Date Distributed:

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL

NATIONAL BOARD TASK GROUP LOCOMOTIVE BOILERS

MINUTES

Meeting of March 4th, 2021
Virtual Meeting using Zoom

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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**

Chair, G. Mark Ray called the meeting to order at 1:03 PM EDT.

2. **Introduction of Members and Visitors**

Introductions took place amongst all members and visitors via ZOOM Virtual meeting. The attendance sheet was checked off by the Secretary. **(Attachment Page 1)**

Task Group Locomotive Boilers

Last Name	First Name	Interest Category	Role	Exp. Date	More
Ray	G. Mark	General Interest	Chair	10/30/2022	Details
Musser	Rick	Users	Vice Chair	10/30/2022	Details
Bock	Jeanne		Secretary	01/30/2099	Details
Butler	Steven	General Interest	Member	01/30/2022	Details
Conrad	David	Users	Member	01/30/2022	Details
Cross	Charlie	Users	Member	07/30/2023	Details
Domitrovich	David	Users	Member	01/30/2024	Details
Franzen	Robert	General Interest	Member	01/30/2022	Details
Griner	David	General Interest	Member	01/30/2022	Details
Janssen	Matthew	General Interest	Member	07/30/2022	Details
Jordan	Mark	Jurisdictional Authorities	Member	07/30/2023	Details
Lee	Stephen	Users	Member	01/30/2022	Details
McCormack	Doyle	General Interest	Member	01/30/2022	Details
Moedinger	Linn	Users	Member	07/30/2022	Details
Stone	Richard	Manufacturers	Member	01/30/2022	Details
Welch	Paul	Authorized Inspection Agencies	Member	07/30/2023	Details

Visitors:

Jonathan Ellis	**NB Staff**

3. Check for a Quorum

With the attached roster a quorum (13 out of 15 present) was established. There was a motion to approve the roster. The motion was unanimously approved. **(Attachment Page 1)**

Task Group Locomotive Boilers

Last Name	First Name	Interest Category	Role	Exp. Date	More
Ray	G. Mark	General Interest	Chair	10/30/2022	Details
Musser	Rick	Users	Vice Chair	10/30/2022	Details
Bock	Jeanne		Secretary	01/30/2099	Details
Butler	Steven	General Interest	Member	01/30/2022	Details
Conrad	David	Users	Member	01/30/2022	Details
Cross	Charlie	Users	Member	07/30/2023	Details
Domitrovich	David	Users	Member	01/30/2024	Details
Franzen	Robert	General Interest	Member	01/30/2022	Details
Griner	David	General Interest	Member	01/30/2022	Details
Janssen	Matthew	General Interest	Member	07/30/2022	Details
Jordan	Mark	Jurisdictional Authorities	Member	07/30/2023	Details
Lee	Stephen	Users	Member	01/30/2022	Details
McCormack	Doyle	General Interest	Member	01/30/2022	Details
Moedinger	Linn	Users	Member	07/30/2022	Details
Stone	Richard	Manufacturers	Member	01/30/2022	Details
Welch	Paul	Authorized Inspection Agencies	Member	07/30/2023	Details

4. Awards/Special Recognition

None to report

5. Announcements

- Voice Voting for each item was used. It was assumed all voted approved and then asked if anyone is voting “not approved”, “abstention”, or “not voting”.
- Naming of Files is to be in the format of the following: Item Number Person Date
- Use of the cloud along with access to the business was discussed. The NBIC Handbook was sent to the group.

6. **Adoption of the Agenda**

There was a motion to adopt the Agenda with the noted additions/correction. The motion was unanimously approved.

- Added an updated proposal for item 20-71
- Correction on item 20-69 in the "Update Reference is shown on Attachment Page 6" - it should read as Attachment Page 3.

7. **Approval of the Minutes of August 2020 Meeting**

There was a motion to approve the Minutes of August 2020 as published. The motion was unanimously approved.

