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

NATIONAL BOARD INSPECTION CODE COMMITTEE

MINUTES

Meeting of January 14th, 2021
San Antonio, TX

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1. Call to Order

NBIC Main Committee Chair Mr. Bob Wielgoszinski called the meeting to order at 8:04AM Central Time.

2. Introduction of Members and Visitors

Mr. Wielgoszinski announced that those present at the meeting in San Antonio would introduce themselves first. Once the in-person attendees finished introducing themselves, Mr. Wielgoszinski asked the NBIC Secretary, Mr. Jonathan Ellis, to take a roll call of those who were attending the meeting via Zoom. The full list of attendees can be found on [Attachment Page 1](#).

3. Check for a Quorum

After introductions were completed, Mr. Wielgoszinski announced that 20 of the 21 Main Committee members were present. This was enough to establish a quorum.

4. Awards/Special Recognition

Mr. Wielgoszinski announced that Mr. Rob Troutt was being recognized for 5 years of service on Main Committee. Mr. Gary Scribner presented an award pin to Mr. Troutt and thanked him for his work.

5. Announcements

Mr. Ellis announced that a buffet lunch will be provided from 11:30 AM to 12:30 PM in Magnolia/Blue Bonnet on the 2nd Floor for those who attended the meeting in person. He also announced that the 2021 edition of the NBIC will be available for purchase on July 1st, 2021.

Mr. Wielgoszinski announced that there would be a slight change in the order of subcommittee reports; Part 1 will go first, followed by Part 2, Part 4, and then Part 3. He also discussed voting procedures for this meeting, stating that he will be asking for negative and abstaining votes instead of affirming votes.

Mr. Luis Ponce announced that National Board staff will be finalizing and presenting a Writing Guide in the following weeks. This will help standardize the formatting and writing conventions for item proposals.

6. Adoption of the Agenda

A motion was made and seconded to adopt the meeting agenda as presented. Mr. Wielgoszinski then asked if anyone wanted to submit changes to the agenda before a vote was called. Ms. Melissa Wadkinson announced that Subcommittee Installation opened a new item 21-01 which would be reported on during their subcommittee report. She also announced that Subcommittee took no action on their two subcommittee nominees Mr. Marvin Byrum and Mr. Gene Tompkins, stating that action would be taken at the next NBIC meeting. Mr. Jim Getter announced that Subcommittee Inspection opened a new item 21-20 and will be reporting on that item during their subcommittee report. Mr. Rob Troutt announced the addition of three new action items (21-10, 21-11, and 21-12), and that Mr. Trevor Seime was approved by Subcommittee Repairs & Alterations (R&A) to be the Vice Chair of the Interpretations Task Group. No further additions to the agenda were made, and the amended agenda was unanimously approved.

7. Approval of the Minutes of the July 16th, 2020 Meeting

A motion was made, seconded, and unanimously approved to accept the minutes from the July 16th, 2020 meeting.

8. Review of Rosters

a. Membership Nominations

Subcommittee Members:

- Mr. Don Kinney (Jurisdictional Authorities) – Subcommittee Repairs & Alterations
 - Mr. Rob Troutt announced that Subcommittee R&A voted unanimously to approve Mr. Kinney as a member of the subcommittee. A motion was made, seconded, and unanimously passed for Main Committee to approve Mr. Kinney’s appointment to Subcommittee R&A. Mr. Kinney’s appointment is subject to final approval from the Chair of the Board of Trustees.

b. Membership Reappointments

- Mr. Rob Troutt – Main Committee
- Mr. Tim Barker – SC Inspection
- Mr. Matt Sansone – SC Inspection

A motion was made, seconded, and unanimously approved to reappoint Mr. Troutt to Main Committee. A separate motion and second was taken to reappoint Mr. Barker and Mr. Sansone to Subcommittee Inspection; this motion was unanimously approved. These appointments are subject to final approval from the Chair of the Board of Trustees.

c. Officer Positions

A motion was made, seconded, and unanimously approved to appoint Mr. Trevor Seime as Vice Chair of Task Group Interpretations.

9. Items Approved for 2023 NBIC

See [Attachment Page 2](#) for a full list of items approved for inclusion in the 2023 NBIC (as of the day of this meeting).

10. Report of Subcommittees

a. Subcommittee Installation

i. Interpretations

Item Number: 20-84 NBIC Location: Part 1, 3.7.5.1 d) 4) No Attachment
General Description: Adjustable Packing on Low Pressure Boiler Stop Valves
Subgroup: SG Installation
Task Group: M. Wadkinson (PM), R. Spiker, and M. Downs
Explanation of Need: Jurisdictions need to know if this requirement applies to all low pressure boiler stop valves (steam, hot water heat, and hot water supply) so they can effectively communicate this requirement to their constituents and can enforce the code when new items are installed.
Background Information: Most new hot water heating boilers and hot water supply boilers are being installed with appropriately-pressure/temperature-rated butterfly valves as their outlet isolation valves. Most butterfly valves that are installed do not have adjustable pressure-type packing glands. Instead, these valves are supplied with EPDM or Viton seals inside the stem housing to prevent water escape. EPDM is rated to 275 F, and Viton is rated to 300 F. It is unclear whether or not the text of the referenced code is a requirement that is specifically intended to apply to water boilers, or if it is a requirement that has simply been in the code and has carried forward through the years. It is also unclear as to the safety basis for requiring adjustable packing for low pressure hot water boiler stop valves.
January 2021 Meeting Action: Ms. Wadkinson presented a progress report for this item. A new action item 21-01 has been opened to look at making code changes related to this interpretation request.

ii. Action Items – Old Business

Item Number: NB11-1901 NBIC Location: Part 1 No Attachment
General Description: Add guidance for the safe installation of high pressure composite pressure vessels operating in close proximity to the public
Subgroup: FRP
Task Group: R. Smith (PM), M. Richards, S. Konopacki, D. Patten and E. Wiggins
July 2020 Meeting Action: Ms. Wadkinson reported that the proposal for this item is still in development.
January 2021 Meeting Action: Ms. Wadkinson presented a progress report for this item.

Item Number: 18-57	NBIC Location: Part 1	Attachment Page 3
General Description: address the use & definition of the word inspector		
Subgroup: SG Installation		
Task Group: - P. Jennings (PM), R. Smith, -, T. Creacy, R. Spiker, M. Washington, and R. Adams		
January 2021 Meeting Action: Mr. Pat Jennings presented a proposal for this item. Discussion was held on the necessity of capitalizing “inspection”, and it was agreed that this was unnecessary. Further discussion was held on making these proposed changes in other sections of the NBIC. Mr. Jennings said that the proposal could be taken back for further work. Mr. Troutt asked about National Board staff making editorial changes to capitalize Inspector throughout the NBIC. It was confirmed that this could be done, and changes could be made in time for the 2021 NBIC release. A motion was made, seconded, and unanimously approved to close this item and request National Board to make the editorial changes.		

Item Number: 20-27	NBIC Location: Part 1, 1.6.9 & S6.3	Attachment Page 17
General Description: Carbon Monoxide Detector/Alarm NBIC 2019		
Subgroup: SG Installation		
Task Group: G. Tompkins (PM), R. Spiker, R. Smith, E. Wiggins, 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?		
January 2021 Meeting Action: Ms. Wadkinson introduced the item and explained why Subcommittee Installation voted to close the item. A motion and second was made for Main Committee to close the item. Mr. Troutt spoke on the importance of adding language to require CO detector/alarms. Mr. Venus Newton spoke on the necessity of adding specifications for the CO alarms, as many questions are coming from inspectors about these things. Mr. Marty Toth spoke expressing concerns of the NBIC providing specifics for CO monitors in rooms with other equipment that don’t fall under the NBIC, and that Jurisdictions need to take the in that area. Mr. Matt Downs commented on referencing building codes. Mr. Toth suggest an idea that the National Board could put together guidance outside of the NBIC on how to handle enforcing CO detectors and ways to work with fire marshals and building codes. After discussion, Ms. Wadkinson agreed to rescind the original motion if Mr. Troutt and Mr. Newton agreed to help the task group develop a proposal. Mr. Troutt and Mr. Newton agreed to this.		

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.		
January 2021 Meeting Action: Ms. Wadkinson presented a progress report for this item.		

Item Number: 20-34	NBIC Location: Part 1	No Attachment
General Description: Venting of gas train components		
Subgroup: SG Installation		
Task Group: P. Jennings (PM), M. Washington, R. Adams		
Explanation of Need: Incorporation of applicable CSD-1 requirements.		
January 2021 Meeting Action: Ms. Wadkinson announced that a proposal will be balloted to Subgroup Installation for approval, and to Subcommittee Installation and Main Committee for Review and Comment.		

Item Number: 20-35	NBIC Location: Part 1	No Attachment
General Description: Installation requirements for Fuel Oil Trains		
Subgroup: SG Installation		
Task Group: G. Tompkins (PM), D. Patten, M. Washington		
Explanation of Need: Incorporation of applicable CSD-1 requirements.		
January 2021 Meeting Action: Ms. Wadkinson announced that a proposal will be balloted to Subgroup Installation for approval.		

Item Number: 20-39	NBIC Location: Part 1	No Attachment
General Description: Modular Boilers		
Subgroup: SG Installation		
Task Group: T. Clark (PM), M. Downs, M. Wadkinson, D. Patten, R. Austin		
Explanation of Need: Incorporation of applicable CSD-1 requirements.		
January 2021 Meeting Action: Ms. Wadkinson presented a progress report for this item.		

Item Number: 20-40	NBIC Location: Part 1	No Attachment
General Description: Gas Train Requirements		
Subgroup: SG Installation		
Task Group: R. Adams (PM), P. Jennings, G. Tompkins		
Explanation of Need: Incorporation of applicable CSD-1 requirements.		
January 2021 Meeting Action: A motion was made, seconded, and unanimously approved to close this item and incorporate its scope into item 20-34.		

Item Number: 20-41	NBIC Location: Part 1	No Attachment
General Description: Safety and Safety Relief Valves for Steam and Hot Water Heating Boilers.		
Subgroup: SG Installation		
Task Group: E. Wiggins (PM), J. Brockman, G. Tompkins		
Explanation of Need: Incorporation of applicable CSD-1 requirements.		
January 2021 Meeting Action: Ms. Wadkinson presented a progress report for this item.		

Item Number: 20-43	NBIC Location: Part 1	No Attachment
General Description: Safety Relief valve for Hot Water Supply Boilers		
Subgroup: SG Installation		
Task Group: W. Anderson (PM), E. Wiggins, J. Brockman		
Explanation of Need: Incorporation of applicable CSD-1 requirements.		
January 2021 Meeting Action: Ms. Wadkinson presented 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.		
January 2021 Meeting Action: Ms. Wadkinson presented a progress report for this item.		

iii. Action Items – New Business

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.		
January 2021 Meeting Action: Ms. Wadkinson presented 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.		
January 2021 Meeting Action: Ms. Wadkinson presented a progress report for this item.		

Item Number: 20-94	NBIC Location: Part 1	Attachment Page 18
General Description: Make it mandatory to install a temperature sensor in the stack of a thermal fluid heater		
Subgroup: SG Installation		
Task Group: M. Wadkinson (PM)		
Explanation of Need: This request came about as a result of work done for action item 19-88.		
January 2021 Meeting Action: Ms. Wadkinson presented a proposal for this item, and mentioned that this goes with item 19-88. A motion was made and seconded to approve the proposal as presented. Mr. Toth asked if anyone dissented to the change at the subgroup or subcommittee level, as well as questions on how the current wording of the passage came to be. Ms. Wadkinson responded that the proposal was unanimously approved by the subgroup and subcommittee, and that the current language was word as such in order to get something into the NBIC. It is now being changed to align with NFPA-87. After discussion concluded, a vote was taken on the motion; the proposal was unanimously approved.		

b. Subcommittee Inspection

i. Interpretations

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.		
January 2021 Meeting Action: Mr. Jim Getter presented a progress report for this item. The Subcommittee submitted several comments on a recent letter ballot for this item that will need to be resolved by the FRP Task Group.		

Item Number: 18-6	NBIC Location: Part 2, S1.4.2.9	No Attachment
General Description: Riveted stay bolt dimensions		
Subgroup: Locomotive		
Task Group: M. Janssen (PM)		
January 2021 Meeting Action: Mr. Linn Moedinger provided an update on this item, stating that the Locomotive Task Group intends to have a proposal ready at their next meeting.		

Item Number: 18-43	NBIC Location: Part 2, Section 5	No Attachment
General Description: Permanent nameplate removal from pressure vessel being removed from service		
Subgroup: Inspection		
Task Group: J. Roberts (PM), J. Burgess, J. Calvert, J. Clark, M. Sansone		
January 2021 Meeting Action: Mr. Getter reported that a proposal for this item will be sent to Main Committee as a letter ballot.		

Item Number: 18-63	NBIC Location: Part 2	No Attachment
General Description: Review inspection requirements for pressure vessels designed for high pressures		
Subgroup: Inspection		
Task Group: V. Scarcella(PM), J. Mangas, J. Peterson, and J. Castle		
January 2021 Meeting Action: Mr. Getter reported that a review and comment ballot will be sent to the Subcommittee for this item.		

Item Number: 19-46	NBIC Location: Part 2, S5	No Attachment
General Description: Revisions to Yankee dryer supplement in Part 2 (Scope)		
Subgroup: Inspection		
Task Group: V. Newton (PM), T. Barker, D. Lesage, J. Jessick		
Explanation of Need: Various parts of supplement 5 do not match their counterparts in Part 1, Supplement 1.		
January 2021 Meeting Action: Mr. Getter presented a progress report for this item.		

Item Number: 19-63	NBIC Location: Part 2, S5.2	No Attachment
<p>General Description: Changes to the Yankee Dryer Supplement (ASSESSMENT OF INSTALLATION)</p> <p>Subgroup: Inspection</p> <p>Task Group: V. Newton (PM), T. Barker, D. Lesage, J. Jessick</p> <p>Explanation of Need: Ensure that wording in Part 2, S5.2, is identical to that found in Part 1, S1.2. Note that wording will be the same, but paragraph numberings will be different.</p> <p>January 2021 Meeting Action: Mr. Getter presented a progress report for this item.</p>		

Item Number: 19-64	NBIC Location: Part 2, S5.2.1	No Attachment
<p>General Description: Changes to the Yankee Dryer Supplement (DETERMINATION OF ALLOWABLE OPERATING PARAMETERS)</p> <p>Subgroup: Inspection</p> <p>Task Group: V. Newton (PM), T. Barker, D. Lesage</p> <p>Explanation of Need: Ensure that wording in Part 2, S5.2.1, is identical to that found in Part 1, S1.3. Note that wording will be the same, but paragraph numberings will be different.</p> <p>January 2021 Meeting Action: Mr. Getter presented a progress report for this item.</p>		

Item Number: 19-84	NBIC Location: Part 2, S2.10.7	No Attachment
<p>General Description: Inspecting riveted joints for failure</p> <p>Subgroup: TG Historical</p> <p>Task Group: F. Johnson (PM), M. Wahl, & R. Underwood</p> <p>Explanation of Need: The text covers cracks parallel to a longitudinal joint, but there is no text covering inspection of plate material around a rivet.</p> <p>January 2021 Meeting Action: Mr. Getter presented a progress report for this item.</p>		

Item Number: 19-88	NBIC Location: Part 2, 2.2.12.7 c) 2)	Attachment Page 23
General Description: At NBIC Part II propose the following be added to Thermal Fluid Heater		
Subgroup: Inspection		
Task Group: assigned. Scarcella (PM), M. Sansone, T. Bolden, & M. Wadkinson		
Explanation of Need: These items are essential to preventing catastrophic loss and are low cost items.		
January 2021 Meeting Action: Mr. Getter presented the proposal for this item. It will be sent out to Main Committee as a letter ballot.		

Item Number: 20-5	NBIC Location: Part 2, 4.1 – 4.4	No Attachment
General Description: Add language in NBIC Pt2/Pt3 to minimize CSEs by allowing remote NDE.		
Subgroup: Inspection		
Task Group: V. Newton (PM), J. Morgan, M. Horbaczewski, D. Graf, D. LeSage, D. Rose		
Explanation of Need: In order to minimize higher-risk work, specifically Confined Space Entries, remote NDE methodologies should be specifically allowed by the NBIC, at the discretion of the people performing the inspections.		
January 2021 Meeting Action: Mr. Getter presented 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, & J. Wolf		
Explanation of Need: Currently Jurisdictions are not uniform in adoption of how and when inspections are performed.		
January 2021 Meeting Action: Mr. Getter presented a progress report for this item.		

Item Number: 20-46	NBIC Location: Part 2, 5.3.2	No Attachment
<p>General Description: Updates to Forms NB-5, NB-6, & NB-7</p> <p>Subgroup: Inspection</p> <p>Task Group: D. Buechel (PM), M. Sansone, V. Scarcella</p> <p>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.</p> <p>January 2021 Meeting Action: Mr. Getter presented a progress report for this item.</p>		

iii. New Items:

Item Number: 20-57	NBIC Location: Part 2, 4.4.1 a)	No Attachment
<p>General Description: Evaluate revision to Part 2, 4.4 FFS scope roles and responsibilities (submitted by Mr. George Galanes).</p> <p>Subgroup: Inspection</p> <p>Task Group: M. Horbaczewski (PM) and B. Ray.</p> <p>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.</p> <p>January 2021 Meeting Action: Mr. Getter presented a progress report for this item.</p>		

Item Number: 20-59	NBIC Location: Part 2, 5.2.1 a)	No Attachment
<p>General Description: Temporary nameplate removal for external inspection (submitted by Mr. Doug Biggar).</p> <p>Subgroup: Inspection</p> <p>Task Group: T. Vandini (PM), B. Ray, J. Roberts, V. Newton, M. Sansone</p> <p>Explanation of Need: What is being added to NBIC part 2 (item 19-30) for NBIC 2021 edition: [(e) removal and re-attachment of the original manufacturer's nameplate shall only be done in accordance with NBIC Part 3, 5.11]. To have an inspector present onsite each time we need to have a nameplate temporarily removed has a cost that a commercial refurbisher such as ourselves would need to pass onto the customer as well as dramatically affect the efficiency of our assembly line.</p> <p>January 2021 Meeting Action: Mr. Getter presented a progress report for this item.</p>		

Item Number: 20-70	NBIC Location: Part 2, S1.4.2.29	No Attachment
General Description: Inspection of Furnace Slides (submitted by Mr. Mark Ray)		
Subgroup: Locomotive		
Task Group: M. Ray (PM)		
Explanation of Need: Furnace slide supports which are locked in-place by corrosion will adversely impact the thermal expansion of the boiler and lead to staybolt breakage.		
January 2021 Meeting Action: Mr. Getter presented a progress report for this item.		

Item Number: 20-71	NBIC Location: Part 2, S1.6	No Attachment
General Description: Safety Valve Sizing (Correct Use of Capacity Charts) (submitted by Mr. Mark Ray)		
Subgroup: Locomotive		
Task Group: M. Ray (PM)		
Explanation of Need: This is to ensure safety valves provide the adequate relieving capacity for steam locomotive boilers.		
January 2021 Meeting Action: Mr. Getter presented a progress report for this item.		

Item Number: 20-79	NBIC Location: Part 2, S10.10.4 c)	No Attachment
General Description: Add nomenclature to formula in S10.10.4 c) (originated from Public Review Comment PR20-0201)		
Subgroup: FRP		
Task Group: M. Gorman		
Explanation of Need: The current formula has no nomenclature to define the variables. The change request came about from Public Review Comment PR20-0201. The Main Committee voted in October of 2020 to open a new action item to add nomenclature for this formula.		
Variable definitions from Mr. Gorman: “U is the measured signal energy in joules. The signal is the captured waveform from, say, a fiber break source. V is the signal amplitude in volts point by point in the signal. Voltage must be corrected for gain (G). Z is in ohms. The (differential) time is dt in seconds.”		
January 2021 Meeting Action: Mr. Getter presented a progress report for this item. The Subcommittee made changes to original proposal which will be sent back to the FRP Task Group for their review.		

Item Number: 20-82	NBIC Location: Part 2, 5.2.2 a) & 5.3.3	Attachment Page 26
<p>General Description: Reporting of Form NB-136 (submitted by Mr. Bob Underwood)</p> <p>Subgroup: Inspection</p> <p>Task Group: None assigned</p> <p>Explanation of Need: Revise NB-136 Reporting requirements to permit the original manufacturer of the pressure retaining item to prepare and submit the form.</p> <p>January 2021 Meeting Action: Mr. Getter presented a proposal for this item. A motion was made and seconded to approve the proposal as presented. Mr. Troutt asked about the Original Manufacturer (OM) having an R stamp and this proposal would make it necessary to have one, as not all Oms have one. Mr. Toth and Mr. Wielgoszinski mentioned that an R stamp isn't always required for the OM. Further discussion held was held on this topic. Discussion was also held on how to track OMs if companies go through name changes. Mr. Toth suggested that it should be handled case by case according to a Jurisdiction's requirements. After discussion concluded, a vote was taken on the original motion, and the proposal was unanimously approved.</p>		

Item Number: 20-93	NBIC Location: Part 2, S2.10.4	No Attachment
<p>General Description: MAWP in the ogee curve (submitted by Mr. Tom Dillon)</p> <p>Subgroup: Historical</p> <p>Task Group: None assigned</p> <p>Explanation of Need: There is some confusion of what is a stayed flat surface and what to do with the ogee curve.</p> <p>January 2021 Meeting Action: Mr. Getter reported that Task Group Historical and Subcommittee Inspection voted to close this item with no action, as Historical felt the change was not needed. A motion was made, seconded, and unanimously approved to close the item with no action.</p>		

Item Number: 21-20	NBIC Location: Part 2, S2.7.3.2	Attachment Page 31
<p>General Description: UT Thickness Check for a New Boiler</p> <p>Subgroup: Historical</p> <p>Task Group: T. Seime (PM)</p> <p>Explanation of Need: This sentence was removed from the proposal that passed in July 2020 in order to get the rest of the proposal pushed through.</p> <p>January 2021 Meeting Action: Mr. Getter presented a proposal for this item. A motion was made and seconded to approve the proposal as presented. Mr. Trevor Seime spoke further on why this change is being made. Mr. Scribner recommended changing "Jurisdiction" to "Inspector". A vote was taken to approve the proposal with the aforementioned change, and this vote passed with one negative. The member who voted negative felt that the end of the code change should be phrased "...unless a shorter interval is deemed necessary by the Inspector and the jurisdiction if applicable."</p>		

c. Subcommittee Repairs & Alterations

i. Interpretations

Item Number: 20-3	NBIC Location: Part 3, Section 3 & 4	Attachment Page 32
General Description: Inspector involvement in Fitness-for Service assessments		
Subgroup: Repairs and Alterations		
Task Group: J. Siefert (PM)		
Explanation of Need: Which Inspector (i.e. “IS” Commissioned or “R” Endorsement) signs the FFSA Form NB-403 when an “R” Certificate Holder is involved with a repair in that region as well as determine what level of review of the Fitness-for-Service the Inspector is expected to complete?		
January 2021 Meeting Action: A motion was made, seconded, and unanimously approved to close this item with a letter being sent to the inquirer to see if the approved code change from item 20-10 satisfies their concerns.		

