Date Distributed: 2/22/2019

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD INSPECTION CODE COMMITTEE

MINUTES

Meeting of January 17th, 2019
San Antonio, TX

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The National Board of Boiler & Pressure Vessel Inspectors
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1. **Call to Order**
   NBIC Committee Chair Mr. Bob Wielgoszinksi called the meeting to order at 8:06am local time.

2. **Introduction of Members and Visitors**

   The meeting began with an introduction of NBIC Committee members followed by an introduction of meeting visitors. Ms. Kathy Moore informed the committee that she would be sitting in as an alternate for Mr. Craig Hopkins. After introductions were completed, it was determined that a quorum had been met because all NBIC Committee members were present.

   As there was no Vice Chair at the time of the meeting, Mr. Wielgoszinski announced that a Vice Chair Pro Tempore would need to be selected. Mr. Jim Sekely nominated Mr. George Galanes for the position. No other nominations were made, so a motion was made and seconded to appoint Mr. Galanes as Vice Chair Pro Tempore. This motion was approved unanimously by the committee.

3. **Announcements**

   Mr. Wielgoszinski announced that lunch would be served at 11:30am and that the meeting would break for coffee and refreshments at 10am. He also briefly spoke on the presentations on the new online method for submitting new NBIC item, asking that any questions go to the NBIC Secretary, Mr. Jonathan Ellis.

   Mr. Wielgoszinski spoke a few words about Mr. Domenic Canonico, who passed away last year. Mr. Wielgoszinski expressed his gratitude for the work Mr. Canonico put in to improve the NBIC as a member of various NBIC committees. A moment of silence was then held in honor of Mr. Canonico.

   Mr. Scribner spoke on the progress of publication efforts for the 2019 NBIC. He announced that everything is on schedule for a July 1st, 2019 release.

   Mr. Wielgoszinski then spoke on participation in the letter ballot process, reminding everyone that part of their duty as a committee member is to take time to vote on ballot items.

4. **Adoption of the Agenda**

   Before adopting the agenda, Mr. Wielgoszinksi asked if any additions needed to be made. Ms. Melissa Wadkinson announced that two Installation items, 18-1 and 18-2, needed to be added to the agenda. Mr. Rob Troutt also requested that two Repairs & Alterations items, NB15-1405 and 18-102, be added to the agenda. Mr. Wielgoszinski then announced that Mr. Marvin J. Byrum, Mr. Donnie LeSage, and Mr. Milton Washington will be added to the list of Membership Nominations.

   With no further additions proposed, a motion was made and seconded to adopt the agenda with the aforementioned additions. This motion was approved unanimously by the committee.

   Before moving on, Mr. Wielgoszinski announced that a new procedure is being developed to but specific requirements on new committee membership. This is why no new nominations were taken at any committee level except for National Board members. The goal is to have this new procedure developed before the July 2019 meeting.

5. Approval of the Minutes of July 19th, 2018 Meeting

The minutes are available for review on the National Board website, www.nationalboard.org.

A motion was made and seconded to approve the July 19th, 2018 NBIC Committee minutes. The motion was approved with one abstention.

6. Review of Rosters (See Attachment Page 1 for Attendance Sheet)

a. Membership Nominations

Mr. Wielgoszinski announced all new NBIC Committee and subcommittee membership nominations, which are listed below:

- Mike Vogel – SC Pressure Relief Devices
- Marvin J. Byrum – SC Inspection
- Donnie Lasage – Main Committee
- Milton Washington – Main Committee

A motion was made and seconded to approve these nominations. This motion was passed unanimously. Their appointment to their designated committees is subject to the approval of the Chairman of the Board of Trustees.

b. Membership Reappointments

- Paul Schuelke – SC Installation
- Paul Welch – SC Inspection
- Ernest Brantley – SC Inspection
- Ben Schaefer – SC Repairs and Alterations
- Marty Toth – Repairs and Alterations
- Linn Moedinger – SC Repairs and Alterations
- Craig Hopkins – SC Repairs and Alterations
- Adam Renaldo – SC Pressure Relief Devices
- Thakor Patel – SC Pressure Relief Devices
- Brandon Nutter – SC Pressure Relief Devices
- Dan Marek – SC Pressure Relief Devices

Mr. Wielgoszinski announced that the people listed above up for reappointment to their respective committees. He asked the subcommittee Chairs if there were any changes that needed to be made to the list before holding a vote. No changes needed to be made, so a motion was made and seconded to approve this list of people for reappointment to their respective committees. This motion passed unanimously. Their reappointments are subject to the approval of the Chairman of the Board of Trustees.

c. Officer Positions

- The position of Vice Chair is currently vacant for Main Committee.

- Mr. Jim Sekely nominated Mr. George Galanes for the position of Main Committee Vice Chair. Mr. Wielgoszinski asked if there were any other nominations for the position. No further nominations were made, so a motion was made and seconded to vote for Mr. Galanes as Vice Chair. The motion was approved with Mr. Galanes choosing to recuse himself from the vote. Mr. Galanes' appointment to the position is subject to the approval of the Chairman of the Board of Trustees.SC Pressure Relief Devices will be electing a new Chair at their meeting.
    - SC Pressure Relief Devices Secretary Mr. Tom Beirne announced that Ms. Marianne Brodeur was approved by the subcommittee to become the new Chair. Since Ms. Brodeur was the Vice Chair of the subcommittee, a vote was held to appoint a new Vice Chair to fill her old role. The subcommittee vote to appoint Mr. Alton Cox as Vice Chair.
    - A motion was made and seconded for the Main Committee to approve these appointments. The motion passed unanimously. Their appointment to these positions is subject to the approval of the Chairman of the Board of Trustees.
- Mr. Rob Troutt, Chair of SC Repairs and Alterations, announced that a vote was taken to appoint Ms. Kathy Moore as the new Vice Chair for the subcommittee. A motion was made and seconded for the Main Committee to approve this nomination. The motion passed unanimously. Her appointment is subject to the approval of the Chairman of the Board of Trustees.

7. Report of Subcommittees

a. Subcommittee Installation

i. Interpretations

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 **Meeting Action:** Ms. Wadkinson informed the committee that work continues on a proposal for this item.		

Item Number: NB12-0302	**NBIC Location: Part 1**	**Attachment Page 4**
General Description: Add installation requirements for pressure vessels for human occupancy (PVHOs) **Subgroup:** Installation **Task Group:** B. Moore (PM), T. Creacy, T. Millette, M. Richards **Meeting Action:** Ms. Wadkinson introduced the item and asked Mr. Brian Moore to present the item. Mr. Moore spent time going over some additional changes made between the July 2018 meeting and this meeting. Mr. Gary Scribner asked if these changes were more akin to design requirements instead of installation requirements. Mr. Moore and Mr. Jim Byrum explained why the changes were added to		

the proposal. After discussion concluded, a motion was made and seconded to send the item to letter ballot for the Man Committee. This motion was amended to include putting Scope before General in the proposal to make it consistent with the rest of the NBIC. The amended motion was approved unanimously.

Item Number: NB14-0403	**NBIC Location: Part 1**	**No Attachment**

General Description: Identify terms from Part 1 that need to be added to the index

Subgroup: Installation

Task Group: B. Moore (PM), M. Richards, T. Creacy, M. Washington

Meeting Action: Ms. Wadkinson introduced the item. She explained that the subcommittee voted to close the item because no new items needed to be added to the index at this time. A new item will be opened if in the future if any updates to the index need to be made. A motion was made and seconded to close the item with no action. This motion passed unanimously.

Item Number: NB16-0102	**NBIC Location: Part 1**	**No Attachment**

General Description: Address post installation pressure testing

Subgroup: Installation

Task Group: S. Konopacki (PM), E. Wiggins, P. Cole, R. Smith, M. Wadkinson, D. Patten

Meeting Action: Ms. Wadkinson introduced the item and explained that this item was brought back for further work due to some issues that were noticed at the July 2018 meeting. A proposal will ready at the July 2019 meeting. She also informed that committee that the subcommittee voted to close item 18-45 as its scope is covered under this item's scope.

Item Number: 17-159	**NBIC Location: Part 1, 4.7**	**Attachment Page 9**

General Description: Result of 17-147; review Part 1, 4.7 for references to hot water storage tanks

Subgroup: SG Installation

Task Group: J. Brockman (PM), D. Patten, and E. Wiggins

Meeting Action: Ms. Wadkinson introduced the item and explained that this is would be a joint proposal with PRD item 17-131. The joint proposal was briefly reviewed by the committee to understand the changes being proposed. A motion was made and seconded to move the combined proposal to letter ballot for the Main Committee. This motion was approved unanimously.

Item Number: 18-26	**NBIC Location: Part 1, S3**	**Attachment Page 11**

General Description: Review installation requirements for CO2 vessels

Subgroup: SG Installation

Task Group: R. Smith (PM), B. Moore, J. Brockman, T. Creacy and R. Spiker

Meeting Action: Ms. Wadkinson introduced the item and explained that this would be a joint proposal with Inspection item 18-27. Mr. Venus Newton presented the item and explained the changes being proposed. A motion was made and seconded to move this to Main Committee letter ballot. This motion was approved unanimously.

Item Number: 18-44	**NBIC Location: Part 1, S3**	**Attachment Page 12**

General Description: Remove the modular limits of BTU/Hr., 3gal for oil and 117 kW for electricity to be consistent with ASME Section IV 2017.

Subgroup: SG Installation

Task Group: M. Wadkinson (PM), J. Downs, and B. Ahee

Meeting Action: Ms. Wadkinson introduced the item and explained the changes being proposed. She also mentioned that the item passed subcommittee with some negative comments. A motion was made and seconded to move this to letter ballot with inclusion of the negative comments. Mr. Troutt asked if this could be done as a voice vote as the proposed changes have been made by ASME and that there isn't much to read through. Mr. Sekely asked to have time to do some research on the proposed changes and to keep it as a letter ballot. Discussion was held on the subject of the negative comments. After discussion concluded, a vote was held on the original motion. The motion passed unanimously.

Item Number: 18-45	**NBIC Location: Part 1, S3**	**No Attachment**

General Description: Addition of a paragraph d) to Part 1, 1.6.9

Subgroup: SG Installation

Task Group: T. Creacy (PM), D. Patten, and S. Konopacki

Meeting Action: Ms. Wadkinson reported that the subcommittee closed this item with no action as its scope is covered under item NB16-0102. A motion was made and seconded for the main committee to close the item with no action. This motion was approved unanimously.

iii. Action Items – New Business

Item Number: 18-57	**NBIC Location: Part 1**	**No Attachment**

General Description: address the use & definition of the word inspector

Subgroup: SG Installation

Task Group: Brian Moore (PM), R. Smith, T. Griffin, P. Jennings, T. Creacy, and R. Spiker

Meeting Action: Ms. Wadkinson reported that work is being done to develop a new proposal, and that additional members have been added to the task group.

Item Number: 18-81	**NBIC Location: Part 1, 3.8.1.5**	**No Attachment**

General Description: Should an assembled modular steam boiler have a single manual LWCO to protect to total assembly?

Subgroup: SG Installation

Task Group: M. Washington (PM), T. Creacy, K. Watson, M. Wadkinson, J. Downs, and B. Ahee

Meeting Action: Ms. Wadkinson reported that a task group has been formed and that they are working on a proposal for the July 2019 meeting.

Item Number: 18-96	NBIC Location: Part 1, 1.6.3	No Attachment

General Description: In reference to item NB16-0905, should "fired or electrically heated pressure vessels" be specified instead of stating "pressure vessels"

Subgroup: SG Installation

Task Group: E. Wiggins (PM), S. Konopacki, G. Halley, G. Thompkins

Meeting Action: Ms. Wadkinson reported that a task group has been formed to work on a proposal for this item.

Item Number: 18-97	NBIC Location: Part 1, 1.6.9	No Attachment

General Description: In reference to item NB16-0101, should specific fuel fired boilers and pressure vessels be listed in Part 1, 1.6.9

Subgroup: SG Installation

Task Group: R. Spiker (PM), B. Anderson, and D. Patten

Meeting Action: Ms. Wadkinson reported that a task group has been formed to work on a proposal for this item.

Ms. Wadkinson informed the committee that item 18-1 (review of potential duplicate paragraphs) and 18-2 (commissioning fired boilers and pressure vessels) had been left off the agenda by mistake, and that their omission was not noticed until the subcommittee meeting. They will be on the agenda for the July 2019 meeting.

b. Subcommittee Inspection

i. Interpretations

ii. Action Items – Old Business

Item Number: NB16-1401	NBIC Location: Part 2, S10	No Attachment

General Description: Revise and update Supplement 10 on Inspection of CRPVs

Subgroup: FRP

Task Group: N. Newhouse (PM)

Meeting Action: Mr. Jim Getter reported that no progress was made on the item at this meeting as the item needs to be balloted to Subgroup FRP.

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)

Meeting Action: Mr. Getter reported that no action was taken on this item as work is still being done to at the subgroup level to develop a proposal.

Item Number: 18-27	**NBIC Location: Part 2, S12.5**	**Attachment Page 11**

General Description: CO2 Detector Placement

Subgroup: Inspection

Task Group: V. Newton (PM), D. Graff, E. Brantly, M. Horbaczewski, T. Shernisky and D. Buechel

Meeting Action: This item was approved to be sent to main committee letter ballot with Item 18-26 as a combined proposal.

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, T. Shernisky, J. Clark, M. Sansone

Meeting Action: Mr. Getter reported that work is still being done to develop a proposal for this item.

Item Number: 18-61	**NBIC Location: Part 2, 2.3.6.8**	**Attachment Page 14**

General Description: Additional changes to PVHO

Subgroup: Inspection

Task Group: J. Byrum (PM), R. Smith, S. Reimers, J. Burgess

Meeting Action: Mr. Getter introduced the item and explained the changes being proposed. A motion was made and second to approve the proposal as presented. Mr. Newton explained that some additional changes were made to clearly indicate that the proposal pertains to medical PVHOs. Mr. Mark Mooney added that an item has been opened to address other types of PVHOs. The motion to approve the proposal passed with 16 approvals and 1 absention.

Item Number: 18-62	**NBIC Location: Part 2, S12.5**	**No Attachment**

General Description: Remote Visual Inspection Requirements

Subgroup: Inspection

Task Group: V. Newton (PM), M. Horbaczewski, B. Wilson, J. Calvert, J. Castle, D. Graf, T. Shernisky

Meeting Action: Mr. Getter introduced the item and explained that work is still being done to develop a proposal. This item will address various types of remote inspection tools like robots and drones. MR. Troutt asked that the task group look into requirements for both drivers and inspectors as well as viewing display requirements.

iii. Action Items – New Business

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:** T. Shernisky (PM) **Meeting Action:** Mr. Getter reported that work is being done to develop a proposal.		

Item Number: 18-79	**NBIC Location: Part 2, S12**	**Attachment Page 17**
General Description: Part 2 S12 changes to address shoulds/shalls **Subgroup:** Inspection **Task Group:** None Assigned **Meeting Action:** Mr. Getter introduced the item and the changes being proposed. He also explained that this item was originally part of NB16-2809, but only one of the two pages of that item went to letter ballot and was approved. This item is the second page of that proposal. A motion was made and seconded to send the item to main committee letter ballot. Me. Wielgoszinski asked that the approved page be included with this page for clarity. The motion was approved unanimously.		

Item Number: 18-89	**NBIC Location: Part 2, S2.4**	**Attachment Page 19**
General Description: Revise NBIC Part 2, paragraph S2.4 to change incorrect reference of "NBIC Part 3, Section 3 Corrosion and Failure Mechanisms" to "NBIC Part 2, Section 3, Corrosion and Failure Mechanisms." **Subgroup:** Historical **Task Group:** None Assigned **Meeting Action:** Mr. Getter introduced the item and explained the changes being proposed. A motion was made and seconded to approve the proposal as presented. This motion was approved unanimously.		

Item Number: 18-101	**NBIC Location: Part 2, 2.3.6.8**	**Attachment Page 21**
General Description: Inspection Requirements for PVHOs **Subgroup:** Inspection **Task Group:** None Assigned **Meeting Action:** Mr. Getter introduced the item and explained the changes being proposed. He also clarified that the black text in the proposal is text approved for the 2019 NBIC, while the red text shows changes for the 2021 NBIC. A motion was made and seconded to approve the proposal. Mr. Wielgoszinski asked some clarifying questions about the changes being made, and Mr. Jim Byrum responded to his questions. The motion to approve the proposal was unanimously approved.		

c. Subcommittee Repairs and Alterations

i. Interpretations

Item Number: 17-143	NBIC Location: Part 3	No Attachment

General Description: Can an "R" stamp certified shop manufacture and use parts for use on the pressure boundary to complete the repair of a boiler?

Subgroup: Repairs and Alterations

Task Group: Pau l Welch (PM), Linn Moedinger

Meeting Action: Mr. Troutt reported that work is still being done to develop a proposal.

Item Number: 18-28	NBIC Location: Part 3	No Attachment

General Description: Weld metal buildup classification. (This item was originally included in 17-175 before being split into its own item at the January 2018 SC R&A meeting.)

Subgroup: Repairs and Alterations

Task Group: George Galanes

Meeting Action: Mr. Troutt introduced the item and asked Mr. Galanes to present the item. Mr. Galanes explained that this item came from a discussion on item 17-175 at the January 2018 meeting. After doing some research, the subcommittee voted to close the item as the response issued to the original inquirer of 17-175 was satisfied with the provided interpretation. A motion was made and seconded for main committee to close this item. The motion was unanimously approved.

Item Number: 18-33	NBIC Location: Part 3, 3.4.4 c)	No Attachment

General Description: Providing an additional stiffener ring to compensate for corrosion levels being above allowance

Subgroup: Repairs and Alterations

Task Group: Kathy Moore (PM), Paul Shanks, David Martinez

Meeting Action: Mr. Troutt introduced the item and asked Ms. Kathy Moore to present the item. Ms. Moore informed the committee that multiple requests for information from the inquirer have been ignored, which led the subcommittee to vote to close the item with no action. A motion was made and seconded for the main committee to close the item with no action. This motion was unanimously approved. Mr. Ellis will send a letter to inquirer explaining why the item was closed.

Item Number: 18-34	NBIC Location: Part 3, 8.4	No Attachment

General Description: Does an R certificate holder assume responsibility for safety/integrity of a vessel outside the scope of repair?

Subgroup: Repairs and Alterations

Task Group: Nathan Carter, Michael Quisenberry

Meeting Action: Mr. Troutt reported that work is still being done to develop a proposal for this item.

Item Number: 18-53	NBIC Location: Part 3	Attachment Page 19

General Description: Is changing the corrosion allowance noted on the original Manufacturer's Data Report considered an alteration per NBIC, when this task is performed solely for the purpose of establishing minimum required thicknesses on an internal Owner / User mechanical integrity database?

Subgroup: Repairs and Alterations

Task Group: Brian Boseo

Meeting Action: Mr. Troutt reported that Mr. Brian Boseo is awaiting more information from the inquirer before moving forward with developing a proposal.

Item Number: 18-77	NBIC Location: Part 3, 3.4.2	Attachment Page 24

General Description: Does statement "later edition/addenda of the original code of construction" means a pressure-retaining item may be re-rated to the latest (most current) edition of the code or any edition/addenda of the code since 1968 edition?

Subgroup: Repairs and Alterations

Task Group: George Galanes

Meeting Action: Mr. Troutt introduced the item and asked Mr. Galanes to present the proposed response. A motion was made and seconded to close the item and send a letter to inquirer referencing interpretation 98-14. Discussion was held on the wording of the question to make sure responding with interpretation 98-14 will answer the inquirer's question. Mr. Troutt suggested moving forward with this motion and that a new interpretation request can be opened to specifically to say that earlier editions should not be used. Further discussion was held on whether or not this was necessary. After discussion concluded, a vote was held and the motion was unanimously approved.

