



*THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS*

Date Distributed: 12/20/2023

NATIONAL BOARD INSPECTION CODE SUBCOMMITTEE INSPECTION

AGENDA

Meeting of January 10th, 2024
San Antonio, TX

The National Board of Boiler & Pressure Vessel Inspectors
1055 Crupper Avenue
Columbus, Ohio 43229-1183
Phone: (614)888-8320
FAX: (614)847-1828

1. Call to Order

The Chair will call the meeting to order at 8:00 a.m. Central Tim. For those attending in person, the meeting will be held in Madero B at the hotel.

2. Introduction of Members and Visitors

3. Check for a Quorum

4. Awards/Special Recognition

5. Announcements

- This meeting marks the end of Cycle C for the 2025 NBIC edition. The committees will have until the end of the July 2024 NBIC meeting to approve items for inclusion in the 2025 NBIC.
- The National Board will be hosting a reception on Wednesday evening from 5:30 p.m. to 7:30 p.m. in Veramendi (fourth level of the hotel).
- The National Board will be hosting breakfast and lunch on Thursday in Veramendi for those attending the Main Committee meeting. Breakfast will be served from 7:00 a.m. to 8:00 a.m. and lunch will be served from 11:30 a.m. to 12:30 p.m.
- Meeting schedules, meeting room layouts, and other helpful information can be found on the National Board website under the **NBIC** tab → NBIC Meeting Information.
- Remember to add any attachments that you'd like to show during the meeting (proposals, reference documents, power points, etc.) to the NBIC file share site (nbfileshare.org) **prior to the meeting**.
 - Note that access to the NBIC file share site is limited to committee members only.
 - ALL power point attachments/presentations must be sent to the NBIC Secretary prior to the meeting for approval.
 - Contact Jonathan Ellis (nbicsecretary@nbbi.org) for any questions regarding NBIC file share access.
- When possible, please submit proposals in Word format showing "strike through/underline". Project Managers: please ensure any proposals containing text from the 2021 NBIC are updated to contain text from the 2023 NBIC.
- If you'd like to request a new Interpretation or Action item, this should be done on the National Board Business Center.
 - Anyone, member or not, can request a new item.
- As a reminder, anyone who would like to become a member of a group or committee:
 - Should attend at least two meetings prior to being put on the agenda for membership consideration. The nominee will be on the agenda for voting during their third meeting.
 - The nominee must submit the formal request along with their resume to the NBIC Secretary **PRIOR TO** the meeting. nbicsecretary@nbbi.org
 - If needed, we can also create a ballot for voting on a new member between meetings.
- Thank you to everyone who registered online for this meeting. The online registration is very helpful for planning our reception, meals, room set up, etc. Please continue to use the online registration for each meeting. If you are here in person, and did not register, please visit the National Board website to register now. Registering will make sure we have an accurate count for the reception, breakfast, and lunch. It is also a good way to make sure we have the most up-to-date contact information.

6. Adoption of the Agenda

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

The minutes can be found on the NBIC Committee Information page under the NBIC tab on NBBI.org.

8. Review of Rosters

a. Membership Nominations

Mr. David Dexter (Users) is interested in becoming a member of Subgroup and Subcommittee Inspection.

b. Membership Reappointments

- The following **Subgroup** members are up for reappointment: Mr. Tim Barker and Mr. Matt Sansone.
- The following **Subcommittee** members are up for reappointment: Mr. Matt Sansone.

c. Officer Appointments

None.

9. Open Items Related to Inspection

a. PRD

- Item 23-31 – Testing of liquid service valves to be water or other suitable liquid (new item)

b. R&A

- Item 21-53 – Post repair inspection of weld repairs to CSEF steels. (P. Gilston as PM)
- Item 21-67 – Add welding requirements to plugging firetubes. (P. Gilston as PM)

10. Interpretations.

Item Number: 22-40	NBIC Location: Part 2, 4.4.7.2	Attachment Page 2
General Description: Allowable stresses for t(required) calculation		
Subgroup: Inspection		
Task Group: T. Clark (PM), B. Ray, B. Wilson, J. Petersen, J. Roberts, J. Sowinski		
Submitted by: Tom Chen		
Explanation of Need: For the purpose of setting up inspection plans, especially with older equipment, we are calculating t(required) per Part 2, para 4.4.7.2. However, we would like to know if it is permissible to use the higher allowable stresses in later editions of ASME BPV Code.		
July 2023 Meeting Action: PROGRESS REPORT		
Mr. Clark stated the Task Group (TG) is still working on their proposal.		