Item Number: 20-11	NBIC Location: Part 3, 3.3.3	Attachment Page 34
General Description: Scope of Repairs		
Subgroup: Repairs and Alterations		
Task Group: K. Moore (PM)		
Explanation of Need: NBIC Part 3 lists several examples of repair but nowhere limits the scope or amount of these examples that can be utilized when performing repairs. This creates some uncertainty when performing some types of repairs, such as replacing the tubesheets of a fixed tubesheet type heat exchanger as listed in 3.3.3 e). According to ASME BPV Code Section VIII Division 1 Part UHX, Section 13, the length of the tubes is a design parameter and therefore replacing the tubesheet in accordance with its original design might require the replacement of the tubes as well to maintain the original design length.		
January 2021 Meeting Action: Ms. Kathy Moore presented a proposal for this item. It was noted that only committee question 1 on the proposal would be sent to the inquirer, as that question directly addresses the inquirer’s original question. A motion was made and seconded to approve the proposal as presented. This motion was unanimously approved.		

ii. **New Interpretation Requests:**

Item Number: 20-66	NBIC Location: Part 3, 3.3.2 e)	Attachment Page 36
General Description: Possible contradictory interpretations of Part 3, 3.3.2 e) 2)		
Subgroup: Repairs and Alterations		
Task Group: R. Underwood (PM)		
Explanation of Need: Two previously issued interpretations, 95-14 and 95-21, seem to be contradictory with the NBIC itself. The reason for the interpretation request is that two previously published NBIC Interpretations and the NBIC itself seem to be contradictory. Interpretations 95-14 and 95-21 lead the reader to conclude that if the original vessel was postweld heat treated, then the addition of refractory clips by welding, regardless of size, without postweld heat treatment is an alteration. However, NBIC Part 3 [2019 Edition], 3.3.3 b)1) and 2) list addition of welded attachments to pressure parts, such as: Studs for insulation or refractory lining and hex steel or expanded metal for refractory lining as “Examples of Repairs”. Furthermore, NBIC Part 3 [2019 Edition], 3.3.2 e) 2) states: “The following repairs may be considered as routine repairs and shall be limited to these categories: 2) The addition or repair of nonload bearing attachments to pressure-retaining items where postweld heat treatment is not required;		
January 2021 Meeting Action: Mr. Bob Underwood presented a proposal for this item. A motion was made and seconded to approve the proposal as presented. Discussion was held on PWHT alternatives and potential confusion with 3.3.2 b). Minor editorial changes were also made to the proposal. The proposal with editorial corrections was approved unanimously.		

Item Number: 20-77	NBIC Location: Part 3, 1.3.2	Attachment Page 38
General Description: Authorization of repair/alteration activities		
Subgroup: Repairs and Alterations		
Task Group: D. Kinney (PM).		
Explanation of Need: Many R-certificate holders also have U or S stamps and as such have a regular AI (with R endorsement) to whom they tend to have review repair and alteration packages. However, when the physical work will be conducted 'out of state' travel limitations and or jurisdictional authorization requirement prevent the local AI from making the final acceptance inspection thus another AI must do that work, para 1.3.2 a) makes clear that both Inspectors have to be employed by the same agency. Form R-2 has 2 Inspector sign off locations but does not make clear if the two Inspectors must be from the same AIA or not.		
January 2021 Meeting Action: Mr. Don Kinney presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Discussion was held on making committee question 1 more specific to ensure its intent is clear, and adjustments were subsequently made to the question. Further discussion was held on the roles of the two different Inspectors. Mr. Troutt mentioned that an action item should be opened to clarify language in Part 3, 1.3.2. The motion was amended to include the changes made to the proposal, and the motion to accept the proposal was unanimously approved.		

Item Number: 20-78	NBIC Location: Part 3, 3.3.3 s) & 3.4.4 d)	Attachment Page 40
<p>General Description: Repairs and Alterations of Tube Bundles</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Shanks (PM).</p> <p>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.)</p> <p>January 2021 Meeting Action: Mr. Toult presented a progress report for this item. An action item (21-12) has been opened to accompany this item.</p>		

Item Number: 20-81	NBIC Location: Part 3, 4.4.2 a) 1)	Attachment Page 42
<p>General Description: Minimum Required Test Pressure for Alteration Activities</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: R. Underwood (PM)</p> <p>Explanation of Need: To provide clarity that the minimum test pressure for alterations shall be in accordance with the original code of construction.</p> <p>January 2021 Meeting Action: A motion was made and seconded to close this item and send a letter to the inquirer with the interpretation issued for item 20-89. This motion was approved unanimously.</p>		

Item Number: 20-89	NBIC Location: Part 3, 4.4.2	Attachment Page 43
<p>General Description: LIQUID PRESSURE TEST EXAMINATION METHODS APPLICABLE TO ALTERATIONS</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: R. Troutt (PM).</p> <p>Explanation of Need: For Alteration can Minimum Test Pressure Shall be Design Pressure or MAWP considering same Condition as Clause 4.4.1 of Pressure Test for Repairs.</p> <p>January 2021 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 on including a reference to Part 3, 4.4.2 a) 2) in the questions. Mr. Underwood explained that it wasn't necessary to do this. Additional discussion was held on including references to 3.4.1 d) and e) to account for re-rating. Mr. Underwood felt this was not necessary because the questions specify that a liquid pressure test is being done. After discussion was held, a vote was taken and the motion was approved unanimously.</p>		

Item Number: 20-90	NBIC Location: Part 3, 1.4.1	Attachment Page 44
General Description: 1.4.1 ACCREDITATION PROCESS / NB-415- Certification of Scope		
Subgroup: Repairs and Alterations		
Task Group: None assigned.		
Explanation of Need: The NBIC Certification scope Does not Restrict the Repair Organization to Perform Based on their ASME Certification of scope, as long as Manual Controls are addressed for the Design and Repair/ Fabrication Scope they can perform Repair and Alteration.		
January 2021 Meeting Action: Ms. Moore presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. This motion was approved unanimously.		

Item Number: 20-91	NBIC Location: Part 3, 1.5.1 h)	Attachment Page 46
General Description: Mechanical Repair Procedures		
Subgroup: Repairs and Alterations		
Task Group: R. Underwood (PM), R. Valdez		
Explanation of Need: Part 3, paragraph 1.5.1(h) requires that control of mechanical assembly/repair procedures be addressed in the R Certificate Holder's Quality Manual. Over the last year or so, there have been National Board Team Leaders requesting these procedures (during joint reviews) for work such as rolling tubes in a boiler and replacing a bolted fitting on a pressure retaining item. This has resulted in questions from certificate holders and Inspectors about why an "R" certificate holder is required to have procedures for mechanical work that doesn't even require an "R" Stamp.		
January 2021 Meeting Action: Mr. Underwood presented the proposal for this item. Mr. Troutt noted that there was one abstention at the subcommittee level. A motion was made and seconded to approve the proposal as presented. There was discussion on if a lack of an R form falls under the NBIC, and if doing mechanical repairs needs an R form. Mr. Scribner felt that this is interpreting language that is not in the NBIC, and that there are other procedures in place outside of NBIC to address this subject. Mr. Troutt pointed out that the inquirer is asking specifically about the first sentence of 1.5.1 h), and this interpretation answers that specific question. Additional discussion was held, which led to the original motion being taken back. The task group will do additional work on the proposal.		

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)		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 17-134	NBIC Location: Part 3, Section 5	No Attachment
General Description: Proposed Revision for registration of Form R-1 with the National Board containing ASME pressure part data reports attached.		
Subgroup: Repairs and Alterations		
Task Group: P. Shanks (PM), Rob Troutt, Joel Amato, Kathy Moore, Paul Edwards		
January 2021 Meeting Action: Mr. Troutt presented a progress report on 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)		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 18-94	NBIC Location: Part 3, S3.2 f), h); S3.4 a), b), c) etc.	No Attachment
General Description: G-mark Requirements for Various Repairs/Alteration to Graphite		
Subgroup: Graphite		
Task Group: C. Cary (PM)		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 18-100	NBIC Location: Part 3, 3.3.2	No Attachment
General Description: Revision adding heat exchanger tubes with an outside diameter of 3/4" or smaller to NBIC Part 3.3.2 Routine Repairs		
Subgroup: Repairs and Alterations		
Task Group: (Marty Toth – PM), B. Schaefer, N. Carter		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 19-16	NBIC Location: Part 3, 3.3.2 e)	Attachment Page 48
General Description: Reword to provide clarity; contradictory requirement Part 3; 3.2.2 e)		
Subgroup: Repairs and Alterations		
Task Group: T. White (PM)		
January 2021 Meeting Action: Mr. Troutt presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Mr. Scribner suggested adding “possible” to the sentences being reworded to make them consistent with rest of NBIC. This change was made to the proposal, and the amended proposal was approved unanimously.		

Item Number: 19-60	NBIC Location: Part 3, 1.5.1	No Attachment
General Description: Quality System For Qualification For The National Board “R” Certificate		
Subgroup: Repairs and Alterations		
Task Group: R. Miletti (PM), K. Moore, B. Boseo, M. Toth		
Explanation of Need: Part 3, 1.5.1 provides a good outline for a Quality Systems Manual. However, the remaining elements of a Quality System, outside of the one’s currently being addressed in Item 19-47 and 19-4 need to be embellished to provide a more auditable description of each element.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 19-61	NBIC Location: Part 3, 3.3.4	No Attachment
General Description: Quality System For Qualification For The National Board “R” Certificate		
Subgroup: Repairs and Alterations		
Task Group: P. Shanks (PM), J. Walker, T. McBee		
Explanation of Need: Threaded insert are being used to fix a bolt that has broken off on certain types of boilers (autoclaves) which hold the heating elements in the water side of the boiler. When this happens, the technician correcting the problem will simply drill out the broken bolt with an over sized bit and inset a metallic insert. NBIC does address this this type of alteration.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 19-68	NBIC Location: Part 3, 1.6	No Attachment
General Description: Quality System For Qualification For The National Board “R” Certificate		
Subgroup: Repairs and Alterations		
Task Group: B. Wielgoszinski		
Explanation of Need: Review of 1.6 for possible requirement for ANI's and ANII's to hold the (R) Endorsement for "NR" activities.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

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.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 19-74	NBIC Location: Part 3, S3.3	No Attachment
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.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 19-79	NBIC Location: Part 3, S3.5.4 h)	No Attachment
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.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 19-82	NBIC Location: Part 3, 1.5.1 j)	No Attachment
<p>General Description: Review verbiage in Part 3, 5.12.5.1 8) and 5.12.5.1.11)</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Quisenberry (PM).</p> <p>Explanation of Need: Safety is not addressed in Part 3. This verbiage could be added to the 1.5.1 j) Method of Performing Work paragraph so Certificate Holders can address the safety concerns specific to their scope of activities.</p> <p>January 2021 Meeting Action: A motion was made and seconded to close the item and have language on safety be added by National Board staff to the NBIC introduction/foreword. Mr. Wielgoszinski suggested that future changes made to the foreword/introduction by National Board staff be shared with the NBIC Committee for information purposes. The motion to close the item was unanimously approved.</p>		

Item Number: 20-8	NBIC Location: Part 3, 8.1 b)	No Attachment
<p>General Description: Interpretation revision process</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: K. Moore (PM)</p> <p>Explanation of Need: Adding language to specify that interpretations of previous NBIC editions are applicable to the most current edition, as long as code requirements have not changed.</p> <p>January 2021 Meeting Action: A motion was made and seconded to close the item and have language on safety be added by National Board staff to the NBIC introduction/foreword. The motion was unanimously approved.</p>		

Item Number: 20-15	NBIC Location: Part 3, 3.3.2 & 5.7.2	No Attachment
<p>General Description: Stamping requirements for routine repairs</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: R. Troutt (PM), K. Moore</p> <p>Explanation of Need: This would offer traceability to the R-Stamp holder responsible for the work.</p> <p>January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.</p>		

Item Number: 20-16	NBIC Location: Part 3, 3.4.4	No Attachment
<p>General Description: Rules to address re-cold stretching of vessels built to Appendix 44 rules</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Shanks (PM)</p> <p>Explanation of Need: ASME Section VIII Div.1 Mandatory Appendix 44 paragraph 44-6.2(g) clearly sets out that a vessel built to those rules needs to be re-stretch having had repair welding. it is not clear if ASME are referring to in process (at the original manufactures location) repairs or post construction repairs. However as the NBIC is currently silent this potential issue should be addressed.</p> <p>July 2020 Meeting Action: Mr. Troutt reported that work continues on the proposal for this item.</p> <p>January 2021 Meeting Action: A motion was made, seconded, and unanimously approved to close this item with no further action, as the original submitter withdrew their request.</p>		

Item Number: 20-20	NBIC Location: Part 3, 3.2.2 e)	No Attachment
<p>General Description: Revision to Part 3, 3.2.2 e)</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Davis (PM)</p> <p>Explanation of Need: The certificate holder should not have to explain or justify why a part was not pressure tested in the manufacturing stage. PG-106.8 of Section I allows the part to be fabricated and shipped as such therefore no explanation should be required.</p> <p>January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.</p>		

Item Number: 20-25	NBIC Location: Part 3, S2.13	No Attachment
<p>General Description: Repair Procedure for Fire Boxes</p> <p>Subgroup: SG Historical</p> <p>Task Group: M. Wahl (PM), Robin Forbes, T. Dillon, & F. Johnson</p> <p>Explanation of Need: In NBIC Part 3, S2.13.10.3, S2.13.11 do not define what to do at a riveted joint. On the tubesheet, or firedoor sheet, where it is flanged to rivet to the firebox, the repairs are silent on what to do at the riveted joint.</p> <p>January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.</p>		

Item Number: 20-47	NBIC Location: All Parts, 9.1	No Attachment
General Description: Revision of the definition of ANIA in Section 9 of all Parts		
Subgroup: Repairs and Alterations		
Task Group: R. Spuhl (PM).		
Explanation of Need: ANIA can be revised to clarify requirements and activities of AIA's performing NR inspection activities. After discussion of ANI endorsement requirements per Item 19-68, a revision of "ANIA" is being considered as a way to provide clarity on the ANI and ANIA requirements.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 20-48	NBIC Location: Part 3, 1.6	No Attachment
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.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

iv. New Items:

Item Number: 20-51	NBIC Location: Part 3, 9.1	Attachment Page 50
General Description: Add practicable and its definition to the glossary		
Subgroup: Repairs and Alterations		
Task Group: B. Boseo (PM)		
Explanation of Need: This is not a commonly used term in everyday language.		
January 2021 Meeting Action: Mr. Troutt presented the proposal for this item. The other subcommittees confirmed that they also approved the definition shown in the proposal. 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)	No Attachment
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.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 20-53	NBIC Location: Part 3, 3.3.5.2 a) & 3.4.5.1 b)	No Attachment
General Description: Certification of Repair or Alteration Plans		
Subgroup: Repairs and Alterations		
Task Group: S. Chestnut (PM)		
Explanation of Need: The Clarification of the Certifying Engineer requirements.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 20-54	NBIC Location: Part 3, 3.2.2 d)	Attachment Page 51
General Description: Review and Update Part 3, 3.4.4 d)		
Subgroup: Repairs and Alterations		
Task Group: B. Schaefer (PM)		
Explanation of Need: A change in dimension and/or contour is currently listed as an example of an alteration in Part 3, 3.4.4 d). A change in dimension may or may not be an alteration in actuality. Current wording does not allow for a change in dimension, even if it is a minor change not affecting the pressure retaining capability of the PRI, without being an alteration. This can be a burden to the industry.		
January 2021 Meeting Action: Mr. Ben Schaefer presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Discussion was held on alteration examples pertaining to this subparagraph and proposed change. Ms. Kathy Moore noted that an action item has been opened to address definitions and examples of alterations. Mr. Newton expressed concern over not including language on calculations. Mr. Troutt suggested including the scope of this item in 21-12. The original motion was withdrawn. A new motion was made, seconded, and unanimously approved to close this item and include it in item 21-12.		

Item Number: 20-55	NBIC Location: Part 3, 3.3.3 e)	Attachment Page 52
General Description: Examples of repairs		
Subgroup: Repairs and Alterations		
Task Group: J. Walker (PM)		
Explanation of Need: By having an and between boiler and heat exchanger the tube is required to be simultaneously installed in both a boiler and a heat exchanger. This is valid for a boiler as they are heat exchanger but in the case of a pressure vessel heat exchanger they are not boilers as boil may not be happening. Therefore, this example is not applicable to pressure vessel which I do not believe is the intent.		
January 2021 Meeting Action: Mr. Jamie Walker presented the proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal.		

Item Number: 20-60	NBIC Location: Part 3, 3.3.4.8	No Attachment
General Description: Part 3 Supplement for FFS Guidelines		
Subgroup: Repairs and Alterations		
Task Group: J. Siefert (PM)		
Explanation of Need: The NBIC provides little guidance related to FFS activities and repairs in part 3.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 20-61	NBIC Location: Part 3, S8	Attachment Page 53
General Description: Revise Supplement 8		
Subgroup: Repairs and Alterations		
Task Group: J. Siefert (PM)		
Explanation of Need: Supplement 8 has one sentence regarding filler metal size that needs to be deleted and dissimilar metal welding needs to be addressed under this Supplement.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item. A proposal will be sent to Subcommittee R&A as a letter ballot.		

Item Number: 20-63	NBIC Location: Part 3, 4.4.2 d)	No Attachment
General Description: Addition of alternative method in lieu of pressure testing		
Subgroup: Repairs and Alterations		
Task Group: T. McBee (PM)		
Explanation of Need: Another alternative method is required when contamination of the pressure-retaining item by liquids is possible or when pressure testing is not practicable, and when NDE is not fully applicable to ensure the structural integrity of the alteration.		
January 2021 Meeting Action: A motion was made, seconded, and unanimously approved to close the item with no action. The Committee felt the current list of alternative methods is sufficient, and the NBIC Secretary will notify the inquirer of the Committee's decision.		

Item Number: 20-67	NBIC Location: Part 3, S6	No Attachment
<p>General Description: Revisions to Part 3, Supplement 6</p> <p>Subgroup: Repairs and Alterations Task Group: R. Underwood (PM)</p> <p>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.</p> <p>January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.</p>		

Item Number: 20-68	NBIC Location: Part 3, 1.5.1 e) & f)	No Attachment
<p>General Description: Certifications to be addressed for electric or written signature and date</p> <p>Subgroup: Repairs and Alterations Task Group: T. Seime (PM)</p> <p>Explanation of Need: Certifications, either written or electronic, are not addressed in the NBIC.</p> <p>January 2021 Meeting Action: A motion was made, seconded, and unanimously approved to close this item and include its scope in item 19-60.</p>		

Item Number: 20-69	NBIC Location: Part 3, S1.2.11.5	No Attachment
<p>General Description: Welds Across Riveted Lap Seams</p> <p>Subgroup: Locomotive Task Group: M. Ray (PM)</p> <p>Explanation of Need: Clarify wording regarding weld taper and provide a cleaner figure to better illustrate the repair. Historical Boilers is considering adding the same text to their Section.</p> <p>January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.</p>		

Item Number: 20-73	NBIC Location: Part 3, 4.4.2 a) 2)	Attachment Page 63
<p>General Description: Pressure Testing of Connecting Welds (Part 3, 4.4.2(a)(2))</p> <p>Subgroup: Repairs and Alterations Task Group: R. Underwood (PM)</p> <p>Explanation of Need: To clarify what the term "replacement part" as used in 4.4.2(a)(2) of Part 3 means.</p> <p>January 2021 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 on the proper paragraph references, as well as the intent of replacement parts. After discussion, the original motion was withdrawn. The task group will work further on this proposal.</p>		

Item Number: 20-74	NBIC Location: Part 3, 2.2.1	No Attachment
<p>General Description: PQR conditions of validity</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Shanks (PM)</p> <p>Explanation of Need: ASME Section IX are planning to issue a new code case under record number 19-2833 which would allow for the normal room temperature tensile test to be replaced with an elevated one due to some material not being capable of passing at room temp. As part of this the WPS may only be used within +- 50°F of the actual test temperature. If this code case is used and a boiler design temperature is changed the validity of the PQR/PWS qualification is in question. This is a similar situation to a PWHT time at temperature- reheat treating an existing PRI may take the PQR/WPS outside of its qualification.</p> <p>January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.</p>		

Item Number: 20-75	NBIC Location: Part 3, 2.5.3.2 d) & h)	Attachment Page 66
<p>General Description: Charpy Impact Test Temperature for Welding Method 2</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: S. Chestnut (PM)</p> <p>Explanation of Need: Current text in 2.5.3.2 h) requires Charpy impact tests be conducted "at the temperature determined in accordance with NBIC Part 3, 2.5.3.2 d)." 2.5.3.2 d) only discusses WPS preheat and interpass temperature. It does not discuss the temperature at which to conduct CVN testing. There is no reference made to the MDMT.</p> <p>January 2021 Meeting Action: Mr. Scott Chestnut presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Mr. Wielgoszinski asked about the temperature required for impact tests, and Mr. Chestnut and Mr. Galanes confirmed that the original code of construction provides requirements for this. No further discussion was held, and the motion was approved unanimously.</p>		

Item Number: 20-76	NBIC Location: Part 3, 9.1	Attachment Page 68
<p>General Description: Define "Remote" in the NBIC Glossary</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: R. Valdez (PM)</p> <p>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.</p> <p>January 2021 Meeting Action: Mr. Troutt presented a progress report on this item. A proposal will be sent to all subcommittees and Main Committee as review and comment ballot.</p>		

Item Number: 20-80	NBIC Location: Part 3, 4.4.2 a) 1)	Attachment Page 69
General Description: Liquid Pressure Testing of Alterations		
Subgroup: Repairs and Alterations		
Task Group: R. Underwood (PM)		
Explanation of Need: To provide clarity that the minimum test pressure for alterations shall be in accordance with the original code of construction.		
January 2021 Meeting Action: Proposal for voice vote, 1 neg and 1 abstain from SC. Mr. Underwood presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Mr. Toth felt that further discussion needs to be held on this before moving forward. Discussion was held on proper test pressures and whether the proposed language is beneficial. Additional discussion was held on rewording first sentence of 4.4.2 a) 1) and removing the second sentence. After discussion and working on the proposal, a vote was taken and the motion to approve the proposal was approved unanimously.		

