THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

**Date Distributed: 6/30/2022**

# NATIONAL BOARD INSPECTION CODE TASK GROUP HISTORICAL BOILERS

# AGENDA

Meeting of July 11th, 2022
Indianapolis, IN

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

1. **Call to Order**
The Chair will call the meeting to order at 8:00 am Eastern Time. For those attending in-person, the meeting will be held in Renaissance Place on the second floor of the hotel.

2. **Introduction of Members and Visitors**

3. **Check for a Quorum**

4. **Awards/Special Recognition**
None

5. **Announcements**
   - The National Board will be hosting a reception on Wednesday evening from 6:30pm to 8:30pm in City Way Gallery.

   - The National Board will be hosting breakfast and lunch on Thursday. Breakfast will be served from 7:00am to 8:00am, and lunch will be served from 11:30am to 12:30pm. Both meals will be served at the hotel in Market Table.

   - This meeting is the last at which items can be approved for inclusion in the 2023 NBIC edition.

6. **Adoption of the Agenda**

7. **Approval of the Minutes of the January 17th, 2022, Meeting**
The minutes can be found on the Committee Information page under the Inspection Code tab on the National Board's website.

8. **Review of Rosters (Attachment Page 1)**
   a. **Membership Reappointments**
      i. Mr. David Rose and Mr. Robert Underwood's memberships are set to expire prior to the next NBIC meeting.

   b. **Membership Nominations**
      i. Mr. Mike Carlson (Jurisdictional Authorities) has expressed interest in becoming a member of the task group.

   c. **Officer Nominations**
      None.

**9. Action Items**

| **Item Number: 20-25** | **NBIC Location: Part 3, S2.13** | **No Attachment** |
|---|---|---|
| **General Description:** Repair Procedure for Fire Boxes<br><br>**Subgroup:** SG Historical<br><br>**Task Group:** M. Wahl (PM), R. Forbes, T. Dillon, L. Moedinger & F. Johnson<br><br>**Explanation of Need:** In NBIC Part 3, S2.13.10.3, S2.13.11 do not define what to do at a riveted joint. On the tubesheet, or firedoor sheet, where it is flanged to rivet to the firebox, the repairs are silent on what to do at the riveted joint. | | |
| **January 2022 Action:**<br>PROGRESS REPORT: Mike Wahl stated he is still working on this item and will review the action item passed through Locomotive to create his proposal for the Historical TG. | | |

| **Item Number: 20-26** | **NBIC Location: Part 2, S2** | **No Attachment** |
|---|---|---|
| **General Description:** Concern for Historical Boiler Inspections Nationwide<br><br>**Subgroup:** SG Historical<br><br>**Task Group:** T. Dillon (PM), R. Underwood, L. Moedinger, M. Wahl, D. Rupert, K. Anderson, M. Sansone, & J. Wolf<br><br>**Explanation of Need:** Currently Jurisdictions are not uniform in adoption of how and when inspections are performed. | | |
| **January 2022 Action:**<br>PROGRESS REPORT: Mr. Seime has stated that he does not feel this item should be an action item. The group discussed making it a "discussion item" as opposed to an action item. It was determined it should stay as an action item so it can be easier tracked. Mr. Sansone was not present to discuss how this was discussed at the BOT meeting. Mr. Seime said the NB is planning to set up a new training course for Historical Inspectors. Mr. Moedinger spoke to the group on what kind of training they have for Locomotive Inspectors. Mr. Seime has asked the Historical TG to send him information on what kind of information they would want in a training course so he can work with the National Board to create a course. He would like the group to start looking towards sending pictures to be used as reference in the training. The group discussed adding/referencing "Form C" in the training. | | |

| Item Number: 21-03 | NBIC Location: Part 2, S2 | Attachment Page 2 |
|---|---|---|

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

**Subgroup:** Historical

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

**Explanation of Need:** The code is silent on the inspection of through stays and diagonal stays. Additionally, new repair methods are available from ASME that can be incorporated.