Item Number: 23-70	NBIC Location: Part 2, 2.3.6.11	Attachment Page 4
General Description: Inspection of vessels at and above 10,000 PSI (c) & (d) "requalification"		
Subgroup: Inspection		
Task Group: None assigned.		
Submitted by: C. Bierl		
Explanation of Need: Isostatic Pressure Vessel manufacturers are currently "requalifying" pressure vessels through an engineering evaluation without the involvement of the NB Alteration process and therefore an Inspector. This leaves control of this process of a code vessel in the hands of the manufacturer and impairs the code integrity of the vessel.		
January 2024 Meeting Action:		

Item Number: 23-80	NBIC Location: Part 2, S2.6.1 a)	Attachment Page 5
General Description: The Held Pressure for Hydro-static Testing of Heritage Boilers.		
Subgroup: SG Historical Task Group: None assigned.		
Explanation of Need: There has been issues in our Jurisdiction of inspectors interpreting that the boiler shall hold hydro static pressure for 10 minutes without the aid of a pump to maintain pressure. Therefore, any weep in valve packing, hand holes, gauge glass gaskets, etc. would be cause for failure of the hydro test.		
January 2024 Action:		

11. Action Items

a. TG FRP Items

Item Number: NB16-1402	NBIC Location: Part 2, New Supplement	No Attachment
General Description: Life extension for high pressure FRP vessels above 20 years		
Subgroup: FRP Task Group: M. Gorman (PM)		
July 2023 Meeting Action: PROGRESS REPORT Mr. Gorman gave a presentation to the SC regarding this item. He stated he has revised his initial proposal and it will be sent to the FRP TG for approval. Mr. Gorman then answered a few questions from the SC.		

b. TG Historical Items

Item Number: 23-74	NBIC Location: Part 2, S2	No Attachment
General Description: Certificate of compliance for new fusible plugs		
Subgroup: SG Historical Task Group: None assigned.		
Explanation of Need: To discuss the possibility of requiring a certificate of compliance on all new fusible plugs on historical boilers.		
January 2024 Action:		

Item Number: 23-85	NBIC Location: Part 2, S2.14.7	Attachment Page 6
General Description: Review paragraphs to replace with proper verbiage		
Subgroup: SG Historical Task Group: None assigned.		
Explanation of Need: There is some slang and second person (POV) verbiage throughout these paragraphs. Recommend rewording with proper terminology (such that it could be understood internationally) and changing point of view (e.g., changing "you're pulling water" to "water is being pulled"). Since I don't have the technical knowledge to know what is slang and what isn't, what I have proposed will still need to be reworded.		
January 2024 Action:		

c. TG Locomotive Items

There are currently no Locomotive items open for Part 2.

d. SG Inspection Items

Item Number: 21-25	NBIC Location: Part 2	Attachment Page 7
General Description: Autoclave/Quick Opening Device PP		
Subgroup: Inspection Task Group: V. Scarcella (PM), T. Bolden, M. Horbaczewski, J. Peterson, J. Clark, W. Hackworth, M.A. Shah, C. Becker, J. Morgan. Submitted by: Kevin Hawes		
Explanation of Need: Upon our AIA (Intact) QRR I produced a Power point presentation on Autoclave inspections. Your NB team leader Gary Scribner suggested I forward this inspection presentation to the NB for review of content as mention of good reference material for next NBIC edition. I have attached a copy of this PP for your considerations.		
July 2023 Meeting Action: Mr. Getter stated this item passed through SG via letter ballot (LB). Mr. Scarcella presented the proposal to the SC. He asked that if there are any further comments on this proposal, he'd like to have them sent to him in writing. The group discussed the item in further detail. A motion was made to accept the proposal as presented. The motion passed with one member (Venus Newton) voting opposed. The Mr. Newton provided the following reasons for his disapproval: <ol style="list-style-type: none">1. I am not comfortable with this wording "Pressure vessels with less than five cubic feet of volume and a design pressure less than 50 psi are excluded from the requirements of this section. "Contained in the opening paragraph.2. How do we evaluate the training requirement in b). "Review shall include maintenance, training."3. The risk-based assessment requirement in 3 is a too much to put on the owners of these vessels.		

Item Number: 21-47	NBIC Location: Part 2, 2.2.4 & 2.2.5	Attachment Page 10
General Description: To provide better guidance as it relates to carbon monoxide		
Subgroup: Inspection Task Group: W. Hackworth (PM), V. Scarcella, D. Buechel, T. Barker, T. Bolden, M. Sansone, H. Henry, J. Castle, J. Morgan, & J. Clark		
Explanation of Need: Need to provide more comprehensive items to be reviewed to guide the inspector on carbon monoxide and combustion air.		
July 2023 Meeting Action: PROGRESS REPORT Mr. Hackworth gave a progress report on this item.		

Item Number: 22-06	NBIC Location: Part 2, 3.4.9 e)	No Attachment
General Description: Part 2 task group to review Part 3 Item 21-53 Subgroup: Inspection Task Group: M. Horbaczewski (PM), J. Clark, B. Wilson, J. Mangas, P. Polick Submitted by: D. Graf Explanation of Need: Part 2 task group to investigate further changes to Part 2/Part 3 that could be needed because of action item 21-53.		
July 2023 Meeting Action: PROGRESS REPORT Mr. Horbaczewski gave a progress report on this item. He stated there were more members added to the TG during the SG meeting to help create the proposal.		

Item Number: 22-22	NBIC Location: Part 2, 4.2	Attachment Page 12
General Description: Changes and additions to align with part III with in service inspections Subgroup: Inspection Task Group: T. Bolden (PM), J. Clark, J. Petersen, M. Sansone, B. Ray, D. Graf, J. Mangas, H. Henry, P. Gilston, B. Ray, T. Bolden, T. Lebeau, A. Triplett Submitted By: V. Scarcella Background Information: Several areas where part III after repair in service inspections should be aligned with part II.		
July 2023 Meeting Action: PROGRESS REPORT Mr. Getter stated a proposal is being sent to SG LB.		

