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THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD SUBCOMMITTEE INSTALLATION

MINUTES

Meeting of July 15, 2015
Columbus, OH

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The National Board of Boiler & Pressure Vessel Inspectors
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1. **Call to Order – 8:00 a.m.**

   Chair, M. Richards called the meeting to order at 8:00 a.m.

2. **Announcements**

   Introductions took place amongst all members and visitors and an attendance sheet was circulated for review and check off.

   Wednesday and Thursday – Lunch provided / 12:00 pm – 1:00 pm

   Wednesday Evening – Reception held at the National Board Pavilion / 5:00 pm – 9:00 pm

   Thursday Morning – Breakfast provided / 7:00 am – 8:00 am

   The 2015 NBIC Book Edition backpacks were available to all committee members. Each member needed to see Brad Besserman to receive and sign that this was received.

   The NBIC Writing Guide is currently being revised and will be circulated via email upon its completion. A presentation will be given in this meeting with regard to this Guide by Brad Besserman.

3. **Adoption of the Agenda**

   Added as new business as follows:

   - NB15-2303 – Footnotes
   - IN15-0501 – Interpretation dealing with 3.8.2.3
   - The possibility of a new item dealing with harmonization of wording for temperature limits
   - 3 Style issues
   - An errata editorial in supplement S3.1

   There was a motion to adopt the Agenda as published with the added items. The motion was unanimously approved.

4. **Approval of Minutes of January 20, 2015**

   There was a motion to approve the Minutes of January 20, 2015 as published. The motion was unanimously approved.

5. Review of the Roster (Attachment Page 1)

a. Nominations

- There are no nominations for new members to the Subgroup Installation or Subcommittee Installation.

b. Reappointments

- Mr. H. Michael Richards, Mr. Paul Bourgeois, Mr. Geoffrey Halley, and Mr. Brian Moore are eligible for reappointment to the Subcommittee Installation. A vote will be taken.

- Ms. Melissa Wadkinson, Mr. Paul Bourgeois, Mr. Geoffrey Halley, Mr. Brian Moore, and Mr. H. Michael Richards are eligible for reappointment to the Subgroup Installation. A vote will be taken.

c. Officer Selection

- Mr. H. Michael Richard's appointment as SC Installation Chair has expired. A vote will be held to select a SC Installation Chair. Any member of the SC Installation may put their name forward for the SC Installation Chair position. There is no term limit, so H. Michael Richards is eligible for reappointment to this position. After the vote, the selected candidate must be appointed by the National Board Chairman of the Board.

- Ms. Melissa Wadkinson's appointment as SG Installation Chair has expired. A vote will be held to select a SG Installation Chair. Any member of the SG Installation may put their name forward for the SG Installation Chair position. There is no term limit, so Melissa Wadkinson is eligible for reappointment to this position. After the vote, the selected candidate must be appointed by the National Board Chairman of the Board.

Meeting Action: Due the chair, Mr. H. Michael Richard's position being up for reappointment / selection the meeting was turned over to Mr. G. Scribner. The committee voted and unanimously approved the above reappointments and selections. Upon completion of voting and approval the meeting was turned back over to Mr. H. Michael Richards.

With the attached roster a quorum was established. There was a motion to approve the roster as published. The motion was unanimously approved.

6. Action Items

Item Number: NB10–1201	NBIC Location: Part 1	Attachment Pages 2 – 15

General Description: Reformat NBIC Part 1 by expanding the general requirements section

Subgroup: Installation

Task Group: M. Wadkinson (PM), B. Moore, S. Konopacki, E. Wiggins, D. Patten

Meeting Action: M. Wadkinson presented a progress report. The TG held a breakout session in the SG meeting and has assigned a section to each individual of the TG to research. Conference calls will take place resulting in an expected proposal to be presented in the January 2016 meeting.

Item Number: NB11–1901	NBIC Location: Part 1	No Attachment

General Description: Add guidance for the safe installation of high pressure composite pressure vessels operating in close proximity to the public

Subgroup: FRP

Task Group: Unknown

Meeting Action: M. Richards presented a progress report of this item is being reworked to have a clean version of a proposal. The Installation Checklist was separated from the original proposal, and will be submitted later as record NB15-2202. A TG of M. Richards (PM), S. Konopacki and D. Patten was assigned to aid in bringing information to this SC.

tem Number: NB12–0302	NBIC Location: Part 1	Attachment Pages 16 – 19

General Description: Add installation requirements for pressure vessels for human occupancy (PVHOs)

Subgroup: Installation

Task Group: B. Moore (PM), T. Creacy, K. Watson, T. Millette, M. Richards, G. Scribner

Meeting Action: B. Moore presented a progress report. The SG gave guidance and G. Scribner gave additional background knowledge on this item. B. Moore will make revisions to the proposal to be presented in the January 2016 meeting.