Item Number: 18-85	NBIC Location: Part 3, 2.3 and Table 2.3	Attachment Page 54

General Description: For the SWPS AWS B2.1-1-233:2006, is the root or 1st pass using GTAW-S (Short Circuiting Transfer mode) allowed to be used in all positions?

Subgroup: Repairs and Alterations

Task Group: Jim Sekely

Meeting Action: Mr. Troutt introduced the item and announced that the item has been withdrawn as an inquiry and will instead be addressed as an action item. Mr. Troutt then asked Mr. Sekely to present the changes being proposed. A motion was made and seconded to approve the changes being made by this item. This motion was unanimously approved.

Item Number: 18-86	NBIC Location: Part 3, 2.5.3	Attachment Page 27

General Description: Are other means of NDE methods such as Ultrasonic Angle Beam (UTA) and/or Ultra Sonic Strait Beam (UTS), as referenced in ASME Section V, acceptable to be used in conjunction with NBIC Part 3, 2.5.3 Alternate welding methods without postweld heat treatment, paragraph e), in order to satisfy the original code of construction examination requirements?

Subgroup: Repairs and Alterations

Task Group: Jamie Walker, Nathan Carter, Michael Quisenberry

Meeting Action: Mr. Troutt introduced the item and asked Mr. Jamie Walker to present the proposal. Mr. Walker explained the interpretation and the proposed reply. A motion was made and seconded to approve the proposed code interpretation. This motion was unanimously approved.

Item Number: 18-91	NBIC Location: Part 3, 2.5.3.2, 2.5.3.3, 2.5.3.4	Attachment Page 29

General Description:
Inquiry 1: Does NBIC Part 3, 2.5.3.2, 2.5.3.3, and 2.5.3.4 permit the use of Nickel-Chrome alloy (F-No.43) filler metal?

Inquiry 2: Does the word "austenitic" in NBIC Part 3, 2.5.3.2(i), 2.5.3.3(g)(2), and 2.5.3.4(g)(2) refer only to filler metals that meet A-No.8 or A-No.9 requirements?

Subgroup: Repairs and Alterations

Task Group: George Galanes

Meeting Action: Mr. Troutt introduced the item and asked Mr. Galanes to present the inquiry and the proposed interpretation. A motion was made and seconded to approve the interpretation as presented. Mr. Wielgoszinki asked if the committee questions could be altered to be less redundant. The original motion was amended to include the alteration. The amended motion was unanimously approved.

Item Number: 18-92	NBIC Location: Part 3, 3.4.1	Attachment Page 30

General Description: Certifying engineer of UDS for re-rating of pressure vessel

Subgroup: Repairs and Alterations

Task Group: Brian Morelock

Meeting Action: Mr. Troutt introduced the item and asked Mr. Brian Morelock to present the inquiry and the proposed interpretation. A motion was made and seconded to approve the interpretation as presented. Mr. Jim Pillow pointed out some editorial changes, and the original motion was amended to include the changes. The amended motion was unanimously approved.

Item Number: 18-99	NBIC Location: Part 3, 3.3.5 & 3.4.5	Attachment Page 34

General Description: Repair and alteration of Section VIII Div 2 items

Subgroup: Repairs and Alterations

Task Group: Brian Morelock

Meeting Action: Mr. Troutt Introduced the item and asked Brian Morelock to present the inquiry and the proposed interpretation. A motion was made and seconded to approve the interpretation as shown, along with an inclusion in the letter that they should seek counsel from their jurisdiction. This moption was unanimously approved.

After concluding discussion on interpretations, Mr. Troutt announced that a new Interpretation Task Group has been formed to work on interpretations as they come in to help reduce response time.

The meeting went on break from 10:05am to 10:37am local time. Upon resuming the meeting, Mr. Wielgoszinski announced that Mr. Donnie LeSage would be acting as Mr. Don Cook's alternate for the remainder of the meeting.

ii. 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) **Meeting Action:** Mr. Troutt reported that no action was taken on this item as work is still being done by the subgroup.		

Item Number: NB16-1402	**NBIC Location: Part 3**	**Attachment Page 30**
General Description: Life extension for high pressure vessels above 20 years **Subgroup:** FRP **Task Group:** M. Gorman (PM) **Meeting Action:** Mr. Troutt reported that no action was taken on this item as work is still being done by the subgroup.		

Item Number: NB16-1403	**NBIC Location: Part 3, S4**	**No Attachment**
General Description: Add information on repair of high pressure vessels **Subgroup:** FRP **Task Group:** N. Sirosh (PM) **Meeting Action:** Mr. Troutt reported that no action was taken on this item as work is still being done by the subgroup.		

Item Number: NB16-1502	**NBIC Location: Part 3**	**No Attachment**
General Description: Develop supplement for repairs and alterations based on international construction standards **Subgroup:** SG Repairs and Alterations **Task Group:** International Repair Supplement Task Group, Chuck Withers (PM) **Meeting Action:** Mr. Troutt reported that no action was taken on this item as MR. Withers was not present at the meeting.		

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

Meeting Action: Mr. Troutt reported that no action was taken on this item as work is still being done by the subgroup.

Item Number: 17-137	NBIC Location: Part 3, S4.18.2	Attachment Page 35

General Description: Remove "sand" blasting and replace with "abrasive" in Part 3, S4.18.2

Subgroup: FRP

Task Group: Terry Cowley

Meeting Action: Mr. Troutt reported that no action was taken on this item as work is still being done by the subgroup.

Item Number: 17-166	NBIC Location: Part 3, S4.18.2	No Attachment

General Description: Remove "sand" blasting and replace with "abrasive" in Part 3, S4.18.2

Subgroup: Graphite

Task Group: Francis Brown (PM)

Meeting Action: Mr. Troutt reported that no action was taken on this item as work is still being done by the subgroup.

Item Number: 17-167	NBIC Location: Part 3, S4.18.2	No Attachment

General Description: Remove "sand" blasting and replace with "abrasive" in Part 3, S4.18.2

Subgroup: Graphite

Task Group: Aaron Viet (PM)

Meeting Action: Mr. Troutt reported that no action was taken on this item as work is still being done by the subgroup.

Item Number: 18-12	NBIC Location: Part 3	Attachment Page 38

General Description: Adding Weld Buildup to WM #6

Subgroup: SG Repairs and Alterations

Task Group: John Siefert PM, George Galanes

Meeting Action: Mr. Troutt reported that the item will be sent to the subgroup and subcommittee as a review and comment letter ballot.

Item Number: 18-13	NBIC Location: Part 3	Attachment Page 41

General Description: Weld Methods 7 addition for dissimilar weld metal-Gr. 91.

Subgroup: SG Repairs and Alterations

Task Group: John Siefert PM, George Galanes

Meeting Action: Mr. Troutt reported that the item will be sent to the subgroup and subcommittee as a review and comment letter ballot.

Item Number: 18-65	NBIC Location: Part 3, Section 3	No Attachment

General Description: Draft rules for "used" material in repairs and/or alterations.

Subgroup: SG Repairs and Alterations

Task Group: Jamie Walker – PM, Marty Toth, Pat Becker, Michael Quisenberry, Issac Osborn, Paul Shanks.

Meeting Action: Mr. Troutt provided a brief progress report on the item. Work continues on developing a proposal.

Item Number: 18-66	NBIC Location: Part 3, Section 5	No Attachment

General Description: Move Report forms to new supplement

Subgroup: SG Repairs and Alterations

Task Group: Marty Toth – PM, Ben Schaefer

Meeting Action: Mr. Troutt reported that no action was taken on this item as work is still being done by the subgroup.

Item Number: 18-67	NBIC Location: Part 3, Section 2&9	Attachment Page 45

General Description: Provide definitions for brazing, fusing, and welding

Subgroup: SG Repairs and Alterations

Task Group: Jim Pillow – PM, Paul Edwards, Walter Sperko

Meeting Action: Mr. Troutt introduced the item and asked Mr. Jim Pillow to present the item and the changes being proposed. A motion was made and a seconded to approve the item as presented. Mr. Troutt asked how Mr. Pillow came up with the presented definitions. Mr. Pillow explained that they were copied from definitions found in ASME Section IX. Further discussion was held to make sure the definitions adequately described the processes. The motion to accept the proposed changes was unanimously approved.

New Items:

Item Number: 18-68	NBIC Location: Part 3, Section 2	No Attachment

General Description: PWHT and Pre-Heat requirements for repairs and alterations

Subgroup: SG Repairs and Alterations

Task Group: George Galanes (PM)

Meeting Action: Mr. Troutt introduced the item and asked Mr. Galanes to present. Mr. Galanes explained that the item was closed by the subcommittee because they felt the NBIC adequately addresses PWHT and Pre-Heat requirements. A motion was made and seconded for the main committee to close the item with no action. This motion was approved unanimously.

Item Number: 18-75	**NBIC Location: Part 3**	**Attachment Page 47**

General Description: Flush patches in stayed and un-stayed areas of tubesheets

Subgroup: SG Repairs and Alterations

Task Group: Michael Quisenberry (PM), Kathy Moore, Marty Toth, Rick Sturm

Meeting Action: Mr. Troutt reported that the item will be sent to the subgroup and subcommittee as a review and comment letter ballot.

Item Number: 18-78	**NBIC Location: Part 3, 3.2.2 c) 1)**	**Attachment Page 51**

General Description: Addition to Part 3, 3.2.2 c) to allow for parts to be transferred w/o Partial Data Reports for repairs and alterations

Subgroup: SG Repairs and Alterations

Task Group: Wayne Jones

Meeting Action: Mr. Troutt introduced the item and asked Mr. Wayne Jones to present. Mr. Jones stated that the subcommittee considered the proposed revision but felt it should not be incorporated into the NBIC and thus voted to close the item. A motion was made and seconded to close this item and to send a letter to the original inquirer that the NBIC committee considered the revision but it will not be incorporated into the NBIC. This motion was approved unanimously.

Item Number: 18-82	**NBIC Location: Part 3, 2.2.3**	**Attachment Page 52**

General Description: Alternative language in Part 3, 2.2.3 to clarify that it is allowable for a company affiliated w/ the "R" certificate holder to conduct performance qualifications

Subgroup: SG Repairs and Alterations

Task Group: Jim Pillow

Meeting Action: Mr. Troutt introduced the item and asked Mr. Pillow to present. Mr. Pillow explained the proposal and that the item was ultimately closed because this request is already covered by ASME Section IX. A motion was made and seconded to close the item and send response to inquirer saying that the request was considered but will not be incorporated into the NBIC. This motion was unanimously approved.

Item Number: 18-83	**NBIC Location: Part 3, 3.4.4 e)**	**Attachment Page 54**

General Description: Alternative language in Part 3, 3.4.4 e) to clarify that it is the current MRRC that must be considered when changes are effected

Subgroup: SG Repairs and Alterations

Task Group: Tom White

Meeting Action: Mr. Troutt introduced the item and asked Mr. Tom White to present the proposal. A motion was made and seconded to approve the proposal as presented. Mr. Wielgoszinski asked why the change is being made. Mr. Troutt explained that it came about as a result of Interpretation 15-06. Mr. Linn Moedinger expressed concern that the proposed change is too precise and could lead to problems. After discussion concluded, a vote was taken on the original motion. The motion passed with 16 approvals and 1 disapproval vote.

Item Number: 18-84	**NBIC Location: Part 3, S1.2.8**	**No Attachment**

General Description: Additional subparagraph in Part 3, S1.2.8 about the use of patch bolts being in accordance with ASME BPVC

Subgroup: Locomotive

Task Group: R. Musser

Meeting Action: Mr. Troutt reported that no action was taken on this item as work is still being done by the subgroup.

Item Number: 18-87	**NBIC Location: Part 3, 1.6**	**Attachment Page 55**

General Description: Review the use of "Authorized Nuclear Inspection Agency" within the NBIC

Subgroup: NR Task Group

Task Group: Paul Edwards

Meeting Action: Mr. Troutt reported that a proposal has been developed and will be sent to subcommittee PRD for their review.

Item Number: 18-88	**NBIC Location: Part 3, S2.6 & S2.9**	**Attachment Page 56**

General Description: Revise NBIC Part 3, paragraphs S2.6(a) and S2.9 to change incorrect reference of “NBIC Part 3, paragraph 1.6” to “NBIC Part 3, paragraph 1.5.”

Subgroup: Historical

Task Group: None Assigned.

Meeting Action: Mr. Troutt introduced the item and asked Mr. Bob Underwood to present. Mr. Underwood explained the item and the changes being proposed. A motion was made and seconded to approve the proposed changes. The motion was unanimously approved.

Item Number: 18-93	**NBIC Location: Part 3, S3.2, S3.4 4.4.2 6)**	**No Attachment**

General Description: Test Duration

Subgroup: Graphite

Task Group: J. Clements (PM)

Meeting Action: Mr. Troutt reported that no action was taken on this item as work is still being done by the subgroup.

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)

Meeting Action: Mr. Troutt reported that no action was taken on this item as work is still being done by the subgroup.

Item Number: 18-95	NBIC Location: Part 3, S1.1.4	No Attachment

General Description: Revision to Part 3, S1.1.4 to account for new rules for riveted construction

Subgroup: Locomotive

Task Group: L. Moedinger

Meeting Action: Mr. Troutt reported that no action was taken on this item as work is still being done by the subgroup.

Item Number: 18-98	NBIC Location: Part 3, S2.7.2	Attachment Page 58

General Description: Revise S2.7.2 of NBIC Part 3, Supplement 2 to refer to existing replacement part requirements of 3.2.2 of Part 3.

Subgroup: Historical

Task Group: R. Underwood

Meeting Action: Mr. Troutt introduced the item and asked Mr. Bob Underwood to present. Mr. Underwood explained the item and the changes being proposed. A motion was made and seconded to approve the proposed changes. The motion was unanimously approved.

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 ¾" or smaller to NBIC Part 3.3.2 Routine Repairs

Subgroup: Repairs and Alterations

Task Group: D. Martinez, B. Schaefer, N. Carter

Meeting Action: Mr. Troutt reported that a proposal is still in development for this item.

Mr. Troutt also gave brief progress reports for Item NB15-1405 (PM - Nathan Carter) and 18-102 (PM - Jim Sekely).

After concluding all Repairs an Alterations business, the committee took a break for lunch from 11:33am to 12:33pm local time.

d. Subcommittee Pressure Relief Devices

Upon resuming the meeting, Mr. Wielgoszinksi announced that Mr. Mark Mooney and Mr. Paul Welch left the meeting. Mr. Mooney appointed Mr. Brian Moore as his alternate, and Mr. Welch appointed Mr. Wayne Jones as his alternate.

i. Interpretations

Item Number: 18-90	**NBIC Location: Part 4, 2.2.10 h) (Part 1, 2.9.6 h))**	**Attachment Page 60**
General Description: Is it acceptable to plug the Valve Casing Drain and provide the required drainage by another drain connection installed at the bottom of the inlet end of the discharge elbow, as long as it is below the level of the valve seat? **Task Group:** None Assigned **Meeting Action:** Mr. Tom Beirne introduced the item and explained the inquiry and proposed response. A motion was made and seconded to approve the proposed reply. This motion passed unanimously.		

ii. Action Items – Old Business

Item Number: NB12-0901	**NBIC Location: Part 4**	**No Attachment**
General Description: Prepare a guide for repair of tank vents **Task Group:** B. Donalson (PM), D. DeMichael, K. Simmons, K. Beise, B. Nutter, J. Little, S. Artrip **Meeting Action:** Ms. Marianne Brodeur informed the committee that a proposal will be ready at the July 2019 meeting.		

Item Number: NB14-0602B	**NBIC Location: Part 2**	**No Attachment**
General Description: Improve index in Part 2 relating to pressure relief devices **Task Group:** D. Marek (PM), B. Donalson, D. DeMichael, B. Hart **Meeting Action:** Ms. Brodeur informed the committee that this item has been put on hold until the 2019 NBIC has been published.		

Item Number: NB15-0108B	**NBIC Location: Part 1**	**No Attachment**
General Description: Address pressure relief devices in new supplement on high temperature hot water boilers **Task Group:** A. Renaldo (PM), D. Marek, D. McHugh, B. Nutter **Meeting Action:** Ms. Brodeur informed the committee that work is still being done to develop a proposal.		

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

Meeting Action: Ms. Brodeur informed the committee that work is still being done to develop a proposal.

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

Meeting Action: Ms. Brodeur informed the committee that work is still being done to develop a proposal.

Item Number: NB15-0308	NBIC Location: Part 4	Attachment Page 69

General Description: - Create Guidelines for Installation of Pressure Relief Devices for Organic Fluid Vaporizers.

Task Group: T. Patel (PM), K. Beise, B. Nutter

Meeting Action: Ms. Brodeur informed the committee that a proposal was approved by Subcommittee PRD and that the proposal will be sent to Subcommittee Installation as a review and comment 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

Meeting Action: Ms. Brodeur informed the committee that work is still being done to develop a proposal.

Item Number: NB15-0321	NBIC Location: Part 4, 3.2.5 a) and Part 2, 2.5.7 a)	Attachment Page 62

General Description: Review testing requirements for inservice testing of pressure relief devices

Task Group: A. Cox, A. Renaldo (PM), D. Marek, S. Irvin, D. DeMichael, B. Nutter, J. Ball

Meeting Action: Ms. Brodeur informed the committee that work is still being done to develop a proposal.

Item Number: NB15-0324	NBIC Location: Part 4	No Attachment

General Description: Create Guidelines for Inspection and Testing Frequencies with respect to shelf life and storage of pressure relief valves.

Task Group: A. Rendaldo (PM), B. Nutter, K. Simmons, D. Marek, J. Little

Meeting Action: Ms. Brodeur informed the committee that a proposal will letter balloted to Subgroup PRD.

Item Number: NB16-0805	NBIC Location: Part 4, 2.6.6 and Part 1, 5.3.6	Attachment Page 66

General Description: Temperature ratings for discharge piping and fittings

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

Meeting Action: Ms. Brodeur informed the committee that a proposal will letter balloted to Subgroup PRD.

Item Number: NB17-0401	NBIC Location: Part 4	Attachment Page 68

General Description: Valve drain plug recommendations for shipping.

Task Group: (PM) K. Beise, M. Brodeur, R.McCaffrey

Meeting Action: Mr. Beirne presented the item and explained the changes being proposed. A motion was made and seconded to approve the proposal as presented. Mr. Scribner mentioned that manufacturers won't look at the NBIC before shipping, so an addition to Part 1 to address this change might be necessary. Ms. Wadkinson agreed with Mr. Scribner's comment and said that an item will be opened up to be addressed by Part 1 at the next meeting. Mr. Getter commented that he would open an action item for Part 2 to inspect that the new procedure has been followed. After discussion concluded, a vote was held on the motion, which was approved unanimously.

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

Meeting Action: Ms. Brodeur informed the committee that a proposal will letter balloted to Subgroup PRD.

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

History: It was determined that the same language was in ASME Section I. The task group decided to put this item on hold pending completion of ASME action item.

Meeting Action: Ms. Brodeur informed the committee that this item is still on hold pending action by ASME Section I.

Item Number: 17-128	NBIC Location: Part 4, 2.4.4.3 and Part 1, 3.9.4.3	No Attachment

General Description: allows Y-base to be used while 2.4.1.6 a) prohibits. This appears to be a conflict.

Task Group: B. Nutter (PM), S. Irvin

History: It was determined that the same language was in ASME Section IV. The task group decided to put this item on hold pending completion of ASME action item.

Meeting Action: Ms. Brodeur informed the committee that this item is still on hold pending action by

ASME Section IV.

Item Number: 17-131	NBIC Location: Part 4, 2.5.7 a) and Part 1, 4.7.3 a)	No Attachment

General Description: Review overpressure protection requirements for hot water storage tanks that exceed 160 psi.