Item Number: 20-83	NBIC Location: Part 3, 1.5.1 s) & 9.1	Attachment Page 70
General Description: Revision to Part 3, 3.2.2 e)		
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.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item. A proposal will be sent to all subcommittees and Main Committee as review and comment ballot.		

Item Number: 20-87	NBIC Location: Part 3, S6.8	No Attachment
General Description: Registered Inspector requirements per DOT		
Subgroup: Repairs and Alterations		
Task Group: K. Moore (PM)		
Explanation of Need: This reference to 49 CFR statutes would clarify the difference between an "Inspector" as used throughout the NBIC and a "Registered Inspector" specific to DOT tank repair/alteration activities.		
January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.		

Item Number: 20-88	NBIC Location: Part 3, S6.15.1	Attachment Page 71
<p>General Description: Remove S6.15.1 - It is redundant and is not needed</p> <p>Subgroup: Repairs and Alterations Task Group: K. Moore (PM)</p> <p>Explanation of Need: S6.15.1 is redundant text.</p> <p>January 2021 Meeting Action: Mr. Troutt presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Mr. Paul Edwards asked for this proposal to go to letter ballot so that the committee members would have more time to review the proposal. The committee agreed unanimously that this should go out as a letter ballot.</p>		

Item Number: 20-92	NBIC Location: Part 3, 1.5.1 h)	No Attachment
<p>General Description: Changing "Mechanical assembly procedures" to "Mechanical Repair Procedures"</p> <p>Subgroup: Repairs and Alterations Task Group: R. Underwood (PM)</p> <p>Explanation of Need: "Mechanical assembly procedures" appears to be incorrectly referenced in the first sentence of 1.5.1(h) and should state "mechanical repair procedures."</p> <p>January 2021 Meeting Action: A motion was made, seconded, and unanimously approved to close this item and add its scope to item 19-60.</p>		

Item Number: 21-10	NBIC Location: Part 3, 5.2 &5.4	No Attachment
<p>General Description: Add a time frame for R forms (for completion of and submittal of forms)</p> <p>Subgroup: Repairs and Alterations Task Group: R. Troutt (PM)</p> <p>Explanation of Need: Currently, the NBIC is silent on how much time may go by after work is completed before the applicable R Form is accepted by the inspector after work is completed. The NBIC is also silent on how much time may go by before the applicable R Form is submitted to the NB and Jurisdictions (as applicable).</p> <p>January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.</p>		

General Description: Update of SWPS Table 2.3

Subgroup: Repairs and Alterations

Task Group: J. Sekely (PM)

Explanation of Need: NBIC Part 3 should not be used as a catalog enabling the purchase of SWPS's

- A complete listing of all available SWPS's is included in each SWPS
- The web page address for the AWS Bookstore is included in Clause 2.3 of NBIC Part 3
- The Table is extremely difficult to maintain and is prone to errors
- At present, 49 SWPS's are approved for use by the NBIC; 29 have been updated with the remaining 20 still in the B2 committee awaiting AWS Ballot with projected completion in the year 2021 or early 2022.
- As Chair of the B2D subcommittee; it is my intent to submit to ANSI for the "Stabilized Maintenance" program (10 year reaffirmation requirement); So far, 13 Sheetmetal SWPS's were approved by AWS TAC for Stabilized Maintenance

Mr. Sekely's intent was to have this go to SC R&A and MC LB.

January 2021 Meeting Action: Mr. Jim Sekely presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Mr. Sekely and Mr. Troutt spoke on how this will greatly simplify maintenance of this table. No further discussion was held, and the

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

January 2021 Meeting Action: Mr. Troutt presented a progress report on this item.

d. Subcommittee Pressure Relief Devices

- i. Interpretations
- 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		
January 2021 Meeting Action: Ms. Brodeur presented a progress report for this item.		

Item Number: NB15-0307	NBIC Location: Part 4	No Attachment
General Description: Create Guidelines for Repair of Pin Devices.		
Task Group: D. McHugh (PM), A. Renaldo, T. Tarbay, R. McCaffrey, J. Simms, C. Bear		
January 2021 Meeting Action: Ms. Brodeur presented a progress report for this item. A proposal will be sent to Subgroup PRD for letter ballot.		

Item Number: NB15-0315	NBIC Location: Part 4, 2.5.6 and 2.6.6 and Part 1, 4.5.6 and 5.3.6	No Attachment
General Description: Review isolation Valve Requirements, and reword to allow installation of pressure relief devices in upstream piping.		
Task Group: D. DeMichael (PM), B. Nutter, A. Renaldo, D. Marek		
January 2021 Meeting Action: Ms. Brodeur presented a progress report for this item.		

Item Number: 17-115	NBIC Location: Part 4, Section 2	No Attachment
General Description: Complete rewrite of Section 2 combining common requirements into a general requirements section for all pressure relief devices and look at combining with 2.4.3, 2.4.4.		
Task Group: A. Renaldo (PM), D. McHugh, D. Marek		
January 2021 Meeting Action: Ms. Brodeur presented a progress report for this item. A proposal will be sent to Subcommittee PRD for letter ballot.		

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		
January 2021 Meeting Action: Ms. Brodeur presented a progress report for this item.		

Item Number: 19-1	NBIC Location: Part 4, 4.8.5.4 & 4.8.6.1	No Attachment
General Description: Develop specific content and scope of annual field audits.		
Task Group: A. Donaldson (PM), D. Marek, A. Cox, P. Dhobi, M. Brodeur, T. Patel		
January 2021 Meeting Action: Ms. Brodeur presented a progress report for this item.		

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.		
January 2021 Meeting Action: Ms. Brodeur presented a progress report for this item.		

Item Number: 19-71	NBIC Location: Part 4, 4.9.2 & 4.9.3	No Attachment
General Description: Use of Personnel from another VR Certificate Holder to perform VR Repairs		
Task Group: A. Donaldson (PM), A. Cox, B. Donaldson, D. Marek, J. Simms		
Explanation of Need: NBIC SCPRD needs to address the practice of sub-contracted personnel between VR Holders. In order to maintain Quality Standards, the responsible VR Holder must verify the qualifications all personnel and maintain records per NBIC Part 4, Table 4.8.5.4 s)		
January 2021 Meeting Action: Ms. Brodeur presented a progress report for this item. A proposal will be sent to Subgroup PRD for letter ballot.		

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.		
January 2021 Meeting Action: Ms. Brodeur presented a progress report for this item. A proposal will be sent to SC PRD and SG/SC Installation for letter ballot.		

Item Number: 19-85	NBIC Location: Part 4, 2.3.6 j)	No Attachment
General Description: Thermal Fluid Heaters		
Task Group: T. Patel (PM), B. Nutter		
Explanation of Need: Thermal Fluid heaters with no change of phase are not specifically addressed in 2.3.6 j).		
January 2021 Meeting Action: Ms. Brodeur presented a progress report for this item.		

iii. New Items:

Item Number: 20-56	NBIC Location: Part 4, 2.3.6 j)	No Attachment
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		
January 2021 Meeting Action: Ms. Brodeur presented a progress report for this item.		

Item Number: 20-58	NBIC Location: Part 4, 3.4 and 3.5	Attachment Page 73
General Description: Correct Paragraph numbers in Section 3 Related to T/O Requirements		
Subgroup: PRD		
Task Group: T. Beirne (PM)		
Explanation of Need: The paragraph hierarchy is incorrect. Section 3 is for all of in-service inspection and Section 3.3 is specifically for the T/O program. Current sections 3.4 and 3.5 are specific to the T/O program and should be a subordinate paragraph in the document.		
January 2021 Meeting Action: Ms. Brodeur and Mr. Tom Beirne presented a proposal for this item. A motion was made, seconded, and unanimously approved to accept the proposal as presented.		

11. Liaison Activities

- a) **American Society of Mechanical Engineers BPV Code (ASME BPV)**
 - i. Mr. Paul Edwards presented a report on recent ASME actions and developments. The full report can be seen on [Attachment Page 80](#).
- b) **American Welding Society (AWS)**
 - i. Mr. Jim Sekely presented a report on recent AWS actions and developments. The full report can be seen on [Attachment Page 85](#).

12. Future Meetings

- July 12th-15th, 2021 – Cincinnati, OH at The Hilton Netherlands Hotel
- January 2022 – To Be Determined

Mr. Scribner announced that National Board staff will begin scouting locations for the January 2022 NBIC meetings in the next few months, and will inform the committees when a location has been selected.

13. Adjournment

Mr. Wielgoszinski adjourned the meeting at 4:52 PM Central Time.

Respectfully submitted,

Jonathan Ellis

Jonathan Ellis
NBIC Secretary



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

NATIONAL BOARD INSPECTION CODE COMMITTEE

ATTACHMENTS

January 14, 2021 NBIC Main Committee Attendance - Members		
Name	Interest Category	Attendance
Bob Wielgoszinski	AIA	Zoom
George Galanes	Users	Zoom
Jonathan Ellis		San Antonio
Randy Austin	Users	Zoom
Marianne Brodeur	NB Certificate Holders	San Antonio
Paul Edwards	NB Certificate Holders	Zoom
Jim Getter	Manufacturers	Zoom
Craig Hopkins	NB Certificate Holders	Zoom
Donnie LeSage	Jurisdictional Authorities	Zoom
Brian Morelock	Users	Zoom
Venus Newton	AIA	San Antonio
Thakor Patel	Manufacturers	Zoom
Mike Richards	General Interest	Zoom
Matt Sansone	Jurisdictional Authorities	Zoom
Trevor Seime	Jurisdictional Authorities	San Antonio
Jim Sekely	General Interest	Zoom
Rick Sturm	Jurisdictional Authorities	Did Not Attend
Marty Toth	General Interest	San Antonio
Rob Troutt	Jurisdictional Authorities	San Antonio
Melissa Wadkinson	Manufacturers	Zoom
Milton Washington	Jurisdictional Authorities	Zoom
Paul Welch	AIA	Zoom

January 14, 2021 NBIC Main Committee Attendance - Visitors		
Name	Affiliation	Attendance
Jeanne Bock	National Board	Zoom
Jodi Metzmaier	National Board	Zoom
Terry Hellman	National Board	San Antonio
Tom Beirne	National Board	Zoom
Gary Scribner	National Board	San Antonio
Luis Ponce	National Board	San Antonio
Todd Creacy	Zurich	Zoom
Adrian Gibbs	State of Wisconsin	Zoom
Bob McGuire	GE	Zoom
Chris Derks	State of Wisconsin	Zoom
Dan Marek	Mainthia Technologies	Zoom
David McHugh	Allied Valve	Zoom
David Warshall	NYC Dept. of Buildings	Zoom
Don Kinney	State of North Carolina	Zoom
Harold Krambeck	State of New York	Zoom
Joe Brockman	FM Global	Zoom
Kathy Moore	Joe Moore & Co.	Zoom
Linn Moedinger	Strasburg Rail Road	Zoom
Marvin Byrum	ARISE	San Antonio
Mike Carlson	State of Washington	Zoom
Ron Spiker	State of South Carolina	Zoom
Siraj Nasiruddin	ABSG Consulting	Zoom
Tim Memmer		Zoom
Ben Schaefer	AEP	Zoom
Brent Ray	Marathon	Zoom
Caslav Dinic	TSSA	Zoom
Jake Hixson	OneCIS	Zoom
Jamie Walker	Hayes Mechanical	Zoom
Julius Dacanay	State of Hawaii	Zoom
Pat Becker	Babcock & Wilcox	Zoom
Pat Jennings	HSB	Zoom
Paul Davis	Wood PLC	Zoom
Philip Gilston	GE	Zoom
Rodger Adams	Zurich	Zoom
Scott Chestnut	Marathon	Zoom
Steve Frazier	City of Seattle	Zoom
Tim McBee	ARISE	Zoom
Tom Clark	State of Oregon	Zoom
Bob Underwood	HSB	Zoom
M.A. Shah	ABM Industrial Services	Zoom
Paul Shanks	OneCIS	Zoom
Rick Valdez	ARB, Inc.	Zoom
Jason Safarz	KarlDungs USA	Zoom
Matt Downs	Weil-McLain	Zoom
William Hackworth	ARISE	Zoom
Eddie Wiggins	State of Alabama	San Antonio
Michael Winters	ARISE	Zoom
Brian Boseo	Burns & McDonnell	San Antonio

Items Approved for 2023 NBIC

Title	Item Number	CaseStatus	Cycle	NBICEdition	Assigned Committee
Review and clarify requirements for documented training program for VR and T/O programs.	19-2	MC Approved	A	2023	Subcommittee Pressure Relief Devices
Prepare a guide for repair of tank vents	NB12-0901	MC Approved	A	2023	Subcommittee Pressure Relief Devices
Create Guidelines for Installation of Pressure Relief Devices for Organic Fluid Vaporizers	NB15-0308	MC Approved	A	2023	Subcommittee Pressure Relief Devices
Review testing requirements for inservice testing of pressure relief devices	NB15-0321	MC Approved	A	2023	Subcommittee Pressure Relief Devices

ITEM 18-57

The following terms are defined in NBIC Part 1 Glossary. In the text of NBIC Part 1, there are instances where the terms are used in the context of the definition but are not capitalized. In these instances, the terms should be capitalized in the text.

Inspection — A process of review to ensure engineering design, materials, assembly, examination, and testing requirements have been met and are compliant with the code.

Inspector — See National Board Commissioned Inspector and National Board Owner-User Commissioned Inspector.

National Board Commissioned Inspector — An individual who holds a valid and current National Board Commission.

Proposed Changes – Where highlighted, the term capitalization is proposed to be changed.

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.

5.4 EXAMINATION, INSPECTION, AND TESTING {piping}

The owner shall ensure that all examinations, **inspections**, and tests required by the code of construction have been performed prior to operation.

BACKGROUND INFORMATION – Review of Inspector, Inspect, Inspection

The following is the review of Inspector Inspect and Inspection that was performed.

- 1) The proposal does not address locations where the addition of the endorsement could be considered. This includes the following:
 - 4.6 – Testing and Acceptance – “the Inspector shall witness the pressure test of the completed installation...”
 - Definitions – Dutchman – references “acceptable to the Inspector”
- 2) Several instances where the terms appear generic.

Location and Usage – Inspector – inspector	Comments
<p>1.1 Scope</p> <p>Middle of main paragraph. “Otherwise the requirements specified in NBIC part 1 provide guidance for installers, contractor, owners, <i>inspectors</i>, and jurisdictions to ensure safe and satisfactory installation of specified pressure-retaining items.</p>	<p>The first part of the paragraph states that the owner-user is responsible for ensuring that the installation meet all the requirements of the Jurisdiction at the point of installation including licensing, registration, or certification of those performing installations.</p> <p>Inspector is little i. Could mean jurisdictional or other.</p>
<p>1.4.1 Responsibility</p> <p>b) The National Board Commissioned <i>Inspector</i> providing inservice inspection for the facility in which the pressure-retaining item is installed have the following responsibilities:</p> <ol style="list-style-type: none"> 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 alteration to pressure-retaining item, 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 service the first inservice inspection/certificate report to the Jurisdiction when required by the Jurisdiction <p>c) Unless otherwise specifically required by the Jurisdiction, the duties of the inservice <i>inspector</i></p>	<p>Inservice inspector responsibilities under Part 1.</p> <p>Capital I IS endorsement</p>

do not include the installation's compliance to other standards and requirements (e.g., environmental, construction, electrical, undefined industry standards, etc.) for which other regulatory agencies have authority and responsibility to oversee.	Little I, but references a commission. This should be capitalized
<p>2.10.2 Pressure Test</p> <p>Prior to initial operation, the completed boiler, including pressure piping, water columns, superheaters, economizers, stop valves, etc., shall be pressure tested in accordance with the original code of construction. Any pressure piping and fittings such as water columns, blowoff valves, feedwater regulators, superheaters, economizers, stop valves, etc., which are shipped connected to the boiler as a unit, shall be hydrostatically tested with the boiler and witnessed by an <u>Inspector</u>.</p>	<p>Capital Inspector so a Commissioned inspector</p> <p>Inservice or shop? (IS vs. R) Do we want to differentiate?</p>
<p>4.6 testing and acceptance (pressure vessels)</p> <p>b. The completed pressure vessel shall be pressure tested in the shop or in the field in accordance to the original code of construction. When required by the Jurisdiction, owner or user, the <u>Inspector</u> shall witness the pressure test of the completed installation, including piping....</p>	<p>Is this the AI?</p> <p>It is a commissioned Inspector so Capital I is appropriate, but which one?</p>
<p>Supplement 1 Installation of Yankee Dryers</p> <p>S1.2 ASSESSMENT OF INSTALLATION</p> <p>a. The <u>Inspector</u> verifies that the owner or user is properly controlling the operating conditions of the dryer. The <u>Inspector</u> does this by reviewing the owners comprehensive assessments of the complete installation.</p> <p>f. To maintain produce quality, the dryer surface is periodically refurbished by grinding.... The manufacturer, or another qualified source acceptable to the <u>Inspector</u>, instead provided a series of curves that graphically defines these maximum allowable operating parameters....</p> <p>h. If nonstandard load events (incidents) have occurred during installation, then the <u>Inspector</u> should ensure that an appropriate assessment of the structural integrity....</p>	<p>Inservice Inspector</p> <p>Capital I and context fits.</p>
<p>Supplement 2 - Pressure relief valves on the low-pressure side of steam pressure reducing valves</p> <p>S2.2 PRESSURE RELIEF VALVE CAPACITY</p> <p>b. By using the formula in NBIC Part 1, S2.3, <u>Inspectors</u> may calculate the required relieving capacities of the pressure relief valve(s) installed on the low-pressure side of the reducing valve.</p>	<p>Assume meant for inservice</p> <p>Capital I and context.</p>
<p>Supplement 5 Installation of thermal fluid heaters</p>	

<p>S5.8.2 PRESSURE TEST</p> <p>Prior to initial operation, the completed thermal fluid heater system, including pressure piping, pumps, stop valves, etc. shall be pressure tested in accordance with the manufacturer's recommendations. Hydrostatic testing of the system is not recommended due to possible contamination of the system. All pressure testing should be witnessed by an <u>Inspector</u>.</p>	<p>Prior to operation. Capitol I</p> <p>Is this an in-service or shop as it is the system test. AIA typically doesn't test completed systems but in-service don't inspect prior to operation.</p>
<p>Definitions</p> <p>Confined space - ... the <u>Inspector</u> is cautioned of the need to comply with...</p>	<p>Any commissioned Inspector.</p>
<p>Dutchman - Generally limited to tube or pipe cross-section replacement. ... meeting the service requirements and installation procedures acceptable to the <u>Inspector</u>...</p>	<p>Dutchman are repair – shop/repair</p> <p>Not in-service.</p>
<p>National Board Commissioned <u>Inspector</u> - An individual who holds a valid and current National Board Owner-user Commission.</p>	<p>Definition – No distinction between in-service and AIA</p>
<p>Owner-user <u>Inspector</u> - An individual who holds a valid and current National Board Commission.</p>	<p>Same definition as an NBIC commissioned inspector. This was originally copied from NBIC part 1 incorrectly. This is correct as shown and the definition is acceptable.</p>
<p>Interpretations</p> <p>Multiple references to <u>Inspector</u>.</p>	<p>Most appear to reference repairs. Some are older references and difficult to ascertain from the Subject.</p>
<p>Location and Usage</p> <p><u>Inspection - inspection</u></p>	
<p>1.4 CERTIFICATION, <u>INSPECTION</u>, AND JURISDICTIONAL REQUIREMENTS</p> <p>b) The National Board Commissioned Inspector providing inservice <u>inspection</u> for the facility in which the pressure-retaining item is installed has the following responsibilities:</p> <p>1) Verify the Boiler Installation Report (I-1 Report) has been completed and signed by the</p>	<p>Inspection – little i but by context should be I.</p>

<p>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 <u>inspection</u>/certificate report to the Jurisdiction when required by the Jurisdiction.</p>	<p>Also should be I, not i.</p>
<p>1.4.2 EQUIPMENT CERTIFICATION</p> <p>b) Package boilers having external piping disassembled and shipped with the boiler shall have a method for traceability of the disassembled piping that can be verified at the time of installation and <u>inspection</u>[RA1]. The manufacturer of the package boiler is responsible for determining a method of traceability.</p>	<p>Little i, but unclear.</p>
<p>1.4.4 <u>INSPECTION</u></p> <p>All boilers, pressure vessels, piping, and other pressure-retaining items shall be inspected and tested after installation and prior to commencing operation.</p> <p>1.4.5 BOILER INSTALLATION REPORT</p> <p>a) Upon completion, <u>inspection</u>, testing, and acceptance of the installation, the installer shall complete and certify the Boiler Installation Report (I-1) for all power boilers, hot-water heating boilers, steam-heating boilers, hot-water supply boilers, and potable water heaters.</p>	<p>Little i, the installation report is by the installer. Not an Inspector reference.</p>
<p>1.6.4 LADDERS AND RUNWAYS</p>	<p>Little i. Reference to generic inspection activities that may include big I Inspection.</p>