Item Number: 22-26	NBIC Location: Part 2, 2.3.6.8	No Attachment
General Description: Addition of cast acrylic as a pressure vessel material Subgroup: Inspection Task Group: J. Calvert (PM), V. Newton, D. Buechel, D. Rose Submitted by: J. Calvert Explanation of Need: Provide inspectors with the criteria necessary to competently inspect vessels like acrylic chromatography columns.		
July 2023 Meeting Action: No report was given as the PM was not present at the meeting.		

Item Number: 22-39	NBIC Location: Part 2, 4.4.8.7 g)	No Attachment
General Description: Recommended clarification of requirements for Evaluating Local Thin Areas Subgroup: Inspection Task Group: V. Newton (PM), T. Barker, J. Morgan, B. Wilson Submitted by: L. Ponce Explanation of Need: The existing text may lead to confusion due to a misplaced comma after 'specified' in the first sentence and no reference to what is being specified in the paragraph. The proposed text is a way to tie in the specified requirement in paragraph (f).		
July 2023 Meeting Action: PROGRESS REPORT Mr. Newton stated this item was a progress report during the SG meeting.		

Item Number: 23-08	NBIC Location: Part 2	No Attachment
General Description: Part 2 task group to review Part 3 Item 21-67 Subgroup: Inspection Task Group: M. Horbaczewski (PM), J. Clark, B. Wilson, J. Mangas, P. Polick, H. Henry, P. Gilston, B. Ray, T. Bolden, T. Lebeau, & A. Triplett Submitted by: D. Graf Explanation of Need: Part 2 task group to investigate further changes to Part 2/Part 3 that could be needed because of action item 21-67.		
July 2023 Meeting Action: PROGRESS REPORT Mr. Horbaczewski stated this item was a progress report during the SG meeting.		

Item Number: 23-17	NBIC Location: Part 2, 2.3.6.4 and 4.4.8.7	No Attachment
General Description: Steel-loss acceptance criteria for pressure-retaining items Subgroup: Inspection Task Group: D. Graf (PM), B. Ray, J. Roberts, T. Vandini, C. Becker, J. Sowinski, & J. Hadley Submitted by: J. Hadley Explanation of Need: (1) Resolve inconsistencies between the 2021 NBIC's air, ammonia, LPG, and general acceptance criteria. (2) Provide screening criteria that, if met, would ensure that a pressure-retaining item also meets the conservative criteria in API 579-1/ASME FFS-1, Fitness-For-Service, 2021 edition, "ASME FFS-1", Part 3 Level 1 (brittle fracture) and either Part 4 Level 2 or Part 5 Level 1 (wall thinning). If not met, an owner/user could fall back on more complex, less conservative, ASME FFS-1 assessments. (3) Describe steel-loss screening criteria in one location within NBIC, and reference this location when needed, to facilitate future revisions. (4) Coordinate NBIC with ASME FFS-1. They have been referencing each other for some years, so coordinating them seems worthwhile.		
July 2023 Meeting Action: Mr. Getter stated a TG was created during the SG meeting.		

Item Number: 23-26	NBIC Location: Part 2	No Attachment
General Description: Adding verbiage in Part 2 to mention a time limit on tube plugs in vessels Subgroup: Inspection Task Group: M. Horbaczewski (PM), J. Clark, B. Wilson, J. Mangas, P. Polick, H. Henry, P. Gilston, B. Ray, T. Bolden, T. Lebeau, A. Triplett Submitted by: K. Moore Explanation of Need: Part 3 is currently revamping 3.3.4.9. We feel like there should be a statement in the NBIC that the Chief or the in-service Inspector can address the operational issues and concerns of plugged tubes.		
July 2023 Meeting Action: Mr. Getter stated a TG was created during the SG meeting.		

Item Number: 23-27	NBIC Location: Part 2, 1.5.1	No Attachment
General Description: Addition of requirement for Inspector to be present for inspections. Subgroup: Inspection Task Group: V. Newton (PM), V. Scarcella, T. Bolden, J. Morgan, J. Smith, T. Barker, C. Becker, C. Hartford Submitted by: D. Kinney Explanation of Need: While it has always been standard industry practice for inspections to be performed in-person, and there are requirements for remote inspection, currently there is no language in Part 2 or RCI-1 requiring the Inspector to be present at the location of installation while performing an inspection. This requirement is implied, but not stated.		
July 2023 Meeting Action: Mr. Getter stated a TG was created during the SG meeting.		

Item Number: 23-28	NBIC Location: Part 2, 5.3.3	No Attachment
General Description: Revision to NB-136 Subgroup: Inspection Task Group: J. Clark (PM), D. Graf, J. Petersen, J. Smith Submitted by: D. Kinney Explanation of Need: For Line #3, "R" should be added, and should match Line #13. For Line #13, when filling out the form, there is confusion between Owner or User, and Owner-User. These are two different terms defined in the NBIC. I believe the intention is to use "Owner or User" and not "Owner-User, and this should be clarified on the form.		
July 2023 Meeting Action: Mr. Getter stated a TG was created during the SG meeting.		

