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THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD INSPECTION CODE SUBGROUP INSTALLATION

MINUTES

Meeting of January 14, 2025
Charleston, SC

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 meeting was called to order by Vice Chair Tom Clark at 8:02 AM

2. **Introduction of Members and Visitors** A list of members and visitors is shown in Attachments Page 1

3. **Check for a Quorum** Meeting attendance indicates having quorum.

4. **Awards/Special Recognition**

   Todd Creacy – 10 years as a member of SG Installation

   Ron Spiker – 5 years as a member of SG Installation

5. **Announcements**
   - This meeting marks the end of Cycle A for the 2027 NBIC edition.
   - The National Board will be hosting a reception on Wednesday evening from 5:30 p.m. to 7:30 p.m. at the Hyatt Place rooftop bar, the Pour Taproom.
   - The National Board will be hosting breakfast and lunch on Thursday for those attending the Main Committee meeting. Breakfast will be served from 7:00 a.m. to 8:00 a.m. in Grand Magnolia Foyer, and lunch will be served from 11:30 a.m. to 12:30 p.m. in Sterling Hall Foyer.
   - Meeting schedules, meeting room layouts, and other helpful information can be found on the National Board website under the **NBIC** tab → NBIC Meeting Information.
   - The NBIC Committee has transitioned from NB File Share to SharePoint. Remember to add any attachments that you'd like to show during the meeting (proposals, reference documents, powerpoints, etc.) to the NBIC SharePoint site (nationalboard.sharepoint.com/sites/NBIC) **prior to the meeting**.
     - Note that access to the NBIC SharePoint site is limited to committee members only.
     - ALL powerpoint attachments/presentations must be sent to the NBIC Secretary for approval prior to the meeting.
     - Contact Jonathan Ellis (*nbicsecretary@nbbi.org*) for any questions regarding NBIC SharePoint access.
   - When possible, please submit proposals in Word format showing "strike through/underline." Project Managers: please ensure any proposals containing text from previous NBIC editions are updated with text from the most current edition.
   - If you'd like to request a new Interpretation or Action item, do so on the National Board Business Center.
     - Anyone, member or not, can request a new item.
   - As a reminder, anyone who would like to become a member of a group or committee:
     - Should attend at least two meetings prior to being put on the agenda for membership consideration. The nominee will be on the agenda for voting during their third meeting.
     - The nominee must submit the formal request along with their resume to the NBIC Secretary **PRIOR TO** the meeting. *nbicsecretary@nbbi.org*
     - If needed, we can also create a ballot for voting on a new member between meetings.
   - Thank you to everyone who registered online for this meeting. The online registration is very helpful for planning our reception, meals, room setup, etc. It is also a good way to make sure we have the most up-to-date contact information. Please continue to use the online registration for each meeting.

6. **Adoption of the Agenda** A motion was made and seconded to adopt the agenda with the addition of item 25-03. There was no discussion. A vote was taken and motion unanimously carried.

7. **Approval of the Minutes of July 16, 2024, Meeting**
   A motion was made and seconded to approve the minutes from the July 16, 2024 meeting. There was no discussion. A vote was taken and motion unanimously carried.

8. **Review of Rosters (Attachment Page 1)**
   a. **Membership Nominations**
   Mr. Howard Berny is interested in joining the subgroup. A motion was made and seconded to recommend that Mr. Berny be appointed to the subgroup. After discussion a vote was taken and motion unanimously carried.

   b. **Membership Reappointments**
   The following SG Installation memberships are set to expire prior to the July 2025 meeting:
   Mr. Ron Spiker indicated he would like to continue his membership and would like to be reappointed.

