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THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

# NATIONAL BOARD INSPECTION CODE SUBCOMMITTEE INSTALLATION

# AGENDA

Meeting of January 15, 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

# 2. Introduction of Members and Visitors

# 3. Check for a Quorum

# 4. Awards/Special Recognition

Matt Downs - 5 years on SC 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 <u>must be sent to the NBIC Secretary for approval prior</u> 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*
  - $\circ$  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

# 7. Approval of the Minutes of the July 17, 2024, Meeting

The minutes can be found on the National Board's website, on the NBIC Committee Information page under the NBIC tab.

# 8. Review of Rosters (Attachment Page 1)

## a. Membership Nominations

Mr. Howard Berny is interested in joining Subgroup Installation.

## b. Membership Reappointments

The following **Subgroup Installation** memberships are set to expire prior to the July 2025 meeting: Mr. Ron Spiker.

The following **Subcommittee Installation** memberships are set to expire prior to the January 2025 meeting: Mr. Tom Clark and Mr. Don Patten.

## c. Officer Appointments

Mr. Patten's term as Chair ends on January 31, 2025. He is eligible for reappointment to the position.

# 9. Open PRD Items Related to Installation

- a. R&A
  - i. Item 24-18 Definition of Controlled Fill (P. Gilston as PM) Attachment Page 2
- b. PRD
  - i. Item NB15-0305 Create Guidelines for Installation of Overpressure Protection by System Design D. Marek (PM).
  - ii. Item NB15-0315 Review isolation valve requirements in Part 1, 4.5.6 and 5.3.6 D. DeMichael (PM)
  - iii. Item 19-83 Address Alternate Pressure Relief Valve Mounting Permitted by ASME CC2887-1 – D. Marek (PM)
  - iv. Item 24-91 Require means to prevent safety valve discharge piping blockage for LCDSV (Part 4)

## **10. Interpretations**

There are currently no Part 1 interpretation items.

## 11. Action Items

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

# July 2024 Meeting Action: Progress Report

Mr. Patten will continue working on this proposal then will send it for Review and Comment to the subgroup.

	Item Number: 22-28	NBIC Location: Part 1	No Attachment
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General Description: Pool Heater supplement

**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.

# July 2024 Meeting Action: Progress Report

There was some discussion on the purpose of supplements. Mr. Kleiss will send this as a letter ballot to the subgroup.

Note: The committee briefly discussed that the title of this item should change from "pool heater definition" to "pool heater supplement" as this has shifted focus since it first opened.

**Update:** A proposal was balloted to the subgroup but was not approved.

Item Number: 23-52	NBIC Location: Part 1, 2.5.3.2	Attachment Page 3
	and 3.5.3	

General Description: Harmonize electrical requirements for most 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.

# July 2024 Meeting Action: Progress Report

Mr. Clark summarized the discussion from the subgroup meeting. This will be sent as a letter ballot to the subgroup and for Review and Comment to the subcommittee.

Note: The committee discussed changing the general description of this item to not be allencompassing. They decided to replace "all" with "most" types of boilers.

Update: A proposal was balloted to the subgroup, but did not receive enough approval votes to pass.

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.

# July 2024 Meeting Action: Progress Report

The committee reviewed the discussion from the Executive Committee meeting. This will be brought to the Chiefs' meeting in October for input.

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

# July 2024 Meeting Action: Progress Report

The task group is still working on this.

Item Number: 24-56	NBIC Location: Part 1, S3.6.1	Attachment Page 6

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.

# July 2024 Meeting Action: Proposal

Mr. Byrum summarized the proposal and changes made at the subgroup meeting. A motion was made to accept the proposal as presented. The motion was seconded and unanimously approved.

During the Main Committee meeting, the Committee asked that this item be put on hold until a similar section in Part 2 could be updated.

# 12. New Items:

Item Number: 24-89	NBIC Location: Part 1, S3.6 d)	Attachment Page 9		
<b>General Description:</b> Requir LCDSV (Part 1)	e means to prevent safety valve disc	harge piping blockage for		
Subgroup: SG Installation				
Task Group: None assigned.				
<b>Explanation of Need:</b> 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	n:			

Item Number: 24-97	NBIC Location: Part 1, 2.7.5	Attachment Page 10	
General Description: Ancho	ring of Threaded Blowdown Piping		
Subgroup: SG Installation			
Task Group: None assigned.			
<b>Explanation of Need:</b> 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 Actio	n:	<u> </u>	

Item Number: 24-102	NBIC Location: Part 1, 1.6.9	Attachment Page 11

General Description: Strengthen requirements for Carbon monoxide monitoring

Subgroup: SG Installation

Task Group: None assigned.