Task Group: J. Ball (PM), B. Hart

Meeting Action: This item was approved to be sent to letter ballot in a combined proposal with Installation item 17-159.

Item Number: 17-132	NBIC Location: Part 4, 3.2.6 and Part 2, 2.5.8	No Attachment

General Description: Paragraph 3.2.6 can be put into tabular format.

Task Group: B. Nutter (PM), M. Brodeur, D. Marek, D. DeMichael, A. Cox, P. Dhobi, R. McCaffrey, T. Beirne

Meeting Action: Ms. Brodeur informed the committee that a proposal will letter balloted to Subgroup PRD.

Item Number: 18-73	NBIC Location: Part 4, 2.3 and Part 1, S5.7.6	No Attachment

General Description: Update installation requirements for Thermal Fluid Heaters

Task Group: T. Patel (PM), B. Nutter

Meeting Action: Ms. Brodeur informed the committee that a proposal was approved by Subcommittee PRD and that the proposal will be sent to Subcommittee Installation as a review and comment letter ballot.

iii. Action Items – New Business

Item Number: 18-80	NBIC Location: Part 4, S3.1, S4.1, S6.1	No Attachment

General Description: Addition of a "Scope" section to Part 4, S3.1, S4.1, and S6.1 to stay consistent with other sections

Task Group: T. Patel (PM), A. Renaldo, K. Simmons, P. Dhobi

Meeting Action: Ms. Brodeur informed the committee that a task group has been formed to address this item.

8. Liaison Activities

a. American Society of Mechanical Engineers BPV Code (ASME BPV)

i. Mr. Paul Edwards presented a report on new actions/developments being for ASME BPV. The full report can be found on Attachment Page 69

b. American Welding Society (AWS)

i. Mr. Jim Sekely presented a report on actions/developments for AWS. The full report can be found on Attachment Page 73

c. American Petroleum Institute (API)

d. Department of Transportation (DOT)

i. Mr. Scribner announced that the DOT has been showing some interest in the NBIC and the T Stamp, but there have not been any recent developments.

9. Future Meetings

July 15th-18th, 2019 – Kansas City, MO
January 2020 – San Diego, CA

Mr. Scribner announced that the National Board is scouting locations in Cincinnati, OH and Louisville, KY for the July 2020 meeting.

10. Adjournment

Mr. Wielgoszinski thanked the meeting attendees for coming to the meeting as well as National Board staff for helping the meetings run smoothly and effectively.

Mr. Scribner thanked the attendees for coming to the meeting to help develop the NBIC and also thanked National Board staff for the work they do for these meetings. Mr. Troutt also expressed his gratitude for the work the National Board staff does.

A motion was made, seconded, and approved to adjourn the meeting at 1:09pm local time.

Respectfully submitted,

Jonathan Ellis

Jonathan Ellis
NBIC Secretary

Contents

NBIC Committee Attendance Sheet - 1/17/2019				
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NBIC Part 1 Item Number: NB12-0302
Proposed Supplement to Part 1, Section 6
Revision 1 to July 2018 NBIC Meeting - Showing the changes

Supplement X

INSTALLATION OF PRESSURE VESSELS FOR HUMAN OCCUPANCY (PVHOs)

SX.1 GENERAL

A pressure vessel for human occupancy, as defined by ASME PVHO-1 is a pressure vessel that encloses one or more human beings within its pressure boundary while it is subject to internal or external pressure that exceeds a 2 psi (15 kPa) differential pressure. PVHOs include, but are not limited to submersibles, diving bells, personal transfer capsules, decompression chambers, recompression chambers, hyperbaric chambers, high-altitude chambers, and medical hyperbaric oxygenation facilities.

SX.2 SCOPE

This Supplement provides general information and guidance for installation to help manufacturers, owners, users, inspectors, and jurisdictional authorities understand ~~these~~ PVHO systems and their unique characteristics. The PVHO systems covered in this supplement include only monoplace (single human occupancy) medical systems used for Hyperbaric Oxygen Therapy (HBO). The PVHO system is comprised of one or more monoplace PVHOs each with pressurization and vent controls, monitoring, and communication supplied by facility medical gas systems or dedicated breathing gas systems, gas distribution, controls, and gas storage.

SX.3 DOCUMENTATION, REGISTRATION, AND REGULATORY REQUIREMENTS

a) PVHO systems should be designed and constructed in accordance with ASME PVHO-1. This code requires Section VIII for steel and other allowed vessel materials and therefore should bear a "U" or "U2" ASME designator and forms. PVHO-1 also has several Code Cases that address PVHOs manufactured from non-Section VIII materials such as reinforced fabrics. PVHO Code Cases are subject to jurisdictional authority and should have all the documentation required by the Code Case, but not necessarily Section VIII forms.

b) Viewport acrylic windows should be designed and constructed in accordance with PVHO -1 and maintained following the rules of PVHO-2. The owner/user should follow PVHO-2 and manufacturer manuals for in-service guidance.

c) The manufacturer should retain PVHO system documentation or submit and register with the National Board, subject to jurisdictional and/or regulatory authorities.

d) The PVHO system owner should have copies of the following documents on site.

   1) Manufacturer Data Report for Section VIII vessel (Form U1-A or U2-A)

   2) Manufacturer Data Report for PVHO-1 Form GR-1

   3) PVHO-1 Forms VP-1 through VP-5

   4) PVHO system Installation Instructions

5) PVHO system operation and maintenance manuals

e) Unique PVHO Characteristics

1) Fire hazard due to oxygen enrich environment
2) Fire hazard due to in-service hydrocarbon contamination
3) Rapid decompression hazard
4) Pressure boundary valves at PVHO penetrators
5) Cleanliness of gases inside the PVHO system
6) In-service life expectancy of flat disc acrylic windows in protected environments, including cylindrical windows, can be up to twenty years with periodic inspections.
7) Manual and/or pneumatic control systems
8) Heat, UV light, and solvents are harmful to acrylic windows

SX.4 PVHO SYSTEM CONFIGURATION AND INSTALLATION

a) The PVHO includes the following pressure boundary components.

1) Shells and heads of revolution
2) Openings and their reinforcement
3) Nozzles and other connections
4) Door seals and quick actuating closures
5) Viewports including acrylic windows
6) A quick opening manual shutoff valve shall be located between the chamber and pressure relief valve (burst discs are prohibited)
7) Quick-opening manual valve shall be sealed open using a frangible seal.

b) The PVHO system, comprised of one or more monoplace PVHOs each with operational controls, should be supplied by a hospital or clinic medical gas system. Installers of medical gas systems that meet NFPA 99 Chapter 5 requirements should be qualified to, and hold third-party certification, in accordance with American Society of Safety Engineers ASSE 6010.

c) Facility Installation

1) PVHO systems installed and operated within buildings are subject to local building codes, National Fire Protection Association NFPA 99, and applicable jurisdictional and regulatory requirements.
2) The rooms designated for PVHO systems should be adequately sized allowing operation and inspection access to all sides of the PVHO system and dedicated to only hyperbaric system operation.
3) PVHO system oxygen exhaust and ventilation lines shall be independently piped to the building exterior.
4) Temperature in the PVHO room should be maintained for patient comfort.

d) Electrical

1) All electrical controls should be located external of the PVHO.

2) PVHO electrical powered control equipment should be connected to grounded facility outlets matching the equipment power specifications.

3) PVHO electrical penetration connectors should be as specified by the manufacturer and checked for leak tightness.

4) Electrical wiring should be supported to prevent obstruction or tripping hazard.

5) Electrical systems within the PVHO should ~~be~~ protect low-voltage communication and monitoring equipment from being exposed to voltages greater than 28 volts AC and currents greater than 0.5 amps and should be grounded in accordance with NFPA 99 Chapter 14.

e) PVHO Controls

1) Medical PVHO controls, piping, hoses, connections, pressure gages, control valves, gas system should meet PVHO-1 Section 4 – Piping Systems and Section 5 – Medical Hyperbaric Systems.

2) PVHO pressurization, ventilation, and depressurization ~~and venting~~ controls should be manual or pneumatic.

3) The operator at the PVHO control station should be present and have visual sight and audio communication with PVHO occupant during operation.

4) Separate oxygen and air supply to the PVHO and occupant should be from the facility medical gas systems or a standalone medical gas system.

5) The gas system should be sized (both flow and volume) for normal and emergency PVHO operations in accordance with manufacturer specification or manual. The owner should have this information available on-site.

6) The facility gas system piping or tubing and controls should be secured to the facility structure up to the adjacent PVHO wall connects. Hoses or tubing connect to these wall connections and supply the gases to the PVHO operational controls. Hoses or tubing should be secured to prevent obstruction or tripping hazards.

f) Facility Medical Gas System

1) NFPA Chapter 5 requirements shall apply to the medical gas supplies from the source to the wall valve adjacent to the PVHO.

2) The PVHO-1 requirements should apply to PVHO gas supplies downstream of the facility medical gas wall valve.

g) Standalone Medical Gas System

1) The PVHO system includes a gas storage system that supplies gas to the PVHO controls for pressurization, ventilation, depressurization, and occupant breathing. The storage system is comprised of control valves, gages, and manifolds that attached to installed tanks or removable cylinders (i.e. DOT).

2) For manifolds attached to removable cylinders, there should be additional controls allowing isolation and depressurization prior to change-out of cylinders.

3) The gas distribution with installed tanks and or cylinders should meet PVHO-1 and NFPA 99 Chapter 5 or equivalent.

4) The storage system should be configured to supply the PVHO from two separate supplies.

h) Internal System Cleanliness and Toxicity

1) PVHO systems include breathing gas systems with air and oxygen enriched gases (greater than 25% oxygen) that should be cleaned and maintained to NFPA 99 Chapter 5 and national standards (e.g., Compressed Gas Association).
2) Manufacturer maintenance manuals should be available on site and provide guidance for the owner or user to maintain system cleanliness and prevent contamination during operation and maintenance.
3) Hoses should be off-gas toxicity tested prior to installation.

i) Maintenance

1) PVHO system should be maintained in accordance with PVHO-2 and manufacturer's maintenance manual.
2) Periodic window inspections should be performed in accordance with PVHO-2.
3) Replacement windows should meet PVHO manufacturer specifications with new PVHO-1 VP-1 to VP-5 forms and once installed checked for leak tightness.

SX.5 Responsibilities

The owner/user, manufacturer, installer, and inspector shall verify the following is part of the PVHO system installation and documentation available on-site.

Does the PVHO have the applicable ASME VIII and PVHO certification mark and label plate?

a) Is the PVHO registered with the National Board, if required by the jurisdictional authority?
b) Are the PVHO documentation forms available on-site, signed, and dated. Forms should include:
    1) U1 or U2 M Manufacturer Data Report
    2) PVHO GR-1 Manufacturer Data Report
    3) PVHO Window VP-1 through VP-5 forms
    4) Acrylic window markings traceable to the VP forms
c) Is the PVHO pressure relief valve constructed in accordance with ASME Section VIII?
d) Does PVHO have a quick opening manual shutoff valve between PVHO and relief valve, and is the manual valve sealed open with a frangible seal?
    1) Are piping and controls labelled and color coded?
    2) Are there external heat sources close to the PVHO that could damage the windows?
    3) Is there room lighting and emergency building lighting that illuminates the PVHO interior and control station?
    4) Are the acrylic windows free of crazing, discoloration, cracks, chips, scratches, gouges, or pits?
    5) Do pressure piping or hoses that connect to the PVHO have shutoff valves?
    6) For door closures that are pressure loaded, does the closure meet quick actuating closures per ASME Section VIII?
    7) Does the operator position at the control station allow for visual and audible communication with the PVHO occupant?

8) Are there local procedures prohibiting personal warming, cellular, sparking, or entertainment devices from entering the PVHO?

9) Are the PVHO and support system rooms posted with signage to prohibit smoking or open flames?

10) Are there system operating manuals on-site?

11) Is there a qualified PVHO system operator?

12) Is there at least one gage measuring the PVHO internal pressure?

SX.6 OTHER CODES, STANDARDS, AND REFERENCES

The following codes, standards, and references may be used as guidance.

a) ASME Section VIII Division 1 and Division 2

b) ASME PVHO-1 Safety Standard for Pressure Vessel for Human Occupancy: PVHO System Design

c) ASME PVHO-2 Safety Standard for Pressure Vessel for Human Occupancy: In-Service Guidelines

d) ASME Bulletin STP-PT-047 PVHO Medical Chamber

e) NFPA 99 Health Care Facilities

f) ASSE 6010

g) ~~Undersea and Hyperbaric Medical Society (UHMS) Committee on Hyperbaric Oxygen Therapy~~

January 16, 2019

Item Numbers: 17-131 (Pressure Relief) and 17-159 (Installation) NBIC Location: Part 4, 2.5.7 a) and Part 1, 4.7.3 a)

17-131 General Description: Review overpressure protection requirements for hot water storage tanks that exceed 160 psi.

17-159: General Description: Result of 17-147; review Part 1, 4.7 for references to hot water storage tanks. With the definition of Potable Hot Water Storage Tank items referencing this in Part 1, Section 4.7 need to be updated, modified and or revised.

The following proposal combines the proposals from 17-131 and 17-159.

"Hot water storage tank" is deleted from 4.7.3 a) because is covered in c), and the temperature could exceed 210 deg. F. for those vessels. The item from installation was not changed otherwise. The Part 4, par. 2.5.7 is new but is just Part 1, par. 4.7 slightly rewritten.

Proposal:

NBIC Location: Part 1, 4.7

4.7 REQUIREMENTS FOR HOT WATER STORAGE TANKS/POTABLE HOT WATER STORAGE TANK
4.7.1 SUPPORTS
Each hot water storage tank shall be supported in accordance with NBIC Part 1, 1.6.1.
4.7.2 CLEARANCE AND ACCEPTABILITY
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 inspection and maintenance.
c) Each hot water storage tank shall meet the requirements of NBIC Part 1, 4.3.2.
4.7.3 TEMPERATURE AND PRESSURE RELIEF DEVICES
a) Each potable hot water storage tank~~/ hot water storage tank~~ shall be equipped with an ASME/NB certified temperature and pressure relief ~~device~~ valve set at a pressure not to exceed the maximum allowable working pressure and 210°F (99°C).
b) Potable hot water storage tanks exceeding the pressure limit of ASME Code Section IV shall meet the original code of construction and shall be protected by a pressure relief device set not to exceed the vessel's maximum allowable working pressure. A temperature limiting device shall be installed so that the water inside the storage tank does not exceed 210°F (99°C).
c) Each hot water storage tank shall be equipped with an ASME/NB certified pressure relief valve set at a pressure not to exceed the maximum allowable working pressure.
d) The temperature and pressure relief ~~device~~ valve shall meet the requirements of NBIC Part 1, 4.5.

4.7.4 THERMOMETERS

a) Each hot water storage/potable hot water storage tank shall be equipped with a thermometer.
b) Each hot water storage/potable hot water storage tank shall have a thermometer so located that it shall be easily readable at or near the outlet. The thermometer shall be so located that it shall at all times indicate the temperature of the water in the storage tank.

4.7.5 SHUT OFF VALVES
a) Each hot water storage/potable hot water storage tank shall be equipped with stop valves in the water inlet piping and the outlet piping in order for the hot water storage tank to be removed from service without having to drain the complete system.
b) Each hot water storage/potable hot water storage tank shall be equipped with a bottom drain valve to provide for flushing and draining of the vessel.

NBIC Location: Part 4, 2.5.7

2.5.7 TEMPERATURE AND PRESSURE RELIEF DEVICES FOR HOT WATER STORAGE TANKS/POTABLE HOT WATER STORAGE TANK

a) Each potable hot water storage tank shall be equipped with an ASME/NB certified temperature and pressure relief ~~device~~ valve set at a pressure not to exceed the maximum allowable working pressure and 210°F. (99°C).
b) Potable hot water storage tanks exceeding the pressure limit of ASME Code Section IV shall meet the original code of construction and shall be protected by a pressure relief device set not to exceed the vessel's maximum allowable working pressure. A temperature limiting device shall be installed so that the water inside the storage tank does not exceed 210°F (99°C).
c) Each hot water storage tank shall be equipped with an ASME/NB certified pressure relief valve set at a pressure not to exceed the maximum allowable working pressure.

~~b~~d) The temperature and pressure relief ~~device~~ valves shall meet the requirements of 2.5.1 through 2.5.6 above.

Item 18-26, Part 1
Item 18-27, Part 2

Current wording (Paragraph's in Part 1 and Part 2 read the same)

PRT 1, S3.4 GAS DETECTION SYSTEMS
Part 2, S12.5 GAS DETECTION SYSTEMS

A continuous gas detection system shall be provided in the room or area where container systems are filled and used, in areas where the heavier than air gas can congregate and in below grade outdoor locations. Carbon dioxide (CO2) sensors shall be provided within 12 inches (305mm) of the floor in the area where the gas is most likely to accumulate or leaks are most likely to occur. The system shall be designed to detect and notify at a low level alarm and high level alarm.

Proposed Changes (the changes are identical in Part 1 and Part 2)

S3.4 GAS DETECTION SYSTEMS
S12.5 GAS DETECTION SYSTEMS

A continuous gas detection system shall be provided in the room or area where container systems are filled/ ~~and~~ used, and in areas where the ~~heavier than air~~heavier-than-air gas can ~~congregate~~ accumulate, ~~and~~ including ~~in~~ below grade, enclosed, or confined space outdoor locations. Small outdoor, at-grade enclosures which are not large enough for a person to enter are not required to have gas detection. Carbon dioxide (CO2) sensors shall be provided within 12 inches (305mm) of the floor in the area where the gas is most likely to accumulate or leaks are most likely to occur, or as specified by the gas detection manufacturer. The system shall be designed to detect and ~~notify~~ alert at a low ~~level alarm and~~and high level alarm.

Proposed wording with the changes incorporated

S3.4 GAS DETECTION SYSTEMS
S12.5 GAS DETECTION SYSTEMS

A continuous gas detection system shall be provided in the room or area where container systems are filled/used, and in areas where the heavier-than-air gas can accumulate, including below grade, enclosed, or confined space outdoor locations. Small outdoor, at-grade enclosures which are not large enough for a person to enter are not required to have gas detection. Carbon dioxide (CO2) sensors shall be provided within 12 inches (305mm) of the floor in the area where the gas is most likely to accumulate or leaks are most likely to occur, or as specified by the gas detection manufacturer. The system shall be designed to detect and alert at a low and high level alarm.

18-44

Action Item Request Form

NBIC 8.3 CODE REVISIONS OR ADDITIONS

Request for Code revisions or additions shall provide the following:

a) Proposed Revisions or Additions

For revisions, identify the rules of the Code that require revision and submit a copy of the appropriate rules as they appear in the Code, marked up with the proposed revision. For additions, provide the recommended wording referenced to the existing Code rules.

Existing Text: **2017 NBIC PART 1**

NBIC Part 1 2017 3.7.8.1 INDIVIDUAL MODULES

a) The individual modules shall comply with all the requirements of the code of construction and this paragraph. ~~The individual modules shall be limited to a maximum input of 400,000 Btu/hr (117 kW/hr) for gas, 3 gal./hr (11.4 l/hr) for oil, or 117 kW for electricity~~.

b) Statement of Need

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

Some Jurisdictions reference the NBIC Part 1 for the installation of modular boilers and some may also reference ASME Section IV for modular installation requirements.
ASME Section VI 2017 removed the modular limits of BTU/Hr., 3gal for oil and 117 kW for electricity. Reference HG-716.
Since the NBIC seems to be consistent with following the ASME Code in installation aspects I request the Committee evaluate the need to remove the modular boiler limits as in the 2017 ASME Code Section VI.

c) Background Information

Provide background information to support the revision or addition, including any data or changes in technology that form the basis for the request that will allow the Committee to adequately evaluate the proposed revision or addition. Sketches, tables, figures, and graphs should be submitted as appropriate.

