to achieve compliance. Procedures shall be provided for the identification of acceptable and unacceptable items and for the control of status indicators. The authority for application and removal of status indicators shall also be specified.

r) Nonconforming Materials or Items

The provisions identified in ASME NQA-1, Part 1, Requirement 15 shall apply. Measures shall be established to control materials or items that do not conform to requirements to prevent their inadvertent use, including measures to identify and control the proper installation of items and to preclude nonconformance with the requirements of these rules These measures shall include procedures for identification, documentation, segregation when practical, and disposition. Nonconforming items shall be reviewed for acceptance, rejection, or repair in accordance with documented procedures. The responsibility and authority for the disposition of nonconforming items shall be defined. Repaired or replaced items shall be re-examined in accordance with the applicable procedures. Measures that control further processing of a nonconforming or defective item, pending a decision on its disposition, shall be established and maintained. Ultimate disposition of nonconforming items shall be documented.

s) Audits

The provisions identified in ASME NQA-1, Part 1, and Requirement 18 shall apply and shall include the following:

A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Audit frequency shall be specified in the organization's Quality Assurance Manual. Audits shall be conducted at least annually (within 12 months) for any ongoing code activity to verify compliance with Quality Assurance Program requirements, performance criteria and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the required annual audit need only include those areas of responsibility required to be continually maintained such as training, audits, organizational structure, and Quality Assurance Program revisions. The Quality Assurance Manual shall as a minimum describe the following:

1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited;

2) Audit personnel shall be qualified in accordance with the current requirements of ASME NQA-1;

3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program;

4) Requirements for follow-up actions shall be specified for any deficiencies noted during the audit;

5) Audit records and applicable documentation shall be made available to the Authorized Nuclear Inspection Agency for review; and

6) Audit records shall include as a minimum;

   a. Written procedures;

   b. Checklists;

   c. Reports;

   d. Written replies; and

   e. Completion of corrective actions.

   Performance of Authorized Inspection Agency audits required by ASME QAI-1 and NB-263, RCI-1 shall be addressed in the Quality Assurance Manual.

t) Authorized Nuclear Inspector

Measures shall be taken to reference the commissioned rules for National Board Authorized Nuclear Inspector, in accordance with NB-263, RCI-1 *Rules for Commissioned Inspectors*. The "NR" Certificate Holder shall ensure that the latest documents including the Quality Assurance Manual, procedures and instructions are made available to the Authorized Nuclear Inspector. The Authorized Nuclear Inspector shall be consulted prior to the issuance of a repair/replacement plan by the "NR" Certificate Holder in order that the Authorized Nuclear Inspector may select any in-process inspection or hold points when performing repair/replacement activities. The "NR" Certificate Holder shall keep the Authorized Nuclear Inspector informed of progress of the repair/replacement activity so that inspections may be performed. The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless satisfied that all work carried out is in accordance with this Section. The Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor shall have access to areas where work is being performed including subcontractors facilities in order to perform their required duties. The ANI shall be involved in dispositions and verification for non-conformances and corrective actions involving quality or code requirements.

u) Exhibits

Forms and exhibits referenced in the Quality Assurance Manual shall be explained in the text and included as part of the referencing document or as an appendix to the Quality Assurance Manual. Forms shall be controlled and identified to show the latest approved revision, name, and other corresponding references as stated in the Quality Assurance Manual.

1.6.7 QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR CATEGORY 2 ACTIVITIES

1.6.7.1 SCOPE

Revise to read: ASME Section XI Division 1

Organizations other than owners shall have a written Quality Assurance Program meeting one of the criteria specified in Table 1.6.2 of this section. Organizations applying for a Category 2 "NR" *Certificate of Authorization* shall specify in their written Quality Assurance Program which program criteria their Quality Assurance Program follows. Owners shall have a Quality Assurance Program meeting the requirements of either 10 CFR 50, Appendix B or NQA-1 Part 1 and shall include the additional requirements specified in ASME Section XI, IWA-4142 when applicable. Organizations other than the owner shall comply with requirements specified in either 10 CFR 50, Appendix B supplemented as needed with the owner's QAP; NQA-1 Part 1; or NCA-4000. Organizations may elect to choose to follow all the rules specified in one of the allowed QAP criteria specified in Table 1.6.2 or they may elect to combine or supplement requirements from other specified QAP's. When organizations elect to combine QAP requirements, it shall be clearly specified and understood in the QAM which QAP requirement is being followed for each activity specified in their QAM. The following quality elements shall be specified and described within the QAM.

(21) #### 1.6.7.2 QUALITY PROGRAM ELEMENTS

a) Organization

The authority and responsibility for individuals involved in activities affecting quality shall be clearly established and documented throughout the Quality Assurance Program and identified on a functional organizational chart contained within the QA Manual.

b) Statement of Policy and Authority shall:

1) identify the titles of individuals who have the authority and responsibility charged with ensuring the quality program is implemented as described;

2) confirm their freedom in the organization to identify quality problems and to initiate, recommend and provide solutions;

3) include a statement that if there is a disagreement in the implementation of the quality assurance program, the matter is to be referred for resolution to a higher authority and shall be resolved in a manner that will not conflict with code, jurisdiction/regulatory authority or quality program requirements;

4) include a statement of the full support of management; and

5) be dated and signed by a senior management official within the organization.

c) Quality Assurance Program (QAP)

1) Qualification of non-destructive examination personnel shall be as required by the code or as specified in the owner's Quality Assurance Program.

2) Prior to returning an item to service, the owner shall evaluate the suitability of the item subjected to the repair/replacement activity. Corrective actions shall be taken when an item is determined to be deficient or does not satisfy the requirements of this section.

3) The “NR” Certificate Holder shall provide a copy of the Quality Assurance Manual to the owner for review and acceptance. The “NR” Certificate Holder shall make a current controlled copy of the Quality Assurance Manual available to the Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor. When a repair/replacement activity is split between the owner and an “NR” Certificate Holder, each Quality Assurance Program shall comply with this section for their respective activities. The owner shall establish interfaces for assuring this section is met for the two Quality Assurance Programs.

4) The “NR” Certificate Holder shall be responsible for advising the Authorized Nuclear Inspection Agency of proposed changes to the Quality Assurance Manual to obtain acceptance of the Authorized Nuclear Inspector Supervisor before putting such changes into effect. The Certificate Holder shall be responsible for notifying the Authorized Nuclear Inspector of QAM changes, including evidence of acceptance by the Authorized Nuclear Inspector Supervisor.

5) The Quality Assurance Manual need not be in the same format or sequential arrangement as the requirements in these rules as long as all applicable requirements have been covered.

6) The “NR” Certificate Holder shall implement and maintain a program for qualification, indoctrination, training and maintaining proficiency of personnel involved with quality functions, including personnel of subcontracted services.

7) The “NR” Certificate Holder shall address in their QAM the requirements for interfacing with the owner specified in 1.6.9 of this section.

8) Specified controls including responsibilities for personnel shall be described in the quality assurance program.

d) Design Control

1) Repair/replacement activities, code edition and addenda used shall correspond with the owner’s Inservice Inspection Program unless later code editions and addenda have been accepted by the owner, the Enforcement and/or the Regulatory authority having jurisdiction at the plant site.

2) The repair/replacement plan (see NBIC Part 3, 1.6.7.2 j)) shall identify expected life of the item when less than the intended life as specified in the owner’s requirements and the owner shall be advised of the condition.

Revise to read: ASME Section XI Division 1

R” Certificate Holder shall assure that specifications, drawings, procedures and instructions do not conflict with the owner’s requirements. A system must be described in the Quality Assurance Manual to resolve or eliminate such conflicts. Resolution shall consider the design specification requirements, as well as, the owner Requirements, Jurisdictional and Regulatory requirements as applicable.

4) ASME Section XI establishes that the owner is responsible for design in connection with repair/replacement activities. The “NR” Certificate Holder must ensure that the design specification, drawings, or other specifications or instructions furnished by the owner satisfy the code edition and addenda of the owner’s requirements. To satisfy this requirement, the “NR” Certificate Holder shall establish requirements that correctly incorporate the owner’s requirements into their specifications, drawings, procedures, and instructions, which may be necessary to carry out the work. The “NR” Certificate Holder’s system shall include provisions to ensure that the appropriate quality standards are specified and included in all quality records. These records shall be reviewed for compliance with the owner’s requirements and the requirements of ASME Section XI.

Revise to read: ASME Section XI Division 1

e) Procurement Document Control

Revise to read: ASME Section XI Division 1

Procurement documents shall require suppliers to provide a Quality Assurance Program consistent with the applicable requirements of ASME Section III, NCA and this section. Documents for procurement of materials, items, and subcontracted services shall include requirements to the extent necessary to ensure compliance with the owner's requirements and IWA-4000 of ASME Section XI. To the extent necessary, procurement documents shall require suppliers to maintain a Quality Assurance Program consistent with the applicable requirements of the edition and addenda of the code of construction to which the items are constructed. Measures shall be established to ensure that all purchased material, items, and services conform to these requirements.

f) Instructions, Procedures, and Drawings

Repair/replacement plans and any verification of acceptability (evaluations) shall be subject to review by Jurisdiction and Regulatory Authorities having jurisdiction at the plant site. Activities affecting quality shall be prescribed by documented instructions, procedures or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative and qualitative criteria for determining that activities affecting quality have been satisfactorily accomplished. The "NR" Certificate Holder shall maintain a written description of procedures, instructions, or drawings used by the organization for control of quality and examination requirements detailing the implementation of the Quality Assurance Program requirements. Copies of these procedures shall be readily available to the Authorized Nuclear Inspector and Authorized Nuclear Inservice Inspector, as applicable.

g) Document Control

The program shall include measures to control the issuance, use, and disposition of documents, such as specifications, instructions, procedures, and drawings, including changes thereto. These measures shall ensure that the latest applicable documents, including changes, are reviewed for adequacy and approved for release by authorized personnel and distributed for use at the location where the prescribed activity is performed.