**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:

# 13. Future Meetings

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

# 14. Adjournment

Respectfully submitted,

is helle bance

Michelle Vance Subcommittee Installation Secretary

# Subcommittee Installation

Last Name	First Name	Interest Category	Role	Exp. Date	More
Patten	Don	National Board Certificate Holders	Chair	01/31/2025	Details
Konopacki	Stanley	Users	Vice Chair	08/22/2026	Details
Vance	Michelle		Secretary	12/31/2099	Details
Black	Robert	Manufacturers	Member	01/31/2027	Details
Brockman	Joe	Authorized Inspection Agencies	Member	08/22/2026	Details
Byrum	Marvin	Authorized Inspection Agencies	Member	08/22/2026	Details
Clark	Tom	Jurisdictional Authorities	Member	01/31/2025	Details
Creacy	Todd	Authorized Inspection Agencies	Member	01/31/2027	Details
Downs	James	Manufacturers	Member	07/31/2025	Details
Richards	H. Michael	General Interest	Member	08/19/2027	Details
Smith	Robert	General Interest	Member	01/31/2027	Details
Spiker	Ronald	Jurisdictional Authorities	Member	08/19/2027	Details
Wadkinson	Melissa	Manufacturers	Member	08/19/2027	Details



## **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 diametersize, weld technique (string or weave), and bead placement-ete.	<b>Controlled Fill</b> – 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

# 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 <u>emergency</u> shutdown switch<del>(es)</del> or circuit breaker shall be <del>located just</del> outside the equipment room door <u>provided</u> 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.<sub>2</sub> (46 m<sub>2</sub>) 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) <del>c)</del> 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.

<u>d)-b</u>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) <u>c)</u>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 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:

- 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.<sub>2</sub> (46 m<sub>2</sub>) 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.

<u>1)-b</u>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) <u>c</u>)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.

 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.

#### Part 1

#### S3.6.1 SYSTEM DESCRIPTION

The Liquid-liquid Carbon-carbon Dioxide dioxide Beverage beverage systems include the Liquid Carbon-Dioxide Storage VesselLCDSV or LCDSV (tank) and associated sub-system circuits: - a Liquid-liquid carbon dioxide CO<sup>2</sup>(CO<sub>2</sub>) fill circuit, and associated sub-system circuits, and a pressure relief / vent line circuit. The LCDSVs are vacuum\_insulated pressure vessels, constructed of stainless steel, with Super-Insulationsuperinsulation wrapping between the inner pressure vessel and the outer vacuum jacket. (See Figure S3.6.1-a.) These pressure vessels are typically designed for a maximum allowable working pressure (MAWP) of either 300 psig (2,068 kPa) or 283 psig (1,951 kPa). The LCDSV comes equipped with an ASME/NB certified "UV" Primary-primary Relief relief Vvalve (PRV) set at or below the MAWP of the vessel. Additionally, as recommended by the Compressed Gas Association pamphlet CGA S-1.3, (Pressure Relief Device Standards Part 3 --\_\_Stationary Storage Containers Forfor Compressed Gasses), a secondary pressure relief valve may be installed. This secondary pressure relief valve is beyond the scope of ASME Section VIII, Division 1 and is not required to be ASME/NB stamped and certified. This additional PRVpressure relief valve is typically rated no higher than 1.5 times the vessel MAWP.

Operating conditions of the system, components, and inner pressure vessel can vary causing temperatures and pressures to range from 90 psig (-56°F) to 300 psig ( $\pm$ 2°F) {620 kPa (-49°C) to 2,068 kPa (-16°C)}. Below about 60 psig (413 kPa) in the tank, liquid CO<sub>2</sub> begins changing to transitioning into a solid phase (dry ice). If the tank becomes completely depressurized to 0 psig, temperatures inside the tank could reach -109°F (-78°C), and thus create (solid dry ice). When liquid CO<sub>2</sub> turns to solid dry ice in a completely depressurized tank, all CO<sub>2</sub> gas flow in the system ceases and the tank becomes nonfunctional.

See the attached Figure S3.6.1-b for a CO<sub>2</sub> phase diagram CO<sub>2</sub>-Phase Diagram NBIC Part 1; Figure-S3.6.1-b, showing the typical operating range of these systems. Components external to the LCDSV inner tank pressure vessel may encounter pressures and temperatures between 90 psig, and -56°F, to 300 psig and +2°F, respectively {between 620 kPa, and -49°C, to 2,068 kPa and -16°C, respectively}.\_Typical operating pressures and temperatures vary in each of the associated sub-system circuits. (See NBIC Part 1, Table S3.6.1.)