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

8. **Review of Rosters (Attachment Page 1)**

   a. **Membership Appointments**

   None to Report

   b. **Membership Reappointments**

   None to Report

   c. **Officer Elections**

   None to Report

9. **Interpretations**

   None to Report

10. Action Items

Old Business

Item Number: 18-6	**NBIC Location: Part 2, S1.4.2.9**	**Attachment Page 2**

General Description: was NB14-1802, Riveted Stay bolt dimensions

Subgroup: Locomotive

Task group: (PM) M Janssen

Meeting Action: Progress Report (Letter Ballot to SC Inspection) – Mr. Janssen reported no additional updates to the proposal. The group re-discussed the attached proposal and agreed to go ahead and make a motion to letter ballot the proposal to SC Inspection. The motion was unanimously approved.

Item Number: 20-69	**NBIC Location: Part 3, S1.2.11.5**	**Attachment Pages 3-4**

General Description: Welds Across Riveted Lap Seams

Subgroup: Locomotive

Task group: (PM) L. Moedinger

Explanation of Need: Clarify wording regarding weld taper and provide a cleaner figure to better illustrate the repair. Historical Boilers is considering adding the same text to their Section.

Update: Mr. Moedinger presented the approved proposal to the Historical Task Group in January, and they proposed the revisions shown on Attachment Page ~~6~~3.

Meeting Action: Progress Report (Letter Ballot to SC Repairs & Alterations) – As stated above Mr. Moedinger had attended the Historical Task Group meeting held in January 2021 presenting V4 proposal that this TG had originally approved to letter ballot to SC Repairs & Alterations in August 2020. The TG Historical made revisions and therefore creating V5. This TG reviewed and held discussions on the attached V5 proposal. Upon conclusion of the discussion a motion was made to approve the revised proposal (V5) to SC Repairs & Alterations. The motion was unanimously approved.

Item Number: 20-70	**NBIC Location: Part 2, S1.4.2.29**	**Attachment Page 5**

General Description: Inspection of Furnace Slides

Subgroup: Locomotive

Task group: (PM) G. Ray

Explanation of Need: Furnace slide supports which are locked in-place by corrosion will adversely impact the thermal expansion of the boiler and lead to staybolt breakage.

Meeting Action: Progress Report – The ballot for 20-70 was recently resubmitted as the original was somehow lost/deleted. The ballot is due to close on 3/12/2021. The group will hold discussions and address any comments on this item at the next meeting.

Item Number: 20-71	NBIC Location: Part 2, S1.6	Attachment Pages 6-7

General Description: Safety Valve Sizing (Correct Use of Capacity Charts)

Subgroup: Locomotive

Task group: (PM) G. Ray

Explanation of Need: This is to ensure safety valves provide the adequate relieving capacity for steam locomotive boilers.

Meeting Action: Progress Report (Letter Ballot to SC Inspection) – G. Ray presented an updated proposal. The TG reviewed, held discussions, and revised the updated proposal. A motion was made to Letter Ballot the proposal as amended to SC Inspection. The motion was unanimously approved.

New Business

None to report

11. Future NBIC Meetings

- July 12-15, 2021, The Hilton Netherland Hotel, Cincinnati, OH
- January 2021 – TBD

12. Adjournment

A motion was made and unanimously approved to adjourn the meeting at 3:25 pm.

Respectfully submitted,

Jeanne Bock
TG Locomotives Secretary

Committee Roster

	Last Name	First Name	Interest Category	Role	Exp. Date
✓	Ray	G. Mark	General Interest	Chair	10/30/2022
✓	Musser	Rick	Users	Vice Chair	10/30/2022
✓	Bock	Jeanne		Secretary	01/30/2099
✓	Butler	Steven	General Interest	Member	01/30/2022
✓	Conrad	David	Users	Member	01/30/2022
✗	Cross	Charlie	Users	Member	07/30/2023
✓	Domitrovich	David	Users	Member	1/30/2024
✓	Franzen	Robert	General Interest	Member	01/30/2022
✓	Griner	David	General Interest	Member	01/30/2022
✓	Janssen	Matthew	General Interest	Member	07/30/2022
✓	Jordan	Mark	Jurisdictional Authorities	Member	07/30/2023
✓	Lee	Stephen	Users	Member	01/30/2022
✓	McCormack	Doyle	General Interest	Member	01/30/2022
✓	Moedinger	Linn	Users	Member	07/30/2022
✓	Stone	Richard	Manufacturers	Member	01/30/2022
✗	Welch	Paul	Authorized Inspection Agencies	Member	07/30/2023