Revise to read: ASME Section XI Division 1

h) Control of Purchased Material, Items, and Services

Purchase of materials and small products shall meet the requirements specified in ASME Section XI, IWA 4142. Measures shall be established to ensure that purchased material, items, and services conform to the owner's requirements and applicable edition and addenda of the code of construction and ASME Section XI. These measures shall include identification for material traceability. Provisions shall be identified for source evaluation and objective evidence shall be provided evidencing quality standards for material examination upon receipt.

Revise to read: ASME Section XI Division 1

tion and Control of Items

1) Measures shall be established for identification and control of material and items, including partially fabricated assemblies. These measures shall ensure that identification is maintained and traceable, either on the material or component, or on records throughout the repair/replacement activity. These measures shall be designed to prevent the use of incorrect or defective items and those which have not received the required examinations, tests, or inspections.

2) Identification for traceability shall be applied using methods and materials that are legible and not detrimental to the component or system involved. Such identification shall be located in areas that will not interfere with the function or quality aspects of the item.

3) Certified Material Test Reports shall be identified as required by the applicable material specification in ASME Section II and shall satisfy any additional requirements specified in the original code of construction. The Certified Material Test Report or Certificate of Compliance need not be duplicated for submission with compliance documents when a record of compliance and satisfactory reviews

of the Certified Material Test Report and Certificate of Compliance is provided. Quality documents shall provide a record that the Certified Material Test Report and Certificate of Compliance have been received, reviewed, and found acceptable. When the “NR” Certificate Holder authorizes a subcontracted organization to perform examinations and tests in accordance with the original code of construction, the “NR” Certificate Holder shall certify compliance either on a Certified Material Test Report or Certificate of Compliance that the material satisfies the original code of construction requirements.

j) Control of Processes

1) The “NR” Certificate Holder shall operate under a controlled system such as process sheets, checklists, travelers, plans or equivalent procedures. Measures shall be established to ensure that processes such as welding, nondestructive examination, and heat treating are controlled in accordance with the rules of the applicable section of the ASME Code and are accomplished by qualified personnel using qualified procedures.

2) Process sheets, checklists, travelers, or equivalent documentation shall be prepared, including the document numbers and revisions to which the process conforms with space provided for reporting results of completion of specific operations at checkpoints of repair/replacement activities.

k) Examinations, Tests, and Inspections Revise to read: ASME Section XI Division 1

1) A repair/replacement plan shall be prepared in accordance with the Quality Assurance Program whenever repair/replacement activities are performed. As a minimum, the repair/replacement plan shall include the requirements specified in ASME Section XI, IWA-4150.

2) In-process and final examinations and tests shall be established to ensure conformance with specifications, drawings, instructions, and procedures which incorporate or reference the requirements and acceptance criteria contained in applicable design documents. Inspection, test and examination activities to verify the quality of work shall be performed by persons other than those who performed the activity being examined. Such persons shall not report directly to the immediate supervisors responsible for the work being examined.

3) Process sheets, travelers, or checklists shall be prepared, including the document numbers and revision to which the examination or test is to be performed, with space provided for recording results.

4) Mandatory hold/inspection points at which witnessing is required by the “NR” Certificate Holder’s representative or the Authorized Nuclear Inspector/Authorized Nuclear Inservice Inspector shall be indicated in the controlling documents. Work shall not proceed beyond mandatory hold/inspection points without the consent of the “NR” Certificate Holder’s representative or the Authorized Nuclear Inspector/Authorized Nuclear Inservice Inspector, as applicable.

l) Test Control

1) Testing shall be performed in accordance with the owner’s written test procedures or procedures acceptable to the owner, that incorporate or reference the requirements and acceptance criteria contained in applicable design documents.

2) Test procedures shall include provisions for ensuring that prerequisites for the given test have been met, that adequate instrumentation is available and used, and that necessary monitoring is performed. Prerequisites may include calibrated instrumentation, appropriate equipment, trained personnel, condition of test equipment, the item to be tested, suitable environmental conditions, and provisions for data acquisition.

3) Test results shall be documented and evaluated to ensure that test requirements have been satisfied.

m) Control of Measuring and Test Equipment

The "NR" Certificate Holder may utilize calibration and test activities performed by subcontractors when surveys and audits are performed. As an alternative to performing a survey and audit for procuring Laboratory Calibration and Test Services, the "NR" Certificate Holder as documented in their Quality Program may accept accreditation of an International Calibration and Test Laboratory Services by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) provided this alternative method is described in the "NR" Certificate Holder's Quality Program and the following requirements are met:

1) The "NR" Certificate Holder shall review and document verification that the supplier of calibration or test services was accredited by an accredited body recognized by the ILAC MRA encompassing ISO/IEC-17025:2005 or 2017, "General Requirements for the Competence of Testing and Calibration Laboratories";

2) For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges and uncertainties;

3) For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty;

4) The "NR" Certificate Holder's purchase documents shall include:

   a. Service provided shall be in accordance with their accredited ISO/IEC-17025:2005 or 2017 program and scope of accreditation;

   b. As-found calibration data shall be reported in the certificate of calibration when items are found to be out-of-calibration;

   c. Standards used to perform calibration shall be identified in the certificate of calibration;

   d. Notification of any condition that adversely impacts the laboratories ability to maintain the scope of accreditation;

   e. Any additional technical and/or quality requirements, as necessary, which may include tolerances, accuracies, ranges, and standards; and

   f. Service suppliers shall not subcontract services to any other supplier.

5) The "NR" Certificate Holder shall upon receipt inspection, validate that the laboratory documentation certifies that:

   a. Services provided by the laboratory has been performed in accordance with their ISO/IEC-17025:2005 or 2017 program and performed within their scope; and

   b. Purchase order requirements have been met.

n) Handling, Storage, and Shipping

Measures and controls shall be established to maintain quality requirements for handling, storage, and shipping of parts, materials, items, and components.

o) Quality Assurance Records

Revise to read: ASME Section XI Division 1

Documentation, reports and records shall be in accordance with ~~ASME~~ Section XI, IWA-6000.

1) The owner is responsible for designating records to be maintained. Measures shall be established for the "NR" Certificate Holder to maintain these records [see NBIC Part 3, 1.6.7.2.o) 2)] required for Quality Assurance of repair/replacement activities. These shall include documents such as records

of materials, manufacturing, examination, and test data taken before and during repair/replacement activity. Procedures, specifications, and drawings used shall be fully identified by pertinent material or item identification numbers, revision numbers, and issue dates. The records shall also include related data such as personnel qualification, procedures, equipment, and related repairs. The “NR” Certificate Holder shall take such steps as may be required to provide suitable protection from deterioration and damage for records while in his care. Also, it is required that the “NR” Certificate Holder have a system for correction or amending records that satisfies the owner’s requirements. These records may be either the original or a reproduced, legible copy and shall be transferred to the owner upon request.

2) Records to be maintained as required in NBIC Part 3, 1.6.7.2 o) 1) above shall include the following, as applicable:

   a. An index that details the location and individual responsible for maintaining the records;

   b. Manufacturer’s Data Reports, properly executed, for each replacement component, part, appurtenance, piping system, and piping assembly, when required by the design specification or the owner;

   Revise to read: ASME Section XI Division 1

   c. The required as-constructed drawings certified as to correctness;

   d. Copies of applicable Certified Material Test Reports and Certificates of Compliance;

   e. As-built sketch(es) including tabulations of materials repair/replacement procedures, and instructions to achieve compliance with ASME Section XI;

   f. Nondestructive examination reports, including results of examinations, shall identify the name and certification level of personnel interpreting the examination results. Final radiographs shall be included where radiography has been performed. Radiographs may be microfilmed or digitally reproduced in accordance with the requirements listed in ASME Section V, Article 2, Mandatory Appendix VI. The accuracy of the reproduction process shall be verified and monitored for legibility, storage, retrievability and reproduction quality;

   Revise to read: ASME Section XI Division 1

   g. Records of heat treatments may be either the heat treatment chart[illegible]tion of heat treatment time and temperature data certified by the “NR” Certificate Holder. Heat treatments performed by the material manufacturer to satisfy requirements of the material specifications may be reported on the Certified Material Test Report; and

   h. Nonconformance reports shall satisfy IWA-4000 of ASME Section XI and shall be reconciled by the owner prior to certification of the Form NR-1 or NVR-1, as applicable.

3) After a repair/replacement activity, all records including audit reports required to verify compliance with the applicable engineering documents and the “NR” Certificate Holder’s Quality Assurance Program, shall be maintained at a place mutually agreed upon by the owner and the “NR” Certificate Holder. The “NR” Certificate Holder shall maintain records and reports for a period of five years after completion of the repair/replacement activity.