**January 2022 Action:**
PROGRESS REPORT: Mr. Rose presented a document to the group showing the code changes/additions they are working on for the proposal. Mr. Moedinger had some questions on the information in the new wording, which Dr. Bryce was able to explain. Mr. Underwood has recommended the document showing the changes/additions be sent to out for **LB to the Historical TG for Review and Comment** prior to the proposal being sent for a vote**.** The group has agreed this would be a good idea to get further input.

| Item Number: 21-09 | NBIC Location: Part 3, S2 | Attachment Page 3 |
|---|---|---|

**General Description:** Incorporate new repair methods for through and diagonal stays (submitted by David Rose)

**Subgroup:** Historical

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

**Explanation of Need:** The code is silent on the inspection of through stays and diagonal stays. Additionally, new repair methods are available from ASME that can be incorporated.

**January 2022 Action:**
Mr. Rose presented the suggested code additions; he stated the figure that is with the document will need to be updated. Mr. Rose has recommended the document showing the additions be sent to out for **LB to the Historical TG for Review and Comment** prior to the proposal being sent for a vote**.** The group has agreed this would be a good idea to get further input.

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

**General Description:** Working Pressure Calculations for Curved Stayed Surfaces

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

**Background:** In January 2021, Dr. Bryce initiated the conversation with the group for this topic. He is proposing the group open an item to address working pressure calculations for curved stayed surfaces. After discussion, a task group was formed

**January 2022 Action:**
PROGRESS REPORT: Dr. Bryce has presented his research to the group, discussing how he came up with the new wording/equation. Mr. Wahl & Dr. Bryce noted that these code additions are only for internal pressure, and a separate item will be opened for the external pressure. They will continue to work on the proposal and have it ready for next meeting. Mr. Wahl will open the new item for external pressure.

| Item Number: 21-78 | NBIC Location: Part 3, S2.13.9.5 | No Attachment |
|---|---|---|

**General Description:** Alternative Weld Joint for Historical Boiler Barrel Replacement

**Subgroup:** Historical

**Task Group:** R. Underwood (PM), C. Jowett, F. Johnson, T. Dillon, M. Wahl, R. Bryce

**Submitted by:** Robert Underwood

**Background:** Historical boilers were manufactured with riveted joints, however in many cases it's more practical to use welded joints when restoring historical boilers. However, ASME Section I does not allow fillet welded lap joints when connecting replacement barrels to the wrapper sheet. The strength of a double fillet welded lap joint has proven to be equal, if not greater in strength than riveted joint designs and this proposal will introduce this type of joint as an alternative to riveted lap joints. This proposal would introduce double welded lap joint connections of the barrel to wrapper sheet in lieu of riveted joints. It is not practical in many cases for repair firms to connect this joint by riveting.

**January 2022 Action:**
PROGRESS REPORT: Mr. Seime suggested a TG be created to discuss this item. Mr. Underwood uploaded documents to the Cloud for reference on this Item. Ms. Wadkinson suggested the TG speak with the Locomotive TG and ASME Section I Committee.

**10. New Items**

**11. Future Meetings**

- January 2023 – Charleston, SC
- July 2023 - TBD

**12. Adjournment**

Respectfully submitted,

Jodi Metzmaier
Historical Task Group Secretary

Task Group Historical Boilers

| Last Name | First Name | Interest Category | Role | Exp. Date | More |
|---|---|---|---|---|---|
| Seime | Trevor | Jurisdictional Authorities | Chair | 07/30/2024 | Details |
| Dillon | Tom | General Interest | Vice Chair | 07/30/2024 | Details |
| Metzmaier | Jodi | | Secretary | 12/30/2099 | Details |
| Anderson | Kevin | Users | Member | 01/30/2024 | Details |
| Getter | Jim | Manufacturers | Member | 01/30/2024 | Details |
| Horton | Michael | General Interest | Member | 01/30/2025 | Details |
| Johnson | Frank | Users | Member | 01/30/2024 | Details |
| Jowett | Chris | National Board Certificate Holders | Member | 09/29/2023 | Details |
| Kinney | Donald | Jurisdictional Authorities | Member | 01/30/2024 | Details |
| Rose | David | Users | Member | 07/30/2022 | Details |
| Rupert | Dennis | General Interest | Member | 01/30/2024 | Details |
| Sansone | Matthew | Jurisdictional Authorities | Member | 01/30/2024 | Details |
| Underwood | Robert | Authorized Inspection Agencies | Member | 08/30/2022 | Details |
| Wahl | Mike | General Interest | Member | 01/30/2024 | Details |
| Wolf | Jon | Authorized Inspection Agencies | Member | 07/30/2023 | Details |