Item 18-6

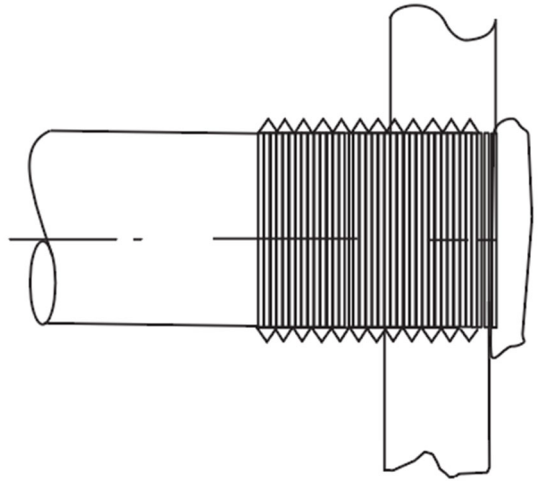
S1.4.2.9 STAYBOLTS

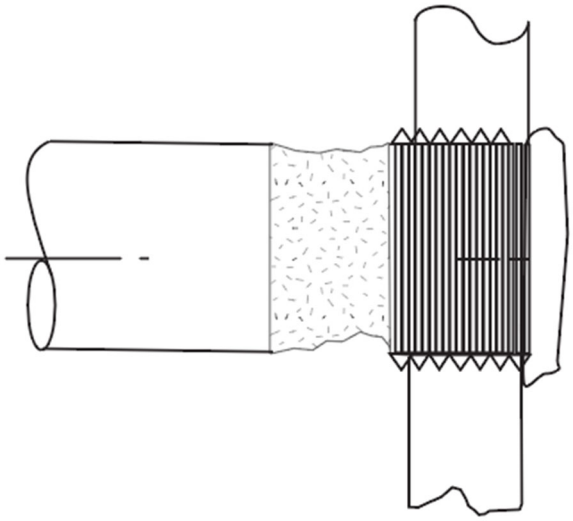
c) Staybolt head flush with or below the surface of the sheet; NBIC Part 2, Figure S1.4.2.9-a

Insert Figure S1.4.2.9-a "Riveted Head Staybolt Dimensions" figure below "g)"

e) Waterside corrosion; NBIC Part 2, Figure S1.4.2.9-b

Insert Figure S1.4.2.9-b "Riveted Head Staybolt Dimensions" figure below Figure S1.4.2.9-a





Item #20-69 **Proposal ~~V4~~ V5**

Task Group Locomotive Boilers

Summary

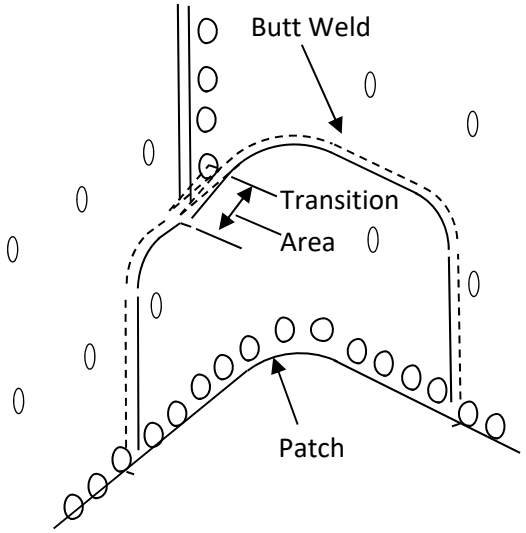
Add a sentence in S1.2.11.5 i); Replace drawing in Figure S1.2.11.5-c1 with new drawing below.