When applicable, identify any pertinent paragraph in the Code that would be affected by the revision or addition and identify paragraphs in the Code that reference the paragraphs that are to be revised or added.

HG-716 MODULAR BOILERS *(ASME Section IV 2015)*

(a) Individual Modules
(1) The individual modules shall comply with all the requirements of Part HG, except as specified in HG-607, HG-615, and this paragraph. The individual modules shall be limited to a maximum input of ***400,000 Btuh (gas), 3 gal/hr (11 L/hr) (oil), or 117 kW (electricity).***
(2) Each module of a steam heating boiler shall be equipped with
(-a) safety valve, see HG-701
(-b) blowoff valve, see HG-715(a)
(-c) drain valve, see HG-715(c)
(3) Each module of a modular hot water heating boiler shall be equipped with
(-a) safety relief valve, see HG-701
(-b) drain valve, see HG-715(c)

HG-716 MODULAR BOILERS *(ASME Section IV 2017)*

(a) Individual Modules
(1) The individual modules shall comply with all the requirements of Part HG, except as specified in HG-607, HG-615, and this paragraph.
(2) Each module of a steam heating boiler shall be equipped with
(-a) safety valve, see HG-701
(-b) blowoff valve, see HG-715(a)
(-c) drain valve, see HG-715(c)

NOTE: The changes made in item 18-101 are highlighted in yellow. These changes are not being voted in this item.

2.3.6.8 INSPECTION OF PRESSURE VESSELS FOR HUMAN OCCUPANCY (PVHO's)

A pressure vessel for human occupancy (PVHO), as defined by ASME PVHO-1 is a pressure vessel that encloses a human being or animal within its pressure boundary while it is subject to internal or external pressure that exceeds a 2 psi (14 kPa) differential pressure. PVHOs include, but are not limited to submersibles, diving bells, personal transfer capsules, decompression chambers, recompression chambers, hyperbaric chambers, high altitude chambers and medical hyperbaric oxygenation facilities.

This section provides guidelines for inspection of medical PVHOs. Due to the many different designs and applications of PVHOs, potential failures of components or safety concerns that are not specifically covered, such as rapid decompression or fire/sparking issues should be considered.

a) General/operational

1) PVHOs should be constructed in accordance with ASME PVHO-1. This code adopts Section VIII and therefore the vessels should bear a "U" or "U2" ASME designator. Inspections may be conducted using ASME PVHO-2 for reference. PVHO-1 also has several Code Cases that address PVHOs manufactured from non-traditional materials such as various fabrics. PVHOs built under such Code Cases shall have all the documentation required by the Code Case, but may not necessarily have any related Section VIII forms.
2) Cast and ductile iron fittings are not allowed.
3) Due to the human occupancy element, a person should be in attendance to monitor the PVHO when in operation, in the event there is an accident.
4) The installation should be such that there is adequate clearance to inspect it properly. ~~In some applications, such as underground tunneling, it may be impossible to perform a complete external inspection.~~

b) Internal Inspection

1) Where existing openings permit, perform a visual internal inspection of the vessel. Look for any obvious cracks and note areas that are subject to high stress such as welds, welded repairs, head-to-shell transitions, sharp interior corners, and interior surfaces opposite external attachments or supports.
2) The vessel should be free of corrosion, dents, gouges, or other damage. Special attention should be paid to areas under chamber floors and the interiors of chamber drain fittings.
3) All openings leading to external fittings or controls should be free from obstruction.
4) All exhaust inlets should be checked for the presence of fittings that prevent a chamber occupant from ~~inadvertently~~ blocking the opening.
5) The inlets to all chamber pressure gauge lines should be located where they are either protected from possible blockage, or are fitted with multiple openings.
6) Chamber doors:
    a. should operate freely and smoothly. However, doors should not move on their own when released;
    b. that close/seal with pressure, and which are fitted with "dogs" or other restraints to hold them in place until an initial seal is obtained, shall be fitted with features to prevent the door from maintaining a seal in the event the pressure differential on the door is reversed;
    c. should have seals that are supple, free from flat spots, cracking, etc.; and
    d. that close/seal against pressure shall have provisions as follows:
        1. Positive protection against pressurization of the vessel unless the restraint mechanism is fully engaged. This includes pressurization by back-up methods as well as primary methods; and
        2. Positive protection against release of the restraint mechanism unless pressure in the vessel is fully relieved.

c) External Inspection

1) The Inspector should closely examine the external condition of the pressure vessel for corrosion, damage, dents, gouges or other damage.
2) The lower half and the bottom portions of insulated vessels should receive special focus, as condensation or moisture may gravitate down the vessel shell and soak into the insulation, keeping it moist for long periods of time. Penetration locations in the insulation or fireproofing such as saddle supports, sphere support legs, nozzles, or fittings should be examined closely for potential moisture ingress paths. When moisture penetrates the insulation, the insulation may actually work in reverse, holding moisture in the insulation and/or near the vessel shell.
3) Insulated vessels that are run on an intermittent basis or that have been out of service require close scrutiny. In general, a visual inspection of the vessel's insulated surfaces should be conducted once per year.
4) The most common and superior method to inspect for suspected corrosion under insulation (CUI) damage is to completely or partially remove the insulation for visual inspection. The method most commonly utilized to inspect for CUI without insulation removal is by X-ray and isotope radiography (film or digital) or by real time radiography, utilizing imaging scopes and surface profilers. The real time imaging tools will work well if the vessel geometry and insulation thickness allows. Other less common methods to detect CUI include specialized electromagnetic methods (pulsed eddy current and electromagnetic waves) and long-range ultrasonic techniques (guided waves).
5) There are also several methods to detect moisture soaked insulation, which is often the beginning for potential CUI damage. Moisture probe detectors, neutron backscatter, and thermography are tools that can be used for CUI moisture screening. Proper surface treatment (coating) of the vessel external shell and maintaining weather-tight external insulation are the keys to prevention of CUI damage.
6) Couplers and doors that open with pressure:
    a. should operate freely and smoothly;
    b. should have seals that are supple, free from flat spots, cracking, etc.; and
    c. that close/seal against pressure shall have provisions as follows:
        1. Positive protection against pressurization of the vessel unless the restraint mechanism is fully engaged. This includes pressurization by back-up methods as well as primary methods; and
        2. Positive protection against release of the restraint mechanism unless pressure in the vessel is fully released.

d) Inspection of parts and appurtenances (e.g., piping systems, pressure gages, bottom drains, etc.)

1) As stated above, cast iron is not allowed on PVHOs and shall be replaced with parts fabricated with other suitable materials, in accordance with ASME Code Section II.
2) If valves or fittings are in place, check to ensure that these are complete and functional.
3) The Inspector shall note the pressure indicated by the gage and compare it with other gages on the same system. If the pressure gage is not mounted on the vessel itself, it should be ascertained that the gage is installed on the system in such a manner that it correctly indicates actual pressure in the vessel. Lines leading to chamber primary depth gauges should connect only to the depth gauge.
~~4) The Inspector shall verify that the vessel is provided with a drain opening.~~
~~5~~4) The system should have a pressure gage designed for at least the most severe condition of coincident pressure in normal operation. This gage should be clearly visible to the person adjusting the setting of the pressure control valve. The graduation on the pressure gage ~~shall~~ should be graduated to not less than 1.5 times the MAWP of the vessel.
~~6~~5) Provisions should be made to calibrate pressure gages or to have them checked against a standard test gage.
~~7~~6) Any vents and exhausts should be piped at least 10 ft. (3.0 m) from any air intake.

e) Inspection of view ports / windows

1) Each window should be individually identified and be marked in accordance with PVHO-1.
2) If there are any penetrations through windows, they must be circular and in accordance with PVHO-1 requirements.

3) ~~If~~ Windows must be free of crazing, cracks and scratches that exceed “superficial” defects as defined by PVHO-2.
4) Windows and viewports have a maximum interval for seat/seal inspection and refurbishment. Documentation should be checked to ensure compliance with PVHO-2, ~~Table 7.1.3~~ Section 2-4.4.

f) Inspection of pressure relief devices

1) Pressure relief devices for chambers only must have a quick opening manual shutoff valve installed between the chamber and the pressure relief device, with a frangible seal in place, within easy access to the operator.
2) The pressure relief device shall be constructed in accordance with ASME Code Section VIII.
3) The discharge from the chamber pressure relief device shall be piped outside to a safe point of discharge as determined by the Authority having Jurisdiction.
4) Rupture disks may be used only if they are in series with a pressure relief valve, or when there is less than 2 ft^3 (57 l) of water volume.
5) Verify that the safety valve is periodically tested either manually by raising the disk from the seat or by removing and testing the valve on a test stand.

g) Acceptance criteria

The following forms are required to be available for review:

1) ASME BPV Forms U-1, U-1A or U-2 as appropriate;
2) PVHO-1 Form GR-1 Manufacturer’s Data Report for Pressure Vessels for Human Occupancy;
3) PVHO-1 Form~~s~~ VP-1 ~~PVHO-2~~ Fabrication Certification for Acrylic Windows (one for each window),
4) PVHO-1 Form VP-2 Design Certification for Acrylic Windows (one for each window);
5) PVHO-2 Form ~~VP~~VM-1 Viewport Inspection (one for each window, current within PVHO-2 requirements);and
6) For any repaired windows, PVHO-2 Form ~~VP~~VM-2 Acrylic Window Repair Certificate for Windows. Repaired by the User (or his Authorized Agent) or PVHO-2 Form ~~VP~~VM-3 Acrylic Window Repair Certificate for Severely Damaged Windows.

h) All PVHOs under the jurisdiction of the U.S. Coast Guard must also comply with 46 CFR Part 197.

Item 18-79

History: Item NB16-2809 had two attachments, when it went to MC letter Ballot only one attachment was attached; therefore, MC never reviewed this part of the action item. A new action item has been opened for the below changes.

Part 2 Supplement 12
INSPECTION OF LIQUID CARBON DIOXIDE STORAGE VESSELS

Replace mandatory "shall" with non-mandatory "should" in all places listed below.

S12.3 b) Portable LCDSV installations with no permanent remote fill connection: Warning: LCDSVs shall not be filled indoors...

4) Are provided with a pathway that provides a smooth rolling surface to the outdoor, unenclosed fill area. There ~~shall~~ should not be any stairs or other than minimal inclines in the pathway.

S12.5 A continuous gas detection system shall be provided in the room or area where container systems are filled and used, in areas where the heavier ~~that~~ than air gas can congregate and in below grade outdoor locations. Carbon dioxide (CO2) sensors ~~shall~~ should be provided within 12 inches (305mm) of the floor in the area where the gas is most likely to accumulate or leaks are most likely to occur. The system shall be designed to detect and notify at a low level alarm and high level alarm.

a) The threshold for activation of ~~the~~ a low level alarm shall not exceed a carbon dioxide concentration of 5,000 ppm (9,000 mg/m3) Time Weighted Average (TWA) over 8 hours. When carbon dioxide is detected at the low level alarm, the system shall activate a signal at a normally attended location within the building.
b) The threshold for activation of the high level alarm shall not exceed a carbon dioxide concentration 30,000 ppm (54,000 mg/m3). When carbon dioxide is detected at the high level alarm, the system shall activate an audible ~~and visual~~ alarm at a location approved by the jurisdiction having authority.

S12.7 VALVES, PIPING, TUBING AND FITTINGS

b) Relief Valves – The inspection should verify that each LCDSV shall have at least one ASME/NB stamped & certified relief valve with a pressure setting at or below the MAWP of the tank. The relief valve shall be suitable for the temperatures and flows experienced during relief valve operation. The minimum relief valve capacity shall be designated by the manufacturer. Additional relief valves that do not require ASME stamps may be added per Compressed Gas Association pamphlet, CGA S-1.3 Pressure Relief Device Standards Part 3, Stationary Storage Containers for Compressed Gases, recommendations. Discharge lines from the relief valves shall should be sized in accordance with NBIC Part 2, Tables S12.7-a and S12.7-b. Note: Due to the design of the LCDSV the discharge line may be smaller in diameter than the relief valve outlet size.

Caution: ~~Company's~~ Companies and or individuals filling or refilling LCDSV's ~~shall be~~are responsible for utilizing fill equipment that is acceptable to the manufacturer to prevent over pressurization of the vessel.

c) Isolation Valves – The inspection should verify that each LCDSV ~~shall have~~has an isolation valve installed on the fill line and tank discharge, or gas supply line in accordance with the following requirements:

1) Isolation valves shall be located on the tank or at an accessible point as near to the storage tank a possible.
2) All valves shall be designed or marked to indicate clearly whether they are open or closed.
3) All valves ~~shall~~ should be capable of being locked or tagged in the closed position for servicing.
4) Gas supply and liquid CO2 fill valves shall be clearly marked for easy identification.

COMMENT: The above note is immediately after the metric Tables S12.7M-a and –b, but the references tables are the customary units S12.7-a and –b. This appears to be a mistake.

NB16-2809

Part 2, S12.2d **GENERAL REQUIREMENTS (ENCLOSED AND UNENCLOSED AREAS)**

Delete reference to seismic requirements. Seismic analysis and sizing of pipe snubbers is beyond the knowledge of in-service boiler inspectors. This is scope creep.

S12.2 GENERAL REQUIREMENTS (ENCLOSED AND UNENCLOSED AREAS)
The inspection should verify that LCDSVs are:

a) not located within 10 feet (3050 mm) of elevators, unprotected platform ledges or other areas where falling would result in dropping distances exceeding half the container height;
b) installed with clearance to satisfactorily allow for filling, operation, maintenance, inspection and replacement of the vessel parts or appurtenances;
c) not located on roofs;
d) adequately supported to prevent the vessel from tipping or falling~~, and to meet seismic requirements as required by design~~;
e) not located within 36 in. (915 mm) of electrical panels; and
f) located outdoors in areas in the vicinity of vehicular traffic are protected with barriers designed to prevent accidental impact by vehicles.

Item 18-89

1/14/19

Request for NBIC Part 2, Supplement 2 Revision

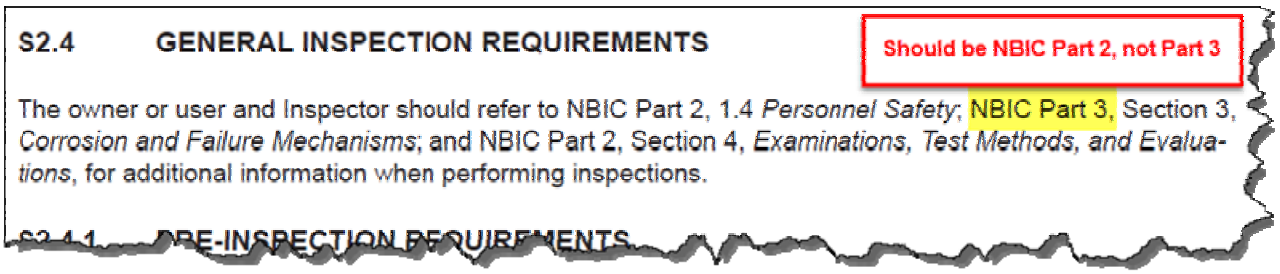
Robert V. Underwood-The Hartford Steam Boiler Inspection & Insurance Company

Purpose	To change incorrect reference in NBIC Part 2, Supplement 2, paragraph S2.4.
Scope:	Revise S2.4 to change reference from "NBIC Part 3, Section 3" to "NBIC Part 2, Section 3."
Background	Part 2, Supplement 2 paragraph S2.4 incorrectly refers to NBIC Part 3, Section 3, however *Corrosion and Failure Mechanisms* are found in Part 2, Section 3. Part 3 Section 3 refers to *Requirements for Repairs and Alterations*.
Proposed Revision	See below for proposed revision

S2.4 GENERAL INSPECTION REQUIREMENTS

The owner or user and Inspector should refer to NBIC Part 2, 1.4 *Personnel Safety*; NBIC Part ~~3~~2, Section 3, *Corrosion and Failure Mechanisms*; and NBIC Part 2, Section 4, *Examinations, Test Methods, and Evaluations*, for additional information when performing inspections.

EXISTING NBIC Part 2, S2.4 and EXISTING PART 2, SECTION 3

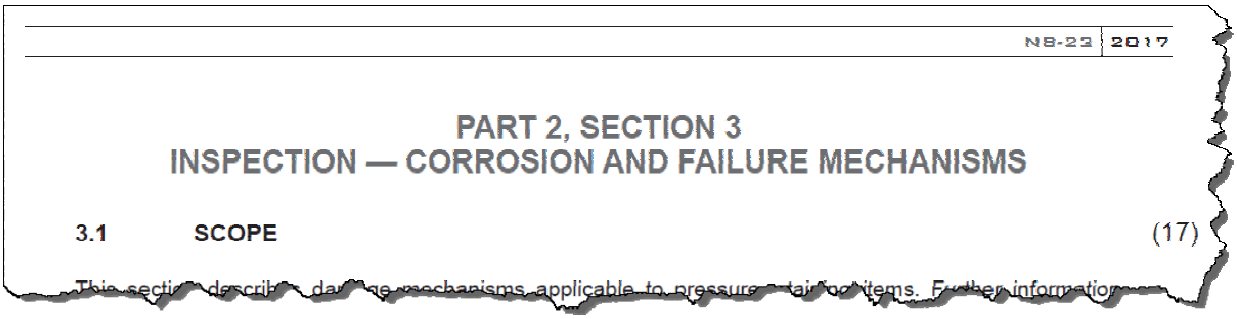


S2.4 GENERAL INSPECTION REQUIREMENTS

Should be NBIC Part 2, not Part 3

The owner or user and Inspector should refer to NBIC Part 2, 1.4 *Personnel Safety*; NBIC Part 3, Section 3, *Corrosion and Failure Mechanisms*; and NBIC Part 2, Section 4, *Examinations, Test Methods, and Evaluations*, for additional information when performing inspections.

S2.4.1 PRE-INSPECTION REQUIREMENTS



NB-23 2017

PART 2, SECTION 3
INSPECTION — CORROSION AND FAILURE MECHANISMS

3.1 SCOPE (17)

This section describes damage mechanisms applicable to pressure-retaining items. Further information

This document shows the changes that were approved by SC Inspection on 1/10/18. Mistakenly, the document approved by SG Inspection was the one that went to MC Letter Ballot. These changes were not included in that document.

2.3.6.8 INSPECTION OF PRESSURE VESSELS FOR HUMAN OCCUPANCY (PVHO's)

A pressure vessel for human occupancy (PVHO), as defined by ASME PVHO-1 is a pressure vessel that encloses a human being or animal within its pressure boundary while it is subject to internal or external pressure that exceeds a 2 psi (14 kPa) differential pressure. PVHOs include, but are not limited to submersibles, diving bells, personal transfer capsules, decompression chambers, recompression chambers, hyperbaric chambers, high altitude chambers and medical hyperbaric oxygenation facilities.