4) When the “NR” Certificate Holder is the owner, designated records and reports received by the owner, shall be filed and maintained in a manner to allow access by the Authorized Nuclear Inservice Inspector. Suitable protection from deterioration and damage shall be provided by the owner. These records and reports shall be retained as specified in the owners QAP for the lifetime of the component or system.

5) The original of the completed Form NR-1 or Form NVR-1, as applicable, shall be registered with the National Board and, if required, a copy forwarded to the Jurisdiction where the nuclear power plant is located. A log shall be maintained in accordance with NBIC Part 3, 5.6.

p) Corrective Action

1) Measures shall be established to ensure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and other nonconformances are promptly identified, controlled and corrected.

2) In the case of significant conditions adverse to quality, the measures shall also ensure that the cause of these conditions be determined and corrected to preclude repetition. The identification of significant conditions adverse to quality, the cause, condition, and the corrective action taken shall be documented and reported to the appropriate levels of management.

3) Corrective action requirements shall also extend to the performance of subcontractors' activities.

q) Inspection or Test Status (not to include operating status)

Measures shall be established to indicate examination and test status of parts, items, or components during the repair/replacement activity. The system used shall provide positive identification of the part, item, or component by means of stamps, labels, routing cards, or other acceptable methods. The system shall include any procedures or instructions necessary to achieve compliance. Also, measures shall be provided for the identification of acceptable and unacceptable items. They shall also include procedures for control of status indicators, including the authority for application and removal of status indicators.

r) Nonconforming Materials or Items

1) Measures shall be established to control materials or items that do not conform to specified requirements to prevent their inadvertent use, including measures to identify and control the proper installation of items and to preclude nonconformance with the requirements of these rules. These measures shall include procedures for identification, documentation, segregation, and disposition. Nonconforming items shall be reviewed for acceptance, rejection, or repair in accordance with documented procedures. The responsibility and authority for the disposition of nonconforming items shall be defined. Repaired/replaced or altered items shall be re-examined in accordance with the applicable procedures.

2) Measures that control further processing of a nonconforming or defective item, pending a decision on its disposition, shall be established and maintained. Ultimate disposition of nonconforming items shall be documented.

s) Audits

A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Audit frequency shall be specified in the organization's Quality Assurance Manual. Audits shall be conducted at least annually (within 12 months) to verify compliance with Quality Assurance Program requirements, performance criteria and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the required annual audit need only include those areas of responsibility required to be continually maintained such as training, audits, organizational structure, Quality Assurance Program revisions, etc. The Quality Assurance Manual shall as a minimum describe the following:

1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited;

2) Audit personnel shall be qualified in accordance with the current requirements of NQA-1;

3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program;

4) Requirements for follow-up actions for any deficiencies noted during the audit;

5) Audit records and applicable documentation shall be made available to the Authorized Nuclear Inspection Agency for review; and

6) Audit records shall include as a minimum:

a. written procedures;

b. checklists;

c. reports;

d. written replies; and

e. completion of corrective actions.

Performance of Authorized Inspection Agency audits required by ASME QAI-1 and NB-263, RCI-1 shall be addressed in the Quality Assurance Manual.

t) Authorized Nuclear Inspector

Measures shall be taken to reference the commissioned rules for National Board Authorized Nuclear Inspector, in accordance with NB-263, RCI-1 *Rules for Commissioned Inspectors*. The "NR" Certificate Holder shall ensure that the latest documents including the Quality Assurance Manual, procedures and instructions are made available to the Authorized Nuclear Inspector. The Authorized Nuclear Inspector shall be consulted prior to the issuance of a repair/replacement plan by the "NR" Certificate Holder in order that the Authorized Nuclear Inspector may select any in process inspection or hold points when performing repair/replacement activities. The "NR" Certificate Holder shall keep the Authorized Nuclear Inspector informed of progress of the repair/replacement activity so that inspections may be performed. The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless satisfied that all work carried out is in accordance with this section. The Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor shall have access to areas where work is being performed including subcontractors facilities in order to perform their required duties. The ANI shall be involved in dispositions and verification for nonconformances and corrective actions involving quality or code requirements.

u) Exhibits

Forms and exhibits referenced in the Quality Assurance Manual shall be explained in the text and included as part of the referencing document or as an appendix to the Quality Assurance Manual. Forms shall be controlled and identified to show the latest approved revision, name, and other corresponding references as stated in the Quality Assurance Manual.

1.6.8 QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR CATEGORY 3 ACTIVITIES

1.6.8.1 SCOPE

Organizations requesting a Category 3 "NR" *Certificate of Authorization* may elect to follow the requirements specified in ASME NQA-1 Part 1 or follow specific Quality Assurance Program requirements outlined in other specified standards as required by the owner, Regulatory Authority or Jurisdiction. Organizations shall specify in the QAM what QAP requirements are followed. When standards other than ASME NQA-1 are followed, the organization shall have available a copy of that standard for review by the NB Survey Team and the ANIA, as applicable. Each organization shall, as a minimum, include in their written QAM the specified elements listed in Category 1 and/or 2 (1.6.6, 1.6.7) QAP requirements. Additional requirements, as specified within NBIC Part 3, 1.6.8 and 1.6.9 shall be included within the QAP. Also, limitations or additions to ASME NQA-1, as specified for Category 1 or 2 may be incorporated and referenced within the QAM.

(21) **1.6.8.2 QUALITY PROGRAM ELEMENTS**

a) Organization

The authority and responsibility for individuals involved in activities affecting quality shall be clearly established and documented throughout the Quality Assurance Program and identified on a functional organizational chart contained within the QA Manual.

b) Statement of Policy and Authority shall:

1) identify the titles of individuals who have the authority and responsibility charged with ensuring the quality program is implemented as described;

2) confirm their freedom in the organization to identify quality problems and to initiate, recommend and provide solutions;

3) include a statement that if there is a disagreement in the implementation of the quality assurance program, the matter is to be referred for resolution to a higher authority and shall be resolved in a manner that will not conflict with code, jurisdiction/regulatory authority or quality program requirements;

4) include a statement of the full support of management; and

5) be dated and signed by a senior management official within the organization.

c) QAP

The quality assurance program shall be documented by written policies, procedures and instructions. It shall account for special controls, processes, test equipment, tools and skills to obtain quality and for verification of quality by inspections and tests. Indoctrination, training and maintaining proficiency of personnel effecting quality shall be described. The status, adequacy and effectiveness of the QAP shall be regularly reviewed by management. The scope shall be included within the written QAM. The “NR” Certificate Holder shall make a current controlled copy of the Quality Assurance Manual available to the Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor. The “NR” Certificate Holder shall address in their QAM the requirements for interfacing with the owner specified in 1.6.9 of this section. Specified controls including responsibilities for personnel shall be described in the quality assurance program.

d) Design Control

Established measures to assure applicable quality standards and regulatory requirements are accurately specified and translated into design documents. Any deviations shall be identified and controlled. Control measures (such as review, approval, release, distribution and revisions) for suitability of materials, parts, equipment, procedures, instructions and processes, shall be performed to ensure adherence to specified design basis requirements. Qualifications, responsibilities and certifications of design personnel shall be clearly defined within the quality assurance program.

e) Procurement Document Control

Documents for procurement of material, equipment and services shall ensure regulatory requirements, design bases and other quality requirements are included or referenced. Procurement documents shall require contractors or subcontractors provide a Quality Assurance Program consistent with the provisions specified herein. Controls necessary to ensure materials, equipment, and services meet specified design criteria shall be clearly described within the quality assurance program.

f) Instructions, Procedures, and Drawings

Activities affecting quality shall be accomplished in accordance with prescribed instructions, procedures or drawings and shall include appropriate quantitative or qualitative acceptance criteria to determine activities are satisfactorily accomplished.

g) Document Control

Shall define measures to control the preparation, issuance, use, review approval, revisions and distribution of all documents, including procedures, instructions and drawings related to quality. Responsibilities shall be described within the quality program.

h) Control of Purchased, Materials, Items and Services

Purchased material, items and services shall conform to the procurement documents. Measures shall be established for source evaluation and selection, objective evidence of quality, inspections at the source and examination of products upon delivery. Effectiveness of quality of suppliers shall be assessed by the applicant or designee at specified intervals. Documented evidence shall be performed and made available to assure materials and services conform to procurement documents, quality procedures and instructions.

i) Identification and Control of Items

Specified controls shall ensure only correct and acceptable items, parts and components are used and installed and traceable to required documents such as certified material test reports, certificates of conformance, or data reports. These controls shall include traceability on the items or on records traceable to the items during fabrication and final acceptance and test.

j) Control of Processes

Documents used to control processes shall be prepared, including the document numbers and revision to which the process conforms and shall include space for providing reporting of results of specific operations at checkpoints of repair/replacement activity, and provide spaces for signatures, initials, stamps and dates for activities performed by the Certificate Holders' representative and the Authorized Nuclear Inspector. Special processes including welding, nondestructive examinations, heat treating, and bending are performed using qualified and approved procedures and qualified personnel in accordance with applicable codes, standards and other specified criteria.

k) Examinations, Tests, and Inspections

A repair / replacement plan, developed in accordance with Table 1.6.9, shall address all required information for performing examinations, tests and inspections including but not limited to:

1) Establishing hold points;

2) Identifying procedures, methods, acceptance criteria;

3) Defects identified, removal methods, welding, brazing, fusing, and material requirements, reference points used for identification; and

4) Evaluations of results

Examinations, tests and inspections shall be performed using trained and qualified personnel. Personnel records for qualification and training shall be available for review.

l) Test Control

Tests shall be performed using written procedures identifying prerequisites, acceptance limits, calibration, equipment, personnel qualifications, environmental conditions, and required documentation.