<p>a) All walkways, runways, and platforms shall be:</p> <ol style="list-style-type: none"> 1) of metal construction or equivalent material; 2) provided between or over the top of boilers, heaters, or vessels that are more than 8 ft. (2.4 m) above the operating floor to afford accessibility for normal operation, maintenance, and <u>inspection</u>; 	<p>("Generic i" in the following cases)</p>
<p>2.3.3 CLEARANCES</p> <p>a) Boiler installations shall allow for normal operation, maintenance, and <u>inspections</u>. There shall be at least 36 in. (915 mm) of clearance on each side of the boiler to enable access for maintenance and/or <u>inspection</u> activities. Boilers operated in battery shall not be installed closer than 48 in. (1220 mm) from each other. The front or rear of any boiler shall not be located nearer than 36 in. (915 mm) from any wall or structure.</p> <p>e) Boilers with a bottom opening used for <u>inspection</u> or maintenance shall have at least 12 in. (305 mm) of unobstructed clearance.</p>	<p>Generic i.</p>
<p>2.7.5 BLOWOFF</p> <p>q) Where necessary to install a blowoff tank underground, it shall be enclosed in a concrete or brick pit with a removable cover so that <u>inspection</u> of the entire shell and heads of the tank can be made.</p>	<p>Generic i.</p>
<p>2.10 TESTING AND ACCEPTANCE</p> <p>2.10.1 GENERAL</p> <p>a) Care shall be exercised during installation to prevent loose weld material, welding rods, small tools, and miscellaneous scrap metal from getting into the boiler. Where possible, an <u>inspection</u> of the interior of the boiler and its appurtenances shall be made for the presence of foreign debris prior to making the final closure.</p>	<p>Generic i.</p>

<p>2.10.6 BOILER INSTALLATION REPORT</p> <p>a) Upon completion, <u>inspection</u>, and acceptance of the installation, the installer shall complete and certify the Boiler Installation Report I-1. See NBIC Part 1, 1.4.5.1.</p>	<p>Not an Inspector. Little i. ?</p>
<p>3.3.4 CLEARANCES</p> <p>c) Heating boilers shall be located so that adequate space is provided for proper operation, maintenance, and <u>inspection</u> of equipment and appurtenances, which shall include the removal of tubes if applicable.</p>	<p>Generic i.</p>
<p>3.7.4 FEEDWATER, MAKEUP WATER, AND WATER SUPPLY</p> <p>a) Steam Boilers Feedwater or water treatment shall be introduced into a boiler through the return piping system. Alternatively, feedwater or water treatment shall be introduced through an independent connection. The water flow from the independent connection shall not discharge directly against parts of the boiler exposed to direct radiant heat from the fire. Feedwater or water treatment shall not be introduced through openings or connections provided for <u>inspection</u> or cleaning, safety valve, water column, water-gage glass, or pressure gage. The feedwater pipe shall be provided with a check valve, or a backflow preventer containing a check valve, near the boiler and a stop valve or cock between the check valve and the boiler, or between the check valve and the return pipe system.</p> <p>b) Hot-Water Boilers Makeup water may be introduced into a boiler through the piping system or through an independent connection. The water flow from the independent connection shall not discharge directly against parts of the boiler exposed to direct radiant heat from the fire. Makeup water shall not be introduced through openings or connections provided exclusively for <u>inspection</u> or cleaning, safety relief valve,</p>	<p>Generic i</p>

<p>pressure gauge, or temperature gauge. The makeup water pipe shall be provided with a check valve, or a backflow preventer containing a check valve, near the boiler and a stop valve or cock between the check valve and the boiler, or between the check valve and the piping system.</p>	
<p>3.10.3 BOILER INSTALLATION REPORT</p> <p>a) Upon completion, <u>inspection</u>, and acceptance of the installation, the installer shall complete and certify the Boiler Installation Report I-1. See NBIC Part 1, 1.4.5.1.</p> <p>4.3.2 CLEARANCES</p> <p>a) All pressure vessel installations must allow sufficient clearance for normal operation, maintenance, and <u>inspection</u> (internal and external).</p>	<p>Not the in-service inspector prior to first "inspection"</p>
<p>4.5.6 INSTALLATION AND DISCHARGE PIPING REQUIREMENTS</p> <p>e) There shall be no intervening stop valves...except under the following conditions:</p> <p>2) Upon specific acceptance of the Jurisdiction, when necessary for the continuous operation of processing equipment of such a complex nature that shutdown of any part is not feasible, a full area stop valve between a pressure vessel and its pressure relief device may be provided for <u>inspection</u> and repair purposes only. This stop valve shall be arranged so that it can be locked or sealed open, and it shall not be closed except by an authorized person who shall remain stationed there during that period of operation while the valve remains closed. The valve shall be locked or sealed in the open position before the authorized person leaves the station.</p> <p>3) A full area stop valve may also be placed on the discharge side of a pressure relief device when</p>	<p>Generic i.</p>

<p>its discharge is connected to a common header for pressure relief devices to prevent discharges from these other devices from flowing back to the first device during <u>inspection</u> and repair. This stop valve shall be arranged so that it can be locked or sealed open, and it shall not be closed except by an authorized person who shall remain stationed there during that period of operation while the valve remains closed. The valve shall be locked and sealed in the open position before the authorized person leaves the station. This valve shall only be used when a stop valve on the inlet side of the pressure relief device is first closed.</p> <p>h) Pressure relief devices shall be installed so they are readily accessible for <u>inspection</u>, repair, or replacement.</p>	
<p>4.7.2 CLEARANCE AND ACCEPTABILITY</p> <p>a) The required nameplate (marking or stamping) should be exposed and accessible. b) The openings when required should be accessible to allow for entry for <u>inspection</u> and maintenance.</p>	Generic i.
<p>5.3.6 INLET AND DISCHARGE PIPING REQUIREMENTS</p> <p>e) There shall be no intervening stop valves ... except under the following conditions:</p> <p>2) Upon specific acceptance of the Jurisdiction, when necessary for the continuous operation of processing equipment of such a complex nature that shutdown of any part is not feasible, a full area stop valve between a piping system and its pressure relief device may be provided for <u>inspection</u> and repair purposes only. This stop valve shall be arranged so that it can be locked or sealed open and it shall not be closed except by an authorized person who shall remain stationed there during that period of operation while the valve remains closed. The valve shall be locked or sealed in the</p>	Generic i.

<p>open position before the authorized person leaves the station;</p> <p>3) A full area stop valve may be placed on the discharge side of a pressure relief device when its discharge is connected to a common header for pressure relief devices to prevent discharges from these other devices from flowing back to the first device during <u>inspection</u> and repair. This stop valve shall be arranged so that it can be locked or sealed open, and it shall not be closed except by an authorized person who shall remain stationed there during that period of operation while the valve remains closed. The valve shall be locked or sealed in the open position before the authorized person leaves the station. This valve shall only be used when a stop valve on the inlet side of the pressure relief device is first closed; or</p> <p>i) Pressure relief devices shall be installed so they are accessible for <u>inspection</u>, repair, or replacement. These stop valves shall be so constructed or positively controlled that the closing of the maximum number of block valves at one time will not reduce the pressure relieving capacity below the required relieving capacity.</p>	
<p>5.4 EXAMINATION, <u>INSPECTION</u>, AND TESTING</p> <p>The owner shall ensure that all examinations, <u>inspections</u> [RA2], and tests required by the code of construction have been performed prior to operation.</p>	<p>As it is required by the code of construction, should this be a capitol I? Why both examinations and inspections.</p>
<p>S3.2.1 GENERAL REQUIREMENTS (ENCLOSED AND UNENCLOSED AREAS)</p> <p>a) LCDSVs shall not be located within 10 feet (3,050 mm) of elevators, unprotected platform ledges, or other areas where falling would result in dropping distances exceeding half the container height.</p> <p>b) LCDSVs shall be installed with sufficient clearance for filling, operation, maintenance, <u>inspection</u>, and replacement.</p>	<p>Generic i</p>

<p>S5.3.4 CLEARANCES</p> <p>a) Thermal fluid heater installations shall allow for normal operation, maintenance, and <u>inspections</u>. There shall be at least 18 in. (460 mm) of clearance on each side of the thermal fluid heater to enable access for maintenance and/or <u>inspection</u> activities. Thermal fluid heaters operated in battery shall not be installed closer than 18 in. (460 mm) from each other. The front or rear of any thermal fluid heater shall not be located nearer than 36 in. (915 mm) from any wall or structure.</p> <p>c) Heaters with a bottom opening used for <u>inspection</u> or maintenance shall have at least 18 in. (460 mm) of unobstructed clearance.</p>	<p>Generic i</p>
<p>S5.8.1 GENERAL</p> <p>a) Care shall be exercised during installation to prevent loose weld material, welding rods, small tools, and miscellaneous scrap metal from getting into the thermal fluid system. Where possible, an <u>inspection</u> of the interior of the thermal fluid heater and its appurtenances shall be made for the presence of foreign debris prior to making the final closure.</p>	<p>Generic i</p>
<p>S5.8.6 INSTALLATION REPORT</p> <p>a) Upon completion, <u>inspection</u>, and acceptance of the installation, the installer should complete and certify the Boiler Installation Report I-1. See 1.4.5.1.</p>	<p>Generic i?[RA3]</p>
<p>S7.3.1 RECEIVING AND INITIAL <u>INSPECTION</u> OF GRAPHITE PRESSURE EQUIPMENT</p> <p>Graphite equipment should be thoroughly inspected and tested as it is received in order to identify any in transit damage. Whenever possible, this <u>inspection</u> should be made before the</p>	<p>This is not a Inspector responsibility?</p>

<p>exchanger is removed from the carrier. To verify the unit has arrived in an undamaged condition, a pressure test may be performed. The bolt torques and spring heights should be verified prior to a pressure test. This pressure test shall not exceed the MAWP of the vessel....</p>	
<p>PART 1, SECTION 8 INSTALLATION — PREPARATION OF TECHNICAL INQUIRIES TO THE NATIONAL BOARD INSPECTION CODE COMMITTEE</p> <p><u>SKIPPED INSPECTION IN THIS SECTION</u></p>	
<p>Authorized <u>Inspection</u> Agency (AIA)</p> <p>Inservice: An Authorized <u>Inspection</u> Agency is either:</p> <p>a) a jurisdictional authority as defined in the National Board Constitution; or b) an entity that is accredited by the National Board meeting NB-369, Accreditation of Authorized <u>Inspection</u> Agencies Performing Inservice <u>Inspection</u> Activities; NB-371, Accreditation of Owner-User <u>Inspection</u> Organizations (OUIO); or NB-390, Qualifications and duties for Federal <u>Inspection</u> Agencies (FIAs) Performing Inservice <u>Inspection</u> Activities.</p> <p>New Construction: An Authorized <u>Inspection</u> Agency is one that is accredited by the National Board meeting the qualification and duties of NB-360, Criteria for Acceptance of Authorized <u>Inspection</u> Agencies for New Construction.</p> <p>Authorized Nuclear <u>Inspection</u> Agency — An Authorized <u>Inspection</u> Agency intending to perform nuclear <u>inspection</u> activities and employing nuclear Inspectors / Supervisors</p>	
<p><u>Inspection</u> — A process of review to ensure engineering design, materials, assembly, examination, and testing requirements have been met and are compliant with the code.</p>	<p>Capitol I Inspection.</p>

<p>Jurisdiction — The National Board member Jurisdiction where the organization is located. Alternatively, where the Jurisdiction elects not to perform the review or where there is no Jurisdiction or where the Jurisdiction is the organization's Authorized <u>Inspection</u> Agency, The National Board of Boiler and Pressure Vessel Inspectors will represent the Jurisdiction. At the Jurisdiction's discretion, the Jurisdiction may choose to be a member of the review team if the Jurisdiction chooses not to be the team leader.</p>	
<p>NBIC — The National Board <u>Inspection</u> Code published by The National Board of Boiler and Pressure Vessel Inspectors.</p>	
<p>Owner-User <u>Inspection</u> Organization — An owner or user of pressure-retaining items that maintains an established <u>inspection</u> program, whose organization and <u>inspection</u> procedures meet the requirements of the National Board rules and are acceptable to the jurisdiction or jurisdictional authority wherein the owner or user is located.</p>	
<p>Some in Interpretations</p>	
<p>Index</p> <p>Inservice <u>Inspection</u> (Introduction), (1.4.1), (8.1), (9.1)</p> <p><u>Inspection</u> (Foreword), (Introduction), (1.4), (1.4.1), (1.4.2), (1.4.4), (1.4.5), (1.6.4), (2.3.3), (2.7.5), (2.10.1), (2.10.6), (3.3.4), (3.7.4), (3.10.3), (4.3.2), (4.5.6), (4.7.2), (5.3.6), (5.4), (S1.2), (S3.2.1), (S5.3.4), (S5.8.1), (S5.8.6), (7.1), (8.4), (9.1)</p>	

Owner-User <u>Inspection</u> Organization (Introduction), (9.1)	
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Proposed CO Wording Changes - Item Number 20-27

1.6.9 CARBON MONOXIDE (CO) DETECTOR/ALARM

The owner or user shall install a carbon monoxide (CO) detector/alarm in equipment rooms where fuel fired boilers and/or fuel fired pressure vessels are located in accordance with the authority having Jurisdiction.

- a) If a carbon monoxide detector/alarm is required, it is recommended that the NFPA 72 standards be used for installation details not otherwise covered.
- b) The installer shall follow the combustion tuning requirements of the manufacture, including the equipment used for the combustion tuning.
- c) It is recommended that burner combustion adjustments be performed with a combustion analyzer that measures Carbon Monoxide (CO), and that corrective actions are taken with high levels.

Rational

CO has been a major hazard related to boilers, killing and injuring many people every year. NBIC has been dealing with ways to address this for several years, with the new section 1.6.9 recently added. Other changes requested include requiring calibrated combustion analyzers for startups and the requirement to use ambient CO monitors in all boiler rooms, neither of which were accepted by the group.

The ideal solution would be a CO sensor in the stack that would quickly identify a problem and shut the unit off, but there are no inexpensive reliable CO sensors that would be cost effective for the many small boilers existing and sold every year. There are simple inexpensive ambient CO monitors that are being used as a means of detecting CO problems.

The NFPA 72 standard (was NFPA 720) covers the application of ambient CO monitors in great deal, but is targeted towards buildings that house people, like nursing homes, apartment buildings and so on. They require CO monitors in all living areas and boiler rooms.

These changes are intended to address the two primary issues that this group asked;

1. Now that the individual states are starting to require ambient CO monitors, questions like what are the correct equipment and installation procedures. The answers are given in the NFPA 72 standard.
2. To address the proper setup of the burner (and CO levels), require that they follow the manufacturers setup procedures. Many of the CO problems are from improper installation, like using natural gas orifices for LP gas.
3. Encourage the use of combustion analyzers to check for high CO levels and take corrective actions if needed.

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the heater at all times regardless of control valve position. If 3-way valves are used, balancing valves should be included.

- b) Design of piping supports should be in accordance with jurisdictional requirements, manufacturer's recommendations, and/or other industry standards as applicable. Thermal insulation used on the pipes and equipment should be selected for the intended purpose and for compatibility with the fluid. Where there is the potential for fluid system leaks (flanged joints, etc.), the thermal insulation selected should be non-absorbent. Laminated foam glass or cellular glass (nonabsorbent, closed cell) insulation are examples of suitable insulation.

S5.5.6 FUEL

See NBIC Part 1, Section 1.6.5 *Fuel*

(19) S5.5.7 ELECTRICAL

- a) All wiring for controls, heat generating apparatus, and other appurtenances necessary for the operation of the thermal fluid heater(s) should be installed in accordance with the provisions of national or international standards and comply with the applicable local electrical codes.
- b) A manually operated remote shutdown switch or circuit breaker shall be located just outside the equipment room door and marked for easy identification. Consideration should also be given to the type and location of the switch to safeguard against tampering.
- c) A disconnecting means capable of being locked in the open position shall be installed at an accessible location at the heater so that the heater can be disconnected from all sources of potential. This disconnecting means shall be an integral part of the heater or adjacent to it.
- d) If the equipment room door is on the building exterior, the shutdown switch should be located just inside the door. If there is more than one door to the equipment room, there should be a shutdown switch located at each door of egress. For atmospheric-gas burners, and oil burners where a fan is on a common shaft with the oil pump, the complete burner and controls should be shut off. For power burners with detached auxiliaries, only the fuel input supply to the firebox need be shut off.
- e) Controls for Heat Generating Apparatus
 - 1) Oil and gas-fired and electrically heated thermal fluid heaters shall be equipped with suitable primary (flame safeguard) safety controls, safety limit switches and controls, and burners or electric elements by a nationally or internationally recognized standard.
 - 2) 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. Thermal fluid heater shall have:
 - a. Expansion tank low level switch, liquid level switch (or similar device) interlocked with the circulating pump operation to confirm minimum level in the expansion tank when the system is cold. This interlock prevents pump cavitation. The function of this device shall prevent burner and pump operation if the liquid level is not adequate.
 - b. Thermal fluid temperature operation control. This temperature actuated control shall shut down the fuel supply when the system reaches a preset operation temperature. This requirement does not preclude the use of additional operation control devices when required.
 - c. High temperature limit safety switch located on the thermal fluid heater outlet. This limit shall prevent the fluid temperature from exceeding the maximum allowable temperature of the

specific fluid. The high temperature limit safety switch set point should be set no higher than the maximum temperature specified by the fluid manufacturer, heater designer, or downstream process limits, whichever is lowest. Functioning of this control shall cause a safety shutdown and lockout. The manual reset may be incorporated in the temperature limit control. Where a reset device is separate from the temperature limit control, a means shall be provided to indicate actuation of the temperature sensing element. Each limit and operating control shall have its own sensing element and operating switch.

- d. Primary flame safety control for each main burner assembly. This control shall deenergize the main fuel shut off valve and shut off pilot fuel upon loss of flame at the point of supervision. The function of this control shall cause a safety shutdown and lockout.
 - e. Power burners and mechanical draft atmospheric burners shall provide for the preignition purging of the combustion chamber and flue passes. The purge shall provide no fewer than four air changes or greater as specified by the manufacturer.
 - f. Proof of flow interlock-thermal fluid heaters require a minimum flow rate to ensure proper velocities and film temperatures through the heater. A low flow condition can cause overheating, degradation of the fluid or heater coil or tube failure. Activation of this interlock shall cause a safety shutdown of the burner and pump. One or more interlocks shall be provided to prove minimum flow through the heater at all operating conditions.
- 3) In accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or other industry standards, as applicable, Thermal fluid heaters may also have:
- g.a.** A high stack temperature switch interlock – in the event of a high stack temperature (indication of improper combustion or cracked coil) this device shall shut off the burner and circulating pump and cause a lockout condition.
 - a.b.** An inert gas smothering system (steam or CO₂) – this system is used to quench combustion in the event of a cracked heater coil or tube. The gas smothering system should be installed per local codes and requirements. A typical system may include two stack limit switches, an alarm and valve to allow inert gas to enter the combustion chamber. One stack limit is set at a value above the typical stack temperature for the equipment [e.g. 1,000. °F (540°C)] and the second is set at 100 °F (40°C) above the first. If the limit is tripped, the pump and burner will shut down. If the second limit is tripped, the inert gas shall enter the combustion chamber to quench the flame.
 - b.e.** A high inlet pressure switch – this normally closed switch senses pressure at the heater inlet and its setpoint is determined based on the system design pressure when the system is cold. Activation of this switch indicates a restriction in flow and should shutdown the burner and pump and cause a lockout condition.
 - c.d.** A low inlet pressure switch – this normally open switch senses pressure at the heater inlet and its setpoint is determined based on system pressure when the system is operating at temperature. Activation of this switch indicates a restriction in flow and should shutdown the burner and pump and cause a lockout condition.
 - d.e.** A high outlet pressure switch – this normally closed switch senses pressure at the heater outlet and its setpoint is determined based on the system pressures when the system is at operating temperature. Activation of this switch indicates a restriction in flow and should shutdown the burner and pump and cause a lockout condition. Note: the setpoint of this switch should be lower than the safety relief valve setting.
- 4) These devices shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, as applicable.

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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.

Need to present to NBIC Part 1 that the installation of high stack temperature indicator with a safety shut down be mandatory. See Supplement 5.5.7 3 a change "may" to "shall")

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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 — Pressure relief valves shall be a closed bonnet design with no manual lift lever. Pressure relief valves must be tested by a qualified repair organization every 12 to 36 months, depending on conditions, unless otherwise

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~~directed by the jurisdiction. The pressure relief discharge installation should shall meet the requirements of NBIC Part 4, 2.3. Inspection and testing of the relief device shall meet the requirements of NBIC Part 4, 3.0. 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:~~

- ~~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.

((Need to consult manufacturer on internals))

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

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.

NBIC Part 2 Inquiry

Robert Underwood
Hartford Steam Boiler
12/15/20

Item No.	20-82 – Reporting of Form NB-136
Purpose	To permit the original PRI manufacturer to prepare and submit Form NB-136
Statement of Need:	Revise NB-136 Reporting requirements and Form NB-136 to permit the original manufacturer of the pressure retaining item to prepare and submit the form.
Background Information:	<p>This proposal is the result of a field inquiry. Currently, only the owner, user, or R StampCertificate holderHolder are permitted to prepare and submit Form NB-136 (Replacement of Stamped Data). After discussing with NB staff, we saw no reason to prohibit the original PRI manufacturer from replacing stamped data or nameplates and preparing/submitting the NB-136 Form.</p> <p>This proposal will revise 5.2.2(a), Form NB-136, and the instructions on how to complete Form NB-136 (paragraph 5.3.3) to permit the original PRI manufacturer to prepare and submit the NB-136 Form.</p>
Existing Text:	See Attachment
Proposed Text:	See Attachment

5.2.2 REPORTING

- a) The completed Form NB-136 with a facsimile of the replacement stamping or nameplate applied and appropriate signatures shall be filed with the Jurisdiction, if applicable and the National Board by the owner, user, Original Manufacturer, or “R” StampCertificate Holder.

