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NATIONAL BOARD INSPECTION CODE SUBCOMMITTEE INSTALLATION

AGENDA

Meeting of July 12th, 2023 St. Louis, MO

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

FAX: (614) 847-1828

1. Call to Order

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

2. Introduction of Members and Visitors

3. Check for a Quorum

4. Awards/Special Recognition

5. Announcements

- The National Board will be hosting a reception on Wednesday evening from 5:30 p.m. to 7:30 p.m. at Sports & Social St. Louis Ballpark Village next to the hotel.
- 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 Cardinal C, and lunch will be served from 11:30 a.m. to 12:30 p.m. in Cardinal C.
- Meeting schedules, meeting room layouts, and other helpful information can be found on the National Board website under the **Inspection Code** tab → NBIC Meeting Information.
- Remember to add any attachments that you'd like to show during the meeting (proposals, reference documents, power points, etc.) to the NBIC file share site (nbfileshare.org) **prior to the meeting**.
 - o Note that access to the NBIC file share site is limited to committee members only.
 - o ALL power point attachments/presentations <u>must be sent to the NBIC Secretary prior to the meeting</u> for approval.
 - o Contact Jonathan Ellis (*nbicsecretary@nbbi.org*) for any questions regarding NBIC file share access.
- When possible, please submit proposals in word format showing "strike through/underline".
- If you'd like to request a new Interpretation or Action item, this should be done on the National Board Business Center.
 - o 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*
 - o If needed, we can also create a ballot for voting on a new member between meetings.
- Thank you to everyone who registered online for this meeting. The online registration is very helpful for planning our reception, meals, room set up, etc. Please continue to use the online registration for each meeting. If you are here in person, and did not register, please visit the National Board website to register now. Registering will make sure we have an accurate count for the reception, breakfast, and lunch. It is also a good way to make sure we have the most up-to-date contact information.

6. Adoption of the Agenda

7. Approval of the Minutes of the January 11, 2023, Meeting

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

8. Review of Rosters

a. Membership Nominations

i. Mr. Marvin Byrum (AIA) is interested in becoming a member of Subcommittee Installation.

b. Membership Reappointments

The following **Subcommittee Installation** memberships are set to expire prior to the January 2024 meeting: Mr. Eddie Wiggins, and Mr. Joe Brockman.

c. Officer Appointments

Mr. Wiggins' term as Vice Chair of Subcommittee Installation is set to end after the July 2023 meeting.

9. Open PRD Items Related to Installation

- NB15-0305 Create Guidelines for Installation of Overpressure Protection by System Design D. Marek (PM)
 - o Mr. Brockman reported that this is being sent as a letter ballot to SG/SC Parts 1 and 4.
- NB15-0315 Review isolation valve requirements in Part 1, 4.5.6 and 5.3.6 D. DeMichael (PM)
- 19-83 Address Alternate Pressure Relief Valve Mounting Permitted by ASME CC2887-1 D. Marek (PM).
 - o This is being sent as a letter ballot to SG/SC Parts 1 and 4.
- 22-08 Review and improve guidance for T&P valve installation relating to probe.
- 22-15 What is the meaning of "service limitations" as used in Part 4, 2.4.5?
 - o This is being sent as a letter ballot to SG/SC Parts 1 and 4.
- 22-16 Allow the use of pressure relief valves on potable water heaters.
 - o Mr. Clark showed the proposal with the editorial revisions incorporated. The whole thing will be sent as a letter ballot to SG/SC Parts 1 and 4.

10. Interpretations

There are no Part 1 interpretation requests to address.

11. Action Items

Item Number: 20-62 NBIC Location: Part 1, 1.4.5.1 No Attachment

General Description: Update the National Board Boiler Installation Report

Subgroup: SG Installation

Task Group: T. Clark (PM), E. Wiggins, R. Spiker, T. Creacy, P. Jennings, G. Tompkins, and D.

Patten.

Explanation of Need: The form has not been updated in years. The form will be part of the National Board's Jurisdictional Reporting System (JRS) which is currently under development.