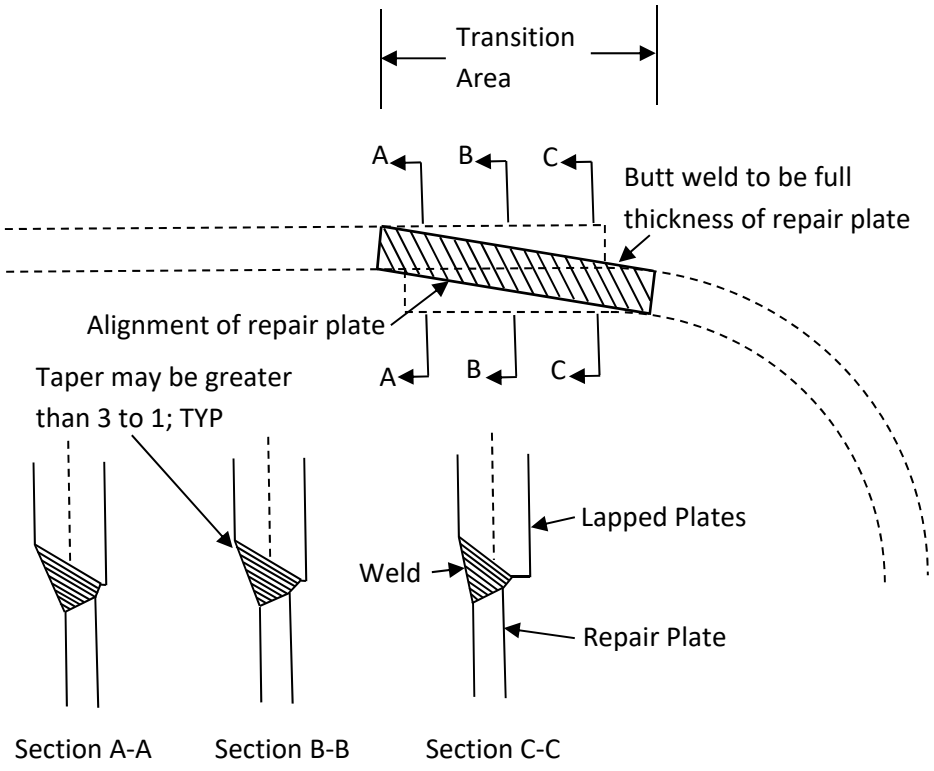
Proposal

S1.2.11.5 REPAIR OF FIREBOX, WRAPPER, AND TUBESHEET KNUCKLES

i) For one-piece flange knuckle joint patches in portions of a riveted lap joint or in mud ring corners with a lap joint in the firebox, the knuckle patch shall be supported on at least one of the two planes adjacent to the flange, by means other than the weld. See Figure S1.2.11.5-c1. The weld shall be at least the full thickness of the new plate being installed. Taper of weld in transition area may be greater than the limitation(s) given in the original Code of Construction. Volumetric examination is not required. This type of repair shall be considered a repair.

FIGURE S1.2.11.5-c1
NEW PATCH ALIGNMENT WITH ORIGINAL MATERIAL





Item #20-70 **Proposal V1**

Task Group Locomotive Boilers

Summary

Many steam locomotive operators do not inspect the sliding firebox supports on their locomotives (when they are equipped). Inspections have found them to be rusted in-place causing breakage of connection bolts and other damage to the locomotive firebox and mudring.

Furnace slide supports which are locked in-place by corrosion will adversely impact the thermal expansion of the boiler and lead to staybolt breakage.

Proposal

S1.4.2.29 BOILER ATTACHMENT BRACKETS

The boiler attachment brackets and associated components and fasteners used to secure the boiler to the frame shall be inspected for:

a) Correct installation;
b) Damaged or missing components;
c) Looseness;
d) Leakage;
e) Loose, bent, broken, or damaged rivets, nuts, bolts and studs;
f) Defective rivets;
g) Provision for expansion; and
h) Corrosion which may preclude free movement of sliding supports

Item #20-71 **Proposal V2**

Task Group Locomotive Boilers

Summary

Locomotive safety valves may have nameplate data that is missing or illegible. Owners have to rely on capacity charts produced by the manufacturers. These charts were dependent upon the lift of the valve. The valve lift prior to around 1920 was fixed at 0.1 inch. However, after 1920 or so, manufacturers began to increase the lift of their valves. This lead to increased relieving capability. Thus, it is imperative to understand the lift of the valve on the locomotive in order to assign the correct relieving capability.