5.3.3 INSTRUCTIONS FOR COMPLETING THE FORM NB-136, REPLACEMENT OF STAMPED DATA FORM

Items 1-12 shall be completed by the owner, user, Original Manufacturer, or “R” StampCertificate holderHolder making the request.

- 1) Enter purchase order, job, or other identifying number used by your company if applicable.
- 2) The name, address and phone number of the Jurisdiction, Authorized Inspection Agency (when there is no Jurisdiction) the form is being submitted to for approval.
- 3) Enter the name and address of your company or organization.
- 4) Enter the name, email, and phone number of the person who can be contacted if there are any questions concerning this request within your company or organization.
- 5) Enter the name and address of the location where the pressure-retaining item is installed. If this is the same as number 3, check the box “same as # 3”. If the pressure-retaining item is being refurbished and the final installation location is unknown, check the box “Stock item-unknown”.
- 6) Enter the date the pressure-retaining item was installed. If unknown check the box “Unknown”.
- 7) Enter the name of the manufacturer of the pressure retaining item the request is being submitted for.
- 8) Manufacturer’s Data Report Attached, check the appropriate box.
- 9) Is the pressure-retaining item registered with the National Board? Check the appropriate block. If yes provide the National Board Registration Number.
- 10) Provide as much information as known to help identify the pressure-retaining item.
- 11) Provide a true facsimile of the legible part of the nameplate or stamping.
- 12) Attach any other documentation that helps provide traceability of the vessels to the original stamping, such as purchase orders, blueprints, inspection reports, etc.
- 13) Provide the name of owner, ~~or~~ user, or Original Manufacturer of the pressure-retaining item or “R” StampCertificate holderHolder making the request. If an “R” StampCertificate holderHolder, provide the “R” StampCertificate number. Signature of the requester and date requested.
- 14) To be completed by the Jurisdiction or Authorized Inspection Agency’s authorized representative.

If the original manufacturer is currently in business, concurrence shall be obtained by the owner or ~~user~~.

The requester shall submit the form along with any attachments to the Jurisdiction where the pressure-retaining item is installed for approval. If there is no Jurisdiction or the pressure-retaining item is a

stock item, the requester shall submit the form to a National Board Commissioned Inspector for approval.

After authorization, the form will be returned to the owner, user, Original Manufacturer, or "R" Stamp Certificate holder/Holder who made the request. The requester is required to contact the Jurisdiction or an Authorized Inspection Agency to provide a National Board Commissioned Inspector to witness the re-stamping or installation of the new nameplate. If the nameplate is being welded to the pressure-retaining boundary of the vessel, the welding shall be done by a "R" Stamp Certificate holder/Holder. The requester will provide the new nameplate or have the tools on-hand to do the re-stamping in accordance with the original Code of Construction.

- 15) Once the re-stamping is completed, or the new nameplate is attached, the requester shall provide a true facsimile of the replacement stamping.
- 16) The owner, user, Original Manufacturer, or "R" Stamp Certificate Holder/Holder shall fill in their name (and number if an "R" Stamp Certificate holder/Holder), sign and date.
- 17) To be completed by the National Board Commissioned Inspector who witnessed the re-stamping or installation of the new nameplate.

Note: Once completed the requester shall file a copy with the Jurisdiction where the pressure-retaining item is installed, the National Board, and the owner or user of the vessel if the request was made by the Original Manufacturer or and "R" Stamp Certificate holder/Holder, and upon request to the Authorized Inspection Agency who witnessed the re-stamping or attachment of the new nameplate.

REPLACEMENT OF STAMPED DATA FORM, NB-136
in accordance with provisions of the *National Board Inspection Code*

1. _____
(P.O. no., job no., etc.)

2. SUBMITTED TO: _____
(Name of Jurisdiction)

(Telephone no.)

3. SUBMITTED BY: _____
(Name of Owner, User, **Original Manufacturer**, or "R" Certificate Holder)

(Address)

4. _____ (Name of contact) _____ (Email) _____ (Telephone no.)

5. LOCATION OF INSTALLATION: SAME AS #3 STOCK ITEM-UNKNOWN

(Name)

(Address)

6. DATE INSTALLED: _____ UNKNOWN

7. MANUFACTURER: _____
(Name)

8. MANUFACTURER'S DATA REPORT ATTACHED: NO YES

9. ITEM REGISTERED WITH NATIONAL BOARD: NO YES, NB NUMBER _____

10. ITEM IDENTIFICATION: _____ (Type) _____ (Mfg. serial no.) _____ (Jurisdiction no.) _____ (Year built)

_____ (Dimensions) _____ (MAWP psi) SAFETY RELIEF VALVE SET AT: _____ (psi)

13. I REQUEST AUTHORIZATION TO REPLACE THE STAMPED DATA OR NAMEPLATE ON THE ABOVE DESCRIBED PRESSURE-RETAINING ITEM IN ACCORDANCE WITH THE RULES OF THE NATIONAL BOARD INSPECTION CODE (NBIC).

NAME: _____ NUMBER: _____
(Name of Owner/user, Original Manufacturer, or "R" Certificate Holder) ("R" Certificate Holder only)

SIGNATURE: _____ DATE: _____
(Authorized Representative)

Change to owner, user,

14. BASED ON THE TRACEABILITY PROVIDED, AUTHORIZATION IS GRANTED TO REPLACE THE STAMPED DATA OR TO REPLACE THE NAMEPLATE OF THE ABOVE DESCRIBED PRESSURE-RETAINING ITEM.

SIGNATURE: _____ DATE: _____
(Authorized Jurisdictional Representative or Inspector)

NATIONAL BOARD COMMISSION NO.: _____ JURISDICTIONAL NUMBER: _____
(If available)

15. THE FOLLOWING IS A TRUE FACSIMILE OF THE ITEM'S REPLACEMENT STAMPING OR NAMEPLATE.
(Must clearly state "replacement")

Change to owner, user

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE STATEMENTS IN THIS REPORT ARE CORRECT, AND THAT THE REPLACEMENT INFORMATION, DATA, AND IDENTIFICATION NUMBERS ARE CORRECT AND IN ACCORDANCE WITH PROVISIONS OF THE NATIONAL BOARD INSPECTION CODE (NBIC).

NAME: _____ NUMBER: _____
(Name of Owner/user, Original Manufacturer, or "R" Certificate Holder) ("R" Certificate Holder only)

SIGNATURE: _____ DATE: _____
(Authorized Representative)

17. WITNESSED BY: _____ EMPLOYER: _____
(Name of Inspector)

S2.7.3.2 SUBSEQUENT INSPECTIONS

- a) Boilers that have completed the initial inspection requirements begin the subsequent inspection intervals. The following inspection intervals should be used unless other requirements are mandated by the Jurisdiction.
 - 1) Interval #1 — One year following initial inspection. Inservice inspection per NBIC Part 2, S2.7.1.
 - 2) Interval #2 — Two years following initial inspection. Visual inspection per NBIC Part 2, S2.5.2.2.
 - 3) Interval #3 — Three years following initial inspection. A pressure test per NBIC Part 2, S2.6.1.
- b) After interval #3 is completed, the subsequent inspection cycle continues with interval #1.
- c) UT thickness testing per NBIC Part 2 S2.6.2 shall be performed at 5 year intervals, or at a shorter interval if deemed necessary by the Jurisdiction.
 - 1) Recurring UT thickness testing may be extended by up to 1 cycle (5 years) where the owner can demonstrate the following:
 - a. Two prior consecutive NDE reports following this cycle, spanning a minimum of 5 years, showing that current practice permits a longer NDE cycle;
 - b. Storage and care of the boiler in adherence with the applicable sections of S2.13.1 STORAGE METHODS; and
 - c. Operating records (ie; visual images and log book records showing correct water treatment) shall be reviewed annually during the extension period indicating no change to boiler condition.
 - 2) New construction ASME Section I boilers may not be required to be subjected to UT thickness testing for 20 years from the date of manufacture, unless a shorter interval is deemed necessary by the Jurisdiction.

PROPOSED INTERPRETATION

Inquiry No.	20-3
Source	Nathan Carter, HSB nathan_carter@hsb.org
Subject	<p>Inspector involvement in Fitness-for-Service Assessments</p> <p>Background: The below questions are intended to gain clarity as to first which Inspector (i.e. “IS” Commissioned or “R” Endorsement) signs the FFSA Form NB-403 when an “R” Certificate Holder is involved with a repair in that region as well as determine what level of review of the Fitness-for-Service the Inspector is expected to complete. If it is an Inspector holding a “R” Endorsement with an AI Commission (not tested on NBIC Part 2), shouldn’t the relevant pages in NBIC Part 2 concerning Fitness for Service be included in their tested body of knowledge, so they are aware of the detailed rules?</p> <p>The Body-Of-Knowledge for National Board Inspectors holding either an “IS” Commission or “R” Endorsement does not reference ASME FFS-1/API 579 Fitness-For-Service Standard or have any expectation that the Inspector be capable of determining if the correct Fitness for Service methodology was used or that the assumptions taken by the Engineer in the analysis were the most appropriate or accurate. Clarification is also requested due to the Form NB-403 signature block stating “Verified by” for the Inspector without any other disclaimers as typically found on other Forms signed by Inspectors such as ASME MDRs and NBIC Form R-1/R-2.</p> <p>An example is a R-Certificate holder was hired to repair a weld seam. It was discovered during a repair that multiple base metal laminations existed adjacent to the repair location. A Fitness for Services Evaluation was subsequently performed. The first question is whether or not it is the responsibility of the Repair Inspector to sign the FFSA form once everything has been properly vetted, since the defect being left in place is not necessarily within the scope of the initial repair being performed by the “R” Certificate Holder, or should this be signed off by a Commissioned Inservice Inspector, since they are examined on the rules of NBIC Part 2? Also, Form NB-403 is vague in the signature block region for the scope of what the Inspector is signed for. It could be alluded that without a statement, such as those found on the R-1 and R-2 forms, the Inspector is signing off on the appropriateness and adequacy of the Fitness-For-Service methodology performed by the Engineer.</p>
Edition	2019; Part: Repairs and Alterations; Section: 3; Paragraph: 3.3.4.8 2019; Part: Inspection; Section: 4; Paragraph: 4.4
Question	<p>Question 1: In accordance with NBIC Part 3, 3.3.4.8, a fitness-for-service condition assessment as described in NBIC Part 2, 4.4 shall be completed and adequately documented on the FFSA Form NB-403. Once Form NB-403 is completed, is it required that the Inspector signing this Form hold a National Board “R” Endorsement as described in RCI-1/NB-263?</p> <p>Question 2: NBIC Part 2 4.4.1 d) states that the Inspector shall indicate acceptance of the Report of FFSA by signing. Paragraph 4.4.3 b) states that the Inspector shall review the condition assessment methodology and ensure that the inspection data and documentation are in accordance with Part 2. Is the Inspector’s signature on Form NB-403 an indication that the condition assessment and recommendations completed by the Engineer have been fully reviewed for appropriateness and accuracy by the Inspector?</p>

	Question 3: If the answer to Question 2 is No, is the Inspector's signature on Form NB-403 an indication of acceptance solely on the basis of review of the Form for completeness and verification that the requirements outlined in 4.4 were addressed?
Reply	Proposed Reply 1: Yes Proposed Reply 2: No Proposed Reply 3: Yes
Committee's Question	
Committee's Reply	
Rationale	

PROPOSED INTERPRETATION

Inquiry No.	20-11
Source	Hugh-Jean Nel, Sasol Hugh-Jean.Nel@sasol.com
Subject	Scope of Repairs Background: Historically NBIC has not defined limitations on the scope of repair provided the entire item is being rebuilt, see Question & Reply 2 & 3 in Interpretation 98-28. NBIC Part 3 lists several examples of repair but nowhere limits the scope or amount of these examples that can be utilized when performing repairs. This creates some uncertainty when performing some types of repairs, such as replacing the tubesheets of a fixed tubesheet type heat exchanger as listed in 3.3.3 e). According to ASME BPV Code Section VIII Division 1 Part UHX, Section 13, the length of the tubes is a design parameter and therefore replacing the tubesheet in accordance with its original design might require the replacement of the tubes as well to maintain the original design length.
Edition	2019; Part: Repairs and Alterations; Section: 3; Paragraph: 3.3.3 Examples of Repairs
Question	Question: Is it permissible for repair activities performed on pressure retaining item to have more than one activity listed in 3.3.3 with the scope of repair?
Reply	Proposed Reply: Yes, provided that the scope of repairs has been approved by the Inspector, and when required, by the Jurisdiction.
Committee's Question 1	Can May multiple repair activities referenced in 3.3.3 of Part 3 be listed on a single Form R-1 Report when performing a repair on a pressure retaining item?
Committee's Reply	Yes
Rationale	There is nothing in the NBIC that restrict the repair work performed on one vessel at the same time.
Committee's Question 2	Other than tube plugging, is it considered an alteration when the heat transfer surface(s) tube length of a heat exchanger is changed changed from its original design while replacing tube sheets on a ASME Section VIII, Div 1 pressure vessel?
Committee's Reply	Yes. Reference NBIC Part 3, 3.4.4 d)
Rationale:	The tube length is a dimension as mentioned in 3.4.4. d

Interp 20-11

3.4.4 EXAMPLES OF ALTERATIONS

d) A change in the dimensions or contour of a pressure-retaining item;

3.3.3 EXAMPLES OF REPAIRS

e) Replacement of heat exchanger tubesheets in accordance with the original design;

INTERPRETATION 98-28

Subject: RC-1050(c) Replacement Parts Fabricated by an "R" Certificate Holder
Appendix 6 Pressure Retaining Replacement Items
RC-1050 Definition of New Replacement Parts

1998 Edition

Question 1: Does RC-1050(c) of the NBIC permit the holder of an "R" Certificate to fabricate by welding new and exact pressure retaining replacement parts for an ASME stamped item that the "R" stamp holder is repairing?

Reply 1: No. ASME replacement parts fabricated by welding that require shop inspection by an Authorized Inspector shall be fabricated by an organization having an appropriate ASME Certificate of Authorization.

Question 2: An ASME stamped item is determined to be corroded beyond repair and the only salvageable part is the ASME Code stamping or nameplate. Is it the intent of the NBIC to permit a holder of an "R" Certificate only to build a complete new and exact pressure retaining replacement item using the original ASME construction Code, Section, Edition and Addenda and same materials, transfer and document the transfer of the ASME stamping or nameplate on an R-1 Form to the new pressure-retaining item and stamp the repair with the "R" stamp?

Reply 2: No.

Question 3: Does the NBIC define the point at which a repair becomes new construction?

Reply 3: No.

PROPOSED INTERPRETATION

Inquiry No.	20-66 NBIC Location: Part 3, 3.3.2 e) (Addition of non-load bearing attachments)
Source	Alex Garbolevsky – Hartford Steam Boiler
Subject	<p>The reason for the interpretation request is that two previously published NBIC Interpretations and the NBIC itself seem to be contradictory.</p> <p>Interpretations 95-14 and 95-21 lead the reader to conclude that if the original vessel was postweld heat treated, then the addition of refractory clips by welding, regardless of size, without postweld heat treatment is an alteration.</p> <p>However, NBIC Part 3 [2019 Edition], 3.3.3 b)1) and 2) list addition of welded attachments to pressure parts, such as: Studs for insulation or refractory lining and hex steel or expanded metal for refractory lining as “Examples of Repairs”.</p> <p>Furthermore, NBIC Part 3 [2019 Edition], 3.3.2 e) 2) states: “The following repairs may be considered as routine repairs and shall be limited to these categories: 2) The addition or repair of non-load bearing attachments to pressure-retaining items <i>where postweld heat treatment is not required</i>;</p>
Edition	2019
Question	An ASME BPV Code Section VIII, Div. 1 pressure vessel (P-No. 1, 2-1/4 in thick), fabricated in 1971, was completely postweld heat treated (PWHT) in an oven. The vessel nameplate is marked “HT”. No special service applies. In 2020, refractory clips are added by welding. The attachment welds are of such size that they are exempted from PWHT per ASME BPV Section VIII, Div. 1, 2019 Edition, Table UCS-56-1 General Note (b)(3)(c). May the welding of the refractory clips be considered as a “routine repair” under NBIC (2019) Part 3, 3.3.2 e) 2)?
Reply	Yes
Committee’s Question	May non-load bearing attachments welded directly to an ASME Section VIII, Div. 1 pressure vessel that has full postweld heat treatment reported on the ASME Manufacturer’s Data Report be considered a routine repair without subsequent postweld heat treatment or post weld heat treatment alternatives?
Committee’s Reply	<u>Yes, provided the attachment welds are exempted from post weld heat treatment by the original construction Code and any service related conditions.</u>
Rationale	After discussion, it was determined that 3.3.2(e)(2) permits addition of non-load bearing attachments when the repair weld is exempted from post weld heat treatment by the original construction code.
SC Vote	

NBIC Vote	
Negative Vote Comments	

...shall be noted on the Manufacturer's Data Report.

(f) See below.

(1) The letters HT shall be applied under the Designators when the complete vessel has been postweld heat treated as provided in UW-10.

(2) The letters PHT shall be applied under the Designators when only part of the complete vessel has been postweld heat treated as provided in UW-10.

The extent of the postweld heat treatment shall be noted on the Manufacturer's Data Report.

Interpretation: (NBIC) 95-14
 Subject: R-202 Alteration, 1992 Edition with the 1994 Addenda
 Date Issued: N/A
 File: N/A

Question: May a welded repair to a pressure vessel be performed without postweld heat treatment or acceptable alternative to postweld heat treatment, when the pressure vessel as reported on the data report was postweld heat treated during construction?

Reply: No.

INTERPRETATION 95-21

Subject: Appendix 4, Definition of Alteration, 1995 Edition

Question: May an ASME Section VIII, Division 1 pressure vessel that has postweld heat treatment reported on an ASME Manufacturer's Data Report, be repaired by welding without subsequent postweld heat treatment or postweld heat treatment alternatives?

Reply: No. This is an alteration.

INTERPRETATION 20-77
Authorization of repair/alteration activities

Inquiry No.	20-77
Source	Paul Shanks Email: paul.shanks@onecis.com Phone: +1 (832) 316.4249
Subject	<p>Many R-certificate holders also have U or S stamps and as such have a regular AI (with R endorsement) to whom they tend to have review repair and alteration packages. However when the physical work will be conducted 'out of state' travel limitations and or jurisdictional authorization requirement prevent the local AI from making the final acceptance inspection thus another AI must do that work, para 1.3.2 a) makes clear that both Inspectors have to be employed by the same agency. Form R-2 has 2 Inspector sign off locations but does not make clear if the two Inspectors must be from the same AIA or not.</p> <p>Background Information: Paragraph 1.3.2 a) situates that the inspectors that authorizes the repair/alteration and the inspector that performs the acceptance inspection be employed by the same AIA. However the activity of authorizing the repair/alteration is not defined and it is not clear what constitutes authorization. Given that form R-2 has sign off locations for design and constructions, if two different Inspectors sign, should they be employed by the same agency?</p>
Edition	Part 3 1.3.2
Question	<p>Q1: Given the restriction of employment in paragraph 1.3.2 a) if two inspectors are signing an R-2 may they be employed by different AIA's?;</p> <p>Q2: if the answer to the above is yes, does this mean the Inspector making the final acceptance inspection is the only Inspector that is suitable to authorize the inspection?</p>
Reply	<p>A1: No</p> <p>A2: Yes</p>
Committee's Question	<p>Q1: May inspectors<u>Inspectors</u> employed by two different AIA's complete the inspector certifications on the Form R-2?<u>certify the Certificate of Design Change Review and Certificate of Inspection portions of the Form R-2?</u></p> <p>Q2: Must the inspector<u>Inspector</u> signing the Certificate of Inspection on the Form R-2 be the same inspector<u>Inspector</u>, or employed by the same AIA as the inspector<u>Inspector</u>, who authorized the construction work for the alteration?</p>
Committee's Reply	<p>A1: Yes.</p> <p>A2: Yes.</p>
Rationale	<p>Q1: NBIC Part 3, 5.2.2(a) and (c).</p> <p>Q2: NBIC Part 3, 1.3.2(a) and 5.2.2(c).</p>

SC Vote	
NBIC Vote	
Negative Vote Comments	

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	<p>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?</p> <p>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?</p> <p>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?</p> <p>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?</p> <p>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.</p> <p>Proposed Reply: Question 1: Alteration (calculations required)</p> <p>Question 2: Alteration (calculations required)</p> <p>Question 3: Repair</p> <p>Question 4: Some may be repairs others alterations.</p> <p>Question 5: Alteration (calculations required)</p>
Reply	

Committee's Question	<p>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?</p> <p>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?</p> <p>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.</p>
Committee's Reply	<p>A1: Alteration A2: Yes A3, Alteration</p>
Rationale	<p>Original questions 1,2 &3 have all be rolled up into Q&A1.</p> <p>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</p> <p>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.</p>
SC Vote	
NBIC Vote	
Negative Vote Comments	

PROPOSED INTERPRETATION

Item Number:	20-81
Submitted by:	Micah Davidian robert_underwood@hsb.com
Subject:	<p>Minimum Required Test Pressure for Alteration Activities</p> <p>Explanation of Need: To provide clarity that the minimum test pressure for alterations shall be in accordance with the original code of construction.</p> <p>Background Information: I have recently had discussions with some repair firms and Repair Inspectors who believe there are no minimum test pressure requirements when performing liquid pressure tests of alterations since it is not specifically stated in paragraph 4.4.2(a)(1).</p> <p>This interpretation, combined with a new proposal to revise 4.4.2(a)(1) will make it clear that minimum test pressures for alteration activities shall comply with the original code of construction, which I believe is the intent.</p>
NBIC Location:	2019 NBIC Part 3, 4.4.2 a) 1)
Question:	When conducting a liquid pressure test of an alteration activity as described in 4.4.2(a)(1), shall the minimum required test pressure be as specified in the original code of construction?
Proposed Reply:	Yes.
Committee's Question:	
Committee's Reply:	
Rationale:	