   c. **Officer Appointments**

9. **Other Committee Items Related to Installation**
   a. **R&A**
      i. **Item 24-18** – Definition of Controlled Fill (P. Gilston as PM) – **Attachment Page 2** – A motion was made and seconded to accept the proposal. After discussion, a vote was taken and motion carried unanimously.
   b. **PRD**
      i. **Item NB15-0305** – Create Guidelines for Installation of Overpressure Protection by System Design – D. Marek (PM). No action taken.
      ii. **Item NB15-0315** – Review isolation valve requirements in Part 1, 4.5.6 and 5.3.6 – D. DeMichael (PM). No action taken.
      iii. **Item 19-83** – Address Alternate Pressure Relief Valve Mounting Permitted by ASME CC2887-1 – D. Marek (PM). No action taken.
      iv. **Item 24-91** – Require means to prevent safety valve discharge piping blockage for LCDSV (Part 4). No action taken.

10. **Interpretations**
    There are currently no Part 1 interpretation items.

11. **Action Items**

Item Number: 20-86 **NBIC Location: Part 1, 2.10.1 a)**	**Attachments pages 3-6**
General Description: Testing and Acceptance: Boil-out Procedure **Subgroup:** SG Installation **Task Group:** D. Patten (PM), S. Konopacki, and R. Spiker **Explanation of Need:** This was brought to my (Mr. Eddie Wiggins) attention by Ernest Brantley. Mr. Brantley indicated during an acceptance inspection, he found boiler with excessive oil on the tubes and tube sheet after boiler was delivered and installed. He could not find any reference to boil- out to remove this extraneous material.	
January 2025 Meeting Action: Passed A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion carried unanimously. This will be sent to SC Installation for action.	

Item Number: 22-28	NBIC Location: Part 1	No Attachment

General Description: Pool Heater requirements and definition

Subgroup: SG Installation

Task Group: J. Kleiss (PM), R. Spiker, T. Creacy, and M. Byrum

Explanation of Need: The NBIC Installation and Inspection Codes do not have a definition for pool heaters. There is potential for confusion regarding which NBIC requirements, if any, should apply to pool heaters.

January 2025 Meeting Action: Progress Report

This item will be letter balloted to SG Installation with review and comment to SC Installation.

Item Number: 23-52	NBIC Location: Part 1, 2.5.3.2 and 3.5.3	Attachment Page 7

General Description: Harmonize electrical requirements for all types of boilers/water heaters

Subgroup: SG Installation

Task Group: T. Clark (PM), S. Konopacki, J. Kleiss, R. Spiker, and Jon Choitz

Explanation of Need: Electrical requirements for power boilers, heating boilers, and water heaters are inconsistent, particularly regarding remote emergency shutdown switches. In some cases, the requirements are the same but worded or ordered differently. In order to promote better understanding of code requirements and consistency in their application, I propose making sections 2.5.3 and 3.5.5 as uniform as possible.

January 2025Meeting Action: Passed

A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion carried unanimously. This will be sent to SC Installation for action.

Item Number: 24-05	NBIC Location: Part 1, New Supplement	No Attachment

General Description: Add Heat Pump Water Heater & Heat Pump Hydronic Heater Supplement

Subgroup: SG Installation

Task Group: J. Kleiss (PM), Bryan Ahee

Explanation of Need: Heat pump water heating and hydronic heating are growing in prevalence. Guidance for installation and inspection of these products is needed.

January 2025 Meeting Action: Progress Report

This item will be balloted for review and comment to all four subgroups.

Item Number: 24-26	NBIC Location: Part 1, 3.7.8	No Attachment

General Description: NBIC Requirements for ASME Modular Water Heaters

Subgroup: SG Installation

Task Group: R. Spiker (PM), M. Byrum, J. Kleiss

Explanation of Need: ASME Section IV added requirements in the 2023 Edition for modular water heaters. The NBIC currently includes requirements for modular steam-heating and hot-water heating boilers, but not for modular water heaters.

January 2025 Meeting Action: Progress Report

Work continues on this item.