21-03 Inspection of through stays and diagonal stays

Rationale:

Minimal guidance was provided on the current wording of the Inspection Guideline regarding through stays and diagonal stays. References to the most common failure mechanisms will assist the owner or inspector in applying the Guideline effectively.

Suggested change:

Part 2 - Inspection

S2.10.4.3

Through Stays

Through stays shall be visually examined for damage or failure such as corrosion, sagging or cracks. Sagging beyond 3x the original diameter of the stay shall be cause for replacement. Cracked through stays shall be replaced. Corroded through stays shall be measured where accessible and if the measured diameter has been reduced by more than 20% of the original the through stay shall be replaced. Alternatively the acceptable loading may be calculated in accordance with the relevant sections of the 1971 ASME BPVC.

S2.10.4.4

Diagonal Braces

Diagonal braces shall be visually examined for damage or failure such as corrosion, deformation or cracks. Cracks shall be cause for repair. Deformation should be carefully monitored for changes indicating movement. Corroded braces shall be measured where accessible and if the measured diameter has been reduced by more than 20% of the original or the cross sectional area has been reduced by 30% the brace shall be replaced. Alternatively the acceptable loading may be calculated in accordance with the relevant sections of the 1971 ASME BPVC.

## 21-09 Repair of through stays and diagonal stays

Rationale:

ASME PL-27 provides a construction method applicable to through stays that would be useful in repairs. Using PL-27 as a guide we can add these methods in to assist in the replacement of corroded or excessively sagged through stays.

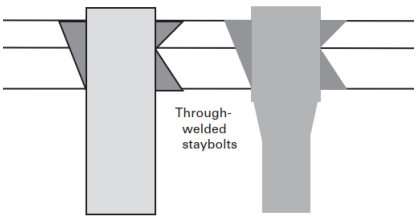
Part 3 – Repair

Suggested addition:

S2.13.4.1

a) Threaded through stays may be replaced in kind in accordance with the original design. The threaded portion of the stay may be upsized to permit new threads to be cut in the shell. The new threads shall be Unified National Fine thread.
b) Threaded through stays may be replaced by welded-in stays provided that, in the judgement of the Inspector, the material adjacent to the through stay has not been materially weakened by deterioration or wasting away.
c) Reduced section through stays shall be replaced with stays of similar design.
d) Stays shall be removed by threading out or drilling
e) The stays shall be inserted into countersunk holes through the sheet and attached by full penetration welds of no less than 3/8" (10mm)
f) The ends of the stays shall not be covered by weld metal and the face of the welds shall not be below the outside surface of the plates.
g) Minimum diameter of the reduced section of the stay shall be no less than the greater of 1" or stay bolt length divided by 120.
h) Material will be in accordance with Table S2.7.1 for Boiler Braces
i) Original nuts and washers may be reinstalled on a welded stay for cosmetic purposes only.

Figure S2.13.4.1




After beveling and prior to the installation of the stay the two plates should be seal welded and ground back to match the bevel prep.

Diagonal Braces

Diagonal Braces with one end riveted and the other end threaded and peened may be replaced in kind or by welding the peened end to the boiler shell with a full penetration weld.

Image of repaired brace with weld

Diagonal Braces with pinned ends may be repaired as required by replacing the defective component with new manufactured component matching the original design.