INTERPRETATION 20-89

LIQUID PRESSURE TEST EXAMINATION METHODS APPLICABLE TO ALTERATIONS -

Inquiry No.	20-89
Source	Jagadheesan Vellingiri Muthukumaraswamy Email: jaga4021@hotmail.com Phone: +1 (91) 9944208398
Subject	For an ASME SEC VIII Div 2, Class 1 or Class 2 / ASME SEC I / ASME B 31.1 Equipment is Subjected to Alteration due to Increase in MAWP.
Edition	2019 Edition Part 3: 4.4.1 & 4.4.2 Examination and testing
Question	<ol style="list-style-type: none"> 1. Is it the Intent of the Code that the Minimum Pressure for Liquid Pressure Test for Alteration Shall be as per Original Code of Construction? 2. Can Pressure Test Be Conducted at Design Pressure or MAWP for Alteration Considering Remaining Thickness or Corrosion Condition considering Integrity of the Equipment?
Reply	<ol style="list-style-type: none"> 1. Yes 2. No
Committee's Question	<p>Q1: When conducting a liquid pressure test of an alteration activity as described in 4.4.2(a)(1), shall the minimum required test pressure be as specified in the original code of construction?</p> <p>Q2: When conducting a liquid pressure test of an alteration activity as described in 4.4.2(a)(1), may the minimum required test pressure be as adjusted based on the remaining corrosion allowance when the original test pressure included consideration of corrosion allowance.</p>
Committee's Reply	<p>A1: Yes,</p> <p>A2: Yes, provided the minimum test pressure is in compliance with the original code of construction.</p>
Rationale	
SC Vote	
NBIC Vote	
Negative Vote Comments	

INTERPRETATION 20-90
1.4.1 ACCREDITATION PROCESS / NB-415- Certification of Scope

Inquiry No.	20-90
Source	Jagadheesan Vellingiri Muthukumaraswamy Email: jaga4021@hotmail.com Phone: +1 (91) 9944208398
Subject	The NBIC Certification scope Does not Restrict the Repair Organization to Perform Based on their ASME Certification of scope, as long as Manual Controls are addressed for the Design and Repair/ Fabrication Scope they can perform Repair and Alteration. A Repair Organization is Holding an valid R certification under NBIC, and Holds Valid ASME- U Authorization. The Certification Scope Under NBIC is issued for Metallic Repair and Alteration, Can the Repair Organization Perform Repair and Alteration on ASME Sec VIII Div 2 / 3 and Section 1 Components
Edition	Part 3 1.4.1
Question	<ol style="list-style-type: none"> 1. Is it the Intent of Code that based on the Initial Certification under 1.4.1 / NB-415 Process and Quality manual Restriction that if the Repair Organization is Authorized for Repair and Alteration on Sec VIII Div 1 Vessels only they are entitled to Perform Repair and alteration of Sec VIII Div 1 Vessels? 2. If the Answer to above Question is No then can the Repair Organization Perform Repair and Alteration on Sec VIII Div 2/Div 3 and Section 1 Components if the controls are addressed in Manual?
Reply	<ol style="list-style-type: none"> 1. No 2. Yes
Committee's Question	Is it required for an "R" Certificate of Authorization holder <u>to</u> also hold a Certificate of Authorization <u>issued byfor</u> the <u>PRI's-pressure retaining item's</u> original Code of Construction (<u>e.g. ASME Section VIII Div. 1</u>) for which a repair or alteration is to be completed?
Committee's Reply	No
Rationale	The NBIC does not restrict the "R" Certificate of Authorization holder to making repairs and/or alterations to specific Codes of Construction. It does require that the "R" Certificate of Authorization holder have the capabilities to make the repairs and/or alterations in accordance with the original code of construction.
SC Vote	
NBIC Vote	
Negative Vote Comments	

PROPOSED INTERPRETATION

Inquiry No.	20-91
Source	Robert Underwood – Hartford Steam Boiler
Subject/Background	<p>To determine if procedures are required for mechanical repairs/assemblies as referenced in Part 3, paragraph 1.5.1(h).</p> <p>Part 3, para. 1.5.1(h), requires that control of mechanical assembly/repair procedures be addressed in the R Certificate Holder's Quality Manual. Over the last year or so, there have been National Board Team Leaders requesting these procedures (during joint reviews) for work such as rolling tubes in a boiler and replacing a bolted fitting on a pressure retaining item. This has resulted in confusion and several questions from certificate holders and Inspectors about why an "R" certificate holder is required to have procedures for mechanical work that doesn't even require an "R" Stamp.</p>
Edition	2019; Part 3: Repairs and Alterations; Section 1, paragraph 1.5.1(h)
Question	Are mechanical repair/assembly procedures that are referenced in Part 3, paragraph 1.5.1(h), required for work that does not require an "R" Form?
Reply	Proposed Reply: No
Committee's Question 1	<u>For an is a "R" Certificate of Authorization holder, is it required to have mechanical repair/assembly procedure(s) in accordance with Part 3, 1.5.1 h) mandatory for work that does not require an R Form?</u>
Committee's Reply	No, <u>provided it is not required by the Jurisdiction.</u>
Rationale	There are many interpretations addressing mechanical work, replacing boiler tubes "non welded", repairing studded outlet threads "no welding" the NBIC does not address non welded repairs (mechanical), nor requires a written procedure or a repair plan when this work does not require an R Form.
SC Vote	
NBIC Vote	
Negative Vote Comments	

Part 3, 1.5.1(h)

h) Repair and Alteration Methods

The manual shall include controls for repairs and alterations, including **mechanical assembly procedures**, materials, nondestructive examination methods, pre-heat, and postweld heat treatment, as applicable. Special requirements such as nonmetallic repairs and alterations to graphite and fiber-reinforced thermosetting plastic pressure-retaining items including bonding or mechanical assembly procedures shall be addressed, if applicable.

Part 3, Supplement 9 - Glossary

Mechanical Assembly — The work necessary to establish or restore a pressure retaining boundary, under supplementary materials, whereby pressure-retaining capability is established through a mechanical, chemical, or physical interface, as defined under the rules of the NBIC.

Mechanical Repair Method — A method of repair, which restores a pressure retaining boundary to a safe and satisfactory operating condition, where the pressure retaining boundary is established by a method other than welding or brazing, as defined under the rules of the NBIC.

Item Number: 19-16: Reword to provide clarity; contradictory requirement Part 3; 3.2.2 e)

PM: Tom White

Submitted By: Eben Creaser

Background Information: The second sentence of 3.2.2 e) seems to provide optional provisions that contradict the mandatory requirement stated in the first sentence that requires 3.2.2 c) or d) parts to be pressure tested by the original code of construction. If this is the intent of the committee then the clause should be reworded to add an "or" between the sentences. The wording could also be understood to mean that all parts addressed in 3.2.2 c) or d) have to be pressure tested. But then the second sentence eludes to an optional requirement, its just not clear

Explanation of Need: This wording of this clause is causing confusion. I have had multiple instances where owners have requested to purchase welded replacement parts directly and read this clause with the belief that they can purchase a replacement part for in some cases a welded pressure part for an ASME Section I boiler and save money by having the fabricator not Hydro test as per Section I even when its was not impractical to have the testing performed.

Date Opened: 2/13/2019

3.2.2 REPLACEMENT PARTS

Replacement parts to be used in repairs or alterations shall meet the following applicable requirements:

- a) Replacement parts that will be subject to internal or external pressure that consist of new materials which should be formed to the required shape by casting, spinning, forging, die forming, and on which no fabrication welding is performed, shall be supplied as material. Such parts shall be marked with the material and part identification and the name or trademark of the parts manufacturer. In lieu of full identification marking on the material or part, the part manufacturer may use a coded marking system traceable to the original marking. Such markings shall be considered as the parts manufacturer's certification that the part complies with the original code of construction. Examples include seamless or welded tubes or pipe, forged nozzles, heads or tubesheets, or subassemblies attached together mechanically;
- b) Replacement parts that will be subject to internal or external pressure that are preassembled by attachment welds shall have the welding performed in accordance with the original code of construction. The supplier or manufacturer shall certify that the material and fabrication are in accordance with the original code of construction. This certification shall be supplied in the form of bills of material and drawings with statement of certification. Examples include boiler furnace wall or floor panel assemblies, prefabricated openings in boiler furnace walls, such as burner openings, air ports, inspection openings, or sootblower openings;
- c) When ASME Code is the original code of construction, replacement parts subject to internal or external pressure fabricated by welding, which require inspection by an Authorized Inspector shall be fabricated by an organization having an appropriate ASME *Certificate of Authorization*. The item shall be inspected and stamped as required by the applicable section of the ASME Code. A completed ASME *Manufacturer's Partial Data Report* shall be supplied by the manufacturer.
 - 1) ASME stamping and completion of an ASME Manufacturer's Partial Data Report is not required for parts fabricated by the "R" Certificate Holder that will be used on pressure retaining items being repaired or altered by the same "R" Certificate Holder. The controls for this activity shall be described in the quality control system.

- 2) The “R” Certificate Holder, using replacement parts fabricated and certified to an ASME Code edition and addenda different from that used for the original construction, shall consider and seek technical advice, where appropriate, for change or conflicts in design, materials, welding, heat treatment, examinations and tests to ensure a safe repair/alteration is performed. Note that work once classified as a repair could now be considered an alteration.
- d) When the original code of construction is other than ASME Code, replacement parts subject to internal or external pressure, fabricated by welding, shall be manufactured by an organization certified as required by the original code of construction. The item shall be inspected and stamped as required by the original code of construction. Certification to the original code of construction, as required by the original code of construction or equivalent, shall be supplied with the item. When this is not possible or practicable, the organization fabricating the part shall have a National Board “R” *Certificate of Authorization*; replacement parts shall be documented on Form R-3 and the “R” Symbol Stamp applied as described in NBIC Part 3, Section 5.

e) Current Wording (2019):

- e) Replacement parts addressed by 3.2.2 c) or d) above shall receive a pressure test as required by the original code of construction. If replacement parts have not been pressure tested as required by the original code of construction prior to installation they may be installed without performing the original code of construction pressure test provided the owner, the Inspector and, when required, the Jurisdiction accept the use of one or a combination of the examination and test methods shown in Part 3, Section 4, paragraph 4.4.1 (for repairs) or 4.4.2 (for alterations). The R Certificate Holder responsible for completing the R Form shall note in the Remarks section of the R Form the examination(s) and test(s) performed, and the reason the replacement part was not tested in accordance with the original code of construction.

e) Proposed Wording:

- e) Replacement parts addressed by 3.2.2 c) or d) above shall receive a pressure test as required by the original code of construction. When it is not possible or practicable to perform the required pressure test prior to installation, the replacement parts may be installed without performing the original code of construction pressure test provided the owner, the Inspector and, when required, the Jurisdiction accept the use of one or a combination of the examination and test methods shown in Part 3, Section 4, paragraph 4.4.1 (for repairs) or 4.4.2 (for alterations). The R Certificate Holder responsible for completing the R Form shall note in the Remarks section of the R Form the examination(s) and test(s) performed in lieu of pressure test, and the reason it was not possible or practicable to pressure test the replacement part in accordance with the original code of construction.

Item Number: 20-51 NBIC Location: Part 3, 9.1

General Description: Add practicable and its definition to the glossary

Subgroup: Repairs and Alterations

Task Group: Kathy Moore (PM)

Explanation of Need: This is not a commonly used term in everyday language.

Proposed Definition:

Practicable – capable of being accomplished based on technical consideration of the nature and scope of activities, design or arrangement.

Item Number: 20-54 **NBIC Location: Part 3, 3.4.4 d)**

General Description: Review and Update Part 3, 3.4.4 d)

Subgroup: Repairs and Alterations

Task Group: B. Schaefer (PM)

Explanation of Need: A change in dimension and/or contour is currently listed as an example of an alteration in Part 3, 3.4.4 d). A change in dimension may or may not be an alteration in actuality. Current wording does not allow for a change in dimension, even if it is a minor change not affecting the pressure retaining capability of the PRI, without being an alteration. This can be a burden to the industry.

EXISTING TEXT

3.4.4 EXAMPLES OF ALTERATIONS

d) A change in the dimensions or contour of a pressure-retaining item;

PROPOSED TEXT

3.4.4 EXAMPLES OF ALTERATIONS

d) A change in the dimensions or contour of a pressure-retaining item that affects the pressure retaining capabilities.

PROPOSED ACTION ITEM

Item Number:	20-55
Submitted by:	Paul Shanks paul.shanks@onecis.com
Subject:	Examples of repairs Explanation of Need: By having an and between boiler and heat exchanger the tube is required to be simultaneously installed in both a boiler and a heat exchanger. This is valid for a boiler as they are heat exchanger but in the case of a pressure vessel heat exchanger they are not boilers as boil may not be happening. Therefore this example is not applicable to pressure vessel which I do not believe is the intent. Background Information: Per the Oxford English dictionary: and is a word used to connect words, clause or terms; or is a word used to link alternatives
NBIC Location:	NBIC Part 3, 3.3.3 f)

Current Text:	Proposed Text:
f) Replacement or plugging of boiler and heat exchanger tubes where welding is involved	f) Replacement or plugging of boiler <u>or</u> heat exchanger tubes where welding is involved

Item Number: 20-61**NBIC Location: Part 3, S8****General Description:** Revise Supplement 8**Subgroup:** Repairs and Alterations**Task Group:** J. Siefert (PM)**Explanation of Need:** Supplement 8 has one sentence regarding filler metal size that needs to be deleted and dissimilar metal welding needs to be addressed under this Supplement.**Summary of changes (January 12, 2021):**

- Minor editorial items have been fixed or clarified.
- Section S8.1 a) has been modified to reflect the incorporation of dissimilar metal welds.
- Section S8.2.2 is added to provide guidance for dissimilar metal weld repairs
- The language in S8.3 was confusing, and this has been resolved.
- Section S8.4 a) has been revised to reflect qualification for dissimilar metal weld repairs and language in S8.4 c) has been simplified.

Summary of changes (January 13, 2021):

Added minor edits in Welding Method 6 [Part 3, 2.5.3.6 c) 5)] and Welding Method 7 [Part 3, 2.5.3.7 i)] approved language for 2021 edition to remove reference to Code Cases 2733 and 2734 and to reference the UNS number for these respective filler materials that are covered by the Code Cases.

S8.1 SCOPE

- a) The technical information provided in this supplement pertains to weld repair and post repair inspection of creep strength enhanced ferritic steel (CSEF) pressure retaining items. The present guidance covers P-No. 15E, Group 1, Grade 91 and dissimilar welds made to this material (e.g. P-No. 4, P-No. 5A or P-No. 8, P-No. 42, P-No. 43 or P-No. 45). This Supplement provides guidance for full penetration and partial penetration weld repairs not covered under Welding Method 6 (NBIC Part 3, 2.5.3.6) or Welding Method 7 (NBIC Part 3, 2.5.3.7).
- b) Creep Strength Enhanced Ferritic alloys (CSEFs) are a collection of ferritic steels whose creep strength is enhanced by the creation of a precise condition of micro-structure, specifically marten- site or bainite, which is stabilized during tempering by controlled precipitation of temper-resistant carbides, carbo-nitrides, or other stable and/or meta-stable phases. Careful consideration shall be given to pressure-retaining items that are fabricated from CSEF steelsCSEF's. The behavior of these materials in low temperature (i.e. fracture toughness and/or fatigue) and in high temperature (i.e. creep and/or creep-fatigue) components can be degraded by not adhering to the welding procedures and/or improper application of post-weld heat treatment (PWHT). Experienced inspection personnel should oversee weld repairs of this nature for strict compliance with all welding procedure and repair requirements.
- c) Post construction access and in-service operation may not allow the practicable application of PWHT following original construction fabrication requirements and repair weld joint design. This supplement provides guidelines for weld repair options and post repair inspection using a well-engineered approach for CSEF steels. The user is cautioned to seek technical guidance for welding and selection of heat treating requirements.
- d) Prior to using this guideline an engineering evaluation shall be performed to determine the scope of the repair and impact to safety prior to returning the pressure-retaining item to service for a specified period of time, based on acceptance by the Inspector, and when required the Jurisdiction. The organization performing the engineering evaluation shall have demonstrated experience with Grade 91 CSEF steels.

S8.2 WELD REPAIR OF GRADE 91 STEEL

S8.2.1 WELD REPAIR OPTIONS

- a) 9Cr-1Mo-VNbN Filler Metal (i.e. matching to Grade 91) + Controlled Fill + Low PWHT (Minimum temperature is 1250°F, 675°C). Acceptable filler materials are referenced in Table S8.2.1. The minimum time and maximum heat treatment temperature shall be in accordance with the original code of construction. For reference, where the Ni+Mn content of the filler metal is not known, the maximum PWHT temperature shall be 1425°F (775°C). This maximum shall be

enforced to avoid over-tempering or exceeding the absolute maximum PWHT temperature. PWHT hold times at temperature shall be as follows:

- 1) Minimum holding time at PWHT temperature is specified as 1 hour per 1.0 inch (25 mm) of thickness, 30 minute minimum provided the component < 0.5 inches (12.5 mm) in thickness;
 - 2) Minimum holding time at PWHT temperature is specified as 5 hours plus 15 minutes for each additional 1.0 inch (25 mm) over 5.0 inches (125 mm);
- b) 9Cr-1Mo Filler Metal + Controlled Fill and No PWHT. Acceptable filler materials are detailed in Table S8.2.1 S11.2.4.
- c) Ni-base Filler Metal + Controlled Fill and No PWHT. Acceptable nickel base consumables include selected ASME F No. 43 filler metals as detailed in Table S8.2.1.

TABLE S8.2.1

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

Acceptable Weld Repair Method		Welding Process and Filler Metal AWS Classification
Filler Metal	Welding Procedure	
Matching (9Cr-1Mo-VNbN)	Controlled Fill + Low PWHT	<ul style="list-style-type: none"> • SMAW – E9015-B9, E9016-B9, E9018-B9 or E9015-B91A, E9016-B91A or E9018-B91A • FCAW – E91T1-B9 or E91T1-B91A • GTAW – ER90S-B9 or ER90S-B91A
9Cr-1Mo	Controlled Fill	<ul style="list-style-type: none"> • SMAW – E8015-B8, E8016-B8 or E8018-B8 • FCAW – E81T1-B8 • GTAW – ER80S-B8
Ni-base	Controlled Fill	<ul style="list-style-type: none"> • SMAW – EPRI P87^B, ENiCrFe-2, ENiCrFe-3 • FCAW – None available • GTAW – EPRI P87^C, ERNiCr-3

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

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

^CIncorporated by ASME B&PV Code as Code Case 2733 for classification as an F No. 43 filler material

S8.2.2 WELD REPAIR OPTIONS FOR DISSIMILAR METAL WELDS

- a) For repairs in P-No. 15E, Group 1, Grade 91, CSEF steel joined to either P-No. 8, P-No. 42, P-No. 43, or P-No. 45, as permitted for welded construction by the applicable rules of the original code of construction, the filler metal shall be limited to an austenitic, nickel-base filler metal having a designation F-No. 43 and limited

to the following consumables: ERNiCr-3, ENiCrFe-3, ENiCrFe-2, UNS N08087. This weld repair option does not require PWHT.

- b) For repairs in P-No. 15E, Group 1, Grade 91, CSEF steel joined to P-No. 4, Group 1, or P-No. 5A, Group 1, the filler metal shall be limited to:
- 1) A martensitic, iron-base filler metal having a designation F-No. 4 or F-No. 6 and limited to the following consumables: E8015-B8, E8018-B8 or ER80S-B8. This weld repair option does not require PWHT. Or
 - 2) A martensitic, iron-base filler metal having a designation F-No. 4 or F-No. 6 and limited to the following consumables: E9015-B9, E9016-B9, E9018-B9, E9015-B91, E9016-B91, E9018-B91, E91T1-B9, E91T1-B91, ER90S-B9 or ER90S-B91. This weld repair option requires PWHT at a minimum temperature of 1250°F (675°C).

S8.3 APPLICATION OF CONTROLLED FILL WELDING PROCEDURE

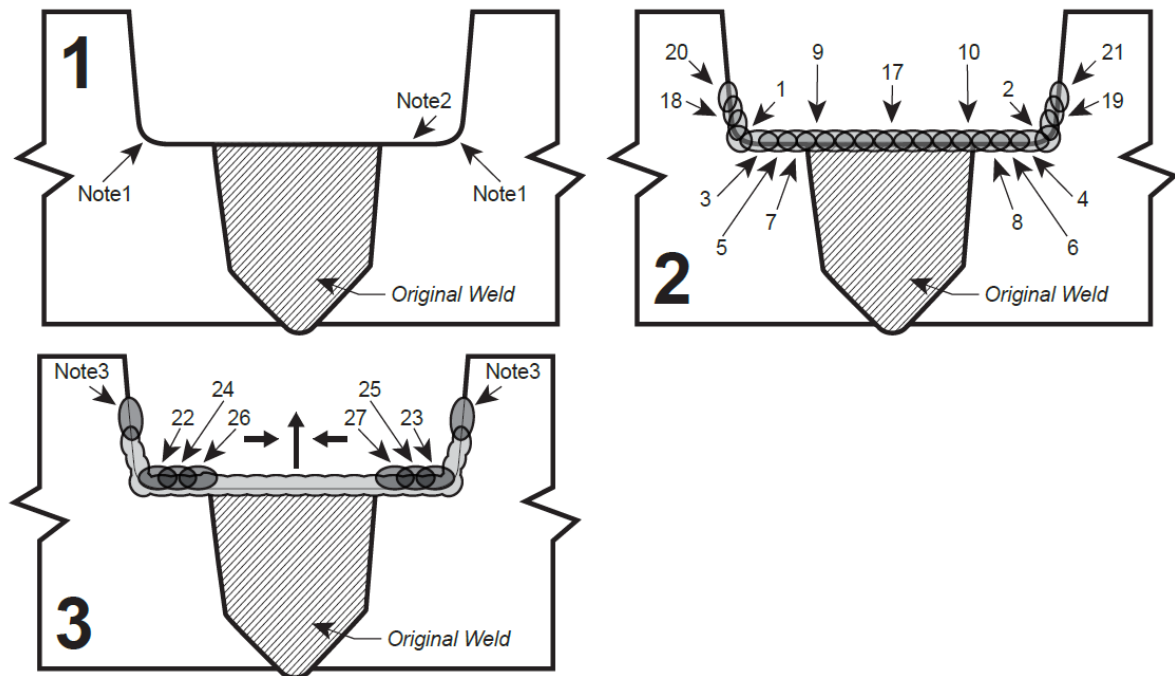
- a) The minimum preheat for the repair procedure shall be 300°F (150°C). The preheat temperature shall be checked to ensure the minimum preheat temperature is maintained during all welding and until welding is completed. The maximum interpass temperature shall be 550°F (290°C). At the completion of welding, a post weld hydrogen bake-out is not required nor prohibited.
- b) To control heat input the weld repair shall be performed using a “controlled fill” technique. In this technique, the first layer in contact with the repair groove can be identical or smaller in diameter than the fill passes.
- c) Figures S8.3-a through S8.3-d illustrate the types of acceptable weld joint details using the controlled fill technique for full or partial penetration weld repairs.
- d) The bead-to-bead overlap should be ~50% or greater. The fill passes should be deposited working from the bevel of the machined excavation towards the center of the excavation with a minimum overlap of 25% and ideally 50%. As a rule of thumb, if the welder aims for the toe of the previously deposited weld bead, an overlap of at least 40% will be achieved.
- e) When the SMAW process is specified, the fill passes in immediate contact with the excavation shall not exceed an electrode diameter of 1/8 in. (3.2 mm). The remaining fill passes shall not exceed an electrode diameter of 5/32 in. (4.0 mm). When the GTAW process is specified, any limits for filler metal size shall be reflected in the qualified PQR and WPS.