Item Number: 24-56	NBIC Location: Part 1, S3.6.1	No Attachment

General Description: LCDSV Systems: Add Table and Figure

Subgroup: SG Installation

Task Group: M. Byrum (PM), R. Black

Explanation of Need: In accordance with the NBIC Policy For Metrication, metric units need to be shown alongside US customary units. Table S3.6.1 and Figure S3.6.1-b both show only US customary units. I recommend adding a Table S3.6.1M and Figure S3.6.1-bM to show metric units. I've also included some additional editorial recommendations.

January 2025 Meeting Action: Proposal

During the July 2024 Main Committee meeting, the Committee asked that this item be put on hold until a similar section in Part 2 could be updated. SG/SC Inspection needs action item to work on Part 2 S12.7.

12. New Items:

Item Number: 24-89	NBIC Location: Part 1, S3.6 d)	No Attachment

General Description: Require means to prevent safety valve discharge piping blockage for LCDSV (Part 1)

Subgroup: SG Installation

Task Group: None assigned.

Explanation of Need: Adding verbiage to the NBIC Part 1, Part 2 and Part 4 to require a means to prevent foreign material introduction to the safety valve discharge pipe.

January 2025 Meeting Action: No action taken at SG. Group agreed this should go through SG/SC PRD.

Item Number: 24-97	NBIC Location: Part 1, 2.7.5	Attachment Page XX

General Description: Anchoring of Threaded Blowdown Piping

Subgroup: SG Installation

Task Group: Jon Choitz (PM), Tom Clark Jim Byrum, Roger Adams, Ron Spiker

Explanation of Need: An operator opened a blowdown valve located between a 90-degree elbow and the floor drain. The pressure released caused the piping to rotate at the elbow striking the operator and pressing him to the ground which resulted in his death. This could have been avoided if the piping was anchored at a point between the elbow and the discharge.

January 2025 Meeting Action: Passed

A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion carried unanimously. This will be forwarded to SC Installation for action.

Item Number: 24-102	NBIC Location: Part 1, 1.6.9	No Attachment

General Description: Strengthen requirements for Carbon monoxide monitoring

Subgroup: SG Installation

Task Group: Jim Byrum (PM) and all members SG Installation, Steve Schneeberger, Bryan Ahee

Explanation of Need: Approximately 50 to 75 percent of the Chief Boiler Inspectors have requested some version of the proposed text above to be included in the NBIC Part 1. Since this has not happened, in many jurisdictions the Chief Inspector has had to include requirements for interlocking Carbon Monoxide detectors with boilers to secure the burners when the detector senses CO. The NBIC is a Health and Safety Code and therefore should provide requirements that prevent the many injuries and deaths the Chief Boiler Inspectors across the U.S. have had to investigate.

January 2025 Meeting Action: Progress report

A task group was formed to work on this item.

Item Number: 25-03	NBIC Location: Part 1, 1.6.1 & 3.7.7.1	No Attachment
General Description: Create uniformity between sections on requirements for drains and blowoff pipes **Subgroup:** SG Installation **Task Group:** T. Clark (PM), J. Choitz, R. Spiker, R. Adams **Explanation of Need:** Create uniformity between sections on requirements for drains and blowoff pipes		
January 2025 Meeting Action: Progress Report A task group was formed to work on this item		

13. Future Meetings

- July 7-10, 2025 – Cincinnati, OH
- January 12-15, 2026 – New Orleans, LA

14. Adjournment

Meeting adjourned at 10:01 AM.