Item Number: NB13–1101	NBIC Location: Part 1	Attachment Pages 20 – 21

General Description: Add installation requirements for condensing hot water boilers

Subgroup: Installation

Task Group: G. Halley (PM), M. Wadkinson, D. Patten, B. Moore, T. Millete, P. Bourgeois

Meeting Action: G. Halley presented an updated document, "Special Requirements for the Installation of Condensing Boilers", for review and discussion in the SG meeting. Extensive discussions took place offering many suggestions and or changes. The TG then held a breakout session to discuss the feedback given by the SG, resulting in a further revised proposal to be taken to the SC for approval. The SC made a motion to move the final revised proposal to the MC. The motion was unanimously approved.

Item Number: NB14–0403	NBIC Location: Part 1	Attachment Page 22

General Description: Identify terms from Part 1 that need to be added to the index

Subgroup: Installation

Task Group: B. Moore (PM), M. Richards, T. Creacy, K. Watson, M. Washington

Meeting Action: B. Moore presented a progress report. A proposal was presented to the SG for discussion and review. The SG is in agreement of adding the items identified in the proposal to the index. This proposal will be put in a format to be letter balloted. Mr. Moore also found editorial errata's of which he will be submitting to the NB. Additionally, it was determined that a new action item will need to opened to address the consistency of water gage glass and water glass.

Item Number: NB15–0104	NBIC Location: Part 1, 2.5.1.3	Attachment Pages 23 – 26

General Description: Edit or remove "Guide for Feedpump Differential" table because it gives inconsistent guidance

Subgroup: Installation

Task Group: E. Wiggins (PM), D. Patten, S. Konopacki, K. Watson

Meeting Action: A proposal was approved in the SC January 2015 meeting but did not pass in the MC. The TG held a breakout session in the SG to discuss reworking the paragraph where the table is found. D. Patten presented a revised proposal to the SG. There was a motion to move this revised proposal to the MC for approval. The motion was unanimously approved.

Item Number: NB15–0105	NBIC Location: Part 1	No Attachment

General Description: Research ASME B31.9 Building Piping code and assess its applicability to the NBIC

Subgroup: Installation

Task Group: M. Wadkinson (PM), D. Patten, K. Watson, S. Konopacki, B. Moore, E. Wiggins

Meeting Action: M. Wadkinson presented a progress report. Upon the completion of research on this item it was determined that there is no applicability from B31.9 and therefore a motion was made to close this item with no further action. The motion was unanimously approved with Mr. Washington not voting.

Item Number: NB15–0401	NBIC Location: Part 1, 2.5.1.3	Attachment Pages 27 – 30

General Description: Clarify boiler feedwater pump installation requirements for power boilers

Subgroup: Installation

Task Group: E. Wiggins (PM), D. Patten, S. Konopacki, K. Watson

Meeting Action: A proposal was approved in the January 2015 SC meeting but did not pass in the MC. The TG held a break out session in the SG meeting to discuss reworking this proposal. D. Patten presented a revised proposal to the SG. There was a motion to move this revised proposal to the MC for approval. The motion was unanimously approved.

Item Number: NB15–1001	NBIC Location: Part 1	No Attachment

General Description: Update "stamp" vs. "certification" language to maintain consistency with ASME code

Subgroup: Installation

Task Group: P. Bourgeois (PM), K. Watson, M. Richards, M. Wadkinson

Meeting Action: G. Scribner reported that B. Besserman continues to work on searching for and highlighting language that needs to be changed, with a proposal forthcoming by the January 2016 meeting.

Item Number: NB15–1301	NBIC Location: Part 1, Section 2	Attachment Page 31

General Description: Investigate overpressure protection requirement differences between Part 1 Section 2 – Power Boilers and Part 1 Section 3 – Heating Boilers, specifically why aren't the requirements of Part 1, 3.8.1.4 duplicated in Part 1 Section 2?