~~When the SMAW process is specified using ferrous filler metals for an initial fill pass layer as a controlled fill welding technique, the electrode diameter is restricted to a maximum size of 1/8 in. (3.2 mm). The remaining fill passes to complete this excavation using this technique and SMAW process are limited to an electrode diameter of 5/32 in. (4.0 mm). When the SMAW process is~~

specified with ferrous filler metals, the fill passes are restricted to a maximum electrode diameter of 1/8 in. (3.2 mm). When the SMAW process is specified with nickel-base filler metals, the fill passes in immediate contact with the excavation shall not exceed an electrode diameter of 1/8 in. (3.2 mm), and for the remaining fill passes to restore the excavated material an increase in the electrode diameter to 5/32 in. (4.0 mm) is permitted. When the GTAW process is specified, any limits for filler metal size shall be reflected in the qualified PQR and WPS.

FIGURE S8.3-a.

SCHEMATIC OF THE CONTROLLED FILL WELDING PROCEDURE FOR GRADE 91 STEEL FOR A PARTIAL PENETRATION WELD REPAIR.



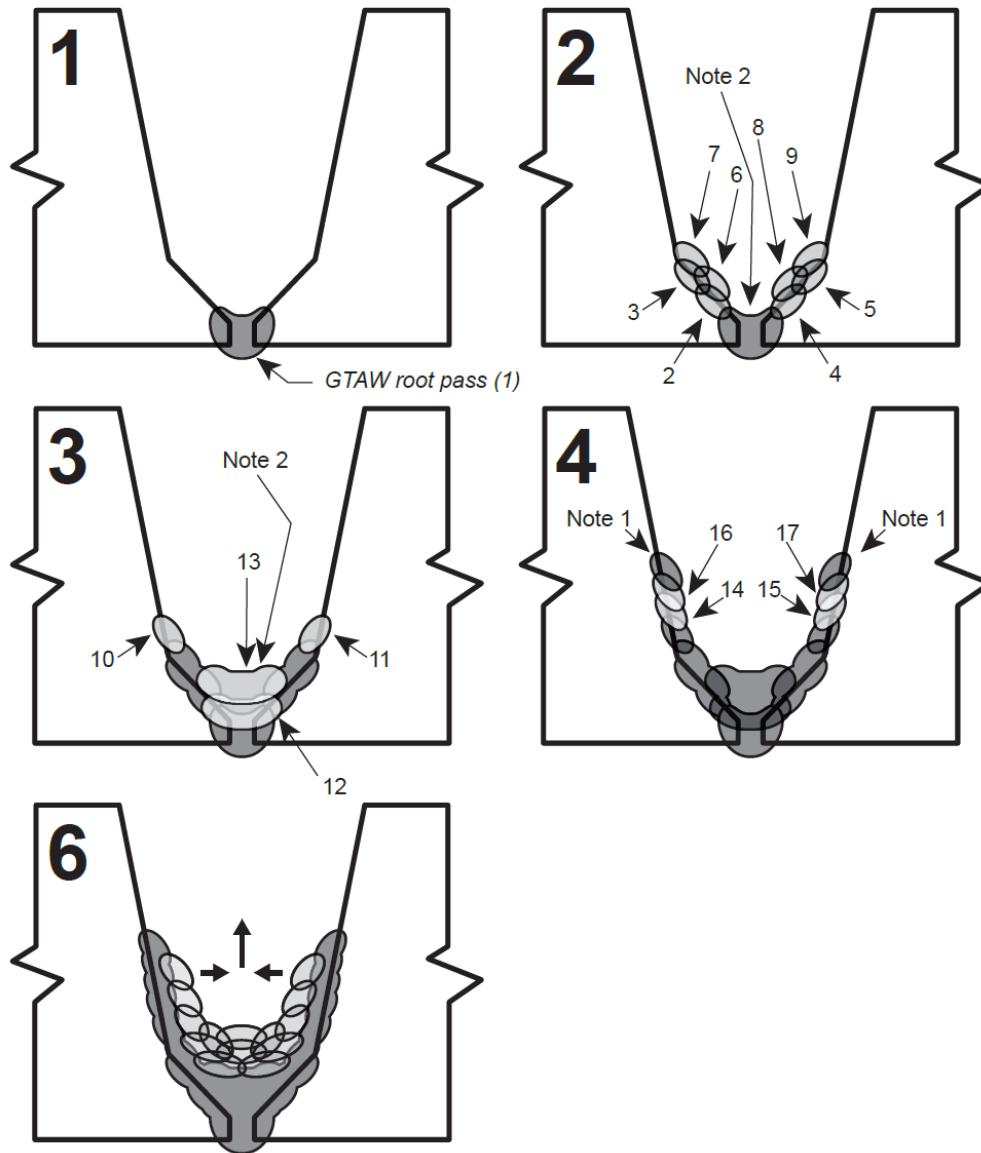
Note 1 – The excavation shall have rounded corners to prevent lack of fusion defects. In these locations it is recommended to use a smaller diameter electrode (such as 3/32 in. (2.4 mm)) to ensure acceptable fusion.

Note 2 – The repair cavity width shall extend at least 0.40 in. (10 mm) beyond the fusion line of the original weld

Note 3 – Where the excavation may pose challenges with electrode access, it is recommended that the fill passes in immediate contact with the machined excavation be restricted in height as the weld repair is performed.

FIGURE S8.3-b.

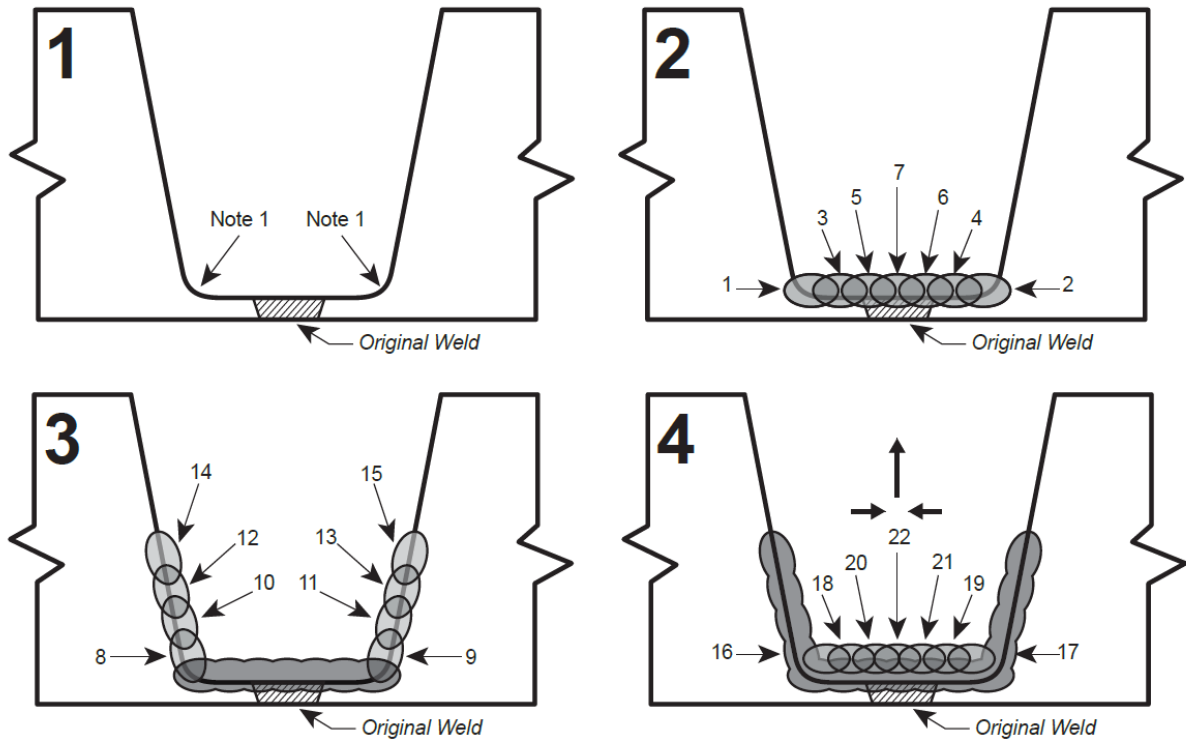
SCHEMATIC OF THE CONTROLLED FILL WELDING PROCEDURE FOR GRADE 91 STEEL FOR A FULL PENETRATION WELD REPAIR USING A COMPOUND BEVEL.



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

FIGURE S8.3-c.

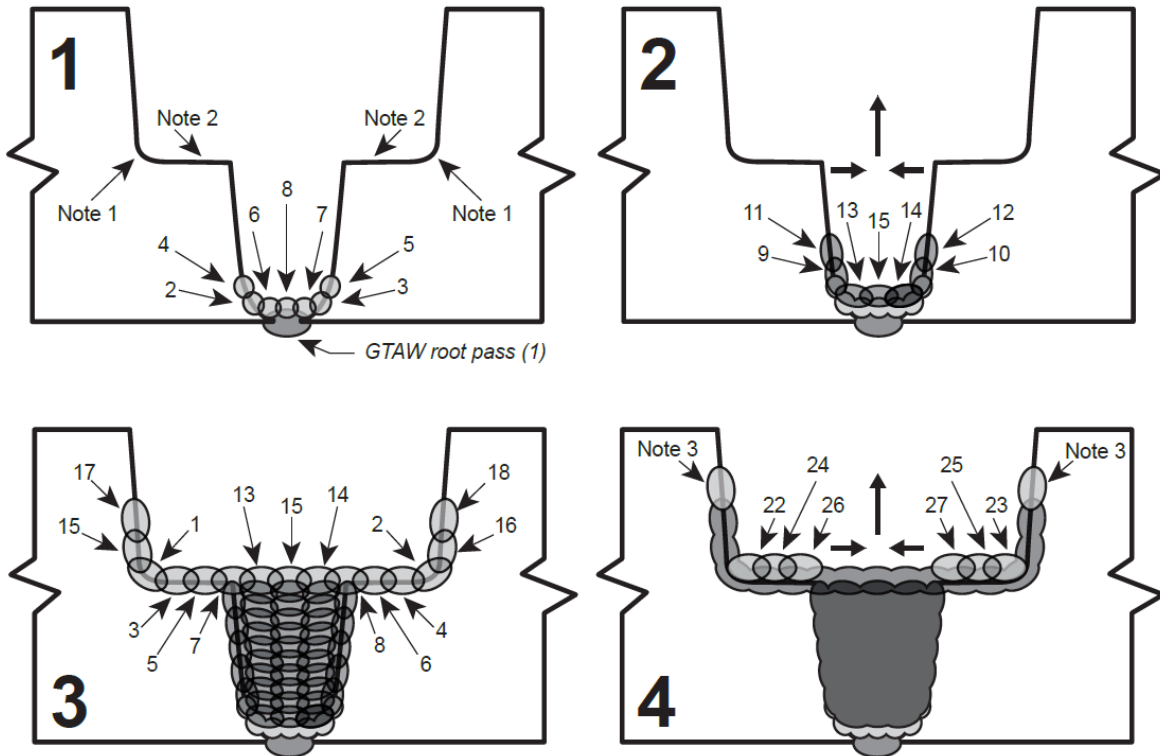
SCHEMATIC OF THE CONTROLLED FILL WELDING PROCEDURE FOR GRADE 91 STEEL FOR FULL PENETRATION WELD REPAIR USING A LAND.



Note 1 – The excavation shall have rounded corners to prevent lack of fusion defects. In these locations it is recommended to use a smaller diameter electrode (such as 3/32 in.(2.4 mm)) to ensure acceptable fusion.

FIGURE S8.3-d.

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



Note 1 – The excavation shall have rounded corners to prevent lack of fusion defects. In these locations it is recommended to use a smaller diameter electrode (such as 3/32 in. (2.4 mm)) to ensure acceptable fusion.

Note 2 – The repair cavity width shall extend at least 0.40 in. (10 mm) beyond the fusion line of the original weld

Note 3 – Where the excavation may pose challenges with electrode access, it is recommended that the fill passes in immediate contact with the machined excavation be restricted in height as the weld repair is performed.

S8.4 QUALIFICATION OF CONTROLLED FILL WELDING PROCEDURE

- a) The welding procedure qualification test coupon shall be ASME P-No. 15 E, Group 1, joined to itself, or P-No. 4 or P-No. 5A or P-No. 8, P-No. 42, P-No. 43, or P-No. 45. The test material for the welding procedure qualification shall be P-No 15E, Group 1, Grade 91.
- b) Qualification thickness for the test plates and repair groove depths shall be in accordance with ASME Section IX.
- c) The Welding Procedure Specification (WPS) shall be qualified in accordance with requirements of ASME Section IX. If qualifying the WPS with PWHT, the PWHT is to be low temperature PWHT, i.e., a minimum temperature of 1250°F (675°C) and a maximum temperature of 1445°F (785°C).

- d) For qualification of weld repair procedures using 9Cr-1Mo filler metal and in the as-welded condition, the requirements for the bend test shall be performed using a bend radius which achieves a minimum of 14% elongation in the outer fibers.

S8.5 POST REPAIR INSPECTION

- a) After the completion of weld repairs to CSEF steels, post inspection requirements shall be developed and implemented based on acceptance from the Inspector, and if applicable, the Jurisdiction.
- b) Post-repair inspection intervals and methods of examination shall be implemented to ensure safe operation and margin to locate and monitor defect growth in the weld repair area. The selected non-destructive examination method shall provide meaningful results and shall follow NBIC Part 3, Section 4.
- c) Post repair inspection shall be on-going until the component reaches end of life or is replaced. The Owner/User may revise the re-inspection interval based on inspection results from previous inspections.

Part 3, 2.5.3.6 c) 5)

d. The filler metal shall be limited to an austenitic, nickel-base filler metal having a designation F-No. 43 to those assigned to F-number 43 in Section IX, QW-432 and limited to the following consumables: ERNiCr-3, ENiCrFe-3, ENiCrFe-2, UNS N08087; ~~or ASME B&PV Code Cases 2733 and 2734 (e.g. EPRI P87); or~~

Part 3, 2.5.3.7 i)

5) For the joining of ASME P-No. 15E, Group 1 to P-No. 8, P-No. 42, P-No. 43 or P-No. 45, the filler metal shall be limited to an austenitic, nickel-base filler metal to those assigned to F-No. 43 in ASME Section IX, QW-432 and limited to the following consumables: ERNiCr-3, ENiCrFe-3, ENiCrFe-2, UNS N08087. ~~ASME B&PV Code Cases 2733 and 2734.~~

NBIC Part 3 Inquiry

Robert Underwood
Hartford Steam Boiler
10/30/2020

Item No.	20-73 – Pressure testing of connecting welds
Purpose	Revise 4.4.2(a)(1) and (2) to clarify the term replacement part
Statement of Need:	To clarify that "replacement part" as specified in 4.4.2(a)(1) and (2) is referring to those parts fabricated by welding as described in 3.3.2(c) and (d).
Background Information:	<p>We have had some inquiries from repair firms and Repair Inspectors who are confused by the term "replacement part" as it is used in paragraphs 4.4.2(a)(1) and (2). I believe that "replacement part" in 4.4.2(a)(1) and (2) refers to those parts fabricated by welding as described in 3.3.2(c) and (d), and not those as described in 3.3.2(a) and (b).</p> <p>This proposal would clarify that alternative pressure testing of connecting welds of "replacement parts" is referring to replacement parts fabricated by welding such as economizers, superheaters, etc... and not material such as nozzles and piping.</p>
Existing Text:	<p>4.4.2(a)(1 and 2) From 2021 Edition</p> <p>a) Liquid Pressure Test</p> <p>Pressure testing of alterations shall meet the following requirements:</p> <ol style="list-style-type: none"> 1) A pressure test as required by the original code of construction shall be conducted. The test pressure shall not exceed the maximum hydrostatic test pressure of the original code of construction. When the original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance. The pressure test for replacement parts may be performed at the point of manufacture or point of installation. 2) As an alternative to pressure testing connecting welds in accordance with the original code of construction, connecting welds may be tested or examined in accordance with the rules for repairs (see NBIC Part 3, 4.4.1). Connecting welds are defined as welds attaching the replacement part to the pressure-retaining item;
Proposed Text:	4.4.2(a)(1) and (2) (From 2021 Edition)

	<p>a) Liquid Pressure Test</p> <p>Pressure testing of alterations shall meet the following requirements:</p> <ol style="list-style-type: none"> 1) A pressure test as required by the original code of construction shall be conducted. The test pressure shall not exceed the maximum hydrostatic test pressure of the original code of construction. When the original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance. The pressure test for replacement parts <u>fabricated by welding addressed in NBIC Part 3, 3.2.2 c) or d)</u> may be performed at the point of manufacture or point of installation. 2) As an alternative to pressure testing connecting welds in accordance with the original code of construction, <u>NBIC Part 3, 4.4.2(a)(1) above</u>, connecting welds may be tested or examined in accordance with the rules for repairs (see NBIC Part 3, 4.4.1). Connecting welds are defined as welds attaching the <u>a</u> replacement part <u>fabricated by welding addressed in NBIC Part 3, 3.2.2 c) or d)</u> to the pressure-retaining item;
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3.2.2 REPLACEMENT PARTS

Replacement parts to be used in repairs or alterations shall meet the following applicable requirements:

- a) Replacement parts that will be subject to internal or external pressure that consist of **new materials** which should be formed to the required shape by casting, spinning, forging, die forming, and on which no fabrication welding is performed, shall be supplied as material. Such parts shall be marked with the material and part identification and the name or trademark of the parts manufacturer. In lieu of full identification marking on the material or part, the part manufacturer may use a coded marking system traceable to the original marking. Such markings shall be considered as the parts manufacturer's certification that the part complies with the original code of construction. Examples include seamless or welded **tubes or pipe, forged nozzles,** heads or tubesheets, or subassemblies attached together mechanically;
- b) Replacement parts that will be subject to internal or external pressure that are **preassembled by attachment welds** shall have the welding performed in accordance with the original code of construction. The supplier or manufacturer shall certify that the material and fabrication are in accordance with the original code of construction. This certification shall be supplied in the form of bills of material and drawings with statement of certification. Examples include boiler furnace wall or floor panel assemblies, prefabricated openings in boiler furnace walls, such as burner openings, air ports, inspection openings, or sootblower openings;

- c) When ASME Code is the original code of construction, replacement parts subject to internal or external pressure fabricated by welding, which require inspection by an Authorized Inspector shall be fabricated by an organization having an appropriate ASME *Certificate of Authorization*. The item shall be inspected and stamped as required by the applicable section of the ASME Code. A completed ASME *Manufacturer's Partial Data Report* shall be supplied by the manufacturer.
- 1) ASME stamping and completion of an ASME Manufacturer's Partial Data Report is not required for parts fabricated by the "R" Certificate Holder that will be used on pressure retaining items being repaired or altered by the same "R" Certificate Holder. The controls for this activity shall be described in the quality control system.
 - 2) The "R" Certificate Holder, using replacement parts fabricated and certified to an ASME Code edition and addenda different from that used for the original construction, shall consider and seek technical advice, where appropriate, for change or conflicts in design, materials, welding, heat treatment, examinations and tests to ensure a safe repair/alteration is performed. Note that work once classified as a repair could now be considered an alteration.
- d) When the original code of construction is other than ASME Code, replacement parts subject to internal or external pressure, fabricated by welding, shall be manufactured by an organization certified as required by the original code of construction. The item shall be inspected and stamped as required by the original code of construction. Certification to the original code of construction, as required by the original code of construction or equivalent, shall be supplied with the item. When this is not possible or practicable, the organization fabricating the part shall have a National Board "R" *Certificate of Authorization*; replacement parts shall be documented on Form R-3 and the "R" Symbol Stamp applied as described in NBIC Part 3, Section 5.