Respectfully submitted,

Thomas P. Beirne
Subgroup Installation Secretary

Subgroup Installation Attendance: January 14, 2025

MEMBERS:	Interest Category	In Person	Remote	Not In Attendance
Joe Brockman	Authorized Inspection Agencies			x
Rodger Adams	Authorized Inspection Agencies	x		
Robert Black	Manufacturers	x		
Jim Byrum	Authorized Inspection Agencies	x		
Jon Choitz	HSB	x		
Tom Clark	Jurisdictional Authorities	x		
Todd Creacy	Authorized Inspection Agencies	x		
J. Matt Downs	Manufacturers	x		
Jeff Kleiss	Manufacturers		x	
Stan Konopacki	Users	x		
Don Patten	NB Certificate Holders	x		
H. Michael Richards	General Interest		x	
Robert Smith	General Interest	x		
Ron Spiker	Jurisdictional Authorities	x		
Melissa Wadkinson	Manufacturers	x		
Thomas P. Beirne	Secretary	x		

VISITORS:	Company / Interest	In Person	Remote
Howard Berny	State of Minnesota	x	
John Burpee	State of Maine	x	
Luis Ponce	NBBI Staff	x	
Gary Scribner	NBBI Staff	x	
Bryan Ahee	Bradford White Corporation	x	
Joel Amato	NBBI Staff	x	
Rob Stimson	State of Kansas	x	
Clayton Collins	CNA Insurance Co.	x	
Steve Schneeberger	CNA Insurance Co.	x	
Greg Goosens	NBBI Staff	x	
John Mirajali		x	

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

PROPOSED REVISION OR ADDITION

Item No.

A 24-18 Rev 01

Subject/Title

Controlled Fill Definition

NBIC Location

All Parts, Section 9, Glossary of Terms

Project Manager and Task Group

Philip Gilston (PM), A. Triplett

Source (Name/email)

Philip Gilston (philip_gilston@hsb.com)

Statement of Need

There is no definition of the term 'controlled fill'.

Background Information

Interpretation item I 23-79 addresses the use of the term 'controlled fill' in NBIC Part 3, 2.5.3 d in relation to Welding Method 6 for Grade 91 material.

While the term 'controlled fill' is not specifically used in the text of Welding Method 6 (2.5.3.6), directions are given for such variables as typical preheats, electrode size for SMAW, and the use of stringer beads only. The term is used explicitly in Supplement 8 for CSEF repairs, where S8.3.b says that "To control heat input the weld repair shall be performed using a "controlled fill" technique"; details are also given on such items as preheats, electrode size, required fill pass overlap, etc., and a lot of detail is provided in schematics including specifics on weld bead placement.

Existing Text	Proposed Text	Clean Copy
None	**Changes form Rev 00 shown** **Controlled Fill** – ~~requirements specified~~control of weld technique for a ~~permitted weld~~ repair process ~~in order to manage heat input~~ to ensure satisfactory weld properties by controlling distortion, promoting tempering and minimizing the risk of cracking by addressing variables including but not limited to heat input, ~~such as~~ preheat and interpass temperature, weld consumable type and ~~diameter~~size, weld technique (string or weave~~),~~) and bead placement ~~etc~~.	**Controlled Fill** – control of weld technique for a repair process to ensure satisfactory weld properties by controlling distortion, promoting tempering and minimizing the risk of cracking by addressing variables including but not limited to heat input, preheat and interpass temperature, weld consumable type and size, weld technique (string or weave) and bead placement.

	VOTE						
Committee	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

NBIC Item # 20-86

NBIC Part 1

Supplement SXX Boil Out and Steam Blow Guidelines

SX Scope

This supplement provides guidelines for boiling out new power boilers, steam heating boilers or unfired steam pressure vessels. It is recommended that newly installed units be boiled out prior to operation. New internal surfaces are subject to oil, grease, and/or other protective coatings, mill scale, rust, welding flux, and/or other foreign material normally associated with the manufacturing process, shipping preparation and installation. All contaminants should be removed as they could lower the heat transfer rate, cause localized overheating, erratic water level control and surging.

a) Proper boil out procedures and/or recommended chemicals should be obtained from the boiler/pressure vessel manufacturer or a boiler chemical treatment specialist. Safety relief valves must be removed before adding the boil out solution so that neither it nor the grease which it may carry will contaminate the valves. All valves in the piping leading to or from the system must be closed to prevent cleaning solution from getting into the system.