January 2023 Meeting Action: Progress Report — LB for Review and Comment

Mr. Clark shared the updated report with all jurisdictional input incorporated. This can be used for installing contractors or jurisdictions. JRS will utilize this form as a base report and will allow each jurisdiction to manipulate the form according to its requirements. This report is not mandatory, so states will adopt as they see fit/based on their requirements. The form will be letter balloted for Review and Comment. Then once comments are received and instructions are finished, all will be incorporated in a proposal to be voted on at the July meeting.

Item Number: 20-86 NBIC Location: Part 1, 2.10.1 a) No Attachment

General Description: Testing and Acceptance: Boil-out Procedure

Subgroup: SG Installation

Task Group: E. Wiggins (PM), D. Patten, 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 2023 Meeting Action: Progress Report

Mr. Wiggins shared the verbiage on steam blow submitted by Mr. Washington. Mr. Wiggins will work on this for the next meeting. Mr. Richards will help with the verbiage submitted to Part 3. This item should revolve more around power boilers, and a new item involving heating and hot water may be opened.

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

General Description: Pool Heater 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 2023 Meeting Action: Progress Report

A task group was assigned during the subgroup meeting. They will work on adding pool heater requirements before adding definitions. They may reach out to the jurisdictions about their exemption requirements.

Item Number: 22-30 NBIC Location: Part 1, 3.6.3 No Attachment

General Description: Drains in equipment rooms with heating boilers containing glycol

Subgroup: SG Installation

Task Group: P. Jennings (PM), R. Adams, D. Zalusky, D. Patten, and R. Smith

Explanation of Need: Glycol should be disposed of in accordance with regulations. The intent of this addition to the text is to identify that drains may not be the proper way to dispose of glycol.

January 2023 Meeting Action: Progress Report

A task group was assigned during the subgroup meeting. They will look into drainage of glycol (and possibly the relationship with safety valves) with respect to the drainage requirements of other codes, the U.S. Environmental Protection Agency (EPA), etc.

Item Number: 22-32 NBIC Location: Part 1, 3.8.1.4 b) No Attachment

General Description: High pressure limit control requirements for fired jacketed steam kettles

Subgroup: SG Installation

Task Group: R. Adams (PM), D. Patten, T. Clark, and T. Creacy.

Explanation of Need: As a safeguard to over pressurizing the fired jacketed steam kettle, the pressure range of the actuated high pressure limit control should not exceed the MAWP of the vessel.

January 2023 Meeting Action: Progress Report

A task group was assigned during the subgroup meeting. Mr. Adams explained that the information from 3.8.1.4 b) may need to be moved to Part 4. And high-pressure limit control requirements for fired jacketed steam kettles could be addressed in Part 1, 4.4, on Instruments and Controls. The task group will further discuss if that is the right placement for the text or if they need to create a new supplement addressing jacketed steam kettles.

12. New Items:

Item Number: 23-50 NBIC Location: Part 1, 2.8.5 and Attachment Page 2

3.8.1.5

General Description: Require separate waterside piping connections for multiple LWCO devices

Subgroup: SG Installation

Task Group: None assigned.

Explanation of Need: CSD-1 CW-120 (a) and CW-140 (a) address piping connection requirements for low-water fuel cutoff devices for low-pressure and high-pressure steam boilers. Specifically, both sections require each LWCO device to have a separate piping connection on the waterside. However, NFPA 85 does not address any installation requirements for LWCO devices, potentially allowing them to be installed in an unsafe manner.

July 2023 Meeting Action:

Item Number: 23-52 NBIC Location: Part 1, 2.5.3.2 Attachment Page 4

and 3.5.3

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

Subgroup: SG Installation

Task Group: None assigned.

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.