Item Number: 23-37	NBIC Location: Part 2, 1.4	No Attachment
General Description: Add comment to further define responsibility of the owner user Subgroup: Inspection Task Group: V. Scarcella (PM), J. Smith, J. Mangas, T. Barker Submitted by: V. Scarcella Explanation of Need: Specifically, if the inspector is going to a location where for instance H2S of some harmful pathogen is being handled, those locations have and should provide safety training and equipment needed to complete the inspection. For internals this is already touched on in 1.5.3. "Requirements of occupational safety and health regulations (i.e., federal, state, local, or other), as well as the owner-user's own program and the safety program of the Inspector's employer are applicable."		
July 2023 Meeting Action: Mr. Getter stated a TG was created during the SG meeting.		

12. New Items

Item Number: 23-81	NBIC Location: Part 2, 4.4.3 b)	Attachment Page 14
General Description: Evaluate Inspector responsibilities relating to 4.4.3 FFS		
Subgroup: Inspection Task Group: None assigned. Submitted by: R. Underwood		
Explanation of Need: Currently, 4.4.3-b states the Inspector shall review the condition assessment methodology and ensure the inspection data and documentation are in accordance with Section 4. This proposal would redefine the role and responsibility of the Inspector.		
January 2024 Meeting Action:		

Item Number: 23-84	NBIC Location: Part 2, 2.3.6.4 c) 3), 2.3.6.7 b) 5), and S10.10.6	No Attachment
General Description: Wording Updates for Clarity		
Subgroup: Inspection Task Group: None assigned. Submitted by: J. Metzmaier		
Explanation of Need: “good repair” is typically an understood term, but with the NBIC being read internationally, we were wondering if that phrase could be understood in the same way on a global scale. Or if a better phrase could be chosen.		
January 2024 Meeting Action:		

13. Future Meetings

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

14. Adjournment

Respectfully submitted,



Jodi Metzmaier
Subcommittee Inspection Secretary

Last Name	First Name	Interest Category	Role	Exp. Date
Getter	Jim	Manufacturers	Chair	07/30/2024
Horbaczewski	Mark	Users	Vice Chair	07/30/2024
Metzmaier	Jodi		Secretary	01/30/2099
Barker	Timothy	Authorized Inspection Agencies	Member	01/30/2024
Becker	Chuck	General Interest	Member	01/29/2026
Brantley	Ernest	Authorized Inspection Agencies	Member	01/30/2025
Buechel	David	Authorized Inspection Agencies	Member	07/30/2025
Burton	Damon	National Board Certificate Holders	Member	01/30/2026
Calvert	James	National Board Certificate Holders	Member	07/30/2024
Clark	James	Manufacturers	Member	07/30/2025
Graf	Darrell	National Board Certificate Holders	Member	01/30/2026
Hackworth	William	Authorized Inspection Agencies	Member	07/30/2024
Jessick	Jerry	Users	Member	07/30/2024
Mangas	John	General Interest	Member	07/30/2024
Morgan	Joseph	Users	Member	07/30/2024
Newton	Venus	Authorized Inspection Agencies	Member	01/30/2025
Petersen	Jeffrey	Users	Member	01/30/2026
Polick	Patrick	Jurisdictional Authorities	Member	07/30/2025
Ray	Brent	Users	Member	08/21/2026
Roberts	James	Manufacturers	Member	08/21/2026
Rose	David	Users	Member	07/30/2025
Safarz	Jason	General Interest	Member	08/21/2026
Sansone	Matthew	Jurisdictional Authorities	Member	01/30/2024
Scarcella	Vincent	Authorized Inspection Agencies	Member	01/30/2026
Vandini	Thomas	Manufacturers	Member	01/30/2026

PROPOSED INTERPRETATION

Item No. 22-40
Subject/Title Allowable stresses for t(required) calculation
Project Manager and Task Group
Source (Name/Email) Tom Chen / tom.chen@chemours.com
Statement of Need For the purpose of setting up inspection plans, especially with older equipment, we are calculating t(required) per Part 2, para 4.4.7.2. However, we would like to know if it is permissible to use the higher allowable stresses in later editions of ASME BPV Code.
Background Information Part 3, para 3.4.2, titled "Alterations Based on Allowable Stress Values" states "...re-calculating a new minimum wall thickness for a pressure-retaining item using a later edition/addenda of the original code of construction or selected construction standard or code that permits use of higher allowable material stress values than were used in the original construction, the following requirements shall apply...". The paragraph goes on to give some requirements. It seems to imply that recalculating a new min wall thickness per new Code allowable stresses is considered an alteration. While Part 2, Para 4.4.7.2 does not reference allowable stress values, interpretation 07-13 and 95-19 states that it is permissible to use later editions of the original code of construction.
Proposed Question Question 1: When calculating the t(required), as defined in NBIC Part 2, Para 4.4.7.2, is it permissible to use a later edition/addenda of the original code of construction? Question 2: If the reply to Question No. 1 is yes, is it permissible to use higher allowable material stress values than were used in the original construction when calculating the t(required)? Question 3: If the reply to Question No. 2 is yes, is it considered an alteration to use higher allowable material stress values than were used in the original construction to calculate the t(required) per NB23 Part 3, para 3.4.2?
Proposed Reply Proposed Reply 1: Yes. See Interpretations 07-13 and 95-19. Proposed Reply 2: Yes, if the requirements of NB23 Part 3, paragraph 3.4.2, subparagraphs (b), (c), (d), (e), and (f) are met. Proposed Reply 3: No, unless required by the jurisdiction.
Committee's Question 1 When calculating the t(required), as defined in NBIC Part 2, Para 4.4.7.2, is it permissible to use a later edition/addenda of the original code of construction that permits higher allowable material stress values than the original code of construction?
Committee's Reply 1 No.
Rationale Part 2 does not specifically allow for the use of a later edition/addenda of the original code of construction that permits higher allowable material stress values than the original code of construction. However, Part 2 Para. 4.4.7.2 (a) allows for the inspection interval to be determined by other industry methods (see Part 2, Para. 1.3) as accepted by the Jurisdiction. Interpretation 07-13 directs to Interpretation 95-19 which only directly addresses repairs and alterations.
Committee's Question 2
Committee's Reply 2
Rationale