Subgroup: Installation

Task Group: T. Millete (PM), M. Wadkinson, B. Moore, T. Creacy, K. Watson

Meeting Action: The TG held a breakout session in the SG meeting to discuss wording in Section 2, Section 3, and CSD-1, to work towards developing new text in Section 2. M. Wadkinson presented a proposal to the SG. There was a motion to move the proposal to the MC for approval. The motion was unanimously approved.

Item Number: NB15–1302	NBIC Location: Part 1, 2.8.1	Attachment Page 32

General Description: Why aren't low water cutoffs required to have manual resets in Part 1, 2.8.1? Manual resets are required in NBIC Part 1 Section 3 and CSD-1 Article CW-140

Subgroup: Installation

Task Group: T. Millete (PM), M. Wadkinson, B. Moore, T. Creacy, K. Watson

Meeting Action: The TG held a breakout session in the SG meeting to discuss wording in Section 2, Section 3, and CSD-1, to work towards developing new text in Section 2. M. Wadkinson presented a proposal to the SG. There was a motion to move the proposal to the SC and then to the MC for approval. Additional concerns were brought up to the SC and the SC made a motion to withdraw its approval and send back to the SG for more work. The motion was unanimously approved.

Item Number: NB15–2001	NBIC Location: Part 1, Section 2	No Attachment

General Description: Add requirements for pressure operated controls for power boilers to be consistent with CSD-1 CW-310 and NBIC Part 2, 2.2.10.6 l) 1)

Subgroup: Installation

Task Group: None assigned.

Meeting Action: In the SG meeting, upon researching this item it was determined that this item was already handled under item NB15-1301. A motion was made to close this item with no further action. The motion was unanimously approved.

Item Number: NB15–2101	NBIC Location: Part 1, 2.5.3.2	No Attachment

General Description: Add requirements for a lockable disconnect for power boilers, similar to requirements for heating boilers

Subgroup: Installation

Task Group: None assigned.

Meeting Action: In the SG meeting, upon researching this item it was determined that what is contained in Section 2 2.5.3 Power Boilers is infact contained in Section 3 Steam Heating Boilers, Hot-Water Heating Boilers, Hot-Water Supply Boilers, and Potable Water Heaters under 3.5.3.1 c) . A motion was made to close this item with no further action. The motion was unanimously approved.

Item Number: NB15–2202	NBIC Location: Part 1	No Attachment
General Description:	Add checklist for the safe installation of high pressure composite pressure vessels operating in close proximity to the public	
Subgroup:	FRP	
Task Group:	None assigned.	
Meeting Action: M. Richards presented a progress report in that this resulted from NB11-1901 (Installation of High Pressure Composite Vessels). B. Moore has been assigned to address the Installation Checklist.		

7. New Business

- **New Interpretation (IN15–0501) (Attachment page 33 – 34)**
  TG assigned - P. Bourgeois (PM), T. Creacy, B. Moore, K. Watson and D. Patten.

  G. Scribner gave clarification to the SG. The assigned TG held a breakout session in the SG meeting to discuss the proposal of an answer. The proposed answer was presented to the SG. There was a motion to move the proposed answer to the MC for approval. The motion was unanimously approved.

- **New Action Item (NB15–2303) (Attachment Pages 35 – 46)**
  A TG has been assigned - M. Washington (PM), P. Bougeois, T. Creacy, and K. Watson.

  The TG held a breakout session to discuss and review whether the footnotes should be removed as a footnote or is it Code language that could be incorporated in the body of the code, or is it a definition to be put in the glossary.

- **New Action Item (NB15–0106) (Attachment Pages 47 – 51)** To address Figure 3.7.5.1
  A TG has been assigned - B. Moore (PM), T. Creacy, and M. Washington

- **New Action Item (NB15–0107) (Attachment Pages 52 – 55)** To address 3.8.2.3 with BPV IV and CSD-1
  A TG has been assigned - M. Wadkinson (PM)

- **New Action Item (NB15–0108) (Attachment Page 56 – 57)** Add a supplement to address high temperature hot water boilers.
  A TG has been assigned - M. Wakdinson (PM), B. Moore, T. Creacy, D. Patten and P. Bourgeois