Personnel responsibilities shall be described for performance, acceptance/inspection and documenting results.

m) Control of Measuring and Test Equipment

The "NR" Certificate Holder may utilize calibration and test activities performed by subcontractors when surveys and audits are performed. As an alternative to performing a survey and audit for procuring Laboratory Calibration and Test Services, the "NR" Certificate Holder as documented in their Quality Program may accept accreditation of an International Calibration and Test Laboratory Services by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) provided this alternative method is described in the "NR" Certificate Holder's Quality Program and the following requirements are met:

1) The "NR" Certificate Holder shall review and document verification that the supplier of calibration or test services was accredited by an accredited body recognized by the ILAC MRA encompassing ISO/IEC-17025:2005 or 2017, "General Requirements for the Competence of Testing and Calibration Laboratories";

2) For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges and uncertainties;

3) For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty;

4) The "NR" Certificate Holder's purchase documents shall include:

   a. Service provided shall be in accordance with their accredited ISO/IEC-17025:2005 or 2017 program and scope of accreditation;

   b. As-found calibration data shall be reported in the certificate of calibration when items are found to be out-of-calibration;

   c. Standards used to perform calibration shall be identified in the certificate of calibration;

   d. Notification of any condition that adversely impacts the laboratories ability to maintain the scope of accreditation;

   e. Any additional technical and/or quality requirements, as necessary, which may include tolerances, accuracies, ranges, and standards; and

   f. Service suppliers shall not subcontract services to any other supplier.

5) The "NR" Certificate Holder shall upon receipt inspection, validate that the laboratory documentation certifies that:

   a. Services provided by the laboratory has been performed in accordance with their ISO/IEC-17025:2005 or 2017 program and performed within their scope; and

   b. Purchase order requirements have been met.

n) Handling, Storage, and Shipping

Processes or procedures shall be established to prevent damage, deterioration or misuse of material, items or components used and stored. Controls for handling, shipping, storage, cleanliness and preservation shall be specified in the quality program.

o) Records

1) All quality related records shall be classified, identified, verified, maintained, distributed retrievable, and accessible. When the "NR" Certificate Holder is the owner, designated records and reports

received by the owner, shall be filed and maintained in a manner to allow access by the Authorized Nuclear Inservice Inspector (ANII). Suitable protection from deterioration and damage shall be provided by the owner. These records and reports shall be retained as specified in the owner's QAP for the lifetime of the component or system. Records to support evidence of activities affecting quality shall include as applicable:

a. Inspections and acceptance criteria/results;

b. Tests performed and supporting reports;

c. Procedures/instructions;

d. Qualification of personnel, procedures, and equipment;

e. Types of observations and results;

f. Audits;

g. Nonconformances; and

h. Corrective actions.

2) The original of the completed Form NR-1 or Form NVR-1, as applicable, shall be registered with the National Board and, if required, a copy forwarded to the Jurisdiction where the nuclear power plant is located. A log shall be maintained in accordance with NBIC Part 3, 5.6.

p) Corrective Action

1) Measures shall be established to ensure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and other nonconformances are promptly identified and corrected.

2) In the case of significant conditions adverse to quality, the measures shall also ensure that the cause of these conditions be determined and corrected to preclude repetition. The identification of significant conditions adverse to quality, the cause, condition, and the corrective action taken shall be documented and reported to the appropriate levels of management.

3) Corrective action requirements shall also extend to the performance of subcontractors' activities.

q) Inspection or Test Status

Measures shall be established to indicate inspection and test status of parts, items or components during repair/replacement activity. Measures shall include identification, procedures, control indicators (acceptable, unacceptable) and responsibility of personnel.

r) Nonconforming Material or Items

Measures to control material or items, nonconforming to specified criteria shall be established. Measures shall include identifying, controlling, documenting, reviewing, verifying, dispositioning and segregation when practical.

s) Audits

A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Audit frequency shall be specified in the organization's Quality Assurance Manual. Audits shall be conducted at least annually (within 12 months) to verify compliance with Quality Assurance Program requirements, performance criteria and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the required annual audit need only include those areas of responsibility required to be continually maintained such as training,

audits, organizational structure, Quality Assurance Program revisions, etc. The Quality Assurance Manual shall as a minimum describe the following:

1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited;

2) Audit personnel shall be qualified in accordance with recognized standards, such as NQA-1;

3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program;

4) Requirements for follow-up actions for any deficiencies noted during the audit;

5) Audit records and applicable documentation shall be made available to the Authorized Nuclear Inspection Agency for review;

6) Audit records shall include as a minimum:

a. written procedures;

b. checklists;

c. reports;

d. written replies; and

e. completion of corrective actions.

Performance of Authorized Inspection Agency audits required by ASME QAI-1 and NB-263, RCI-1 shall be addressed in the Quality Assurance Manual.

t) Authorized Nuclear Inspector

Qualifications and duties shall be as specified in ASME QAI-1 and NB-263, RCI-1 for the Authorized Inspection Agencies, Authorized Nuclear Inspector and the Authorized Nuclear Inspector Supervisor. Additional requirements are specified in NBIC Part 3, 1.6.6.2 s), 1.6.7.2 s), and 1.6.9.

u) Exhibits

Quality related forms and exhibits described in the Quality Assurance Program shall be identified, controlled and where applicable included as a reference document within the QAM or referenced procedures.

1.6.9 INTERFACE WITH THE OWNER'S REPAIR/REPLACEMENT PROGRAM (FOR CATEGORIES 1, 2, AND 3 AS APPLICABLE)

Revise to read: ASME Section XI Division 1

owner's repair/replacement program shall meet the following:

a) The "NR" Certificate Holder's repair/replacement plan (see Table 1.6.9) shall be subject to the acceptance of the owner and the owner's Authorized Nuclear Inservice Inspector (ANII) and shall be subject to review by the Jurisdiction and Regulatory Authorities having jurisdiction at the plant site.

b) Repair/Replacement activities of nuclear components shall meet the requirements of ASME Section III, ASME Section XI, and/or other applicable standard, and the owner's requirements, and shall be subject to verification by the Jurisdiction and Regulatory Authorities having jurisdiction at the plant site.

c) Documentation of the repair/replacement activities of nuclear components shall be recorded on the Report of Repair/Replacement Activities of Nuclear Components and Systems for Nuclear Facilities, Form NR-1, or Report of Repair/Replacement Activities for Nuclear Pressure Relief Devices, Form NVR-1, in accordance with the NBIC Part 3, Section 5. The completed forms shall be signed by a

representative of the “NR” Certificate Holder and the Authorized Nuclear Inspector when the repair/replacement activity meets the requirements of this section. For repair/replacement activities that involve design changes, Form NR-1, or Form NVR-1, as applicable, shall indicate the organization responsible for the design or design reconciliation in accordance with the owner’s requirements.

d) The “NR” Certificate Holder shall provide a copy of the signed Form NR-1 or Form NVR-1, as applicable, to the owner, the Enforcement, and the Regulatory Authority if required, and the Authorized Nuclear Inspection Agency. The original Form NR-1 or Form NVR-1, as applicable, shall be registered with the National Board by the “NR” Certificate Holder. A NB registration log shall be maintained by the “NR” Certificate Holder. See NBIC Part 3, Section 5.5 and 5.6.

e) The “NR” Certificate Holder shall provide a nameplate/stamping for repair/replacement activities for each nuclear component unless otherwise specified by the owner’s Quality Assurance Program. The required information and format shall be as shown in NBIC Part 3, Section 5.

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: 2021**	B2.1-1/8-231: 2015
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: 2020**
B2.1-1-020: 2018	B2.1-1-207: 2019	**B2.1-4-221: 2021**	**B2.1-1-235: 2020**
B2.1-1-021: 2018	B2.1-1-208: 2019	**B2.1-5A-222: 2022**	
B2.1-1-022: 2018	B2.1-1-209: 2019	**B2.1-5A-223: 2022**	
B2.1-8-023: 2018	B2.1-1-210: 2012	**B2.1-5A-224: 2022**	
B2.1-8-024: 2012	B2.1-1-211: 2012	**B2.1-5A-225: 2022**	
B2.1-8-025: 2012	B2.1-8-212: 2012	**B2.1-5A-226: 2022**	
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	

PROPOSED REVISION OR ADDITION

Item No.

A 22-04

Subject/Title

Clarification on Part 3, 3.3.3 s)

NBIC Location

Part: Repairs and Alterations; Section: 3.3.3; Paragraph: s)

Project Manager and Task Group

Source (Name/Email)

Tom White / Thomas.white@nrg.com

Statement of Need

The paragraph was written for pressure-retaining parts not just vessels as stated later in the first sentence.