NBIC Part 3 Inquiry

Scott Chestnut
01/10/2021

Purpose	ITEM 20-75 Remove bad reference in 2.5.3.2(h) relating to charpy impact testing temperature
Statement of Need:	To revise 2.5.3.2(h) to provide the correct charpy impact test temperature
Background Information:	Current text in 2.5.3.2 h) requires Charpy impact tests be conducted "at the temperature determined in accordance with NBIC Part 3, 2.5.3.2 d)." 2.5.3.2 d) only discusses WPS preheat and interpass temperature. It does not discuss the temperature at which to conduct CVN testing. There is no reference made to the MDMT.
Existing Text:	Part 3, 2.5.3.2 h) Notch toughness shall be determined and evaluated by Charpy impact tests in accordance with the provisions of the original code of construction at the temperature determined in accordance with NBIC Part 3, 2.5.3.2 d). Exemptions from impact testing described in the original code of construction are not applicable;
Proposed Text:	Part 3, 2.5.3.2 h) Notch toughness shall be determined and evaluated by Charpy impact tests in accordance with the provisions of the original code of construction at the a temperature determined in accordance with NBIC Part 3, 2.5.3.2 d) not warmer than the minimum design metal temperature. Exemptions from impact testing described in the original code of construction are not applicable;

2.5.3(d) Existing test does not reference charpy impact test temperature

d) The detailed welding methods listed in the following subsections may be used as an alternative to post-weld heat treatment (PWHT). NBIC Part 3, 2.5.3.1 is a method in which the welding procedure requires an elevation of the preheat temperature. In contrast, NBIC Part 3, 2.5.3.2 through 2.5.3.5, are methods in which the welding procedure requires the use of a temper-bead welding technique. Welding Method 6 as described in 2.5.3.6 requires use of a controlled fill technique. In 2.5.3.5 is a method in which the welding procedure used for joining dissimilar materials requires either an elevation of the preheat temperature or a temper-bead welding technique, depending on the chemical composition of the base metal that is joined to an austenitic steel. Temper-bead welding procedure nomenclature is defined in Section IX of the *ASME Boiler and Pressure Vessel Code*. Typically, this technique minimizes heat input of the initial beads, thus limiting heat beyond the weld heat-affected zone (HAZ) of the base metal. Heat input shall be increased for successive beads in accordance with the rules of QW-290 for temper bead welding in ASME Section IX. The Welding Procedure and Welder Performance Qualifications shall, in all cases, be in accordance with the requirements of the latest Edition of Section IX of the *ASME Boiler and Pressure Vessel Code*.

Action Item 20-76: Request for the addition to NBIC Part 3, Glossary

Rick Valdez
 ARB, INC.
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 661 331 6024

Background:	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.
Explanation of need:	Remote Inspections need to be better clarified.
Date opened	9/15/2020
Proposed:	Remote Visual Examination: a visual examination technique used with visual aids for conditions where the area to be examined is inaccessible for direct visual examination.

NBIC Part 3 Inquiry

Robert Underwood
Hartford Steam Boiler
12/15/20

Purpose	Revise 4.4.2(a)(2) to clarify the term replacement part
Statement of Need:	To clarify that the minimum test pressure for alterations shall be in accordance with the original code of construction.
Background Information:	I have recently had discussions with some repair firms and Repair Inspectors who believe there are no minimum test pressure requirements when performing a liquid pressure tests of alterations since it is not specifically stated in paragraph 4.4.2(a)(1). This proposal would revise the second sentence of 4.4.2(a)(1) to specifically address minimum test pressure requirements for alterations.
Existing Text:	<p>4.4.2(a)(1) (From 2021 Edition)</p> <p>a) Liquid Pressure Test</p> <p>Pressure testing of alterations shall meet the following requirements:</p> <p>1) A pressure test as required by the original code of construction shall be conducted. The test pressure shall not exceed the maximum liquid test pressure of the original code of construction. When the original test pressure consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance. The pressure test for replacement parts may be performed at the point of manufacture or point of installation.</p>
Proposed Text:	<p>4.4.2(a)(1) (From 2021 Edition)</p> <p>a) Liquid Pressure Test</p> <p>Pressure testing of alterations shall meet the following requirements:</p> <p>1) A pressure test as required by <u>in accordance with</u> the original code of construction shall be conducted. The test pressure shall not be less than the minimum or exceed the maximum liquid test pressure of the original code of construction. When the original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance. The pressure test for replacement parts may be performed at the point of manufacture or point of installation.</p>

PROPOSED ACTION ITEM

Item Number:	20-83
Submitted by:	Terry Hellman thellman@nationalboard.org
Subject:	<p>Definition of Nonconformance</p> <p>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.</p> <p>Background Information: Current text in 1.5.1 s) that is being revised via Action Item 19-60: s) Nonconforming Items There shall be a system acceptable to the Inspector for the correction of nonconformities. A nonconformance is any condition that does not comply with the applicable rules of the NBIC, construction code, jurisdictional requirements, or the quality system. Nonconformance must be corrected or eliminated before the repaired or altered component can be considered in compliance with the NBIC.</p>
NBIC Location:	NBIC Part 3, 1.5.1 s) and 9.1

Current Text:	Proposed Text:
<p>s) Nonconforming Items There shall be a system acceptable to the Inspector for the correction of nonconformities. A nonconformance is any condition that does not comply with the applicable rules of the NBIC, construction code, jurisdictional requirements, or the quality system. Nonconformance must be corrected or eliminated before the repaired or altered component can be considered in compliance with the NBIC.</p>	<p>s) Nonconforming Items There shall be a system acceptable to the Inspector for the correction of nonconformities. A nonconformance is any condition that does not comply with the applicable rules of the NBIC, construction code, jurisdictional requirements, or the quality system. Nonconformance must be corrected or eliminated before the repaired or altered component can be considered in compliance with the NBIC.</p> <p>9.1 Glossary <u>Nonconformance – A condition of product or service in which any characteristics do not conform with the applicable rules of the NBIC, construction code, jurisdictional requirements, or the quality system.</u></p>

Such stamping or attaching of a nameplate shall be done only with the knowledge and authorization of the Inspector and Competent Authority. The "R" Certificate Holder responsible for the repair or the construction portion of the modification/alteration shall apply the stamping. For a re-rating where no physical changes are made to the pressure-retaining item, the "R" Certificate Holder responsible for the design shall apply the stamping. Requirements for stamping and nameplate information are shown in NBIC Part 3, Section 5.

~~S6.15.1~~ ~~SPECIFIC "R" STAMPING AND NAMEPLATE REQUIREMENTS~~

~~The holder of a "R" Certificate of Authorization is required to affix a stamping or nameplate on the Transport Tank that indicates, the repair, alteration, or modification has been performed in accordance with the requirements of NBIC Part 3, Supplement 6 and the additional requirements of the code of construction. All repairs, alterations, and modifications, after acceptance by the Registered Inspector, shall have the "R" Symbol affixed to the stamping or the nameplate. The stamping or nameplate information shall satisfy the requirements of a) thru g) below:~~

- ~~a) The required data shall be in characters at least 4 mm (5/32 in.) high;~~
- ~~b) The markings may be produced by casting, etching, embossing, debossing, stamping, or engraving;~~
- ~~c) The selected method shall not result in any harmful contamination or sharp discontinuities to the pressure-retaining boundary of the Transport Tank;~~
- ~~d) Stamping directly on the Transport Tank, when used, shall be done with blunt nose continuous or blunt nose interrupted dot die stamps. If direct stamping would be detrimental to the item, required markings and the embossed Code Symbol stamping may appear on a nameplate affixed to the Transport Tank;~~
- ~~e) The "R" Certificate Holder shall use its full name as shown on the Certificate of Authorization or use an approved abbreviation acceptable to the National Board;~~
- ~~f) The non-embossed Code Symbol stamping, when directly applied on the item or when a nameplate is used shall be applied adjacent to the original manufacturer's stamping or nameplate. A single repair stamping or nameplate may be used for additional activities performed, provided the repair activity is carried out by the same "R" Certificate Holder;~~
- ~~g) The date of each repair, alteration, or modification corresponding with the date on the applicable "R" form shall be applied to the exiting stamping or nameplate.~~

S6.15.21 REMOVAL OF ORIGINAL STAMPING OR NAMEPLATE

If it becomes necessary to remove the original stamping, the Inspector shall, subject to the approval of the Competent Authority, witness the making of a facsimile of the stamping, the obliteration of the old stamping, and the transfer of the stamping. When the stamping is on a nameplate, the Inspector shall witness the transfer of the nameplate to the new location. Any relocation shall be described on the applicable NBIC "R" Form. The restamping or replacement of a code symbol stamp shall be performed only as permitted by the governing code of construction.

S6.16 "R" FORMS

S6.16.1 DOCUMENTATION

Repairs, alterations, or modifications that have been performed in accordance with the NBIC shall be documented on Form R-1, *Report of Repair* or Form R-2, *Report of Alteration* as shown in NBIC Part 3, Section 5. Form R-4, *Report Supplementary Sheet*, shall be used to record additional data when space is insufficient on Form R-1 or R-2.

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 conversation table contained in the SWPS. The user may issue supplementary instructions as allowed by the SWPS. Standard Welding Procedures Specifications shall not be used in the same product joint together with the other Standard Welding Procedure Specifications or other welding procedure specifications qualified by the organization. SWPSs may be purchased at the AWS Bookstore at <http://pubs.aws.org>.

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

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

TABLE 2.3

SWPS DESIGNATION: YEAR

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

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from an external inspection or test. Periodic re-establishment of seating surfaces and the replacement of soft goods such as o-rings and diaphragms are also well advised preventive maintenance activities that can prevent future problems. If the valve is serviced, a complete disassembly, internal inspection, and repair as necessary, such that the valve's condition and performance are restored to a like new condition, should be done by a National Board "VR" Certificate Holder.

c) Service records with test results and findings should be maintained for all overpressure protection devices. A service interval of no more than three inspection intervals or ten years, whichever is less, is recommended to maintain device condition. Results of the internal inspection and maintenance findings can then be used to establish future service intervals.

3.3 ACCREDITATION OF "T/O" TEST ONLY ORGANIZATIONS

3.3.1 SCOPE

a) This section provides requirements that must be met for an organization to obtain a National Board *Certificate of Authorization* to use the "T/O" Certification Mark for in-service testing and performing minor adjustments of pressure relief valves constructed in accordance with the requirements of the ASME Code.

b) For administrative requirements to obtain or renew a National Board "T/O" *Certificate of Authorization* and "T/O" Certification Mark, refer to NB-528, Accreditation of "T/O" Test Only Organizations.

c) Authorization to use the official National Board "T/O" Certification Mark as shown in Figure [3.5.23.3.6.2-a](#)), will be granted by the National Board provided the requirements of the administrative rules in NB-528 and the NBIC are met.

3.3.2 JURISDICTIONAL PARTICIPATION

The National Board member Jurisdiction in which the "T/O" organization is located is encouraged to participate in the review and demonstration of the applicant's quality system. The Jurisdiction may require participation in the review of the testing organization and the demonstration and acceptance of the repair organization's quality system manual.

3.3.3 QUALITY SYSTEM

3.3.3.1 GENERAL

Each applicant for a new or renewed "T/O" *Certificate of Authorization* shall have and maintain a quality system which shall establish that all of these rules and administrative procedures and applicable ASME Code requirements, testing, inspection, sealing, and applying the "T/O" Certification Mark will be met.

3.3.3.2 WRITTEN DESCRIPTION

A written description, in the English language, of the system the applicant will use shall be available for review and shall contain, as a minimum, the features set forth in 3.3.3.4. This description may be brief or voluminous, depending upon the projected scope of work, and shall be treated confidentially. In general, the quality system shall describe and explain what documents and procedures the testing firm will use to validate a test and/or minor adjustment.

j) Test Only Nameplates

The quality system shall include a description of a nameplate or a drawing. An effective valve marking system shall be established to ensure proper marking and nameplate attachment for each valve as required by 3-5-23.3.6.2. The manual shall include a description of the nameplate or a drawing.

k) Calibration

1) The quality system shall describe a system for the calibration of examination, measuring, and test equipment used in the performance of testing. Documentation of these calibrations shall include the standard used and the results.

2) All calibration standards shall be calibrated against certified equipment having known valid relationships to nationally recognized standards.

l) Manual Control/Procedures

The quality system manual and referenced procedures shall include:

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

m) Nonconformities

The quality system shall establish measures for the identification, documentation, evaluation, segregation, and disposition of nonconformities. A nonconformity is a condition of any material, item, product, or process in which one or more characteristics do not conform to the established requirements. These may include, but are not limited to, data discrepancies, procedural and/or documentation deficiencies, or material defects. Also, the title(s) of the individual(s) involved in this process shall be included.

n) Testing Equipment (See NBIC Part 4, Supplement 5)

The quality system shall include a means to control the development, addition, or modification of testing equipment to ensure the requirements of NBIC Part 4, 4.6.1 b) are met.

o) Field Testing

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

- 1) Provisions for annual audits of field activities shall be included;
- 2) Provisions for use of owner-user measurement and test equipment, if applicable, shall be addressed.

p) Records Retention

The quality manual shall describe a system for filing, maintaining, and easily retrieving records supporting or substantiating the administration of the Quality System within the scope of the "VR" *Certificate*

b) Pressure Relief Valves with missing or illegible nameplates shall not be tested under the T/O program and shall be referred to a “VR” Certificate Holder or replaced.

c) Pressure Relief Valves shall be tested to confirm that the Set Pressure (defined as the average of at least three consecutive tests) is within the allowable tolerance specified by the applicable ASME Code Section and NBIC. Test Results, including Test Gauge Identification, shall be recorded on the document referred to above. Pressure Relief Valve seals shall not be removed unless required for adjustment or testing using a lift assist device.

d) Testing organizations may obtain a “T/O” *Certificate of Authorization* for field testing, either as an extension to their in-shop/plant scope, or as a field-only scope, provided that the Quality System includes the following provisions:

- 1) Qualified technicians in the employ of the certificate holder perform such testing;
- 2) An acceptable quality system covering field testing, including field audits is maintained; and
- 3) Functions affecting the quality of the tested valves are supervised from the address of record where the “T/O” certification is issued.

3.3.4.1 AUDIT REQUIREMENTS

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

3.43.3.5 TRAINING AND QUALIFICATION OF PERSONNEL

3.4.13.3.5.1 CONTENTS OF TRAINING PROGRAM

The applicant shall establish a documented in-house training program. This program shall establish training objectives and provide a method of evaluating the training effectiveness. As a minimum, training objectives for knowledge level shall include:

- a) Applicable ASME Code and NBIC requirements;
- b) Responsibilities within the organization’s quality system;
- c) Knowledge of the technical aspects and mechanical skills for making set pressure and/or blowdown adjustments to pressure relief valves;
- d) Knowledge of the technical aspects and mechanical skills for marking and sealing of pressure relief valve adjustments.

3.53.3.6 MARKING REQUIREMENTS FOR VALVES TESTED UNDER THE T/O PROGRAM

3.5.13.3.6.1 NAMEPLATES

Proper marking and identification of tested valves is critical to ensuring acceptance during subsequent inspections, and also provide for traceability and identification to the valve.

3.5.23.3.6.2 TEST ONLY NAMEPLATE & VALVE SEALING

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

- a) Existing manufacturer/assembler and “VR” nameplates if applicable shall not be removed.

b) Existing manufacturer/assembler, “VR”, and/or “TO” seals shall remain in place unless removal is required to perform testing or adjustment. Following testing, the valve shall be resealed by the responsible “T/O” Certificate Holder.

c) Any previous test only nameplates shall be removed.

d) As a minimum, the information on the “T/O” nameplate (see Figure [3-5.23.3.6.2-a](#)) shall include:

- 1) The name of responsible organization preceded by the words “Tested by” shall be applied.
- 2) Date of test shall be applied;
- 3) Set pressure shall be applied;
- 4) Unique identifier of test shall be applied (eg. shop order number, work order number, job serial number, etc.);
- 5) The “T/O” Certification Mark as provided by the National Board; and
- 6) National Board “T/O” certificate number.

FIGURE [3-5.23.3.6.2-a](#) REQUIRED MARKINGS FOR TESTING OF ASME/NATIONAL BOARD “V,” “UV,” AND “HV” STAMPED PRESSURE RELIEF VALVES UNDER THE “T/O” PROGRAM

This page is for reference only. No changes on this page.

SUPPLEMENT 7 RECOMMENDED PROCEDURES FOR TEST ONLY OF PRESSURE RELIEF VALVES

S7.1 INTRODUCTION

- a) It is essential that the test only organization establish basic, specific procedures for the testing of pressure relief valves. The purpose of these recommended procedures is to provide the test only organization with guidelines for this important aspect of valve testing. It is realized that there are many types of valves and conditions under which they are tested and, for this reason, the specific items in these recommended procedures may not apply, or they may be inadequate for each of those types or for the detailed test procedures that may be required for each valve.
- b) If the valve is to be bench tested, ensure that all sources of pressure have been removed from the valve prior to removal from service. If the valve is to be field tested using system pressure, ensure that all sources of pressure are under the control of the person performing the test.
- c) S7.2 contains recommended procedures for the test only of spring-loaded and pilot operated pressure relief valves.

S7.2 PRESSURE RELIEF VALVES

a) Visual inspection

- 1) This information is to be recorded
 - a. User (customer) identification number;
 - b. Complete original pressure relief valve nameplate data, previous "VR" repair nameplate data, previous "T/O" test only nameplate data plus any important information received from customer.
 - c. If nameplate is missing, illegible or has incorrect information, the pressure relief valve shall not be tested. Relief valve should be sent to "VR" repair shop per paragraph 4.7.5
- 2) Verify external adjustment seals are installed and match manufacturer and/or "VR" - "T/O" nameplate.
- 3) Check bonnet for venting on bellows type valves.
- 4) Check appearance for any unusual damage, missing, or misapplied parts. If sufficient damage or other unusual conditions are detected that may pose a safety risk during testing, set aside for review by the Quality Department.

b) Existing Nameplate

- 1) An existing "VR" Nameplate, if applicable, shall not be removed from the relief valve.
- 2) An existing "T/O" Nameplate shall be removed from the relief valve.

c) Relief Valve Data

- 1) "Set Pressure Definition" shall be obtained from National Board Document # NB-18.
- 2) Manufacturer's steam to air correction factor, if applicable, shall be obtained from Manufacturer.

d) Set Pressure Test

- 1) If set pressure test indicates the valves opens within the requirements of the original code of construction, then proceed to Seat Tightness.

2) If set pressure test indicates the valve does not open within the requirements of the original code of construction, but opens within twice the set pressure tolerance allowed per the requirements of the original code of construction and is otherwise in acceptable condition, set pressure restoration (defined as no more than twice the permitted set pressure tolerance) shall be made. Proceed to Seat Tightness.

3) If set pressure test indicates the valve does not open within twice the set pressure tolerance allowed per the requirements of the original code of construction, valve should be sent to a "VR" shop for repair or scrapped.

e) Seat Tightness

1) Seat tightness must be tested at a level which meets the requirements of the end user.

f) Sealing

1) After completion of set pressure test, set pressure restoration (if applicable) and seat tightness testing, all external adjustments shall be sealed in accordance with the original code of construction with a seal providing a means of identification of the organization performing the set pressure test.

g) "T/O" Nameplate

1) The tester shall prepare a "T/O" nameplate for each valve tested.

2) The nameplate shall, as a minimum, meet the requirements of ~~3.5-23.3.6.2~~ a).

3) Nameplate shall be installed independent of sealing used for external adjustments and/or "VR" nameplate attachment.

4) Nameplate shall receive a safety seal providing a means of identification of the organization performing the set pressure testing.

ASME BPV Liaison Report

NBIC Standards Committee
January 14, 2021

ASME BPV Liaison Report

CA-1 Conformity Assessment Requirements

- *Ongoing work to:*
 - *Identify Certificate numbers on Data Plates*
 - *Incorporate Nuclear CA requirements*
- *CA-1 – 2020 Edition published*
 - *Recognize alternative methods for applying the ASME Mark*
 - *Incorporated CAP-21 criteria for reapplication of the ASME Mark*
 - *Incorporated CAP-22 criteria for use of additional AIAs*
 - *Incorporated AIA accreditation requirements (from QAI-1)*
 - *Clarified permitted activities prior to issue of a Certificate*
 - *Incorporated definitions of “field site” and “temporary location”*
 - *Updated PRD and PRT program references*
 - *Available for free download from ASME website*

ASME BPV Liaison Report

QAI-1 Qualifications for Authorized Inspection

- *Case 6 extended for performance of remote inspections by the AI*
- *Action approved for AIA notification to ASME of unresolved Code or Program nonconformances*
- *QAI Conference Committee established with representation from accredited AIAs*
- *Ongoing work:*
 - *A major reorganization of the QAI-1 Standard*
 - *Establish eye examination requirements for Inspectors*
 - *Change “periodic” to “annual”*
 - *Clarify CI responsibilities consistent with CSP-53*
 - *Address situations where the AIA provides both inspection and consulting services*

ASME BPV Liaison Report

BCA Items

- CAP-21 revised to permit reapplication of the ASME Mark to be witnessed by any National Board Commissioned Inspector
- CAP-23 issued to permit Designated Oversight via electronic means during times of natural disaster, public health crisis, regional instability, or government-imposed restrictions.
- Ongoing discussions regarding nameplates that imply compliance with an ASME Standard by using “ASME” without the ASME Mark
- New ASME Quality Program Standard in development, with a separate, non-product specific certification
- Certificates required to be issued in legal company name

ASME BPV Liaison Report

Related Developments

- *2021 publication of new ASME Section XIII, linked with construction book changes*
- *Follow-up actions planned with Book Sections to align coverage of field sites and temporary locations with current CA requirements*
- *Parts Fabrication Certificate Program continues to gain participation; 99 certificates issued*
- *February 7-12, 2021 ASME BPV Code meetings will be conducted virtually*

Questions / Discussion

The following listed actions are currently in process within the American Welding Society.

- The B2 committee has agreed to systematically update all published SWPS's to bring them in line with the advancements realized by the Welding Community over the last 20 years or so. This effort is to include:
 - Deletion of the reference to "S" numbers recently deleted by ASME
 - Deleting the Metric Conversion Table opting to reference the actual metric equivalent adjacent to the listed Imperial value.
 - Adding a paragraph or so to address "Repairs".
 - Offering additional Tungsten Classifications (as applicable).
 - Updating and or deleting the Welding Symbols from Figure 1
 - Additional items as determined by the SWPS Sub Committee (correct typos, inadvertent omissions etc.)
 - Although minor word engineering may come into play, no change in philosophy or application will be permitted

To date, 49 various SWPS's are listed in Table 2.3 as follows:

- * 22 SWPS's have been revised and approved for use as noted in Table 2.3
- ** 5 SWPS's have been revised and approved by the various AWS committees and are presently at the printers and should be available for adoption later this year.
- *** 22 SWPS's are currently in process of revision with anticipated approval by the AWS this year and/or early next year. See the table below for specific details"

SWPS DESIGNATION: YEAR

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

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

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

Jim Sekely