CODE INTERPRETATIONS

Requests for code Interpretations shall provide the following:

a) Inquiry

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

b) Reply

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

c) Background Information

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

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

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

A request seeking the rationale for code requirements.

PROPOSED INTERPRETATION

Item No. 23-70
Subject/Title Inspection of vessels at and above 10,000 PSI (c) & (d) "requalification"
Project Manager and Task Group
Source (Name/Email) Craig Bierl / craig.bierl@chubb.com
Statement of Need Isostatic Pressure Vessel manufacturers are currently "requalifying" pressure vessels through an engineering evaluation without the involvement of the NB Alteration process and therefore an Inspector. This leaves control of this process of a code vessel in the hands of the manufacturer and impairs the code integrity of the vessel.
Background Information c) Vessels constructed for a set number of cycles, as defined by the code of construction, which have reached the end of those cycles, must be removed from service or requalified for continued use. Any requalification for continued service must be completed in accordance with the requirements of the jurisdiction where applicable. The Inspector shall verify that documentation of any requalification is retained. d) Requalification of any vessel shall either be completed by the original manufacturer or a manufacturer familiar with the construction of pressure vessels at and above 10,000 PSI (68.95 MPa). Guidance for completing requalification can be found in ASME PCC-3, Inspection Planning and Using Risk-Based Methods. It is not clear in the new Part 2 guidance and I have already had a manufacturer question this. I would like this interpretation to also consider the prior interpretation 19-15 INTERPRETATION 19-15 Subject: PV Cycles of operations change as an alteration (Part 3, 3.4.4). Edition: 2019 Question: When the design of a pressure retaining item (PRI) includes cyclic loading data, should an adjustment, modification or change in analysis of the original design data be considered an alteration? Reply: Yes.
Proposed Question Is the "requalification for continued service" of a vessel constructed for a set number of cycles, as defined by the code of construction, which has reached the end of those cycles, required to be completed as an alteration?
Proposed Reply Yes, requalification of a pressure vessel requires an alteration.
Committee's Question 1
Committee's Reply 1
Rationale
Committee's Question 2
Committee's Reply 2
Rationale

PROPOSED INTERPRETATION

Item No. 23-80
Subject/Title The Held Pressure for Hydro-static Testing of Heritage Boilers.
Project Manager and Task Group
Source (Name/Email) Robin Forbes / robin.a.forbes@outlook.com
Statement of Need There has been issues in our Jurisdiction of inspectors interpreting that the boiler shall hold hydro static pressure for 10 minutes without the aid of a pump to maintain pressure. Therefore any weep in valve packing, hand holes, gauge glass gaskets, etc. would be cause for failure of the hydro test.
Background Information There was a situation where it took the owner of a traction engine 8 days to complete a hydro. Any drop in the pressure over the 10 minutes and the inspector would fail the boiler. He would reference the above clause from the NBIC as evidence the boiler must hold hydro static pressure (unaided) for 10 minutes.
Proposed Question S2.6.1.a states a hydro static pressure between MAWP and 1.25 MAWP shall be "held for a minimum of 10 minutes or as required to preform a complete visual inspection" Is the intent that the boiler shall hold a set hydro static pressure for a minimum of 10 minutes, without the aid of a pump to maintain the pressure? Or, is it permissible to use a pump to maintain the hydro static pressure for a minimum of 10 minutes?
Proposed Reply Given that the wording is "held" and not "hold" the use of a pump to maintain the hydro static pressure is permissible. The intent that the pressure be held a minimum of 10 minutes is to allow time for leaks to present themselves along seams, tubes, stay bolts, etc.
Committee's Question 1
Committee's Reply 1
Rationale
Committee's Question 2
Committee's Reply 2
Rationale