8. Future Meetings

January 2016 – Corpus Christi, Texas
July 2016 – Columbus, Ohio

9. Adjournment

The meeting adjourned at 11:10 am

Respectfully Submitted,
Jeanne Bock
Secretary

SC Installation Attendance Sheet - 7/15/15

Name	Company	Phone Number	Email	Signature
Mike Richards	SOUTHERN COMPANY	205 992-7111	HMRICHAR@SOUTHERNCO.COM	
Don Patten	BAY CITY BOILER & ENG. INC	(510) 786-3711	dpatten@BAYCITYBOILER.COM	
Jeanne Bock	NB			
Paul Bourgeois	ARISE, INC.	732-943-6078	PCBourge@gmail.com	
Geoffrey Halley	ABMA	636 394 3483	ghalleysji@aol.com	
Stanley Konopacki	NRG	815 372-4740	Stanley.Konopacki@NRG.com	
Brian Moore	HSB	860 722-5657	brian_moore@hsb.com	
Paul Schuelke	Weil-McLain	219-879-656 EXT 407	pschuelke@weil-mclain.com	
Melissa Wadkinson	Fulton	(315)382 8481	melissa.wadkinson@fulton.com	
Kenneth Watson	State of Mississippi	501.590 6730	Kenneth.Watson@msdh.state.ms.us	
Edward Wiggins				
Todd Creacy	Zurich	(817) 403 4601	todd.creacy@zurichna.com	
Milton Washington	State of NJ	(609) 292 0345	Milton.Washington@dol.state.nj.us	

2.3.1 SUPPORTS, FOUNDATIONS, AND SETTINGS

Each boiler and its associated piping must be safely supported. Design of supports, foundations, and settings shall consider vibration (including seismic where necessary), movement (including thermal movement), and loadings (including the weight of water during a hydrostatic test) in accordance with jurisdictional requirements, manufacturer's recommendations, and/or other industry standards, as applicable.

3.3.1 SUPPORTS

Each heating boiler shall be supported by masonry and/or structural supports of sufficient strength and rigidity to safely support the heating boiler and its contents without vibration in the heating boiler or its connecting piping and to allow for expansion and contraction.

S5.3.1 SUPPORTS, FOUNDATIONS, AND SETTINGS

Each thermal fluid heater and its associated piping must be safely supported. Design of supports, foundations, and settings shall consider vibration (including seismic where necessary), movement (including thermal movement), and loadings (including the weight of the fluid in the system) in accordance with jurisdictional requirements, manufacturer's recommendations, and/or other industry standards, as applicable.

2.3.2 STRUCTURAL STEEL

a) If the boiler is supported by structural steel work, the steel supporting members shall be so located or insulated that the heat from the furnace will not affect their strength.

b) Structural steel shall be installed in accordance with jurisdictional requirements, manufacturer's recommendations, and/or other industry standards, as applicable.

3.3.3 STRUCTURAL STEEL

a) If the boiler is supported by structural steel work, the steel supporting members shall be so located or insulated that the heat from the furnace will not affect their strength.

b) Structural steel shall be installed in accordance with jurisdictional requirements, manufacturer's recommendations, and/or industry standards as appropriate.

S5.3.2 STRUCTURAL STEEL

a) If the thermal fluid heater is supported by structural steel work, the steel supporting members shall be solocated or insulated that the heat from the furnace will not affect their strength.

b) Structural steel shall be installed in accordance with jurisdictional requirements, manufacturer's recommendations, and/or other industry standards, as applicable.

2.3.3 CLEARANCES

a) Boiler installations shall allow for normal operation, maintenance, and inspections. There shall be at least 36 in. (915 mm) of clearance on each side of the boiler to enable access for maintenance and/or inspection activities. Boilers operated in battery shall not be installed closer than 48 in. (1220 mm) from each other. The front or rear of any boiler shall not be located nearer than 36 in. (915 mm) from any wall or structure.

Note: Alternative clearances in accordance with the manufacturer's recommendations are subject to acceptance by the Jurisdiction.

b) Boilers shall be installed to allow for removal and installation of tubes.

c) Boilers with a top-opening manhole shall have at least 84 in. (2135 mm) of unobstructed clearance above the manhole to the ceiling of the equipment room.

d) Boilers without top-opening manholes shall have at least 36 in. (915 mm) of clearance from the top of the boiler or as recommended by the manufacturer.

e) Boilers with a bottom opening used for inspection or maintenance shall have at least 12 in. (305 mm) of unobstructed clearance.