This section provides guidelines for inspection of PVHOs. Due to the many different designs and applications of PVHOs, potential failures of components or safety concerns that are not specifically covered, such as rapid decompression or fire/sparking issues should be considered.

a) General/operational

1) PVHOs should be constructed in accordance with ASME PVHO-1. This code adopts Section VIII and therefore the vessels should bear a "U" or "U2" ASME designator. Inspections may be conducted using ASME PVHO-2 for reference. PVHO-1 also has several Code Cases that address PVHOs manufactured from non-traditional materials such as various fabrics. PVHOs built under such Code Cases shall have all the documentation required by the Code Case, but may not necessarily have any related Section VIII forms.
2) Cast and ductile iron fittings are not allowed.
3) Due to the human occupancy element, a person should be in attendance to monitor the PVHO when in operation, in the event there is an accident.
4) The installation should be such that there is adequate clearance to inspect it properly. In some applications, such as underground tunneling, it may be impossible to perform a complete external inspection.

b) Internal Inspection

1) Where existing openings permit, perform a visual internal inspection of the vessel. Look for any obvious cracks and note areas that are subject to high stress such as welds, welded repairs, head-to-shell transitions, sharp interior corners, and interior surfaces opposite external attachments or supports.
2) The vessel should be free of corrosion, dents, gouges, or other damage. Special attention should be paid to areas under chamber floors and the interiors of chamber drain fittings.
3) All openings leading to external fittings or controls should be free from obstruction.
4) All exhaust inlets should be checked for the presence of fittings that prevent a chamber occupant from ~~inadvertently~~ blocking the opening.
5) The inlets to all chamber pressure gauge lines should be located where they are either protected from possible blockage, or are fitted with multiple openings.
6) Chamber doors:
    a. should operate freely and smoothly. However, doors should not move on their own when released;
    b. that close/seal with pressure, and which are fitted with "dogs" or other restraints to hold them in place until an initial seal is obtained, shall be fitted with features to prevent the door from maintaining a seal in the event the pressure differential on the door is reversed;
    c. should have seals that are supple, free from flat spots, cracking, etc.; and
    d. that close/seal against pressure shall have provisions as follows:
        1. Positive protection against pressurization of the vessel unless the restraint mechanism is fully engaged. This includes pressurization by back-up methods as well as primary methods; and
        2. Positive protection against release of the restraint mechanism unless pressure in the vessel is fully relieved.

c) External Inspection

1) The Inspector should closely examine the external condition of the pressure vessel for corrosion, damage, dents, gouges or other damage.
2) The lower half and the bottom portions of insulated vessels should receive special focus, as condensation or moisture may gravitate down the vessel shell and soak into the insulation, keeping it moist for long periods of time. Penetration locations in the insulation or fireproofing such as saddle supports, sphere support legs, nozzles, or fittings should be examined closely for potential moisture ingress paths. When moisture penetrates the insulation, the insulation may actually work in reverse, holding moisture in the insulation and/or near the vessel shell.
3) Insulated vessels that are run on an intermittent basis or that have been out of service require close scrutiny. In general, a visual inspection of the vessel's insulated surfaces should be conducted once per year.
4) The most common and superior method to inspect for suspected corrosion under insulation (CUI) damage is to completely or partially remove the insulation for visual inspection. The method most commonly utilized to inspect for CUI without insulation removal is by X-ray and isotope radiography (film or digital) or by real time radiography, utilizing imaging scopes and surface profilers. The real time imaging tools will work well if the vessel geometry and insulation thickness allows. Other less common methods to detect CUI include specialized electromagnetic methods (pulsed eddy current and electromagnetic waves) and long-range ultrasonic techniques (guided waves).
5) There are also several methods to detect moisture soaked insulation, which is often the beginning for potential CUI damage. Moisture probe detectors, neutron backscatter, and thermography are tools that can be used for CUI moisture screening. Proper surface treatment (coating) of the vessel external shell and maintaining weather-tight external insulation are the keys to prevention of CUI damage.
6) Couplers and doors that open with pressure:
    a. should operate freely and smoothly;
    b. should have seals that are supple, free from flat spots, cracking, etc.; and
    c. that close/seal against pressure shall have provisions as follows:
        1. Positive protection against pressurization of the vessel unless the restraint mechanism is fully engaged. This includes pressurization by back-up methods as well as primary methods; and
        2. Positive protection against release of the restraint mechanism unless pressure in the vessel is fully released.

d) Inspection of parts and appurtenances (e.g., piping systems, pressure gages, bottom drains, etc.)

1) As stated above, cast iron is not allowed on PVHOs and shall be replaced with parts fabricated with other suitable materials, in accordance with ASME Code Section II.
2) If valves or fittings are in place, check to ensure that these are complete and functional.
3) The Inspector shall note the pressure indicated by the gage and compare it with other gages on the same system. If the pressure gage is not mounted on the vessel itself, it should be ascertained that the gage is installed on the system in such a manner that it correctly indicates actual pressure in the vessel. Lines leading to chamber primary depth gauges should connect only to the depth gauge.
~~4) The Inspector shall verify that the vessel is provided with a drain opening.~~
~~5~~4) The system should have a pressure gage designed for at least the most severe condition of coincident pressure in normal operation. This gage should be clearly visible to the person adjusting the setting of the pressure control valve. The graduation on the pressure gage shall be graduated to not less than 1.5 times the MAWP of the vessel.
~~6~~5) Provisions should be made to calibrate pressure gages or to have them checked against a standard test gage.
~~7~~6) Any vents and exhausts should be piped at least 10 ft. (3.0 m) from any air intake.

e) Inspection of view ports / windows

1) Each window should be individually identified and be marked in accordance with PVHO-1.

2) If there are any penetrations through windows, they must be circular and in accordance with PVHO-1 requirements.
3) ~~If~~ Windows must be free of crazing, cracks and scratches that exceed “superficial” defects as defined by PVHO-2.
4) Windows and viewports have a maximum interval for seat/seal inspection and refurbishment. Documentation should be checked to ensure compliance with PVHO-2, ~~Table 7.1.3~~ Section 2-4.4.

f) Inspection of pressure relief devices

1) Pressure relief devices for chambers only must have a quick opening manual shutoff valve installed between the chamber and the pressure relief device, with a frangible seal in place, within easy access to the operator.
2) The pressure relief device shall be constructed in accordance with ASME Code Section VIII.
3) The discharge from the chamber pressure relief device shall be piped outside to a safe point of discharge as determined by the Authority having Jurisdiction.
4) Rupture disks may be used only if they are in series with a pressure relief valve, or when there is less than 2 ft_3 (57 l) of water volume.
5) Verify that the safety valve is periodically tested either manually by raising the disk from the seat or by removing and testing the valve on a test stand.

g) Acceptance criteria

The following forms are required to be available for review:

1) ASME BPV Forms U-1, U-1A or U-2 as appropriate;
2) PVHO-1 Form GR-1 Manufacturer’s Data Report for Pressure Vessels for Human Occupancy;
3) PVHO-1 Forms VP-1 PVHO-2 Fabrication Certification for Acrylic Windows (one for each window),
4) PVHO-1 Form VP-2 Design Certification for Acrylic Windows (one for each window);
5) PVHO-2 Form VP-1 Viewport Inspection (one for each window, current within PVHO-2 requirements);and
6) For any repaired windows, PVHO-2 Form VP-2 Acrylic Window Repair Certificate for Windows. Repaired by the User (or his Authorized Agent) or PVHO-2 Form VP-3 Acrylic Window Repair Certificate for Severely Damaged Windows.

h) All PVHOs under the jurisdiction of the U.S. Coast Guard must also comply with 46 CFR Part 197.

Item Number: 18-77 NBIC Location: Part 3, 3.4.2 Attachment Page 20 General Description:

a) Inquiry: For re-rating a new minimum wall thickness for a pressure-retaining item using a later edition/addenda of the original code of construction per Section 3.4.2, does statement “later edition/addenda of the original code of construction” means a pressure-retaining item may be rerated to the latest (most current) edition of the code or any edition/addenda of the code since 1968 edition?

b) Reply 01: Yes Reply 02: No, a pressure-retaining item may be re-rated to any edition/addenda of the code since 1968 edition c) This question came up during a re-rating calculation of a pressure vessel, which satisfies all of the requirements of Section 3.4.2. The statement “later edition/addenda of the original code of construction” has been interpreted differently by person doing the calculation and by the checker. Therefore, depending on which edition of the code is used, calculation will show either an issue with the existing nozzle weld size or everything will be fine as is.

The above request for interpretation has been answered in a previous interpretation;

See NBIC Interpretation 98-14 which was used to support the wording in 3.4.2. Later editions can be used provided 3.4.2 rules are followed. Later can be any edition that is most applicable to the work.

INTERPRETATION 98-14

Subject: Appendix 6, Examples of Repairs and Alterations
RC-1050 Replacement Parts
RC-3022 Re-rating
RC-3020 Design

1998 Edition

Question 1: Does the example of an alteration given in Appendix 6, paragraph C.7, for replacement of a pressure retaining part with a material of different allowable stress from that used in the original design, apply to use of the same material when later editions/addenda of the original code of construction permit higher allowable stresses for that material?

Reply 1: Yes, when use of the higher allowable stress value results in a reduction in material thickness.

Question 2: Does the example of a repair given in Appendix 6, paragraph B.17, for replacement of a pressure retaining part with a material of different nominal composition and equal or greater allowable stress from that used in the original design, apply to use of the same material when later editions/addenda of the original code of construction permit higher allowable stresses for that
material?

Reply 2: Yes, provided there is no reduction in material thickness.

Question 3: When a replacement part is constructed using higher allowable stress values permitted by a later edition/addenda of the original code of construction and the replacement part is thinner than the part being replaced, is it required that an "R" Certificate Holder perform calculations and inspections to verify that the connecting welds and the affected portions of the pressure-retaining items are in compliance with the original code of construction?

Reply 3: Yes.

Question 4: May a pressure-retaining item be re-rated using a later edition/addenda of the original code of construction which permits higher allowable stress values for the material than was used in the original construction?

Reply 4: Yes, in compliance with the following minimum criteria:

a. The "R" Certificate Holder verifies (by calculations and other means) that the re-rated item can be satisfactorily operated at the new service conditions (e.g., stiffness, buckling, external mechanical loadings, etc.),

b. The pressure-retaining item is not used for lethal service,

c. The pressure-retaining item is not in high-cycle operation or fatigue service (i.e., loadings other than primary membrane stress are controlling design considerations.),

d. The pressure-retaining item was constructed to the 1968 Edition or later edition/addenda of the original code of construction,

e. The pressure-retaining item is shown to comply with all relevant requirements of the edition/addenda of the code of construction which permits the higher allowable stress values (e.g., reinforcement, toughness, examination, pressure testing, etc.),

f. The pressure-retaining item has a satisfactory operating history and current inspection of the pressure-retaining item verifies that the item exhibits no unrepaired damage (e.g., cracks, corrosion, erosion, etc.),

g. The re-rating is acceptable to the Inspector and, where required, the jurisdiction,

h. All other requirements of Part RC are met, and

i. Use of this Interpretation is documented in the Remarks Section of Form R2.

Question 5: May a new minimum required wall thickness be calculated for a pressure retaining item by using a later edition/addenda of the original code of construction which permits higher allowable stress values for the material than was used in the original construction?

Reply 5: Yes, in compliance with the following minimum criteria:

a. The "R" Certificate Holder verifies (by calculations and other means) that the affected portions of the pressure-retaining item can be satisfactorily operated (e.g., stiffness, buckling, external mechanical loadings, etc.),

b. The pressure-retaining item is not used for lethal service,

c. The pressure-retaining item is not in high-cycle operation or fatigue service (i.e., loadings other than primary membrane stress are controlling design considerations.),

d. The pressure-retaining item was constructed to the 1968 Edition or later edition/addenda of the original code of construction,

e. The pressure-retaining item is shown to comply with all relevant requirements of the edition/addenda of the code of construction which permits the higher allowable stress values (e.g., reinforcement, toughness, examination, pressure testing, etc.),

f. The pressure-retaining item has a satisfactory operating history and current inspection of the pressure-retaining item verifies that the item exhibits no unrepaired damage (e.g., cracks, etc.). Areas of corrosion or erosion may be left in place provided the remaining wall thickness is greater than the new minimum thickness,

g. The design change is acceptable to the Inspector and, where required, the jurisdiction,

h. All other requirements of Part RC are met, and

i. Use of this Interpretation is documented in the Remarks Section of Form R2.

Interpretation Request: Item 18-86
Submitted by: Ryan Orlesky <ryan.orlesky@gov.mb.ca>

Item Number: 18-86	NBIC Location: Part 3, 2.5.3	Attachment Page 8
General Description: Are other means of NDE methods such as Ultrasonic Angle Beam (UTA) and/or Ultra Sonic Strait Beam (UTS), as referenced in ASME Section V, acceptable to be used in conjunction with NBIC Part 3, 2.5.3 Alternate welding methods without postweld heat treatment, paragraph e), in order to satisfy the original code of construction examination requirements? **Subgroup:** Repairs and Alterations **Task Group:** None Assigned.		

Request for code interpretation

Subject: Alternative NDE methods acceptable to the Inspector and the Jurisdiction

Background: When an repair organization uses an alternative welding method without PWHT referenced in NBIC Part 3, 2.5.3 to repair a defect as described in NBIC Part 3, 3.3.4.1. and the defect of the repair is >3/8" or through the full thickness of the pressure retaining item, NBIC Part 3, 2.5.3 e) requires RT to be used where it was required by the original code of construction, or shall be fully examined using MT or PT method and gives no other alternatives.

Other paragraphs in Part 3 allow alternatives.

- **NBIC Part 3, 4.2** last sentence mentions *"Where this is not possible or practicable, alternative NDE methods acceptable to the Inspector and the Jurisdiction where the pressure-retaining item is installed, where required, may be used."*

- **Supplement 7 Para S7.4 b)** *Radiographic or ultrasonic examinations are considered to be suitable alternative non-destructive examination methods to ensure complete removal of the defect, as described in NBIC Part 3, 3.3.4.1.*

ASME Section VIII-1 2017

- When applying the rules of the original code for pressure vessels the original code might not be available and the organization doing the repair would use the latest code. For pressure vessels ASME Section VIII-1 2017 Para UW-51 (4) Allows the use of UT as an alternative as long as the material is ¼" or greater.

~~**Question:** May alternative NDE methods be used to meet the requirements of NBIC Part 3, 2.5.3 e)?~~ With respect to the RT requirement in 2.5.3 e); is it the intent of the reference to alternative methods acceptable to the original code of construction in paragraph 4.2 a) that UT examination may be used in place of RT examination when the original code of construction allows such examination?

Reply: ~~Yes, as permitted in NBIC Part 3, 4.2 a), and with acceptance of the Inspector and the Jurisdiction, where required.~~ Yes. These provisions have already been approved and clarified in the upcoming release of the NBIC 2019 Edition.

National Board Interpretation 18-91

Item Number: 18-91 NBIC Location: Part 3, 2.5.3.2, 2.5.3.3, 2.5.3.4

General Description: NBIC 2017 Edition, Part 3 Alternative Welding Methods

Committee Question 1: Does the ~~2017 Edition of the~~ NBIC Part 3, 2.5.3.2, 2.5.3.3, and 2.5.3.4 ~~permit~~ prohibit the use of Nickel-Chrome alloy (FNo.43) filler metal?

Committee Reply 1: No.

Rationale: Part 3, 2.5.3.2 (i) For the welding process in NBIC Part 3, 2.5.3.2 c), use of austenitic or ferritic filler metals is permitted.

Part 3, 2.5.3.3 and 2.5.3.4 (g) (2) For the welding processes in NBIC Part 3, 2.5.3.3 c), use of austenitic or ferritic filler metal is permitted.

Committee Question 2: ~~Does the word "austenitic"~~ Does the ~~2017 Edition of the~~ NBIC Part 3, 2.5.3.2(i), 2.5.3.3(g)(2), and 2.5.3.4(g)(2) prohibit "austenitic" filler metals that meet A-No.8 or A-No.9 requirements?

Committee Reply 2: No

Subgroup: Repairs and Alterations

Task Group: None Assigned.

Interpretation IN18-92

Proposed Interpretation

Inquiry:	IN18-92
Source:	
Subject:	NBIC Part 3 Section Part 3, 3.4.1
Edition:	2017
General Description:	Certifying engineer of UDS for re-rating of pressure vessel
Question 1:	Can UDS certified by an engineer in para. 2-A.2.2.(b) or (c) of the current ASME Section VIII Div. 2 2017 Edition be accepted for the re-rating work based on the ASME Sec. VIII Div. 2 2004 Edition with 2005 addenda?
Reply 1:	Yes or No
Committee's Question 1:	Provided that a single Edition/Addenda of ASME Section VIII, Division 2 is selected for the repair/alteration activity, may the 2007 or later Edition/Addenda of ASME Section VIII, Division 2 be used for rerating a vessel constructed to the 2004 or earlier Edition/Addenda of ASME Section VIII, Division 2?
Committee's Reply 1:	Yes. Per NBIC, Part 3, 1.2 a).
Question 2:	Can the above engineer authorized in Colombia be recognized as an engineer in para. 2-A.2.2. (b) of the current ASME Section VIII Div.2?
Reply 2:	Yes or No
Committee's Question 2:	With regard to Question 1, may a registered engineer authorized outside the United States or Canada be recognized as an engineer in paragraph 2-A.2.2. (b) of the current ASME Section VIII Division 2?
Committee's Reply 2:	This is outside the scope of the NBIC.
Rationale:	NBIC Part 3, Sections 5.7.3, 5.7.5, Fig. 5.7.5-b
SC Vote	
NBIC Vote	

Response letter to include: See ASME Interpretation VIII-2-07-09

Rationale:

NBIC, Part 3, 1.2 a)

1.2 a), When the standard governing the original construction is the ASME Code or ASME RTP-1, repairs and alterations to pressure-retaining items shall conform, insofar as possible, to the section and edition of the ASME Code most applicable to the work planned.

When the standard governing the original construction is the ASME Code or ASME RTP-1, repairs and alterations to pressure-retaining items shall conform, insofar as possible, to the Section and Edition of the ASME Code most applicable to the work planned. When the standard governing the original construction is the ASME Code or ASME RTP-1, repairs and alterations to pressure-retaining items shall conform, insofar as possible, to the Section and Edition of the ASME Code most applicable to the work planned.

https://cstools.asme.org/Interpretation/InterpretationDetail.cfm?TrackingNumber=8954

2017 Edition, ASME Section VIII, Division 2, 2-A.2.2 and 2-A.2.3.
2-A.2.2 Any Engineer who signs and certifies a User's Design Specification shall meet one of the criteria shown below.
(a) A Registered Professional Engineer who is registered in one or more of the states of the United States of America or the provinces of Canada and experienced in pressure vessel design.
(b) An Engineer experienced in pressure vessel design who meets all required qualifications to perform engineering work and any supplemental requirements stipulated by the user. The Engineer shall have received authority to perform engineering work from a licensing or registering authority. The Engineer shall identify the location and the licensing or registering authorities under which he has received the authority to perform engineering work.
(c) An Engineer experienced in pressure vessel design who meets all required qualifications to perform engineering work and any supplemental requirements stipulated by the user. The Engineer shall be registered
(1) in the International Professional Engineers Agreement, or
(2) in the Asian Pacific Economic Cooperation (APEC Engineer)

2-A.2.3 The Engineer certifying the User's Design Specification shall comply with the requirements of the location to practice engineering where that Specification is prepared unless the jurisdiction where the vessel will be installed has different certification requirements

Research Notes:
NBIC INTERPRETATION 17-08
Subject: Repair/Alteration Plans for ASME VIII, Division 2, Class 1 Pressure Vessels
Edition: 2017
Question: Does the NBIC require a Repair/Alteration Plan for an ASME Section VIII, Division 2, Class 1 vessel to be certified by an engineer when a Manufacturer's Design Report was not required to be certified under the original code of construction?
Reply: No.

Background Information IN18-92 from the Inquirer:
1. Inquiry-1 (Certification of UDS)
We are working on re-rating of a pressure vessel in accordance with National Board Inspection Code (NBIC).

And NBIC requires that the re-rating shall be established in accordance with the requirements of the construction standard to which the pressure-retaining item was built. The original vessel was designed and constructed in accordance with ASME Sec. VIII, Div. 2, 2004 Edition with 2005 Addenda, which requires User's Design Specification (UDS) certified by a Professional Engineer registered in USA or Canada. On the other hand, the current ASME Sec. VIII, Div. 2, 2017 Edition accepts UDS certified by an engineer stipulated in the following para. 2-A.2.2.(b) and (c) also. (Please refer to "3. [For Information]" below.)