PROPOSED REVISION OR ADDITION

Item No. A 23-85	
Subject/Title Review paragraphs to replace with proper verbiage	
NBIC Location Part: Inspection; Section: Supplement 2; Paragraph: S2.14.7	
Project Manager and Task Group	
Source (Name/Email) Michelle Vance / mvance@nationalboard.org	
Statement of Need There is some slang and second person (POV) verbiage throughout these paragraphs. Recommend rewording with proper terminology (such that it could be understood internationally) and changing point of view (e.g., changing "you're pulling water" to "water is being pulled"). Since I don't have the technical knowledge to know what is slang and what isn't, what I have proposed will still need to be reworded.	
Background Information N/A?	
Existing Text <p>a) A foaming boiler is usually caused by dirty or impure water in the boiler. Oils, detergent, etc., are the biggest problems and have no business being on the waterside of a boiler. A good rule of thumb is, "If you wouldn't drink it, don't put it in your boiler." Foaming can be especially bad because you have no way of discerning your water level. The water glass and try-cocks will appear full. Foaming is usually really intensified with a heavy fire and a heavy engine load. Reduce or stop your engine load and reduce your fire until it settles down, steam down, wash out your boiler, and refill it with clean water. The first indication of a foaming or priming boiler is usually a "wet stack" and a discernable difference in the exhaust sound. Open cylinder cocks immediately and close throttle and determine your water level. b) Priming is similar to foaming; you're pulling water into your engine. This is especially bad because it can wash the oil from valves and cylinders and risk severe damage to the engine. Priming is caused more from carrying too-high a water level. It also occurs from working steam while ascending and descending hills. Know the machine you are operating, and what the safe water level is. c) If an engine starts priming (it will show a wet stack), open cylinder cocks, reduce throttle, get engine to level area, and determine the water level. If possible, safely blowdown boiler to proper water level. Ensure no bystanders are close-by for safety.</p>	Proposed Text <p>a) A foaming boiler is usually caused by impure water in the boiler. Oils, detergent, etc., cause many issues and should not be on the waterside of a boiler. Furthermore, when foaming occurs, the water level cannot be discerned. The water glass and try-cocks will appear full. Foaming is usually intensified with a heavy fire and a heavy engine load. Reduce or stop the engine load and reduce the fire until it settles down; then steam down, wash out the boiler, and refill it with clean water. The first indication of a foaming or priming boiler is usually a "wet stack" and a discernable difference in the exhaust sound. Open cylinder cocks immediately, close throttle, and determine the water level. b) Priming is similar to foaming; water is being pulled into the engine. This is especially bad because it can wash the oil from valves and cylinders, risking severe damage to the engine. Priming is caused more from carrying too high a water level. It also occurs from working steam while ascending and descending hills. One should be knowledgeable of the machine they are operating, including the proper water level. c) If an engine starts priming (it will show a wet stack), open cylinder cocks, reduce throttle, get engine to level area, and determine the water level. If possible, safely blow down boiler to the proper water level. Ensure no bystanders are close by.</p>

2.3.6.5 INSPECTION OF PRESSURE VESSELS WITH QUICK-ACTUATING CLOSURES

~~a) — This section describes guidelines for inspection of pressure vessels equipped with quick-actuating closures. Due to the many different designs of quick-actuating closures, potential failures of components that are not specifically covered should be considered. The scope of inspection should include areas affected by abuse or lack of maintenance and a check for inoperable or bypassed safety and warning devices. Pressure vessels with quick actuating closures have a higher likelihood of personnel being in close proximity of the vessel during opening.~~

~~a) Accidents have occurred when gaskets became stuck and released suddenly when pried open. Wear and fatigue damage caused by the repetitive actuation of the mechanism and pressure cycles are also a source of accidents.~~

~~b) Temperatures above that for which the quick actuating closure was designed can have an adverse effect on the safe operation of the device. If parts are found damaged and excessive temperatures are suspected as the cause, the operating temperatures may have exceeded those temperatures recommended by the manufacturer. Rapid fluctuations in temperatures due to rapid start-up and shutdown may lead to cracks or yielding caused by excessive warping and high thermal stress. An careful observation inspection should shall be made of the condition of the complete installation. Review shall including include maintenance, and training records, operation, and non-destructive examination records. This review shall serve as a guide in forming an opinion of for evaluating the care the equipment receives. The construction history of the vessel should be established, including: year built, materials of construction, extent of post weld heat treatment, previous inspection results, and repairs or alterations performed. Any leak should be thoroughly investigated, and the necessary corrective action initiated taken by an "R" Certificate Holder.~~

1) Inspection of parts and appurtenances

~~The owner/user shall adhere to the items below, and the items shall be verified by the inspector if applicable.~~

~~a) Seating surfaces of the closure device, including but not limited to the gaskets, O-rings, or any mechanical appurtenance, shall be inspected to ensure proper alignment. of the closure to the seating surface, should be inspected. This inspection can be made by using powdered chalk or any substance that will indicate that the closure is properly striking the seating surface of the vessel flange. If this method is used, a check should be made to ensure that:~~

- ~~1. Material used shall not contaminate the gasket or material with which it comes into contact; and~~
- ~~2. The substance used shall be completely removed after the examination.~~

~~b) The closure mechanism of the device should shall be inspected for freedom of movement and proper contact with the locking elements. This inspection should indicate that the movable portions of the locking mechanism are striking the locking element in such a manner that full stroke can be obtained. Inspection should be made to ensure that the seating surface of the locking mechanism is free of metal burrs and deep scars, which would indicate misalignment or improper operation. A check should be made for proper alignment of the door hinge mechanisms to ensure that adjustment screws and locking nuts are properly secured.~~

~~c. When deficiencies are noted, the following corrective actions should shall be initiated:~~

- ~~1. If any deterioration defect of the gasket, O-ring, etc., is found, the gasket, O-ring, etc., should shall be removed from service and replaced immediately. Replacements should shall be in accordance with the vessel manufacturer's specifications;~~

Commented [JM1]: Can this sentence be changed? Since it is straight out of SECTION VIII, I wasn't sure if we could change it. I think the word "because" should be removed.