Background Information

Researching alteration examples 3.4.4 (g) which states: except as permitted in NBIC Part 3, 3.3.3 s);

Existing Text	Proposed Text
s) Replacement of a pressure-retaining part with a material of different nominal composition and, equal to or greater in allowable stress from that used in the original design, provided the replacement material satisfies the material and design requirements of the original code of construction under which the vessel was built. The minimum required thickness shall be at least equal to the thickness stated on the original Manufacturer's Data Report;	s) Replacement of a pressure-retaining part with a material of different nominal composition and, equal to or greater in allowable stress from that used in the original design, provided the replacement material satisfies the material and design requirements of the original code of construction under which the ~~vessel~~ pressure-retaining item was built. The minimum required thickness shall be at least equal to the thickness stated on the original Manufacturer's Data Report;

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

PART 3, SECTION 1
REPAIRS AND ALTERATIONS — GENERAL AND ADMINISTRATIVE REQUIREMENTS

1.1 SCOPE

a) This part provides requirements and guidelines that apply when performing repairs and alterations to pressure-retaining items.

b) The National Board administers four specific accreditation programs:

1) "R" — Repairs and Alterations to Pressure-Retaining Items

2) "NR" — Repair and Replacement Activities for Nuclear Items

3) "VR" — Repairs to Pressure Relief Valves

4) "T/O" — Test Only of Pressure Relief Valves

c) This part describes some of the administrative requirements for the accreditation of repair organizations. Additional administrative requirements can be found in:

1) NB-415, *Accreditation of* "R" *Repair Organizations*

2) NB-417, *Accreditation of "NR" Repair Organizations*

3) NB-514, *Accreditation of "VR" Repair Organizations*

4) NB-528, *Accreditation of "T/O" Test Only Organizations*

d) Requirements for repairs to pressure relief valves can be found in NBIC Part 4.

1.2 CONSTRUCTION STANDARDS FOR PRESSURE-RETAINING ITEMS

a) ~~R~~Repairs and alterations shall conform~~, insofar as possible,~~ to the edition and addenda of the original code of construction, standard, or specification used during the initial fabrication of the pressure-retaining item, or to a later edition and addenda most applicable to the work planned.

~~a) When the standard governing the original 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.~~

b) If the ~~pressure-retaining item was not constructed using an~~ original code of construction, standard or specification is unknown, ~~to a construction code or standard, or when the standard governing the original construction is not the ASME Code or ASME RTP-1, repairs or alterations shall conform, insofar as possible, to the edition of the construction standard or specification most applicable to the work. Where this is not possible or practicable,~~ or if the use of the original code of construction, standard, or specification is not possible or practicable, it is permissible to use other codes, standards, or specifications most applicable to the work planned, including the ASME Code or ASME RTP-1, provided the "R" or "NR" Certificate Holder has the concurrence of the Inspector and the Jurisdiction where the pressure-retaining item is installed.

c) For historical boilers, ASME, Section I provides rules for design and features of construction.

d) Piping systems are designed for a variety of service conditions such as steam, water, oil, gas, or air. Design requirements for repairs and alterations are to meet the original code of construction or the code most appropriate for the repair or alteration. These systems shall be designed for the most severe conditions of pressure, temperature, loadings, and expected transients considered for normal operation. Allpipe materials, fittings, and valves shall be rated for the maximum service conditions for normal operation. Design corrosion of piping systems should also be considered when determining types of materials and thicknesses.

PART 3, SECTION 4
REPAIRS AND ALTERATIONS — EXAMINATION AND TESTING

4.1 SCOPE

This section provides requirements and guidelines for performing examinations and tests for repairs and alterations to pressure-retaining items.

(21) 4.2 NONDESTRUCTIVE EXAMINATION

a) ~~The n~~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, standard or specification selected for the repair or alteration of ~~for~~ the pressure-retaining item (see NBIC Part 3, 1.2). ~~Weld repairs and alterations shall be subjected to the same nondestructive examination requirements as the original welds~~. Where this is not possible or practicable, alternative NDE methods acceptable to the Inspector and the Jurisdiction where the pressure-retaining item is installed, where required, may be used, provided that all other requirements of this section are met.

b) NDE personnel shall be qualified and certified in accordance with the requirements of the original code of construction. When this is not possible or practicable, NDE personnel may be qualified and certified in accordance with their employer's written practice. ASNT SNT-TC-1A, *Recommended Practice Non-destructive Testing Personnel Qualification and Certification* (2006 edition), or ANSI/ASNT CP-189, *Standard for Qualification and Certification of Nondestructive Testing Personnel* (2006 edition), shall be used as a guideline for employers to establish their written practice. Provisions for training, experience, qualification, and certification of NDE personnel shall be described in the "R" Certificate Holder's written quality system.

4.3 PRESSURE GAGES, MEASUREMENT, EXAMINATION, AND TEST EQUIPMENT

The calibration of pressure gages, measurement, examination, and test equipment, and documentation of calibration shall be performed, as required, by the applicable standard used for construction.

4.4 EXAMINATION AND TEST FOR REPAIRS AND ALTERATIONS

The following requirements shall apply to all repairs and alterations to pressure-retaining items:

a) The integrity of repairs, alterations, and replacement parts used in repairs and alterations shall be verified by examination or test;

b) Testing methods used shall be suitable for providing meaningful results to verify the integrity of the repair or alteration. Any insulation, coatings, or coverings that may inhibit or compromise a meaningful test method shall be removed, to the extent identified by the Inspector;

c) The "R" Certificate Holder is responsible for all activities relating to examination and test of repairs and alterations;

d) Examinations and tests to be used shall be subject to acceptance of the Inspector and, where required, acceptance of the Jurisdiction.

4.4.1 TEST OR EXAMINATION METHODS APPLICABLE TO REPAIRS

Based on the nature and scope of the repair activity, one or a combination of the following examination and test methods shall be applied to repairs and replacement parts used in repairs.

SUPPLEMENT 5
GENERAL REQUIREMENTS FOR REPAIRS AND ALTERATIONS TO YANKEE DRYERS
S5.1 SCOPE

This supplement provides requirements and guidelines for repairs and alterations to Yankee dryer pressure retaining components and shall be used in conjunction with inspection requirements identified in NBIC Part 2, *Inspection* Supplement 5.

S5.2 EXAMINATIONS AND TEST METHODS

~~In addition to the requirements of NBIC Part 3, 4.4.1 and 4.4.2, the following are recommended:~~The following supplemental examination and test methods may be used in addition to the requirements of NBIC Part 3, 4.4.1.and 4.4.2:

a) Acoustic emission testing; and

b) Metallographic examination when thermal damage is suspected due to operational or repair activities.

S5.3 YANKEE DRYER REPAIR METHODS

This supplement provides additional requirements for repair methods to Yankee Dryer pressure-retaining components and shall be used in conjunction with NBIC Part 3, Section 2 through 5 of this part, as appropriate.

S5.3.1 REPLACEMENT PARTS FOR YANKEE DRYERS

a) Yankee dryer replacement pressure-retaining parts shall be fabricated in accordance with the manufacturer's design and the original code of construction. Yankee dryer pressure-retaining parts may include:

   1) shell;

   2) heads;

   3) center shaft, stay, or trunnion;

   4) stay bars;

   5) structural bolting; and

   6) journals.

b) Replacement of non-pressure-retaining parts, when different from the manufacturer's design, shall be evaluated for any possible effect on the pressure-retaining parts.

S5.4 REPAIR GUIDE FOR YANKEE DRYERS

a) Welding or brazing shall not be used on any Yankee dryer pressure-retaining component manufactured from cast iron. The *Manufacturer's Data Report* shall be carefully reviewed to determine the material of construction of each Yankee dryer component such as shell, heads, and journals.

b)

~~a) Weld repairs are permitted on yankee dryer pressure-retaining components manufactured from steel when properly evaluated and completed as described in NBIC Part 3.~~Weld repairs performed in

accordance with NBIC Part 3 are permitted on yankee dryer pressure-retaining components that are manufactured from steel, except that head bolts may not be welded.

~~b)~~c) Structural deterioration or damage caused by corrosion, thinning, or cracking shall not be repaired until its extent has been determined by suitable nondestructive examination.

~~c)~~d) The user shall have a plan covering the scope of the repair. The plan shall ensure that the work involved is compatible with the original design specification and good engineering practices.

~~d)~~e) All repair work shall be documented.

S5.5 ~~PROCEDURES~~ REPAIRS THAT DO NOT REQUIRE STAMPING OR NAMEPLATE ATTACHMENT

~~All repair procedures~~, ~~shall be acceptable to the Inspector, and when verified by the owner-user to not affect pressure-retaining capability of the Yankee dryer, do not require stamping or nameplate attachment. Examples of repairs~~ that do not require stamping or nameplate attachment ~~are:~~The following examples of repairs do not require stamping or nameplate attachment provided the repair procedure has been accepted by the Inspector and the owner or user has verified there will be no effect on the pressure -retaining capability of the yankee dryer.

a) Grinding and machining:

~~1) removal of shell overhung flange;~~

~~2)~~1) removing bolt-stop ring for test specimens;

~~3)~~2) head/shell joint corrosion removal;

~~4)~~3) journal grinding;

~~5)~~4) shell surface grinding (crowning);

~~6)~~5) crack removal;

~~7)~~6) head flange OD reduction during shell grinding; and

~~8)~~7) back spot facing of flange surfaces (head, shell, journal).

b) Metallizing (full face, spot, edge):

1) applying a metallized coating; and

2) grinding of a metallized coating.

c) Epoxy (sealant) repair of steam leaks at bolted joints (using fittings and pumping bolts) and epoxy filling of surface imperfection;

d) Installation of spoiler bars;

e) Maintain/repair/replace internal condensate removal system;

f) Driven plug repair when completed as described in NBIC Part 3, S5.6.3; and

g) Threaded plug repair when completed as described in NBIC Part 3, S5.6.4.

g)h) Installation of head insulation

S5.6 DAMAGE REPAIR

S5.6.1 REPAIR OF LOCAL THINNING

a) A Local Thin Area (LTA) may develop in a pressure-retaining part or may result from the original casting manufacturing process. Inservice thin areas may result from mechanical wear, erosion-corrosion caused by steam and condensate flow, corrosion, impact damage, or grinding for the removal of material flaws.

b) Evaluation of thinning for repair shall consider the unique design and loading characteristics of the Yankee dryer. Local thin areas are often analyzed as specific cases by the finite element method.