This is to ensure safety valves provide the adequate relieving capacity for steam locomotive boilers.

Proposal

S.1.6 SAFETY VALVES

a) The minimum safety valve capacity in pounds per hour (kilograms per hour) shall be calculated by multiplying the boiler heating surface area by the factor from the appropriate chart in NBIC Part 2, Table S1.6 (1 pound steam/hr/sq. ft = 4.88 kg steam/hr/sq meter).

b) ~~Capacity certified pressure~~ Pressure relief valves shall ~~then~~ be selected with a total rated capacity equal to or greater than the required capacity.

c) Where non-capacity~~the~~ valves ~~are not capacity certified, or where~~used on ~~an~~ existing ~~valve will be used on a new~~ boiler part, an accumulation test may be used to verify that the installed capacity is adequate.

(1) Accumulation testing may be hazardous because the boiler is being run at maximum fire, and pressure relief valve capacity has not been verified. It should be done only under carefully controlled conditions by trained and knowledgeable personnel.

(2) Boiler pressure shall be continuously monitored by both an operating gage and a calibrated test gage.

(3) The pressure relief valves shall first have been set in accordance with the operational verification test requirements in accordance with NBIC Part 2, S1.6.d.

(4) The accumulation test shall be performed by shutting off all other steam-discharge outlets from the boiler and forcing the fire to the maximum.

(5) The locomotive shall be secured from movement, cylinder and valve vents blocked open, and throttle unsecured so that it may be opened if necessary to relieve excess pressure.

(6) Should the pressure approach the limits specified in NBIC Part 2, S2.10, the throttle shall be opened enough to relieve the pressure and the fire reduced to prevent further accumulation of pressure. Corrective action to supply additional capacity shall then be taken.

(7) The safety relief valves shall be sufficient to prevent an excess pressure beyond that specified in NBIC Part 2, S2.10.

(8) Where the pressure relief valve capacity has been verified by an accumulation test, the valves shall be used only on the boiler on which they were tested. The valve identification numbers and set pressures shall be recorded on the data report for that specific boiler by the boiler manufacturer.

d) Operational verification of steam locomotive pressure relief valves may be accomplished by either 1) or 2):
   (1) Testing the valves on a steam test stand.
   (2) Setting the valves on the locomotive boiler per the following:
      a. A calibrated test gage shall be used in addition to the boiler operating gage.
      b. The boiler pressure shall be brought up at a controlled rate and the valves alternately set until the lowest set valve is set to open at MAWP (For MAWP less than or equal to 70 psi, applicable tolerance is +/- 2 psi of the set pressure, FOR MAWP greater than 70 psi and less than 333 psi, applicable tolerance is +/- 3% of the set pressure)~~(+/- 3%)~~ with a blowdown not less than 2% of MAWP.
      ~~c. The low set valve may then be gagged, and the higher set valve(s) shall then be set to open at MAWP (+/- 3%). The blowdowns for the higher set valves shall be set such that the blowdown is greater than 2% of MAWP, and the valves will close be low the lowest set valve set pressure.~~
      c. The low set valve may then be gagged, and the higher set valve(s) shall then be set to open within the set tolerances (For MAWP less than or equal to 70 psi, set tolerance is +/- 2 psi of the set pressure, For MAWP greater than 70 psi and less than 333 psi, set tolerance is +/- 3% of the set pressure). The blowdowns for the higher set valves shall be set such that the blowdown is greater than 2% of MAWP, and the valves will close below the lowest set valve set pressure. No valve shall be set to a lift pressure greater than 6 psi above MAWP.