July 2023 Meeting Action:

13. Future Meetings

• January 8-11, 2024 – Charlotte, NC

• July 2024 – TBD

13. Adjournment

Respectfully submitted,

Michelle Vance

Subcommittee Installation Secretary

Subcommittee Installation

Last Name	First Name	Interest Category	Role	Exp. Date	More
Patten	Don	Manufacturers	Chair	01/30/2025	Details
Wiggins	Edward	Jurisdictional Authorities	Vice Chair	07/30/2023	Details
Vance	Michelle		Secretary	12/30/2099	Details
Brockman	Joe	Authorized Inspection Agencies	Member	07/30/2023	Details
Clark	Tom	Jurisdictional Authorities	Member	01/30/2025	Details
Creacy	Todd	Authorized Inspection Agencies	Member	01/30/2024	Details
Downs	James	Manufacturers	Member	07/30/2025	Details
Jennings	Patrick	Authorized Inspection Agencies	Member	07/30/2024	Details
Konopacki	Stanley	Users	Member	01/30/2026	Details
Richards	H. Michael	General Interest	Member	07/30/2024	Details
Spiker	Ronald	Jurisdictional Authorities	Member	07/30/2024	Details
Wadkinson	Melissa	Manufacturers	Member	07/30/2024	Details

2.8.5 AUTOMATIC LOW-WATER FUEL CUTOFF AND/OR WATER FEEDING DEVICE FOR STEAM OR VAPOR SYSTEM BOILERS

- a) Each automatically fired steam-or vapor-system boiler shall have an automatic low-water fuel cutoff so located as to automatically cut off the fuel supply when the surface of the water falls to the lowest visible part of the water-gage glass. If a water feeding device is installed, it shall be so constructed that the water inlet valve cannot feed water into the boiler through the float chamber and so located as to supply requisite feedwater.
- b) Such a fuel cutoff or water feeding device may be attached directly to a boiler. A fuel cutoff or water feeding device may also be installed in the tapped openings available for attaching a water glass directly to a boiler, provided the connections are made to the boiler with nonferrous tees or Y's not less than NPS 1/2 (DN 15) between the boiler and water glass so that the water glass is attached directly and as close as possible to the boiler; the run of the tee or Y shall take the water glass fittings, and the side outlet or branch of the tee or Y shall take the fuel cutoff or water feeding device. The ends of all nipples shall be reamed to full-size diameter.
- c) In addition to the requirements in a) and b) above, a secondary low-water fuel cutoff with manual reset shall be provided on each automatically fired steam or vapor system boiler.
- d) When installed external to the boiler, fuel cutoffs shall be installed in separate water columns or chambers, which shall be connected to the boiler by piping connections below the waterline. A shared steam piping connection is permissible, though not required.
- d)e) Fuel cutoffs and water feeding devices embodying a separate chamber shall have a vertical drain pipe, extended to a safe point of discharge, and a blowoff valve not less than NPS 3/4 (DN 20), located at the lowest point in the water equalizing pipe connections so that the chamber and the equalizing pipe can be flushed and the device tested.
- e)f) Each electric steam boiler of the resistance element type shall be equipped with an automatic low-water cutoff so located as to automatically cut off the power supply to the heating elements before the surface of the water falls below the visible part of the glass. No low-water cutoff is required for electrode-type boilers.

3.8.1.5 AUTOMATIC LOW-WATER FUEL CUTOFF AND/OR WATER FEEDING DEVICE

- a) Each automatically fired steam boiler shall have an automatic low-water fuel cutoff. The low-water fuel cutoffs must be located to automatically cut off the fuel supply when the surface of the water falls to a level not lower than the lowest visible part of the water-gage glass. If a water feeding device is installed, it shall be so constructed that the water inlet valve cannot feed water into the boiler through the float chamber and so located as to supply requisite feedwater.
- b) Such a fuel cutoff or water feeding device may be attached directly to a boiler. A fuel cutoff or water feeding device may also be installed in the tapped openings available for attaching a water-gage glass directly to a boiler, provided the connections are made to the boiler with nonferrous tees or Y's not less than NPS 1/2 (DN 15) between the boiler and water glass so that the water glass is attached directly and as close as possible to the boiler; the run of the tee or Y shall take the water glass fittings, and the side outlet or branch of the tee or Y shall take the fuel cutoff or water feeding device. The ends of all nipples shall be reamed to full-size diameter.

c) In addition to the requirements in a) and b) above, a secondary low-water fuel cutoff with manual reset shall be provided on each automatically fired steam boiler.

d) When installed external to the boiler, fuel cutoffs shall be installed in separate water columns or chambers, which shall be connected to the boiler by piping connections below the waterline. A shared steam piping connection is permissible, though not required.

d)e) Fuel cutoffs and water feeding devices embodying a separate chamber shall have a vertical drain pipe and a blowoff valve not less than NPS 3/4 (DN 20), located at the lowest point in the water equalizing pipe connections so that the chamber and the equalizing pipe can be flushed and the device tested.