1) When a LTA is evaluated by finite element method, analysis should consider the location of the thin area and account for strength provided by the vessel center shaft and heads in addition to the strength provided by the shell alone. Such structural analysis should consider all relevant loads to ensure safe operation of the shell accordingpressure vessel to the De-rate Curve, or other pressure-retaining parts as indicated on the original *Manufacturer's Data Report*.

2) Following evaluation and determination of maximum allowable operating parameters, an LTA can be coated or filled to prevent further wear or deterioration. Grooves and gouges should always be lightly ground to remove sharp notches and edges. Welding or brazing repairs are NOT permitted on cast-iron pressure-retaining components.

3) Where the LTA is of sufficient size to cause a reduction in maximum allowable operating parameters according to the De-rate Curve, an R-2 form shall be submitted.

4) Depending upon the cause of the LTA, further monitoring may be necessary to ensure deterioration has been arrested.

5) Inspection data, including all thickness readings and corresponding locations used to determine the minimum and average thicknesses, and the accompanying stress analysis, should be included in the documentation and retained for the life of the vessel.

S5.6.2 TREATMENT ASSESSMENT OF CRACK-LIKE FLAWS

a) Crack-like flaws are planar flaws that are predominantly characterized by a length and depth with a sharp root radius. They may either be embedded or surface breaking. In some cases it may be advisable to treat volumetric flaws, such as aligned porosity, inclusions, and laps, as planar flaws, particularly when such volumetric flaws may contain microcracks at the root.

1) Knowledge of local stress level and classification, and of flaw origin, type, size, location, and angle relative to the principal stress direction is essential in making determinations regarding remediation. It is also important to know whether the crack is active. Acoustic Emissions testing can be used to determine if the crack is active. Various other methods of nondestructive examination should be employed to determine crack length and depth. Ultrasonics is the recommended sizing technique for depth and inclination of crack-like flaws. Magnetic particle, specifically the wet fluorescent technique, and liquid penetrant methods are applicable in determining the length of a surface flaw. Radiographic and metallographic methods may also be useful. Metallographic analysis is crucial in differentiating between original casting flaws and cracks.

2) Evaluation of crack-like flaws, that have been determined to be cracks is most often accomplished through removal via grinding or machining. Because cast iron is categorized as a

~~brittle material, this is the conservative approach regarding crack-like flaws. Welding or brazing repairs are not permitted for cast iron parts.~~Crack like flaws are most often removed via grinding or machining. Weld repairs are permitted in steel, but not in cast iron. Metal-stitching is permitted as a repair. However this method of repair requires evaluation as to whether a reduction in allowable operating conditions is required. This evaluation shall be performed by the manufacturer or by another qualified source acceptable to the Inspector.

3) Crack-like flaws that have been identified as cracks, but which developed from normal service exposure or excessive operating conditions, shall be remediated by appropriate means regardless of location.

4) Crack-like flaws that have been identified as cracks that developed through non-standard load events, such as by water hoses from operation or firefighting or mechanical damage, shall be evaluated and remediated as necessary. ~~if in the shell. Cracks in other pressure-retaining parts shall be analyzed, documented, and monitored to ensure their presence will not be, or has not been, affected by current operating conditions.~~

5) Crack-like flaws that are not identified as cracks, but which existed in the original material, i.e., material flaws, shall be analyzed, documented, and monitored to ensure their presence will not be, or have not been, affected by current operating conditions.

b) All documents pertaining to ~~the~~ crack-like flaw assessment shall be retained for the life of the vessel. Documentation should address the engineering principles employed, including stress analysis methods and flaw sizing, the source of all material data used, identification of any potential material property degradation mechanisms and the associated influence on the propagation of flaw, and the criteria applied to the assessment procedures.

S5.6.3 DRIVEN PLUG REPAIR

~~Shell~~ Cast iron shell surface imperfections ~~should~~ may be repaired with smooth, driven plugs as described in ASME Section VIII, Div. 1, UCI-78, with the following additional requirements:

a) Maximum plug length (depth) shall be limited to 20% of shell effective thickness, and plug diameter shall not exceed the plug length (depth);

b) Total surface area of plugs shall not exceed 4 sq. in. in an 8 in. diameter circle (2580 sq. mm in a 200 mm diameter circle);

c) Average number of shell plugs shall not exceed 1 plug per 1 sq. ft. (1 plug per 0.1 sq. m) of the surface;

d) The land distance between edges of plugs shall be at least equal to the diameter of the larger plug;

e) The plug material shall conform in all respects to the material specification of the base material;

f) The installed plug shall have an interference fit. The average hole diameter is determined after the plug hole is drilled or reamed. The maximum plug diameter shall not exceed 1.012 times the average hole diameter. This provides an interference fit while minimizing the residual stresses;

g) All plug repair work shall be documented in the form of a plug repair map or other suitable method of recording and retained in the dryer's permanent file.

S5.6.4 THREADED PLUG REPAIR

Casting defects, leaks and local thin areas ~~should~~ may be repaired with threaded plugs as described in ASME Section VIII, Division 1, UCI-78 with the additional requirement that a threaded plug shall not be used in an area subject to ~~dynamic high frequency~~thermal/mechanical fatigue stresses ~~fatigue loading~~ (e.g.,Yankee dryer shell) as determined by the manufacturer or another qualified source acceptable to the Inspector.

S5.7 ALTERATIONS TO YANKEE DRYERS

S5.7.1 SCOPE

This supplement provides additional requirements for alterations to Yankee dryer pressure-retaining components and shall be used in conjunction with NBIC Part 3, Sections 2 through 5, as appropriate.

S5.7.2 ALTERATION TYPES

a) Any change in the Yankee dryer (shell, heads, center shaft, journals, manway covers, fasteners), as described on the original *Manufacturer's Data Report*, which affects the pressure-retaining capability, shall be considered an alteration. Examples of alterations are:

1) Drilling/enlarging of bolt holes ~~in castings~~ for larger diameter bolts;

2) Replacement of structural bolts differing in size, material, or design, from those described on the *Manufacturer's Data Report*;

3) Removal of shell overhung flange;

4) Journal outside diameter reduction to install a sleeve ~~machining;~~

5) Head flange outside diameter reduction;

6) Machining of head flange or shell flange ~~surface~~ mating surfaces to remove corrosion; and

7) Changes to ~~Operating above~~ the nameplate temperature.

b) Alteration plans to yankee dryers ~~procedures shall be written, reviewed, approved, and~~shall be accepted by the Inspector, and when required, by the Jurisdiction, prior to the start of work.

PROPOSED REVISION OR ADDITION

Item No.
A22-17

Subject/Title

NBIC Part 3, S5.7.2, a), 1) and the examination methods of Part 3, 4.4.2, c)

Project Manager and Task Group
Tim McBee-PM

Source (Name/Email)

Steve Ayotte steve.ayotte@tuvsud.com

Statement of Need

An additional examination option is needed for alterations performed to NBIC S5.7.2 a) 1).

Background Information
When fasteners on dryers are no longer suitable for the intended service, an alteration may be performed by enlarging bolt holes to accept larger diameter bolts. This may be accomplished as a field alteration with the heads in place. Prior to performing the alteration, a finite element analysis (FEA) is performed to evaluate and approve stress levels and to ensure sufficient clamping to retain pressure. A thorough cleaning and visual inspection of enlarged holes and fastener seating surfaces are performed to verify no cracks or other indications. As there is only the removal of existing material by drilling and the original Code of Construction does not require NDE for the drilled holes, a visual inspection should be an acceptable examination. A liquid pressure test is generally not practicable.

Existing Text

None

Proposed Text

S5.7.3 Pressure testing of alterations shall be performed in accordance with NBIC Part 3, 4.4.2, and Part 2, S5.6. When enlarging bolt holes referenced in Part 3, S.5.7.2 a) 1), the item shall be visually examined and tested in accordance with the rules for repairs (see NBIC Part 3, 4.4.1).

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

PROPOSED REVISION OR ADDITION

Item No.

A 22-21

Subject/Title

Example of Alteration

NBIC Location

Part: Repairs and Alterations; Section: 3; Paragraph: 3.4.4 d)

Project Manager and Task Group

Source (Name/Email)

Robert Underwood / robert_underwood@hsb.com

Statement of Need

A change in dimension of a pressure retaining item is not considered an alteration in many cases (increasing nozzle/tube thickness, increasing nozzle diameter in some cases...). This revision would provide clarity that only a change in dimension that decreases its pressure retaining capability be considered an alteration.

Background Information

This Code revision has been in the works with Item 21-12 for over a year, but due to delay in its approval we are creating a new Item to address 3.4.4 d) and also a corresponding intent interpretation.