Also is this paragraph supposed to be "a."?

a. Accidents have occurred when gaskets became stuck and released suddenly when pried open.

Commented [JCP2R1]: I think the word BECAUSE could be removed.

Commented [JM3]: Editorial - I believe the colon can be removed here.

Commented [JCP4R3]: I agree

Commented [JM5]: I changed this to Certificate Holder

Commented [JCP6R5]: Ok Looks good.

Item 21-25
Scarcella
April 26, 2023

2. If any cracking or excessive wear is discovered on the closing mechanism, the owner or user ~~should~~shall contact the original manufacturer of the device for spare parts or repair information. If this cannot be accomplished, the owner or user should contact an organization competent in quick-actuating closure design and construction prior to implementing any repairs;
3. Defective safety or warning devices ~~should~~shall be repaired or replaced prior to further operation of the vessel;
4. Deflections, wear, or warping of the sealing surfaces may cause out-of-roundness and misalignment. The manufacturer of the closure ~~should~~shall be contacted for acceptable tolerances for out-of-roundness and deflection; and
5. The operation of the closure device through its normal operating cycle should be observed while under control of the operator. ~~This should indicate if the operator is following posted procedures and if the operating procedures for the vessel are adequate.~~

Commented [JCP7]: Jodi: This needs to be added back to this paragraph. Venus lined this out, but I think the working group wanted it left in.

2) Gages, safety devices, and controls

The owner/user shall adhere to the items below, and the items shall be verified by the inspector as applicable.

~~a. The required pressure gage should be installed so that it is visible from the operating area located in such a way that the operator can accurately determine the pressure in the vessel while it is in operation. The gage dial size should be of such a diameter that it can be easily read by the operator. This gage should have a pressure range of at least 1 1/2 times, but not more than four times, the operating pressure of the vessel. There should be no intervening valve between the vessel and gage.~~

~~b.a.~~ The pressure gage should be of a type that will give accurate readings, especially when there is a rapid change in pressure. It should be of rugged construction and capable of withstanding severe service conditions. Where necessary, the gage should be protected by a siphon or trap.

~~e.b.~~ Pressure gages intended to measure the operating pressure in the vessel are not usually sensitive or easily read at low pressures approaching atmospheric. It may be advisable to install an auxiliary gage that reads inches of water (mm of mercury) and is intended to measure pressure from atmospheric through low pressures. This ensures that there is zero pressure in the vessel before opening. It would be necessary to protect the auxiliary ~~low-pressure~~low-pressure gage from the higher operating pressures.

~~e.c.~~ Provisions should be made to calibrate pressure gages or to have them checked against a master gage as frequently as necessary.

~~e.d.~~ A check should be made to ensure that the closure and its holding elements must be fully engaged in their intended operating position before pressure can be applied to the vessel. A safety interlock device ~~should~~shall be provided that prevents the opening mechanism from operating unless the vessel is completely depressurized.

~~f.e.~~ Quick-actuating closures held in position by manually operated locking devices or mechanisms, and which are subject to leakage of the vessel contents prior to disengagement of the locking elements and release of the closure, shall be provided with an audible and/or visible warning device to warn the operator if pressure is applied to the vessel before the closure and its holding elements are fully engaged, and to warn the operator if an attempt is made to operate the locking device before the pressure within the vessel is released. Pressure tending to force the closure clear of the vessel must be released before the closure can be opened for access.

3. If required by the authority having jurisdiction, a Risk Based Inspection Assessment (RBIA) program, managed by the owner/user, shall be developed by an ~~professional~~engineer familiar with the design and

Item 21-25
Scarcella
April 26, 2023

applications of quick actuating closures. See NBIC Part 2, Section 4. The RBIA shall be made available for review by the inspector.

PART 2, SUPPLEMENT 15

Concerns Regarding Carbon Monoxide During Boiler Inspections

S15.1 SCOPE

- a) This supplement provides specific requirements and guidelines for evaluating potential carbon monoxide concerns.
- b) It is well documented and internationally recognized¹ that carbon monoxide is a serious health concern. Annually, there are over 40,000 cases of CO poisoning in North America². Boiler and fired pressure vessel inspections involve equipment that is an exposure to the inspector and occupants of buildings. National Board Inspection Code Part 1 calls for carbon monoxide detectors (NBIC Part 1, 1.6.9) where required. A review of service and maintenance records (NBIC Part 2, 2.2.11), verification that combustion air is supplied to the boiler room (NBIC Part 2, 2.2.20.6 c and NBIC Part 1, 1.6.6) and inspecting for combustion air leaks (NBIC Part 2, 2.2.5 d) are important parts of the inspection that help prevent carbon monoxide from becoming a problem. Installers must follow manufacturers and the jurisdictions requirements for the installation of the equipment.