#### **TABLE S3.6.1**

TYPICAL OPERATING PRESSURES & <u>AND</u> TEMPERATURES OF LCDSV SYSTEMS

System Component	Operating Pressure	Operating Temperature
Storage Vessel (tank internal conditions)	90 – 300 psi <del>g/<u>620 – 2,068 kPa</u></del>	-56°F to <b>+</b> 2°F/ <u>-49°C to -16°C</u>
Liquid CO2-CO2 Fill Line	150 – 300 psi <del>g/<u>1,034 – 2,068 kPa</u></del>	-34°F to +2°F/ <u>-36°C to -16°C</u>
Pressure Relief Gas Vent Line	0 – 120 psi <del>g</del> / <u>0 – 827 kPa</u>	Ambient to -50°F/ <u>Ambient to -45°C</u>



SECTION 6 87

FIGURE S3.6.1-a



88 SECTION 6



SECTION 6 89



THE NATIONAL BOARD

Subject:	Require means to prevent safety valve discharge piping blockage for LCDSV (Part 1)
NBIC Location:	2023 NBIC, Part 1, S3.6 d)
Statement 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.
Background Information:	Inspection of CO2 tanks (bulk liquid carbon dioxide storage vessels LCDSV) has shown some areas of the country where insects have built nests in the discharge piping of the safety valve. Once the vessel reaches 300 psi and the safety valve should begin venting, product flow is fully blocked and cannot vent the vessel pressure. In some instances, the pressure has been found to be as high as 350 psi while safety valve outlet discharge is fully restricted. (The vessel MAWP in this example was 300 psi.) An example is dirt dobber bees can block the discharge line and pushing an ink pen through the dirt will allow for sudden venting of the vessel's built-up pressure. The sudden burst of flow from the discharge does present a potential hazard.

# **Proposed Text:**

# **S3.6 VALVES, PIPING, TUBING, AND FITTINGS**

d) Safety Relief/Vent Lines – Safety relief/vent lines shall be as short and straight as possible with a continuous routing to an unenclosed area outside the building and installed in accordance with the manufacturer's instructions. The vent line(s) shall be a continuous run from the vessel pressure relief device vent piping to the outside vent line discharge fitting. Mechanical joints in metallic piping and tubing shall be visible and inspectable. Any splices in plastic or polymeric tubing shall be done within three feet of the vessel and must be visible and inspectable. These lines shall be free of physical defects such as cracking or kinking and all connections shall be securely fastened to the LCDSV and the fill box. All safety relief/vent lines shall be protected to prevent penetration by nail, projectile, or other foreign object when routed through a wall, floor, or ceiling. Additionally, all safety relief/vent line discharge shall be protected to prevent stoppage of the lines by foreign material, moisture, or insects. The minimum size and length of the lines shall be in accordance with NBIC Part 1, Tables S3.6-a and S3.6-b. Fittings or other connections may result in a localized reduction.



THE NATIONAL BOARD SINCE 1919 OF BOILER AND PRESSURE VESSEL INSPECTORS

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

s) All threaded blowdown piping discharging into a floor drain shall be anchored to the floor or other structural element.



THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Strengthen requirements for Carbon monoxide monitoring
NBIC Location:	2023 NBIC, Part 1, 1.6.9
Statement 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.
Background Information:	As the Chief Inspector of Texas, this is not the first time I have made this request. In the past I was told the biggest concern is that of a nuance trip during the winter. I have had this requirement in place in Texas since Sept. 2020, to date I have not received any reports of a nuance trip of the boiler due to CO. In fact, I have received many notifications of where this requirement has saved lives due to tripping the boiler when there was a CO leak in the boiler room. Furthermore, this item was brought up at the NB Oct. Chief Meeting in Columbus when the Chair and Vice Chair of the Main Committee were present to see the desires of the Chief Inspectors.

# **Proposed Text:**

# 1.6.9 CARBON MONOXIDE (CO) DETECTOR/ALARM

Each boiler room containing one or more boilers from which carbon monoxide (CO) can be produced shall be equipped with a CO detector with a manual reset.

<u>a) The CO detector shall have a display that indicates the current level of CO in parts per million (ppm) that is present in the boiler room.</u>

b) The CO detector and boiler(s) shall be interlocked to disable the burners when the measured level of CO rises above 50 ppm.

c) The owner or operator may choose to use a remote monitoring system. When the CO detector is remotely monitored:

1) it must be set to alarm personnel at the boiler location and at the remote location at a measured level of 50 ppm of CO;

2) the alarm at the boiler location must not be capable of being disabled until the measured level of CO falls below 50 ppm; and

3) the detector must be interlocked to disable the burners when the CO level in the boiler room reaches a measured level of 200 ppm.

d) The CO detector shall disable the burners upon loss of power to the detector.

e) The CO detector shall be calibrated in accordance with the manufacturer's recommendations or every eighteen months after installation of the detector, whichever is less. A record of calibration shall be posted at or near the boiler, or be readily accessible to an inspector. The owner or user shall install a carbon monoxide (CO) detector/alarm in equipment rooms where fuel fired boilers and/or fuel fired pressure vessels are located in accordance with the authority having Jurisdiction.