Existing Text	Proposed Text
3.4.4 d) A change in the dimensions or contour of a pressure-retaining item;	d) A change in the dimensions or contour of a pressure-retaining item that decreases its pressure retaining capability;

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

ASME Committee/Subcommittee or WG: Section V

Submitted by: **Mike Burns**

- **Record Number:** **21-1525**

Summary: **Section V, 2019 (INQUIRY): Paragraph T-150(d)(1), Level III**

Original Inquiry 1:

Does ASME Section V, paragraph T-150 (b), require that the Level III shall be present during the procedure demonstration?

Reply:

Paragraph T-150(d)(1) requires that the qualification demonstration be performed under the "control and supervision of a Level III examiner." It can be argued that the words imply the Level III as being physically present. Although it could be equally argued that a virtual presence is not prohibited by the current wording if sufficient control and supervision could be maintained.

Original Inquiry 2:

What is the meaning of "control and supervision"? [as referenced in reply to first inquiry above]

An informal response stating:

The Code does not currently define “control and supervision.” ASME is looking into this subject.

- **Record Number:** **21-2452**

Summary: **Section V, 2021 (INQUIRY): Article 1, paragraph T-120(f).**

Inquiry:

In accordance with Article 1, paragraph T-120(f), may ISO 9712’s Specific and Practical examinations be used to satisfy the required Specific and Practical examinations in BPV Section V, Article 1?

Reply: No.

While acceptable to use an outside agency for administering examinations, the Specific and Practical exams of the International Organization for Standardization (ISO)’ s standard, ISO 9712, *Non-destructive testing – Qualification and certification of NDT personnel,* may not be used for ASME Section V. They were intentionally excluded when the current version of paragraph T-120(f) was approved.

The sticking point is how ISO 9712 breaks down its industry segments. It currently does not have a pressure-retaining device industry segment. The Section V Standards Committee will monitor ISO 9712 revisions, and if ISO 9712 adds a segment for the pressure-retaining device industry, Section V will possibly reconsider this inquiry and the limitations placed on ISO 9712 programs by paragraph T-120(f).

Note: Paul Lang attended as the American Society for Nondestructive Testing (ASNT)’s representative and shared that this issue was on ASME Consultants’ radars.

ASME Committee/Subcommittee or WG: Section V

Submitted by: **Mike Burns**

- **Record Number:** **22-207**

Summary: **Section V, 2021 (INQUIRY): Paragraph III-112.4 (3), Levels of Qualification**

Inquiry:

In accordance with Article 1, Mandatory Appendix III, shall the NDE Level III individual capable of training and examining NDE Level I, Level II, and Level III personnel, be certified in the applicable method?

Reply: Yes.

Original Inquiry:

Is it required that the Level III be certified in the method for which he/she is certifying Level I or Level II Inspectors?

- **Record Number:** **22-794**

Summary: **Section V, 20XX: Article 1, New Nonmandatory Appendix, minimum expectations on how to conduct a demonstration as required by paragraph T-150(a) to the satisfaction of the Inspector.**

This item was closed and will be left to the AI and the AIA to decide what constitutes as "satisfaction."

ASME Committee/Subcommittee or WG: Section VIII

Submitted by: **Mike Pischke**

- **Record Number:** **21-87**

Summary: UCS-56.1, Interpolation of time based upon temperature reduction between values.

- **Record Number:** **22-453**

Summary: **Section VIII, Division 1, Clarity Rewrite UCS-56 Requirements for Post Weld Heat Treatment (PWHT).**

Section VIII, Division 1, UCS-56 has been rewritten/reorganized for clarity and ease of use. No technical changes have been made, and no changes to the UCS-56 PWHT Tables were made.

ASME Committee/Subcommittee or WG: Section VIII, Subgroup on General Requirements (SGGR)

Submitted by: Thomas P. Beirne

- **Record Number: 07-245**

Summary: This item entails the elimination of scope exemptions. This was previously balloted but received pushback from the refrigeration industry. This item was letter balloted between meetings and received several comments. A new proposal will be recirculated based on comments received.

- **Record Number: 14-2249**

Summary: This item involves removing the term, “Lethal Service” in Section VIII, Div. 1, and replacing it with the term, “Toxic.” A proposal will be letter balloted for Review and Comment to Section VIII Standards and all subgroups.

ASME Committee/Subcommittee or WG: Section IX

Submitted by: Mike Pischke

- **Record Number: 20-441**

Summary: **Revision of paragraphs QG-101, QW-101, QW-200, QB-200, and QF-200 to allow the preparation of WPS/BPS/FPS and the supporting PQRs by outside organizations.**

The intention of this item is to revise those Section IX paragraphs that currently imply preparation of Welding Procedure Specifications (WPS), Brazing Procedure Specifications (BPS), Fusing Procedure Specifications (FPS), and the supporting Procedure Qualification Records (PQR) solely by the certifying organization.

- **Record Number: 21-945**

Summary: **Classification of base metals produced by weld deposit.**

Weld metal is clearly "weldable," and has a defined composition and mechanical properties. This proposal assigns a P-number (or P-number and Group number) that would appropriately fit common Specification for Filler metal Analysis (SFA) classifications of mild and low alloy steels.

ASME Committee/Subcommittee or WG: **Standards Committee, Qualifications for Authorized Inspection (QAI-1)**

Submitted by: **Gary L. Scribner**

- **Record Number:** **16-36**

Summary: Incorporation of best practices from other standards, which is basically a rewrite of the QAI-1 Standard. While this ballot has passed at the Standards Committee, other ballots utilizing current wording in QAI-1 that passed are now being reconciled. The Project Manager and Staff Secretary are working on these actions and have developed a spreadsheet that will become part of the background material for these ballots. Once all ballots have been reconciled, all ballots with background material will be sent to the ASME Board on Conformity Assessment (BCA) at one time.

- **Record Number:** **See below**

Summary: **Remote Activities**

Code Case 6: Code Case for Remote Inspection (Record 20-1014): the current approved extension is Record 21-1423; and Code Case 7: Remote Performance Monitoring and Activity Audits (Record 20-1981): the current approved extension is Record 21-1424. Both extensions are valid until November 30, 2022, due to the ongoing pandemic.

There are also new records to address remote inspection and performance monitoring activity audits for instances of political and social instability: Record 21-1100 is being proposed for use after the current pandemic is over.

ASME Committee/Subcommittee or WG: **Committee on Conformity Assessment Requirements (CCAR)**

Submitted by: **Gary L. Scribner**

- **Record Number:** **N/A**

Summary: CCAR has an open item that would align the requirements of the ASME Code Symbol Stamp replacement stamping with the provisions of Conformity Assessment Procedure, CAP-21. This item would allow any National Board Commissioned Inspector to witness the reapplication of the Code Symbol Stamp. This would be consistent with the NBIC Part 2 requirements for replacement of stamped data.

- **Record Number:** **N/A**

Summary: The CCAR Staff Secretary announced that ASME is on track to publish the 2022 Edition of Conformity Assessment Requirements (CA-1) by the end of the year.

ASME Committee/Subcommittee or WG: **Committee on Boiler and Pressure Vessel Conformity Assessment (CBPVCA)**

Submitted by: **Gary L. Scribner**

Record Number: **N/A**

Summary: **During a routine inspection of a 30-gallon air compressor installation, a State Inspector found the air tank head thickness to be lower than what was listed on both the Manufacturer's Data Report and the Code nameplate.**

ASME sent an investigator out to the ASME Certificate Holder's manufacturing plant which was in the process of closing. The findings of the investigation were:

1. The tanks did not meet the customer's design specifications.

2. There was not sufficient documentation to determine if the tanks themselves were built in accordance with all the required Code calculations.

3. The Manufacturer's Data Report, along with the stamped data plate, did not properly show the actual as-built thicknesses of the tank.

Typically, CBPVCA works with Certificate Holders to either bring non-compliant vessels into Code compliance or remove the Single Certification Mark. With the company being closed, CBPVCA has been unable to determine the location of these vessels or how many vessels are non-compliant.

The Committee has asked the National Board to notify the Jurisdictions of this issue. The tanks in question are **30-gallon** air tanks manufactured by **Twin Lakes Tanks.** These tanks are 16" in diameter with a length of 2' 3 ⅞".

It is highly recommended that if any of these tanks are located during inservice inspections, that they be evaluated to include ultrasonic examination to determine if the tanks meet the thickness requirements on the ASME data plate. If the readings do not match the thickness shown on the ASME data plate, the ASME Code Symbol Stamp should be removed since the tanks are not ASME Code Compliant.