S15.2 Inspection points that should be included in the inspection of the object

- a) Assessment of conditions that may indicate a carbon monoxide condition exists outside of the combustion chamber include:
 - unstable pilot or main flame
 - Yellow flame
 - Smoke from stack
 - Discoloration around burner or casing
 - The presence of soot on any surface
 - Any flue leakage or blockage
 - Fresh air intake blocked.
 - Negative pressure in boiler room, resistance when you go to open door, air rushes in when you open door.
 - Lack of maintenance on burner/boiler
 - Condensation in boiler room
 - Any changes to the combustion load or reconfigurations that may impact combustion should be considered in the inspection.
- b) If leakage of flue gas or in any case a condition indicates a lack of combustion air, further investigation by boiler service technician is required. (ASME CSD-1, CG 700 qualified individual, or persons deemed qualified by the authority having jurisdiction)

S15.3 Equipment recommended to inspect the objects safely.

- a) It is highly recommended that inspectors carry a carbon monoxide detector. They are inexpensive and easy to use.

Note 1 <https://www.who.int/teams/environment-climate-change-and-health/air-quality-and-health/health-impacts/types-of-pollutants>,

Note 2 <https://www.ncbi.nlm.nih.gov/books/NBK430740/>

4.2 NONDESTRUCTIVE EXAMINATION METHODS (NDE)

- a) Listed below ~~is-are~~ a variety of ~~nondestructive examination~~ NDE methods that may be employed to assess the condition of pressure-retaining items. ~~The skill, experience, and integrity of the personnel performing these examinations are essential to obtain meaningful results.~~ The Inspector ~~should- shall~~ review the methods and procedures to be employed to ensure compliance with the codes, standards, and/or jurisdictional requirements.
- b) ~~Generally, some form of surface preparation will be required prior to use of these examination metho~~When there is doubt as to the extent of a defect or detrimental condition found in a pressure-retaining item, the Inspector ~~is cautioned encouraged to~~ should seek competent technical advice for further evaluation of the finding. Additionally, and supplemental NDE. ~~M~~may be used to further evaluate the finding.
- c) ~~Personnel performing examination and test methods shall have proper training and certification, as required by the owner and acceptable to the Inspector and Jurisdiction, if required. For the assign~~The NDE requirement shall include ~~, the following shall be stated~~ technique, the extent of coverage, procedures, personnel, and acceptance criteria. The acceptance criteria shall be in accordance with the original code of construction, standard, or specification. If the original code of construction, standard, or Specification is not possible or practical ~~an the application of the assigned NDE-~~ alternative NDE methods may be used; if all other requirements are met. The alternative NDE method(s) shall be acceptable to the Inspector and the Jurisdiction where the pressure-retaining item is installed, where required.
- d) ~~NDE Personnel shall be qualified to the requirements of ASME Section V T-120, which references national and internationally accepted standards~~NDE Personnel shall be qualified to the requirements of ASME Section V paragraph T-120, which references national and internationally accepted standards. When this is not possible, NDE personnel may be qualified and certified in accordance with their employer's written practice.
 - 1) The employer's written practice shall be established by using ASNT SNT-TC1A, *Recommended Practice Non-destructive Testing Personnel Qualification and Certification*, or ANSI/ASNT CP-189, *Standard for Qualification and Certification of Nondestructive Testing Personnel*, as a guideline.
 - 2) Personnel performing the examination and test methods shall have proper training and certification, as required by the owner and acceptable to the Inspector and Jurisdiction (where

required). Such training and certification shall be maintained by the employer of the NDE personnel.

PROPOSED REVISION OR ADDITION

Item No. A 23-81	
Subject/Title Evaluate Inspector responsibilities relating to 4.4.3 FFS	
NBIC Location Part: Inspection; Section: 4; Paragraph: 4.4.3-b	
Project Manager and Task Group	
Source (Name/Email) Robert Underwood / robert_underwood@hsb.com	
Statement of Need Currently, 4.4.3-b states the Inspector shall review the condition assessment methodology and ensure the inspection data and documentation are in accordance with Section 4. This proposal would redefine the role and responsibility of the Inspector.	
Background Information There has been confusion on what the Inspector is responsible for when signing an NB-403 Form for Fitness for Service. Inspectors are not trained in the various FFS or condition assessment methodology referenced in Section 4 and should not be responsible for ensuring that these methods are correct.	
Existing Text 4.4.3 RESPONSIBILITIES a) Owner or User The owner or user of the pressure-retaining item is responsible for the selection and application of a suitable fitness for service or condition assessment methodology described in this section, subject to review and approval by the Jurisdiction, if required. b) Inspector The Inspector shall verify the condition assessment methodology selected by the owner or user has been completed and ensure inspection data and documentation are available.	Proposed Text 4.4.3 RESPONSIBILITIES a) Owner or User The owner or user of the pressure-retaining item is responsible for the selection and application of a suitable fitness for service or condition assessment methodology described in this section, subject to review and approval by the Jurisdiction, if required. b) Inspector The Inspector shall verify the condition assessment methodology selected by the owner or user has been performed and ensure inspection data and documentation are available.

VOTE:							
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date