Can UDS certified by an engineer in para. 2-A.2.2.(b) or (c) of the current ASME Section VIII Div. 2 2017 Edition be accepted for the re-rating work based on the ASME Sec. VIII Div. 2 2004 Edition with 2005 addenda?

2. Inquiry-2 (Engineer to certify UDS)

The pressure vessel for the re-rating was fabricated for one user in 2008 and resold to new user in Colombia last year.

The new user changed design conditions of the vessel and prepared new UDS for the re-rating. The new UDS was certified by an engineer who has the authority given by **El Consejo Profesional Nacional de Ingenierías Eléctrica, Mecánica y profesiones afines** (The National Professional Council of Electrical, Mechanical and Professions Engineering) in Colombia. Link: https://www.consejoprofesional.org.co/

Can the above engineer authorized in Colombia be recognized as an engineer in para. 2-A.2.2.(b) of the current ASME Section VIII Div.2?

3. [For Information] ASME Div.2 Requirements for Engineer to Certify UDS

[Old ASME: Sec. VIII, Div. 2, 2004 Edition with 2005 Addenda]

AG-301.2 Certification of User's Design Specification.

A Professional Engineer, registered in one or more of the states of the United States of America or the provinces of Canada and experienced in pressure vessel design, shall certify to the compliance of the User's Design Specifications with the above requirements.

[Current ASME: Sec. VIII, Div. 2, 2017 Edition]

2-A.2.2 Any Engineer who signs and certifies a User's Design Specification shall meet one of the criteria shown below.

(a) A Registered Professional Engineer who is registered in one or more of the states of the United States of America or the provinces of Canada and experienced in pressure vessel design.

(b) An Engineer experienced in pressure vessel design who meets all required qualifications to perform engineering work and any supplemental requirements stipulated by the user. The Engineer shall have received authority to perform engineering work from a licensing or registering authority. The Engineer shall identify the location and the licensing or registering authorities under which he has received the authority to perform engineering work.

(c) An Engineer experienced in pressure vessel design who meets all required qualifications to perform engineering work and any supplemental requirements

stipulated by the user. The Engineer shall be registered (1) in the International Professional Engineers Agreement, or (2) in the Asian Pacific Economic Cooperation (APEC Engineer)

ASME Interpretations:
Interpretation: VIII-2-13-04
Subject: 2-A.2.2 and 2-B.2.2, Design Reports (2010 Edition, 2011 Addenda)
Date Issued: April 25, 2013
File: 12-2276

Question: Is it required by the rules of ASME Section VIII, Division 2 that the Authorized Inspector be responsible for ensuring the accuracy of the engineer's credentials regarding registration in the U.S., Canada, internationally, or as authorized by a registering authority?

Reply: No.

Interpretation IN18-99

Proposed Interpretation

Inquiry:	IN18-99
Source:	Sunil Sharma
Subject:	NBIC Part 3 Section Part 3, 3.3.5 and 3.4.5
Edition:	2017
General Description:	Repair and alteration of Section VIII Division 2 items
Question 1:	Is it permissible to perform repair on Section VIII Division 2 item based on a Repair Plan that is certified as compatible with original manufacturer's drawings and data report (and not UDS and design report) when user or the original manufacturer are unable to provide copies of UDS and/or design report?
Reply 1:	Yes, provided all the following requirements are met: a. Repair plan prepared by user and certified in accordance with Section VIII Div 2 identifies the missing UDS and design report b. User has confirmed in the repair plan that original service condition of the pressure retaining item have not been altered and the pressure vessel will continue to operate under conditions specified in the UDS c. Inspector needs to be satisfied with repair plan. d. Absence of original UDS and design report shall be reported on R-1 form.
Committee's Question 1:	Is it permissible to perform a repair or alteration on an ASME Section VIII, Division 2 pressure vessel in accordance with the NBIC when the original User's Design Specification (UDS) and/or the Manufacturer's Design Report (MDR) is not available?
Committee's Reply 1:	No. The Repair/Alteration Plan is required to be compatible with the UDS and MDR per the NBIC Part 3, Sections 3.3.5 and 3.4.5.
Question 2:	Is it permissible to consider the case in question 1 as Alteration to Section VIII Div 2 Class 1 where the R stamp holder performs complete design analysis using design data provided in original drawings and data report and ensure compliance with ASME Section VIII Division 2-2017 Class 1?
Reply 2:	Yes, provided all the following requirements are met: a. User has confirmed that the original service condition of the pressure retaining item have not been altered and the pressure vessel will continue to operate under conditions specified in the UDS. b. User has confirmed that vessel is not subjected to cyclic loading conditions that require fatigue analysis. c. Alteration plan is prepared by the R certificate holder to confirm that drawings and data report do not require

	fatigue analysis and design of pressure retaining item can be established without requiring design by analysis method for thickness determination. d. Inspector needs to be satisfied with alteration plan. e. Absence of original UDS and design report shall be reported on R-2 form.
Rationale:	NBIC Part 3, Sections 3.3.5.2 and 3.4.5.1
SC Vote	
NBIC Vote	

Include in response letter: Recommend seeking Jurisdictional guidance where the vessel will be installed/operated.

Rationale:

3.3.5.2 REPAIR PLAN

The user shall prepare, or cause to have prepared, a detailed plan covering the scope of the repair.

a) Engineer Review and Certification

The repair plan shall be reviewed and certified by an engineer meeting the criteria of ASME Section VIII, Division 2 or 3, as applicable, for an engineer signing and certifying a Manufacturer's Design Report. The review and certification shall be such as to ensure the work involved in the repair is compatible with the User's Design Specification and the Manufacturer's Design Report.

Note: The engineer qualification criteria of the Jurisdiction where the pressure vessel is installed should be verified before selecting the certifying engineer.

b) Authorized Inspection Agency Acceptance

Following review and certification, the repair plan shall be submitted for acceptance to the Authorized Inspection Agency/Owner-User Inspection Organization whose Inspector will make the acceptance inspection and sign the Form R-1.

3.4.5.1 ALTERATION PLAN

a) Engineer Review and Certification

The alteration plan shall be reviewed and certified by an engineer meeting the criteria of ASME Section
VIII, Division 2 or 3, as applicable, for an engineer signing and certifying a Manufacturer's Design Report.
The review and certification shall be such as to ensure the work involved in the alteration is compatible
with the user's design specification and the Manufacturer's Design Report.
Note: The engineer qualification criteria of the jurisdiction where the pressure vessel is installed should
be verified before selecting the certifying engineer.

b) User's Design Specification

If the alteration is such that the work is not compatible with, or changes one or more requirement(s) of the original user's design specification, the user's design specification shall be revised by the user with the new parameters or changes. The revisions shall be certified by an engineer meeting the criteria of ASME Section VIII, Division 2 or 3, as applicable, for an engineer signing and certifying a Manufacturer's Design Report.

Note: The engineer qualification criteria of the Jurisdiction where the pressure vessel is installed should be verified before selecting the certifying engineer.

c) Manufacturer's Design Report

1) The "R" Certificate Holder shall prepare, or cause to have prepared a supplement to the *Manufacturer's Design Report* to reconcile the new parameters or changes with the user's design specification.

2) The supplement to the Manufacturer's Design Report shall be certified by an engineer meeting the criteria of ASME Section VIII, Division 2 or 3, as applicable, for an engineer signing and certifying a Manufacturer's Design Report.

Note: The engineer qualification criteria of the Jurisdiction where the pressure vessel is installed should be verified before selecting the certifying engineer.

d) Authorized Inspection Agency Acceptance

Following review and certification, the alteration plan shall be submitted for acceptance to the Authorized Inspection Agency/Owner-User Inspection Organization whose inspector will make the acceptance inspection and sign the Form R-2.

Background Information IN18-99 from the Inquirer:

Explanation of Need:

- Several R stamp holders have faced a situation where the copies of UDS and design report are not available from the user or from the original manufacturer. Absence of such records (being responsibility of the user to retain) should not stop R stamp holder to perform proper repairs and /or alterations. In some cases, there may be a genuine reason (for example war or natural calamity) where the records were lost.

Background Information:

- Vessel certified as per 1992 A1994 Section VIII Div 2 requires repairs for replacement of nozzle of identical size and material specification.
- Owners as well as original manufacturer are unable to provide copies of UDS and Design Report, Drawings, and Copy of MDR are available.

Question 1:

- Is it permissible to perform repair on Section VIII Div 2 item based on Repair Plan that is certified as compatible with original manufacturer's drawings and data report (and not UDS and design report) when user or the original manufacturer are unable to provide copies of UDS and/or design report?

Proposed Reply to Question 1:

- Yes, provided all the following requirements are met:

a. Repair plan prepared by user and certified in accordance with Section VIII Div 2 identifies the missing UDS and design report
b. User has confirmed in the repair plan that original service condition of the pressure retaining item have not been altered and the pressure vessel will continue to operate under conditions specified in the UDS
c. Inspector needs to be satisfied with repair plan.
d. Absence of original UDS and design report shall be reported on R-1 form.

Question 2:

- Is it permissible to consider the case in question 1 as Alteration to Section VIII Div 2 Class 1 where the R stamp holder performs complete design analysis using design data provided in original drawings and data report and ensure compliance with ASME Section VIII Division 2-2017 Class 1?

Proposed Reply to Question 2:

- Yes, provided all the following requirements are met:
    a. User has confirmed that the original service condition of the pressure retaining item have not been altered and the pressure vessel will continue to operate under conditions specified in the UDS
    b. User has confirmed that vessel is not subjected to cyclic loading conditions that require fatigue analysis.
    c. Alteration plan is prepared by the R certificate holder to confirm that drawings and data report do not require fatigue analysis and design of pressure retaining item can be established without requiring design by analysis method for thickness determination.
    d. Inspector needs to be satisfied with alteration plan.
    e. Absence of original UDS and design report shall be reported on R-2 form.

NBIC Subcommittee R&A Action Block

Subject	Code Revision to Part 3, 2.5.3.6		
File Number	NB18-12	**Prop. on Pg.**	2
Proposed Revision	1		
Statement of Need	The revision is to Welding Method 6 to allow for weld build-up limited to 100 square inches on only Grade 91 tube OD surfaces for local erosion or mechanical damage.		

Project Manager	John Siefert/G. Galanes

SubGroup Negatives	**SG Meeting Date**

Background;
Welding Method 6 was successfully introduced into the NBIC, part 3 to permit butt weld repair with no PWHT. This action permits weld build-up of the Grade 91 tubes within the boiler setting and same limitations to repair erosion or mechanical damage without the need for complete tube replacement. To ensure adequate controls, the size of the repair are using a weld overlay is limited to 100 square inches.

The size limitation for the weld build-up repair of 100 square inches is predicated on similar language which appears in Part 3 Supplements 2 and 4. For weld build-up repairs, section 2.5.3.6 c) 5) f) does not limit the F-No. 43 filler materials because the need for the weld build-up may be due to corrosion or erosion. In these examples, it may be necessary to use an optimized filler material which is otherwise prohibited in section 2.5.3.6 c) 5) d) for full thickness repairs.

Item 18-12
2.5.3.6 WELDING METHOD 6

This welding method provides requirements for welding only Grade 91 tube material within the steam boiler setting. When using this welding method, the following applies:

a) This method is limited to butt welds, weld build-up repairs, or attachments (the attachment material may be dissimilar) in tubing NPS 5 (DN 125) or less in diameter and ½ in. (13 mm) or less in wall thickness for which the applicable rules of the original code of construction did not require notch toughness testing;

b) Application shall be limited to only boiler tube repairs at a location internal to the boiler setting;

c) Upon the completion of weld repair, the repair area shall be kept above the dew point temperature so that condensation does not form on the repair surface before returned to service or a moisture-barrier coating shall be applied to the surface.

1) The material shall be limited to P-No 15E, Group 1, Grade 91, creep strength enhanced ferritic steel (CSEF).

2) The welding shall be limited to the SMAW and/or GTAW processes, manual or automatic, using suitably controlled maintenance procedures to avoid contamination by hydrogen producing sources. The surface of the metal shall be free of contaminants and kept dry.

3) The welding procedure qualification test coupon shall be P-No 15 E, Group 1, Grade 91.

4) Qualification thickness limits of base metal and weld deposit thickness shall be in accordance with ASME Section IX, QW-451.

5) The Welding Procedure Specification (WPS) shall be qualified in accordance with the requirements of ASME Section IX. No postweld heat treatment shall be applied to the test coupon. Additionally, the WPS shall include the following requirements:

a. The minimum preheat for the GTAW process shall be 200°F (100°C). The minimum preheat for the SMAW process shall be 300°F (150°C). The preheat temperature shall be checked to ensure the minimum preheat temperature is maintained during welding and until welding is completed. The maximum interpass temperature shall be 550°F (290°C).

b. When the SMAW process is specified for a fill pass layer, the electrode diameter is restricted to a maximum size of 1/8 in. (3.2 mm). When the GTAW-process is specified any limits in filler size is to be shown on the WPS.

c. Regardless of the welding process (SMAW and/or GTAW), only the use of stringer beads shall be permitted.

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, ASME B&PV Code Cases 2733 and 2734 (e.g. EPRI P87); or
e. A martensitic, iron-base filler metal to those assigned to F-number 4 or F-number 6 in ASME Section IX, QW-432 ~~having a designation F-No. 4 or F-No. 6~~ and limited to the following consumables: E8015-B8, E8018-B8 or ER80S-B8.
f. For weld build-up repairs due to wastage, the filler metal shall be limited to those assigned to F-number 43 in ASME Section IX, QW-432.

NBIC Subcommittee R&A Action Block

Subject Code Revision to Part 3, 2.5.3.6

File Number NB18-13 **Prop. on Pg.** 2

Proposed Revision Statement of Need The revision is to add a new Welding Method 7 to allow for dissimilar metal welding of Grade 91 to austenitic steels and low alloy steels in a boiler setting and limited to butt welds, in accordance with approved welding method 6.

Project Manager John Siefert/G. Galanes

SubGroup Negatives **SG Meeting Date**

Background;
Welding Method 7 is being introduced to permit dissimilar metal weld repair with no PWHT between Grade 91 boiler tubes to austenitic steels and low alloy ferritic steels. This action permits DMW of Grade 91 tubes within the boiler setting following welding method 6 with no PWHT.

NB Item 18-13

2.5.3.7 WELDING METHOD 7

This repair method provides requirements for dissimilar metal welding (DMW) of Grade 91 tube material to either austenitic or low alloy ferritic steel tubing within the steam boiler setting. When using this welding method, the following applies:

a) This method is limited to butt welds in tubing NPS 5 (DN 125) or less in diameter and ½ in. (13 mm) or less in wall thickness for which the applicable rules of the original code of construction did not require notch toughness testing;

b) Application shall be limited to only boiler tube repairs at a location internal to the boiler setting;

c) Upon the completion of weld repair, the repair area shall be kept above the dew point temperature so that condensation does not form on the repair surface before returned to service or a moisture-barrier coating shall be applied to the surface.

For DMW of Grade 91 to austenitic steel steel tubing;

1) The materials shall be limited to P-No 15E, Group 1, Grade 91, creep strength enhanced ferritic steel (CSEF) 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.

2) The welding shall be limited to the SMAW and GTAW processes, manual or automatic, using suitably controlled maintenance procedures to avoid contamination by hydrogen producing sources. The surface of the metal shall be free of contaminants and kept dry.

3) The welding procedure qualification test coupon shall be P-No 15 E, Group 1, Grade 91 joined to either P-No. 8, P-No. 42, P-No. 43, or P-No. 45 and as required for the repair application.

4) Qualification thickness limits of base metal and weld deposit thickness shall be in accordance with ASME Section IX, QW-451.

5) The Welding Procedure Specification (WPS) shall be qualified in accordance with the requirements of ASME Section IX. No postweld heat treatment shall be applied to the test coupon. Additionally, the WPS shall include the following requirements:

a). The minimum preheat for the GTAW process shall be 200°F (100°C). The minimum preheat for the SMAW process shall be 300°F (150°C). The preheat temperature shall be checked to ensure the minimum preheat temperature is maintained during welding and until welding is completed.

The maximum interpass temperature shall be 550°F (290°C).

b). When the SMAW process is specified for a fill pass layer, the electrode diameter is restricted to a maximum size of 1/8 in. (3.2 mm). When the GTAW-process is specified any limits in filler size is to be shown on the WPS.

c). Regardless of the welding process (SMAW or GTAW), only the use of stringer beads shall be permitted.

d). The filler metal shall be limited to an austenitic, nickel-base filler metal to those assigned to F-number 43 in ASME Section IX, QW-432 and limited to the following consumables: ERNiCr-3 (e.g., Filler Metal 82), ENiCrFe-3 (e.g., INCONEL Welding Electrode 182), ENiCrFe-2 (e.g., INCO-WELD A), ASME B&PV Code Cases 2733 and 2734 (e.g. EPRI P87);
~~e. 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.~~

For DMW of Grade 91 to low alloy (P-No 5A) steel tubing:

1) The materials shall be limited to P-No 15E, Group 1, Grade 91, creep strength enhanced ferritic steel (CSEF) joined to P-No. 5A steel.

2) The welding shall be limited to the SMAW and/or GTAW processes, manual or automatic, using suitably controlled maintenance procedures to avoid contamination by hydrogen producing sources. The surface of the metal shall be free of contaminants and kept dry.

3) The welding procedure qualification test coupon shall be P-No 15 E, Group 1, Grade 91 joined to P-No. 5A steels.

4) Qualification thickness limits of base metal and weld deposit thickness shall be in accordance with ASME Section IX, QW-451.

5) The Welding Procedure Specification (WPS) shall be qualified in accordance with the requirements of ASME Section IX. No postweld heat treatment shall be applied to the test coupon. Additionally, the WPS shall include the following requirements:

(a). The minimum preheat for the GTAW process shall be 200°F (100°C). The minimum preheat for the SMAW process shall be 300°F (150°C). The preheat

temperature shall be checked to ensure the minimum preheat temperature is maintained during welding and until welding is completed. The maximum interpass temperature shall be 550°F (290°C).

(b). When the SMAW process is specified for a fill pass layer, the electrode diameter is restricted to a maximum size of 1/8 in. (3.2 mm). When the GTAW-process is specified any limits in filler size is to be shown on the WPS.

(c). Regardless of the welding process (SMAW or GTAW), only the use of stringer beads shall be permitted.

(d). The filler metal shall be limited to a martensitic, iron-base filler metal to those assigned to F-number 4 or F-number 6 in ASME Section IX, QW-432 and limited to the following consumables: E8015-B8, E8018-B8 or ER80S-B8.

REQUEST FOR CODE REVISION

The following are proposed revisions to Part 3 Section 9 Glossary. The proposal provides definitions for brazing, fusing and welding that are more closely aligned with the definitions in ASME Section IX.

EXPLANATION

Comments received on item NB18-40 requested that the definitions for brazing, fusing and welding be revised to be more closely aligned with ASME Section IX.

CURRENT – 2019 EDITION	PROPOSED	2017 Section IX – Information Only
PART 3, SECTION 9 REPAIRS AND ALTERATIONS—GLOSSARY OF TERMS **9.1 DEFINITIONS**	NO CHANGE	
Brazing – see Welding	**Brazing - a group of metal joining processes which produce coalescence of materials by heating them to a suitable temperature, and by using a filler metal having a liquidus above 840°F (450°C) and below the solidus of the base materials. The filler metal is distributed between the closely fitted surfaces of the joint by capillary action.**	***brazing*: a group of metal joining processes which produces coalescence of materials by heating them to a suitable temperature, and by using a filler metal having a liquidus above 840°F (450°C) and below the solidus of the base materials. The filler metal is distributed between the closely fitted surfaces of the joint by capillary action.**
Fusing – see Welding	**Fusing - the coalescence of two plastic members by the combination of controlled heating and the application of pressure approximately normal to the interface between them.**	***fusing*: the coalescence of two plastic members by the combination of controlled heating and the application of pressure approximately normal to the interface between them.**
Welding (Brazing, Fusing) – a group of processes which produce a localized coalescence of metallic or nonmetallic materials.	**Welding - a group of processes which produce a localized coalescence of metallic or nonmetallic materials by heating the materials to the suitable temperature, with or**	***weld*: a localized coalescence of metals or nonmetals produced either by heating the materials to the welding temperature, with or without the**

	without the application of pressure, and with or without the use of filler material.	**application of pressure, or by the application of pressure alone and with or without the use of filler material.**

NBIC Action Item NB18-75

Inquirer: Michael Quisenberry (michael@allentri.com)

Subject: NBIC 2017 PART 3, SECTION 3 (PARA. 3.3.4.6 PATCHES)

Statement of Need
At present, the detailed technical requirements associated with making repairs to PRI's are inconsistent across equipment types even when the same physical activities are being conducted.