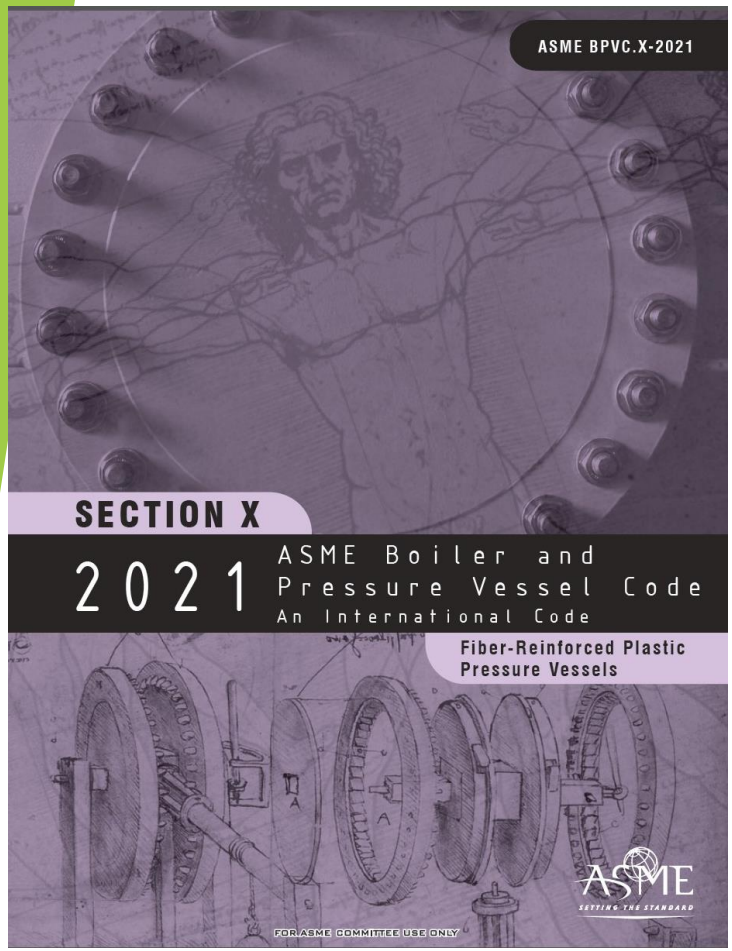
ASME Committee/Subcommittee or WG: **Technical Oversight Management Committee (TOMC)**

Submitted by: **Gary L. Scribner**

Record Number: **N/A**

Summary: The ASME BPVC Standards Committees provide TOMC with an annual presentation on their committee activities. **Attachment 1** contains the report from Section X. The rest of the presentations from Sections II, XI, and XII will be available in the next Code Week Summary Report.

Update on ASME Section X



Presented to the TOMC

August 12, 2022

Brian Linnemann

BPV-X Chair

Section X Committee

- Chair - Brian Linnemann (expires 6/30/23, term limited)
- Vice Chair – Doug Eisberg (expires 6/30/24)
- ASME Secretary - Paul Stumpf
- Membership = 24
  - Designer/Constructor (AC) = 4
  - General Interest (AF) = 3
  - Manufacturer (AK) = 7
  - Material Manufacturer (AM) = 3
  - Users (AW) = 3
  - Regulator (AT) = 1
  - Contributing Member = 2
- Committee is in balance
- Manufacturer interest covers 3 vessel classes

RP Class II CM

Section X RP Certificate Holder Summary

Country	No of Certificate Holders
USA	8
China	4
Great Britain	2
Spain	2
Japan	1
Germany	1
Italy	1
India	1
Total	**20**

RP Class II CM

Section X RP Scope Summary

- 8 scopes defined in BPV-GUI-02 Issue 1, Revision 5 08-14-2019

SECTION X – FIBER REINFORCED PLASTIC VESSELS RP Certificate	
(RP) Fiber-Reinforced Plastic Vessels	
RP-1	Manufacture of Class I and Class II reinforced plastic pressure vessels at the above location only
RP-5	Manufacture of Class I and Class II reinforced plastic pressure vessels at the above location and Class II reinforced plastic pressure vessels only at field sites controlled by the above location
RP-6	Manufacture of Class II reinforced plastic pressure vessels at the above location and at field sites controlled by the above location
RP-7	Manufacture of Class I reinforced plastic pressure vessels at the above location only (This authorization includes mass produced Class I reinforced plastic vessels at the above location)
RP-8	Manufacture of Class II reinforced plastic pressure vessels at the above location only
RP-9	Manufacture of Class I reinforced plastic pressure vessels at the above location only
RP-10	Manufacture of Class III reinforced plastic pressure vessels at the above location only
RP-12	Manufacture of Class I, Class II and Class III reinforced plastic pressure vessels at the above location only

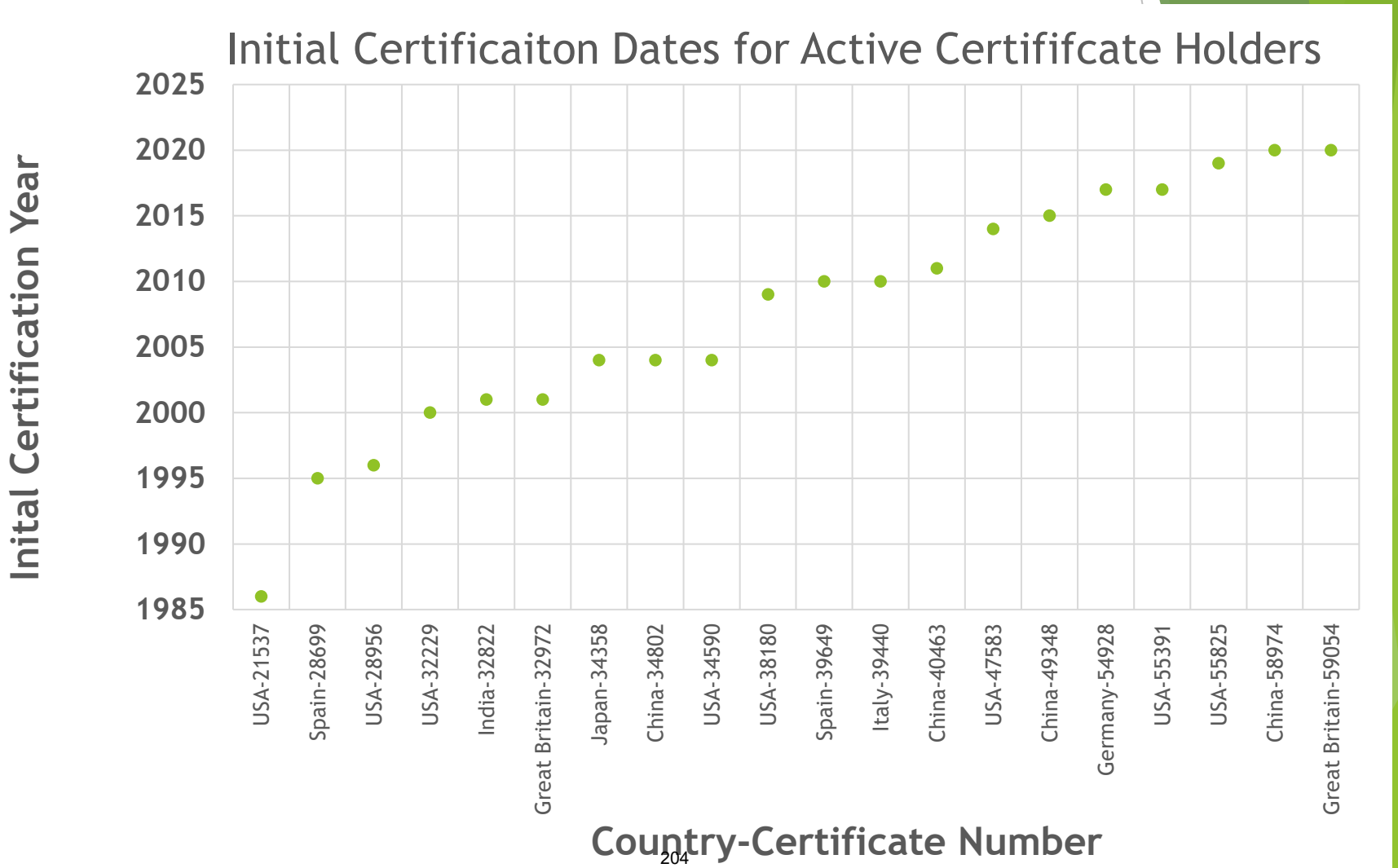
Section X Certificate Holder Scope Summary

- Summary based on ASME Certificate Holder Search data
- All certificates are for a single class except for two (highlighted)

Country	Certificate Number	Class 1	Class II	Class III	Shop	Field
USA	21537	1			1	
USA	28956		1		1	
USA	32229	1			1	
USA	34590	1	1		1	1
USA	38180	1	1	1	1	
USA	47583			1	1	
USA	55391			1	1	
USA	55825			1	1	
China	34802	1			1	
China	40463	1			1	
China	49348	1			1	
China	58974	1			1	
Great Britain	32972	1			1	
Great Britain	59054	1			1	
Spain	28699	1			1	
Spain	39649	1			1	
Japan	34358	1			1	
Germany	54928		1		1	
Italy	39440			1	1	
India	32822	1			1	
Total		**14**	**4**	**5**	**20**	**1**

*Not all certificate holder scopes identify the RP-XX scope number

Section X Certificate Holder Scope Summary



Recognition & Awards

- None since last presentation to TOMC

Current Status of Section X

- 15 open records on agenda
  - 12 records less than 4 years old
  - 1 record from 2014
  - 2 from 2016
  - Records are being processed in a reasonable time
- 2 approved records for the 2023 edition
- 2 code cases approved

RP Class II CM

Section X Standards Committee Organization

- Section X is a small committee and does not currently have any subordinate groups.
- We do have occasional task groups to collaborate on items requiring focused work and discussion.
- Section X is in balance and works hard to ensure member participation and the close evaluation of new member requests.

Future R&D Projects

- None at this time

Thank you for your time and support

Questions?

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:

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2023 5 SWPS: Updated and awaiting AWS B2 ballot
2022 9 SWPSs: Updated and presently in balloting process @ AWS
2021 13 SWPSs Done.
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 cycle to a 10-year revision/re-affirmation cycle.
As in the past, as newly developed SWPS's are approved by the various committees, they will be offered to the NBIC for adoption.

The 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 in the 2021 Edition of the NBIC.

Regards,

Jim Sekely