b) The boiled water should be cooled to 120° F (49° C) and discharged safely in accordance with local, state, and federal guidelines. All procedures should be reported, if required, to the jurisdiction.

c) New condensate return piping should also be considered due to the possibility of contaminants in the piping. The condensate should be cooled to 120° F (49° C) and drained to ensure the new system piping has been flushed free of debris and is fully clean.

d) Prior to the commissioning of a steam supply and distribution piping systems, steam blowing may be recommended to be used along with chemical cleaning to remove foreign material remaining after plant erection is completed. To minimize the potential of injury to personnel and damage to equipment, the design and location of the associated piping should be addressed by the designer or installer of the boiler and associated piping.

e) Existing boilers that have had any tube replacement, re-rolling or other extensive repairs to the pressure parts should also be boiled out. The lubricant used for rolling tubes, plus the protective coating on the new tubes, should be removed by boiling out before the repaired boiler can be put back on the line.

2.5.3 ELECTRICAL

A disconnecting means capable of being locked in the open position shall be installed at an accessible location at the boiler so that the boiler can be disconnected from all sources of potential energy. This disconnecting means shall be an integral part of the boiler or adjacent to it.

2.5.3.1 WIRING

All wiring for controls, heat generating apparatus, and other appurtenances necessary for the operation of the boiler or boilers should be installed in accordance with the provisions of national or international standards and comply with the applicable local electrical codes.

2.5.3.2 REMOTE EMERGENCY SHUTDOWN SWITCHES

~~a)~~ A manually operated remote emergency shutdown switch~~(es)~~ or circuit breaker shall be ~~located just outside the equipment room door~~ provided and marked for easy identification. ~~Consideration should also be given to the type and location of the switch(es) in order to safeguard against tampering. Where approved by the Jurisdiction, alternate locations of remote emergency switch(es) may be provided.~~

a) The default location for the switch or circuit breaker should be just outside the boiler room door, though the following factors must be considered when determining the appropriate location and number of switches to be installed:

1) If the equipment room door is on the building exterior, the switch should be located just inside the door.

2) ~~b)~~ For equipment rooms exceeding 500 ft.$_2$ (46 m$_2$) floor area or containing one or more boilers having a combined fuel capacity of 1,000,000 Btu/hr. (293 kW) or more, additional manually operated remote emergency shutdown switches shall be located at suitably identified points of egress acceptable to the Jurisdiction.

3) ~~c)~~ Where a boiler is located indoors in a facility and not in an equipment room, a remote emergency shutdown switch shall be located within 50 ft. (15 m) of the boiler along the primary egress route from the boiler area.

4) For utility boilers or other large scale units operated from a control room, the switch should be installed in a location immediately accessible to the operator.

~~d)~~ b) For atmospheric-gas burners and for oil burners where a fan is on the common shaft with the oil pump, the emergency remote shutdown switch(es) or circuit breaker(s) must disconnect all power to the burner controls.

~~e)~~ c) For power burners with detached auxiliaries, the emergency remote shutdown switch(es) or circuit breaker(s) need only shut off the fuel input to the burner.

~~f) When existing boiler installations do not include remote emergency shutdown switches, it is not required that these switches be retroactively installed unless required by the Jurisdiction.~~

3.5.3 ELECTRICAL

A disconnecting means capable of being locked in the open position shall be installed at an accessible location at the boiler or water heater so that the boiler or water heater can be disconnected from all sources of potential energy. This disconnecting means shall be an integral part of the boiler or water heater or adjacent to it.

3.5.3.1 WIRING

All wiring for controls, heat generating apparatus, and other appurtenances necessary for the operation of the boiler(s) or water heater(s) should be installed in accordance with the provisions of national or international standards and comply with the applicable local electrical codes.