Background
When replacing tubes in a Scotch Marine Firetube Boiler it is often necessary to cut a temporary opening in the front tubesheets in order to remove wasted tubes. The removed tubesheet material will be reinstalled in the form of a flush patch once the retube is complete. Currently this flush patch weld in a "modern" boiler is required to be volumetrically examined whereas in historic boilers it is acceptable to use NDE alternatives to volumetric methods. The text in red below has been taken from the supplement for historic boilers and added to the main body of part 3 for the purposes of consistency and to address flush patches in stayed and unstayed areas.

3.3.4.6
a) Flush Patches

1) The weld around a flush patch shall be a full penetration weld and the accessible surfaces shall be ground flush where required by the applicable original code of construction. Examples of flush welded patches are shown in NBIC Part 3, Figure 3.3.4.6-a. The welds shall be subjected to the nondestructive examination method used in the original code of construction or an alternative acceptable to the Inspector.

2) Before installing a flush patch, the defective material should be removed until sound material is reached. The patch should be rolled to the proper shape or curvature. The edges should align without overlap. In stayed areas, the weld seams should come between staybolt rows or riveted seams. Patches shall be made from a material whose composition and thickness meet the intended service. Patches may be any shape or size. If the patch is rectangular, a minimum radius of not less than three times the material thickness shall be provided at the corners. Square corners are not permitted. The completed welds shall meet the requirements of the original code of construction.

b) Flush Patches in Stayed Areas of Tubesheets

1) Patches may be of any size or shape provided they are adequately supported by staybolts, rivets, tubes, or other forms of construction. Patches on

stayed surfaces should be designed so weld seams pass between staybolt rows. (See NBIC Part 3, Figure S1.2.11.2). *taken from S1.2.11.2-a*

2) Patches are to be flush type, using full penetration welds. If the load on the patch is carried by other forms of construction, such as staybolts, rivets, or tubes, then volumetric NDE of the welds is not required; (taken from S2.13.10.3) *taken from S1.2.11.2-b*

3) All rectangular or angled patches shall have adequate radius at all corners. Minimum radius to be not less than three times plate thickness. (taken from S1.2.11.2) *taken from S1.2.11.2-d*

4) Patches shall fit flush on the waterside of the sheet. Misalignment shall not exceed one-quarter plate thickness on edge alignment with the sheet water side. *taken from S1.2.11.2-e*

c) Flush Patches in Unstayed Areas of Tubesheets

1) Welded repairs to boiler unstayed areas shall have volumetric NDE performed in accordance with the approved code of construction or ASME Section I, when the size of the repaired area is greater than 3 in. (75mm) in diameter of the largest existing stay. The completed repair must be stress relieved. Alternative Methods without Postweld Heat Treatment identified in NBIC Part 3, 2.5.3 may be used. *taken from S2.13.9.3-a*

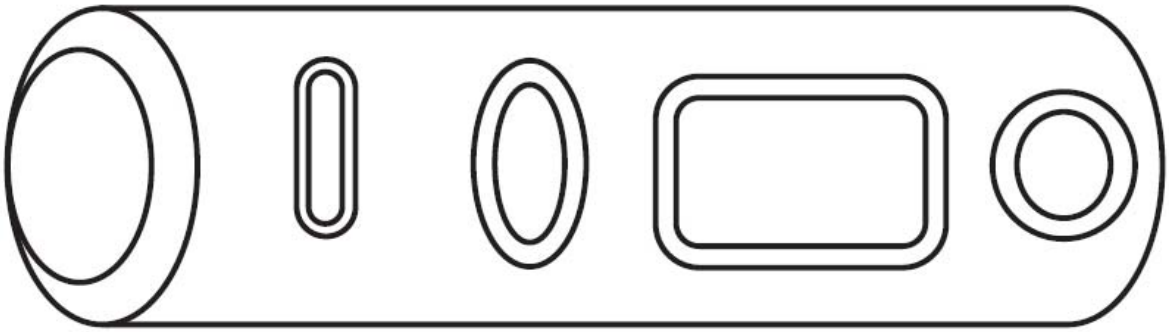
2) The weld around a flush patch shall be a full penetration weld and the accessible surfaces shall be ground flush. Examples of flush welded patches are shown in Figure NBIC Part 3, S2.13.9.3. *taken from S2.13.9.3-a*

3) The patch should be rolled or pressed to the proper shape or curvature. The edges of the patch should align with original material without overlap. Patches shall fit flush on the waterside of the sheet. If the patch is square or rectangular, an adequate radius, of at least three times the material thickness should be provided at the corners. *taken from S2.13.9.3-d*

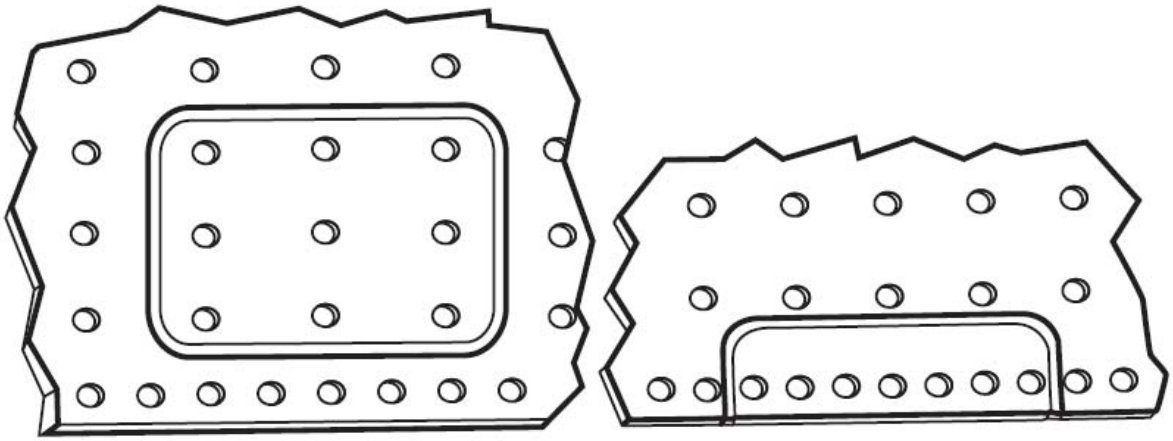
b) Tube Patches

In some situations it is necessary to weld a flush patch on a tube, such as when replacing tube sections and accessibility around the complete circumference of the tube is restricted, or when it is necessary to repair a small bulge. This is referred to as a window patch. Suggested methods for window patches are shown in NBIC Part 3, Figure 3.3.4.6-b.

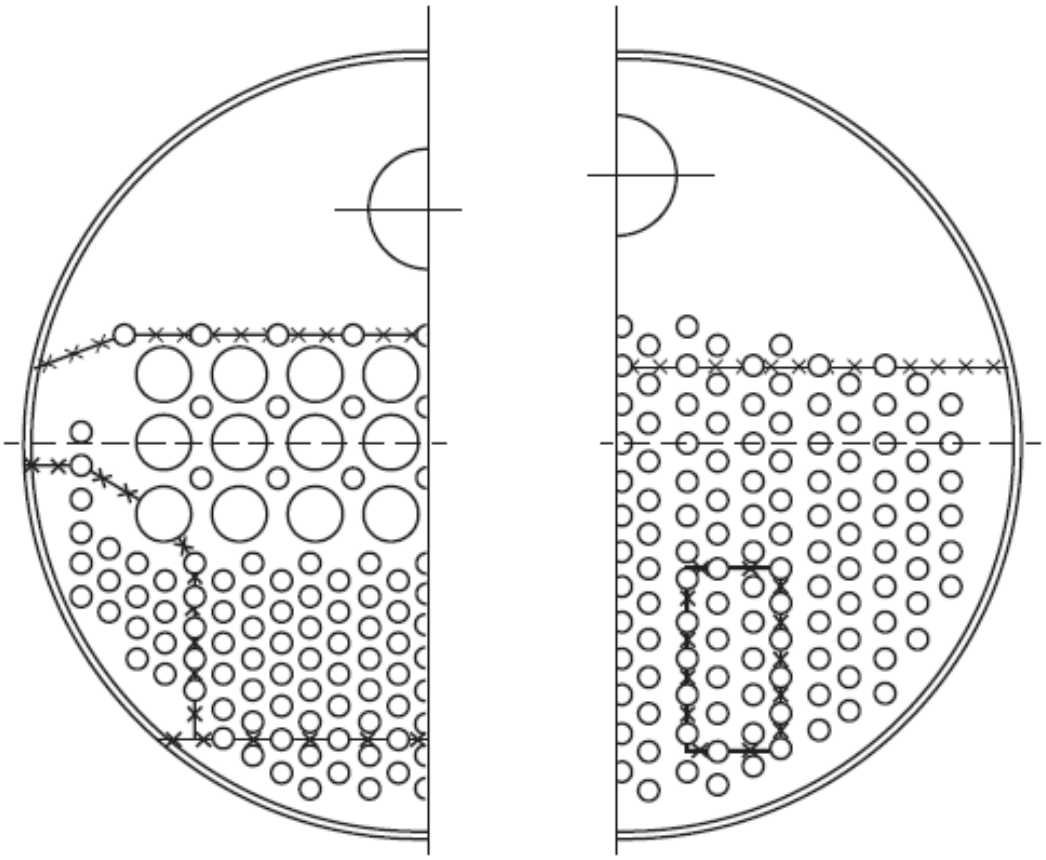
FIGURE 3.3.4.6-a
FLUSH PATCH CONFIGURATIONS IN UNSTAYED AREAS



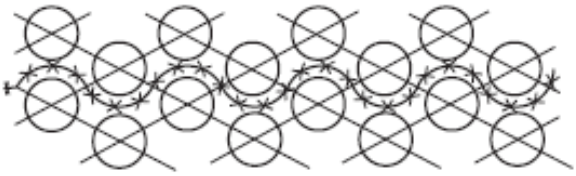
FLUSH PATCHES IN STAYED AREAS



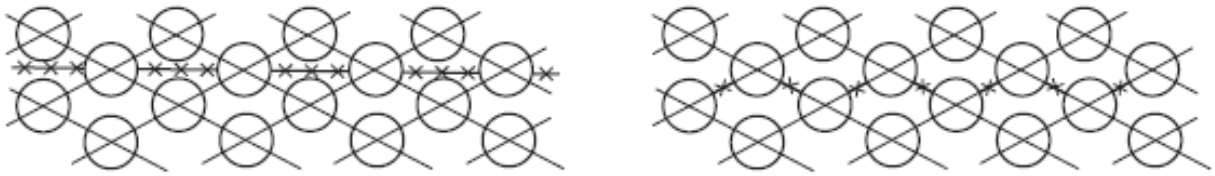
TUBESHEET REPAIRS



Typical tubesheet flush patches



Tubesheet welded around tube holes



Tubesheet welded through ligaments and tube holes

Item Number: 18-78 NBIC Location: Part 3, 3.2.2 c) 1) Attachment Page 20
General Description: Addition to Part 3, 3.2.2 c) to allow for parts to be transferred w/o Partial Data Reports for repairs and alterations
Subgroup: SG Repairs and Alterations
Task Group: None Assigned

Current Wording:

3.2.2.c)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.

Proposed Wording:

2) ASME Stamping and completion of an ASME Manufacturer's Partial Data Report is not required for parts fabricated by one "R" Certificate Holder *at one location under the operational control of a corporate/single organization, if the part will be used on pressure retaining items being repaired or altered by another R Certificate Holder at another location under the operational control of the same corporate/organization provided AIA of Record is same at both locations. The controls for this activity shall be described in the quality control system of both locations.*

Statement of need;

Most of the Manufacturers in Middle East, having facilities at multiple locations, are also Repair organizations holding R Certificate of Authorization. Not all locations are having the same equipment and facilities. Hence, part fabrication is done at one location and transferred to another location which carries out further work which includes assembly at site. ASME BPV Codes allow parts to be transferred without Partial Data Reports for new construction. The same procedure is requested to be allowed for repairs and alterations also.

Proposed Reply:

Unlike ASME (Cap-22) the National Board does not recognize "corporate organizations" also as explained in the "Statement of Need" different R certificate holders may have different AIA's that will mandate/require a partial R form be completed.

WY Jones

2.2.3 PERFORMANCE QUALIFICATION

Welders and welding operators shall be qualified for the welding processes that are used. The performance of personnel shall be qualified for each process used. Such qualification shall be in accordance with the requirements of the original code of construction, the construction standard, code selected or ASME Section IX. Use of a Standard Welding Procedure Specification shown in NBIC Part 3, 2.3 is permitted for performance qualification testing. The "R" Certificate Holder, or an affiliated company under same corporate ownership, shall be responsible for the qualification.

CURRENT TEXT:

3.4.4 EXAMPLES OF ALTERATIONS

a) An increase in the maximum allowable working pressure (internal or external) or temperature of a pressure-retaining item regardless of whether or not a physical change was made to the pressure-retaining item;

b) A decrease in the minimum temperature;

c) The addition of new nozzles or openings in a boiler or pressure vessel except those classified as repairs;

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

e) In a boiler, an increase in the heating surface or steaming capacity as described on the original Manufacturer's Data Report;

Item Number: 18-83	NBIC Location: Part 3, 3.4.4 e)	Attachment Page 24
General Description: Alternative language in Part 3, 3.4.4 e) to clarify that it is the current MRRC that must be considered when changes are effected **Subgroup:** SG Repairs and Alterations **Task Group:** None Assigned.		

PROPOSED REVISION:

3.4.4 EXAMPLES OF ALTERATIONS

e) ~~In a boiler~~, ~~a~~An increase in the heating surface or steaming capacity as described on the original Manufacturer's Data Report;

Item Number: 18-85

General Description: Correct the Title of SWPS AWS B2.1-1-233:2006 and AWS B2.1-1-235:2006 deleting "Flat Position Only" from the Title as it relates Part 3, Table 2.3

Sub Group: Repairs and Alterations

Task Group: Jim Sekely

Present Wording	**Proposed Wording**
B2,1-1-233: 2006 Standard Welding Procedure Specification for Argon Plus 25% Carbon Dioxide Shielded Gas Metal Arc Welding (Short Circuiting Transfer Mode) followed by Argon Plus 2% Oxygen Shielded Gas Metal Arc Welding (Spray Transfer Mode) of Carbon Steel (M-1/P-1/S-1, Groups 1 and 2), 1/8 in. (3.2 mm) through 1 ½ in. (38 mm) Thick, ER70S-3, ~~Flat Position Only,~~ As-Welded or PWHT Condition, Primarily Pipe Applications.	B2.1-1-233: 2006 Standard Welding Procedure Specification for Argon Plus 25% Carbon Dioxide Shielded Gas Metal Arc Welding (Short Circuiting Transfer Mode) followed by Argon Plus 2% Oxygen Shielded Gas Metal Arc Welding (Spray Transfer Mode) of Carbon Steel (M-1/P-1/S-1, Groups 1 and 2), 1/8 in. (3.2 mm) through 1 ½ in. (38 mm) Thick, ER70S-3, As-Welded or PWHT Condition, Primarily Pipe Applications.
B2.1-1-235: 2006 Standard Welding Procedure Specification for Argon Plus 2% Oxygen Shielded Gas Metal Arc Welding (Spray Transfer Mode) of Carbon Steel (M-1/P-1/S-1, Groups 1 and 2), 1/8 in. (3.2 mm) through 1 ½ in. (38 mm) Thick, ER70S-3, ~~Flat Position Only,~~ As-Welded or PWHT Condition, Primarily Pipe Applications.	B2.1-1-235: 2006 Standard Welding Procedure Specification for Argon Plus 2% Oxygen Shielded Gas Metal Arc Welding (Spray Transfer Mode) of Carbon Steel (M-1/P-1/S-1, Groups 1 and 2), 1/8 in. (3.2 mm) through 1 ½ in. (38 mm) Thick, ER70S-3, As-Welded or PWHT Condition, Primarily Pipe Applications.

18-87, Edwards, 01-15-19

Reference: Part 4, Supplement 6, S6.4.b.2

Discussion: Part 4, S6.4.b.2 was revised under 16-0603 and approved for publication in the 2019 Edition. Inserting the word *"Nuclear"* in reference to an Authorized Inspection Agency was subsequently approved in response to PR18-0403, however on further review this action is incorrect. The ASME QAI-1 Standard does not include *"Nuclear"* in reference to accredited AIAs (only in reference to Supervisors and Inspectors). In addition, the ASME QAI-1 Standard does not address *"inspection of repaired nuclear pressure relief valves"* by AIAs.

Proposal: Action is proposed to revise Part 4, S6.4.b.2 in accordance with the following:

~~Have a contract or agreement with an Authorized Nuclear Inspection Agency that is qualified in accordance with the requirements of ASME QAI-1, Qualifications for Authorized Inspection to provide inspection of repaired pressure relief devices;~~ Have a contract or agreement with an Authorized Inspection Agency that is accredited in accordance with the requirements of ASME QAI-1, "Qualifications for Authorized Inspection" to provide nuclear inspection services;

Item 18-88

1/14/19

Request for NBIC Part 3, Supplement 2 Revision

Robert V. Underwood-The Hartford Steam Boiler Inspection & Insurance Company

Purpose	To change incorrect references in NBIC Part 3, Supplement 2, paragraphs S2.6 (a) and S2.9.
Scope:	Revise S2.6 (a) and S2.9 to change reference from "NBIC Part 3 paragraph 1.6" to "NBIC Part 3, paragraph 1.5."
Background	NBIC Part 3, paragraph 1.6 previously addressed requirements of "R" Stamp accreditation. A few editions ago this paragraph was changed to reference "NR" Stamp accreditation requirements. "R" Stamp accreditation requirements were moved to paragraph 1.5. References to 1.6 were not revised in existing S2.6 (a) and S2.9 when this change was made.
Proposed Revision	See below for proposed revision

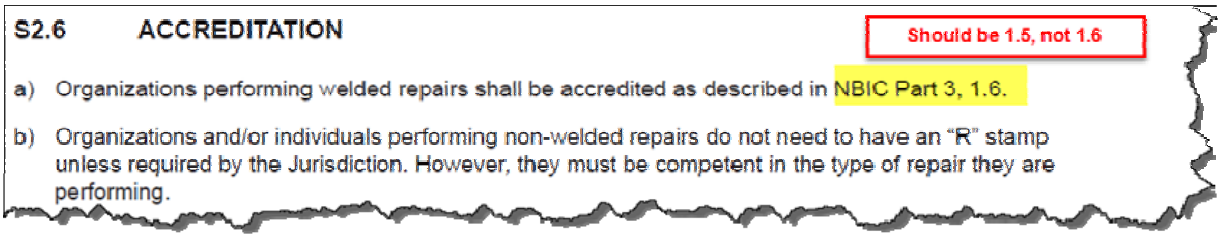
S2.6 ACCREDITATION

a) Organizations performing welded repairs shall be accredited as described in NBIC Part 3, ~~1.6~~1.5.