CW-120 Requirements for Water Level Controls for Low-Pressure Steam Boilers

(a) Each automatically fired, low-pressure steam boiler shall have at least two automatic low-water fuel cutoffs, one of which may be a combined feeder/cutoff device. When installed external to the boiler, each device shall be installed in individual chambers (water columns), which shall be attached to the boiler by separate pipe connections below the waterline. A common steam connection is permissible. Each cutoff device shall be installed to prevent start-up and to cut off the boiler fuel or energy supply automatically, prior to the fall of the surface of the water below the level of the lowest visible part of the gage glass (see CW-210).

EXCEPTION: Only one low-water cutoff is required on gravity return units installed in residences, as defined by the authority having jurisdiction.

A water feeding device, when used, shall be constructed and installed so that the water inlet valve cannot feed water into the boiler through the float chamber or its connections to the boiler. The water feeding device shall be located to maintain the operating water level.

CW-140 Requirements for Water Level Controls for High-Pressure Steam Boilers

(a) Each automatically fired, high-pressure steam boiler, except miniature boilers, shall have at least two automatic low-water fuel cutoff devices. When installed external to the boiler, each device shall be installed in individual chambers (water columns), which shall be attached to the boiler by separate pipe connections below the waterline. A common steam connection is permissible. Each cutoff device shall be installed to prevent start-up and cut off the boiler fuel or energy supply automatically when the surface of the water falls to a level not lower than the lowest visible part of the gage glass. One control shall be set to function ahead of the other.

2.5.3.2 REMOTE EMERGENCY SHUTDOWN SWITCHES

- a) A manually operated remote shutdown switch(es) 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(es) in order to safeguard against tampering. Where approved by the Jurisdiction, alternate locations of remote emergency switch(es) may be provided.
 - 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.
 - 3) 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.
- b) For equipment rooms exceeding 500 ft.2 (46 m²) 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.
- 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.
- d) 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) 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

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.

Commented [TGC1]: This is consistent with CSD-1 CE-110 (b) (1).

Commented [TGC2]: As currently written in Part 1, 3.5.3. Note that it is a "should", not a "shall". The "shall" aspect of multiple shutoff switches is addressed in b).

Commented [TGC3]: This text was unnecessary. The forward already states that the NBIC in not meant to be retroactive. Nowhere else in Part 1 do we state that a requirement is not retroactive.

- c) 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.
- 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 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.

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.

2.5.3.2 REMOTE EMERGENCY SHUTDOWN SWITCHES

Commented [TGC4]: This section has been reordered to be consistent with 2.5.3.

Commented [TGC5]: Wiring requirements for both boilers and water heaters have been merged as they were identical

Commented [TGC6]: Requirements for Remote Emergency Shutdown Switches for both boilers and water heaters have been merged as the exiting requirements were identical. The proposed text incorporates changes suggested for 2.5.3.2.

- a) A manually operated remote shutdown switch(es) or circuit breaker shall be located just outside the equipment room door and marked for easy identification.
 - 4) If the equipment room door is on the building exterior, the switch should be located just inside the door.
 - 5) If there is more than one door to the equipment room, there should be a switch located at each door of egress.
 - 6) 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.
- b) For equipment rooms exceeding 500 ft.2 (46 m²) floor area or containing one or more boilers or water heaters 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.
- c) 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 or water heater along the primary egress route from the equipment area.
- d) 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.
- e) For power burners with detached auxiliaries, only the fuel input supply needs be shut off.