3.5.3.2 REMOTE EMERGENCY SHUTDOWN SWITCHES~~3.5.3.1 STEAM HEATING, HOT WATER HEATING, AND HOT WATER SUPPLY BOILERS~~

~~a) All wiring for controls, heat generating apparatus, and other appurtenances necessary for the operation of the boiler or boilers shall be installed in accordance with the provisions of national or international standards and comply with the applicable local electrical codes.~~

~~b) A disconnecting means capable of being locked in the open position shall be installed at an accessible location at the boiler so that the boiler can be disconnected from all sources of potential. This disconnecting means shall be an integral part of the boiler or adjacent to it.~~

~~c)~~ A manually operated remote shutdown switch or circuit breaker shall be ~~located just outside the equipment room door~~ provided and marked for easy identification. ~~Consideration should also be given to the type and location of the switch to safeguard against tampering.~~

a) The default location for the switch or circuit breaker should be just outside the boiler room door, though the following factors must be considered when determining the appropriate location and number of switches to be installed:

1) ~~d)~~ If the equipment room door is on the building exterior, the switch should be located just inside the door. ~~If there is more than one door to the equipment room, there should be a switch located at each door of egress.~~

2) For equipment rooms exceeding 500 $ft.^2$ (46 m^2) floor area or containing one or more boilers and/or water heaters having a combined fuel capacity greater than or equal to 1,000,000 Btu/hr. (293 kW), additional manually operated remote emergency shutdown switches shall be located at suitably identified points of egress acceptable to the Jurisdiction.

3) Where a boiler or water heater is located indoors in a facility and not in an equipment room, a remote emergency shutdown switch shall be located within 50 ft. (15 m) of the boiler along the primary egress route from the equipment area.

4) Additional consideration should be given to the type and location of the switch(es) in order to facilitate proper operation and safeguard against tampering. Where approved by the Jurisdiction, alternate locations of remote emergency switch(es) may be provided.

~~1)~~ b)For atmospheric-gas burners, and oil burners where a fan is on a common shaft with the oil pump, the complete burner and controls should be shut off.

~~2)~~ c)For power burners with detached auxiliaries, only the fuel input supply to the firebox need to be shut off.

~~**3.5.3.2 POTABLE WATER HEATERS**~~

~~a) All wiring for controls, heat generating apparatus, and other appurtenances necessary for the operation of the potable water heaters shall be installed in accordance with the provisions of national or international standards and comply with the applicable local electrical codes.~~

~~b) A manually operated remote shutdown switch or circuit breaker shall be located just outside the equipment room door and marked for easy identification. Consideration should also be given to the type and location of the switch to safeguard against tampering.~~
~~c) A disconnecting means capable of being locked in the open position shall be installed at an accessible location at the heater so that the heater can be disconnected from all sources of potential. This disconnecting means shall be an integral part of the heater or adjacent to it.~~

~~d) If the equipment room door is on the building exterior, the switch should be located just inside the door. If there is more than one door to the equipment room, there should be a switch located at each door of egress.~~

~~1) For atmospheric-gas burners, and oil burners where a fan is on a common shaft with the oil pump, the complete burner and controls should be shut off.~~

~~2) For power burners with detached auxiliaries, only the fuel input supply needs be shut off.~~

THE NATIONAL BOARD
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Subject:	Anchoring of Threaded Blowdown Piping
NBIC Location:	2023 NBIC, Part 1, 2.7.5
Statement of Need:	An operator opened a blowdown valve located between a 90-degree elbow and the floor drain. The pressure released caused the piping to rotate at the elbow striking the operator and pressing him to the ground which resulted in his death. This could have been avoided if the piping was anchored at a point between the elbow and the discharge.
Background Information:	Boiler recently installed, operating less than a week.

Proposed Text:

2.7.5 BLOWOFF

l) The discharge of blowoff pipes shall be located and anchored to the floor or other structural element ~~so as~~ to prevent injury to personnel.