S2.9 WELDING

Welding shall be performed in accordance with the requirements of the approved construction standard in consultation with the Inspector. A repair organization accredited as described in NBIC Part 3, ~~1.6~~1.5 may use the Standard Welding Procedure Specifications shown in 2.3, as applicable. Welders shall be qualified for the welding processes used. Qualification shall be in accordance with the approved construction standard, or ASME Section IX.

EXISTING S2.6 and S2.9

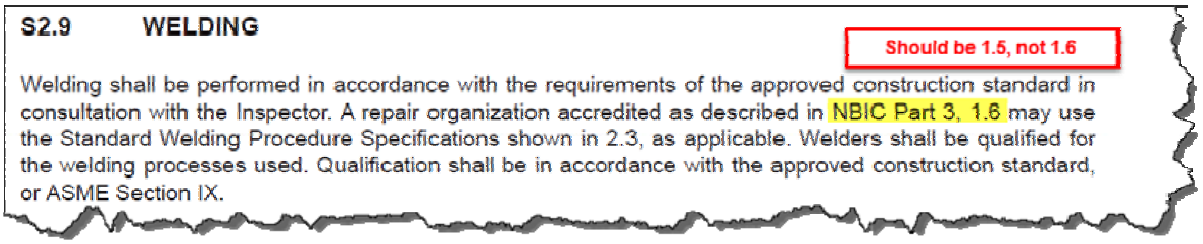


S2.6 ACCREDITATION

Should be 1.5, not 1.6

a) Organizations performing welded repairs shall be accredited as described in NBIC Part 3, 1.6.

b) Organizations and/or individuals performing non-welded repairs do not need to have an "R" stamp unless required by the Jurisdiction. However, they must be competent in the type of repair they are performing.



S2.9 WELDING

Should be 1.5, not 1.6

Welding shall be performed in accordance with the requirements of the approved construction standard in consultation with the Inspector. A repair organization accredited as described in NBIC Part 3, 1.6 may use the Standard Welding Procedure Specifications shown in 2.3, as applicable. Welders shall be qualified for the welding processes used. Qualification shall be in accordance with the approved construction standard, or ASME Section IX.

Item 18-98

1/14/19

Request for NBIC Part 3, Supplement 2 Revision

Robert V. Underwood-The Hartford Steam Boiler Inspection & Insurance Company

Purpose	Add reference to Replacement Part requirements.
Scope:	Add sentence to S2.7.2 to reference Replacement Parts in 3.2.2.
Background	S2.7.2 addresses replacement parts used for repairs and alterations to historical boilers, however it lacks detail. Detailed requirements on replacement parts are found in 3.2.2 of Part 3. Recommend adding a sentence in S2.7.2 to refer back to 3.2.2 in Part 3.
Proposed Revision	See below for TWO options

S2.7.2 REPLACEMENT PARTS

~~Replacement parts formed by casting, forging, or die forming, and on which no welding has been performed shall be supplied as material. Such parts shall be marked with the material identification required by the construction standard used for the repair. Replacement parts fabricated by welding shall be manufactured by an organization certified as required by the construction standard used for the repair.~~ Replacement pressure parts shall be in accordance with Part 3, 3.2.2.

Existing 3.2.2

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) 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.

Interpretation Item 18-90

Proposed Interpretation

Inquiry:	18-90
Source:	Keith MacLean, P.Eng.
Subject:	Part 1, 2.9.6 h) and Part 4, 2.2.10 h)
Edition:	2017
Question 1:	Is it acceptable to plug the Valve Casing Drain and provide the required drainage by another drain connection installed at the bottom of the inlet end of the discharge elbow, as long as it is below the level of the valve seat?
Reply 1:	Yes – as long as it is below the valve seat and meet or exceeds the size required by the code. Or Yes – as long as it is markedly below the level of the valve seat and also the provided drain connection on the bottom of the inlet of the outlet elbow is at least the next largest pipe size, compared to the code required size - of the not used valve casing drain.
Committee's Question:	Is it acceptable to plug the Valve Casing Drain and provide the required drainage by another drain connection installed at the bottom of the inlet end of the discharge elbow, as long as it is below the level of the valve seat?
Committee's Reply:	No.
Rationale:	Code clearly states the valve casing drain be open.
SC Vote	
NBIC Vote	

NB15-0321
suggested edits
1-16-19

Having reviewed all of former Part 2, Section 2.5.7, the mandatory parts of the optional in-service test should remain mandatory. The mandates are related to safety and to not altering the relief device set pressure.

Per the expanded scope of this project, edits to Part 4 are suggested that separate out general guidance that applies to the testing of any device, and provide specific guidance (in separate subsections) for testing of relief valves, pin devices, and rupture disks.

3.2.4.5 PIN DEVICES[DDB1][RA2]

a) For pin devices, those components should be visually checked for bends/deflection, cracks, or corrosion. Pin deflection may be the results of pin fasteners being overtightened.
b) For pin devices, the markings on those components should be checked against information on the device nameplate to ensure that they are installed on the correct device. If markings are illegible or missing, the device should be taken out of service and the pin or bar should be replaced with a component specified by the manufacturer. Replacement shall be performed per manufacturer recommendations.
c) For non-reclosing PRDs that use pins or bars, check that there is no foreign object present that could interfere with the bar or pin, prevent proper operation of the device[AC3][AC4], or hold the device shut.

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

a) Pressure relief ~~valves shall be tested periodically to ensure that they are free to operate and will operate~~devices shall be subject to periodic inspection and/or testing based upon the type of device. ~~in accordance with the requirements of the original code of construction. Testing should include device set or opening pressure, reclosing pressure, where applicable, and seat leakage evaluation. Tolerances specified for these operating requirements in the original code of construction shall be used to determine the acceptability of test results.~~
b) Testing may be accomplished by the owner on the unit where the ~~valve~~ device is installed or at a qualified test
facility. In many cases, testing on the unit may be impractical, especially if the service fluid is hazardous or toxic. Testing on the unit may involve the bypassing of operating controls and should only be performed
by qualified individuals under carefully controlled conditions. It is recommended that a written procedure be available to conduct this testing.
1) The Inspector should ensure that calibrated equipment has been used to perform this test and the results should be documented by the owner.
2) If the testing ~~was~~ is performed at a test facility, the record of this test should be reviewed to ensure the ~~valve~~ device meets the requirements of the original code of construction. ~~Valves~~ Devices which have been in toxic,
flammable, or other hazardous services shall be carefully decontaminated before being tested.
In particular, the closed bonnet of valves in these services may contain fluids that are not easily removed or neutralized. If a test cannot be safely performed, the ~~valve~~ device shall be disassembled, cleaned, ~~and~~ decontaminated, repaired, and reset.
3) If a ~~valve~~ device has been removed for testing, the inlet and outlet connections should be checked for blockage by product buildup or corrosion.

3.2.5.1 TESTING AND OPERATIONAL INSPECTION OF PRESSURE RELIEF VALVES

[DDB5]

a) Pressure relief valves shall be tested periodically to ensure that they are free to operate and will operate
in accordance with the requirements of the original code of construction. Testing should include device set or opening pressure, reclosing pressure, where applicable, and seat leakage evaluation. Tolerances specified for these operating requirements in the original code of construction shall be used to determine the acceptability of test results.
b) Pressure Relief [AC6]Valves may be tested using lift assist devices when testing at full pressure may cause damage to the
Pressure Relief [AC7]valve being tested, or it is impractical to test at full pressure due to system design considerations. Lift
assist devices apply an auxiliary load to the Pressure Relief [AC8]valve spindle or stem, and using the measured inlet pressure,
applied load and other Pressure Relief [AC9]valve data allow the set pressure to be calculated. If a lift assist device is
used to determine Pressure Relief [AC10]valve set pressure, the conditions of 4.6.3 shall be met. It should be noted that false
set pressure readings may be obtained for Pressure Relief [AC11]valves which are leaking excessively or otherwise damaged.
~~c~~c) If Pressure Relief [AC12]valves are not tested on the system using the system fluid, the following test mediums shall be used:
1) High pressure boiler pressure relief valves, high temperature hot-water boiler pressure relief valves, low pressure steam heating boilers: steam;
2) Hot-water heating boiler pressure relief valves: steam, air, or water;
3) Hot water heater temperature and pressure relief valves: air or water;
4) Air and gas service process pressure relief valves: air, nitrogen, or other suitable gas;
5) Liquid service process pressure relief valves: water or other suitable fluid;
6) Process steam service pressure relief valves: steam or air with manufacturer's steam to air correction factor.
Note: Pressure Relief [AC13]Valves being tested after a repair must be tested on steam except as permitted by 4.6.2.
~~e~~d) As an alternative to a pressure test, the Pressure Relief [AC14]valve may be checked by the owner for freedom of operation
by activating the test or "try" lever (manual check). For high pressure boiler and process Pressure Relief [AC15]valves, this test
should be performed only at a pressure greater than 75% of the stamped set pressure of the Pressure Relief [AC16]valve or
the lifting device may be damaged. This test will only indicate that the Pressure Relief [AC17]valve is free to operate and does
not provide any information on the actual set pressure. All manual checks should be performed with some pressure under the Pressure Relief [AC18]valve in order to flush out debris from the seat that could cause leakage.
Note: The manual check at 75% or higher is based on lift lever design requirements for ASME Section I and VIII Pressure Relief [AC19]valves. Code design requirements for lifting levers for Section IV Pressure Relief [AC20]valves require that the Pressure Relief [AC21]valve be
capable of being lifted without pressure.
~~f~~e) Systems with multiple Pressure Relief [AC22]valves will require the lower set Pressure Relief [AC23]valves to be held closed to permit the higher
set Pressure Relief [AC24]valves to be tested. A test clamp or "gag" should be used for this purpose. The spring compression
screw shall not be tightened. It is recommended that the test clamps be applied in accordance with the Pressure Relief [AC25]valve manufacturer's instructions when the Pressure Relief [AC26]valve is at or near the test temperature, and be applied
hand tight only to avoid damage to the Pressure Relief [AC27]valve stem or spindle.

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

3.2.5.2 TESTING AND OPERATIONAL INSPECTION OF PIN DEVICES

In addition to 3.2.5, the following apply to testing and operational inspection of pin devices.
a) Periodic set point testing is not required since pins or bars are single use.[DDB28][RA29]
b) Periodic inspection shall be per 3.2.4.5.
c) Pin devices shall be periodically inspected by the owner for freedom of movement. Freedom of motion inspection frequency should be per 3.2.6[DDB30][RA31].
1) Remove pressure from the PRD, or remove the PRD from service, prior to performing this check.
2) Remove the pin or bar.
3) Manually exercise the sealing mechanism to ensure it is capable of its full range of motion.
4) Reinstall the pin or bar or replace with new. Replacement pin or bar shall be per manufacturer recommendation.
5) Restore pressure to the PRD.
6) The PRD should be checked for seat leakage following restoration of pressure.
d) The owner may elect to have ~~non-reclosing PRD~~pin devices destructively tested periodically in order to determine service life. Such tests should ensure that the PRD is free to operate and will operate in accordance with the requirements of the original code of construction. Testing should include device set or opening pressure and seat leakage evaluation. Tolerances specified for these operating requirements in the original code of construction should be used to determine the acceptability of test results.
e) If PRDs are not tested on the system using the system fluid, the following test mediums shall be used:
1) Air and gas service PRDs: air, nitrogen, or other suitable gas;
2) Liquid service PRDs: water or other suitable fluid.

3.2.5.3 TESTING AND OPERATIONAL INSPECTION OF RUPTURE DISKS

a) Periodic testing of rupture disks is not required
b) Rupture disks shall be subject to periodic inspection per 3.2.4.4.
c) The owner may elect to have rupture disks within assemblies destructively tested periodically in order to determine service life. Such tests should ensure that the disk is free to operate inside its holder (if applicable) and will operate[DDB32][RA33] in accordance with the requirements of the original code of construction. Testing should include an evaluation of leakage through the disk (e.g. due to cracks or porosity), followed by device opening or burst pressure. Tolerances specified for these operating requirements in the original code of construction ~~shall~~should be used to determine the acceptability of test results.
d) If PRDs are not tested on the system using the system fluid, the following test mediums shall be used:
1) Air and gas service PRDs: air, nitrogen, or other suitable gas;
2) Liquid service PRDs: water or other suitable fluid.

3.2.5.~~1~~ 4 CORRECTIVE ACTION

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

b) If a pressure relief valve or pin device fails the seat tightness test, the owner shall be notified and decide what corrective action (if any) will be taken.[DDB34][RA35]

NB-15-0805 ~~AMR~~ AMR edits ~~7-21~~1-22-18 ~~16~~

Update language about pipe material able to handle temperature requirements, in line with IMC.

~~Note that this is already covered in 5.2. So we will be somewhat beating a dead horse~~

~~**5.2 GENERAL REQUIREMENTS**~~

~~For piping, the basic considerations are: the design temperature, the pressure retained by the pipe, the fluid~~
~~in the pipe, the load resulting from the thermal expansion or contraction, and impact or shock loads imparted~~
~~(such as water hammer, external loads, wind loads and vibration from equipment).~~

Proposed Edits (Note that we intentionally are not adding this to power boilers. Power boilers are getting their own supplement that will include PRV piping requirements specific to power boilers):

Part 1, 3.9.1.5 PRESSURE RELIEF VALVE DISCHARGE PIPING

~~i~~c) ~~The design~~ Material selection for the~~-~~ discharge piping shall consider the reduction in material toughness at the low end of design temperature and the reduction in material strength at the high end of design temperature[DDB1][RA2]. Discharge piping shall be rated for the discharge fluid conditions of pressure and temperature including a minimum and maximum design temperature. Only rigid pipe or tubing ~~shall~~should be used for discharge lines that carry hot water or steam.

~~k)~~
~~lreduction in mechanical strength (e.g.threads/flanges/components), bonding strength of joints, exposure to discharge media,~~d) Plastic discharge pipe and fittings are permitted (when compatible with the process fluid, system design temperatures, and other ambient conditions such as light and humidity) and shall conform to NSF/ANSI 14 Plastics Piping System Components and Related Materials.[DDB3][RA4]
~~m~~
e~~n~~) Discharge piping shall be rated for any static pressure present and the back pressure that may develop when the pressure relief device is at full capacity[DDB5][RA6]. Where multiple pressure relief devices or vents discharge into common piping, the back pressure that could develop due to simultaneous flow from all sources shall be considered.

Repeat the same addition to the following paragraphs (note that the letters change)

Part 1, 3.9.4.7 TEMPERATURE AND PRESSURE RELIEF VALVE DISCHARGE PIPING

~~i The design~~ ~~Material selection for the~~

~~k) lreduction in mechanical strength (e.g.threads/flanges/components), bonding strength of joints, exposure to discharge media,mn designcapacitycommond)~~
e)
f)

Part 4, 2.4.1.5 PRESSURE RELIEF VALVE DISCHARGE PIPING

c)
d)
e)

Part 4, 2.4.4.7 TEMPERATURE AND PRESSURE RELIEF VALVE DISCHARGE PIPING

c)
d)
e)

~~i) The design~~ ~~Material selection for the~~

~~k) lreduction in mechanical strength (e.g.threads/flanges/components), bonding strength of joints, exposure to discharge media,mn designcapacitycommon~~ j)
k)
l)

NB17-0401 Valve drain plug recommendations for shipping PART 4 Supplement 4

S4.4 PACKAGING, SHIPPING AND TRANSPORTATION OF PRESSURE RELIEF DEVICES

a) The improper packaging, shipment, and transport of pressure relief devices can have detrimental effects on device operation. Pressure relief devices should be treated with the same precautions as instrumentation, with care taken to avoid rough handling or contamination prior to installation.

b) The following practices are recommended:

1) Valves should be securely fastened to pallets in the vertical position to avoid side loads on guiding surfaces except threaded and socket-weld valves up to NPS 2 (DN 50) may be securely packaged and cushioned during transport.

2) Valve inlet and outlet connection, drain connections, and bonnet vents should be protected during shipment and storage to avoid internal contamination of the valve. Shipping caps or plugs should be labeled with a warning that they shall be removed prior to installation. Ensure all shipping covers and/or plugs are removed prior to installation.

ASME BPV Liaison Report

NBIC Standards Committee

January 17, 2019

NBIC Agenda 01/17/19 - Item 9.a

ASME BPV Liaison Report

- CA-1 Conformity Assessment Requirements
  - *Ongoing work to address CAP-22 Policy on multiple AIAs, alternate methods of applying the ASME Mark, identification of Certificate numbers on Data Plates, transition of AIA accreditation requirements from QAI-1, and to incorporate Nuclear CA requirements*
  - *Actions approved for the next Edition include CAP-21 criteria for reapplication of the ASME Mark, clarification of permitted activities prior to issue of a Certificate of Authorization, and update of PRD and PRT program references*
- Parts Fabrication Certificate
  - *Program gaining participation; 48 certificates issued*
  - *Code Case developed for early implementation under ASME VIII-2*
  - *Planned transition for Scope Statements to include multiple Code Sections*

ASME BPV Liaison Report

- QAI-1 Qualifications for Authorized Inspection
  - *Major reorganization of the QAI-1 Standard under consideration*
  - *Book Section actions to reference QAI-1 for types of AIAs*
  - *Proposal to establish eye examination requirements for Inspectors*
  - *Proposal to establish a QAI-1 AIA Review Committee, with representation from each accredited AIA*
- Field Site Task Group
  - *Field Site definition being developed; to be incorporated in CA-1*
  - *Intermediate locations to be recognized via Temporary Location authorization letter (modeled after Temporary Shop authorization)*
  - *Temporary Location in support of a Field Site will permit all code activities except stamping and data report*

ASME BPV Liaison Report

- Additional Developments
  - *Ongoing resolution of comments and negatives on new Section XIII, primarily related to scope and interface with Book Sections and CA*
  - *Revised Scope of ASME VIII-1 on hold pending resolution of substantive public review comments*
  - *Proposed program for certification of B31.1 High Energy Critical Piping has been dropped*
  - *Proposed program for a Special Joining Process Certification Designator (to replace CC 2590) has been dropped*
  - *Task Group developing uniform AI/ANI inspection requirements, for incorporation in BPV Book Sections*
  - *Resource Development Group being established for CA*
  - *Initial ANDE-1 personnel certification program now available*
  - *Next ASME BPV Code meetings February 11-15, in Costa Mesa, CA*
- 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 the Welding Symbols
    - Additional items as determined by the SWPS Sub Committee.
    - Although minor word engineering may be adopted, no change in philosophy or application is anticipated
- The NBIC needs to understand that these changes will not affect previous versions of the same SWPS. Those version are still very valid and readily useable and unless you have a specific need to replace them; I would not.
- The AWS B2 committee is in process of developing a compliment of Aluminum SWPS using both the GTAW and GMAW processes for the common grades of Aluminum.
- The B2 committee is also developing the plan to begin development of additional SWPS's for Carbon, Stainless and Low Alloy Steels using the GMAW, FCAW and SAW processes.
- At some point in the distant future, additional SWPS's will be developed addressing Notch Toughness applications (incorporating both traditional and Wave Form variables) for the common Carbon and Alloy Steels.
- Additional SWPS-N are in process of development. To date six have been through the approval process and are at the printers. They will not be offered to the NBIC for adoption since their use is primarily intended for NAVSHIPS application.

The following SWPS's have been adopted by the B2 committee and were balloted to this committee at this meeting under Item # 18-102.

B2.1-1-016: 2018	B2.1-1-019: 2018	B2.1-1-021: 2018	B2.1-1-023: 2018
B2.1-1-017: 2018	B2.1-1-020: 2018	B2.1-1-022: 2018	B2.1-1-026: 2018

The long-range plan for the updated SWPSs is to group them into an ANSI approved "Stabilized Maintenance Program" exempting them from the traditional ANSI 5/10-year re-balloting requirement.

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

Regards,

Jim Sekely