3.3.4 CLEARANCES

a) Heating boilers shall have a minimum distance of at least 36 in. (914 mm) between the top of the heating boiler and any overhead structure and at least 36 in. (914 mm) between all sides of the heating boiler and adjacent walls, structures, or other equipment. Heating boilers having manholes shall have at least 84 in. (2135 mm) of clearance between the manhole opening and any wall, ceiling, piping, or other equipment that may prevent a person from entering the heating boiler. Alternative clearances in accordance with the manufacturer's recommendations are subject to acceptance by the Jurisdiction.

b) Modular heating boilers that require individual units to be set side by side, front to back, or by stacking shall provide clearances in accordance with the manufacturer's recommendations, subject to acceptance by the Jurisdiction.

c) Heating boilers shall be located so that adequate space is provided for proper operation, maintenance,[3] and inspection of equipment and appurtenances.

S5.3.4 CLEARANCES

a) Thermal fluid heater installations shall allow for normal operation, maintenance, and inspections. There shall be at least 18 in. (460 mm) of clearance on each side of the thermal fluid heater to enable access for maintenance and/or inspection activities. Thermal fluid heaters operated in battery shall not be installed closer than 18 in. (460 mm) from each other. The front or rear of any thermal fluid heater shall not be located nearer than 36 in. (915 mm) from any wall or structure.

b) Vertical heaters shall have at least 60 in. (1520 mm) clearance from the top of the heater or as recommended by the heater manufacturer.

c) Heaters with a bottom opening used for inspection or maintenance shall have at least 18 in. (460 mm) of unobstructed clearance.

d) NOTE: Alternative clearances in accordance with the manufacturer's recommendation are subject to acceptance by the Jurisdiction.

2.4.1 EXIT

Two means of exit shall be provided for equipment rooms exceeding 500 sq. ft. (46.5 sq. m) floor area and containing one or more boilers having a combined fuel capacity of 1,000,000 Btu/hr (293 kW) or more. Each elevation shall be provided with at least two means of exit, each to be remotely located from the other. A platform at the top of a single boiler is not considered an elevation.

3.4.1 EXIT

Two means of exit shall be provided for equipment rooms exceeding 500 sq. ft. (46.5 sq. m) of floor area and containing one or more boilers having a combined fuel capacity of 1,000,000 Btu/hr (293 kW) or more (or equivalent electrical heat input). Each elevation shall be provided with at least two means of exit, each to be remotely located from the other. A platform at the top of a single boiler is not considered an elevation.

S5.4.1 EXIT

Two means of exit shall be provided for thermal fluid heater rooms exceeding 500 sq. ft. (46.5 sq. m)floor area and containing one or more thermal fluid heaters having a combined fuel capacity of 1,000,000 Btu/hr (293 kW) or more. Each elevation shall be provided with at least two means of exit, each to be remotely located from the other. A platform at the top of a single thermal fluid heater is not considered an elevation.

2.4.2 LADDERS AND RUNWAYS

a) All walkways, runways, and platforms shall be:

1) of metal construction;

2) provided between or over the top of boilers that are more than 8 ft. (2.4 m) above the operating floor to afford accessibility for normal operation, maintenance, and inspection;

3) constructed of safety treads, standard grating, or similar material and have a minimum width of 30 in. (760 mm);

4) of bolted, welded, or riveted construction;

5) equipped with handrails 42 in. (1070 mm) high with an intermediate rail and 4 in. (100 mm) toe-board.

b) Stairways that serve as a means of access to walkways, runways, or platforms shall not exceed an angle of 45 degrees from the horizontal and shall be equipped with handrails 42 in. (1070 mm) high with an intermediate rail.

c) Ladders that serve as a means of access to walkways, runways, or platforms shall:

1) be of metal construction and not less than 18 in. (460 mm) wide;

2) have rungs that extend through the side members and are permanently secured;

3) have a clearance of not less than 30 in. (760 mm) from the front of rungs to the nearest permanent object on the climbing side of the ladder;

4) have a clearance of not less than 6-1/2 in. (165 mm) from the back of rungs to the nearest permanent object;

5) have a clearance width of at least 15 in. (380 mm) from the center of the ladder on either side across the front of the ladder.

d) There shall be at least two permanently installed means of exit from walkways, runways, or platforms that exceed 6 ft. (1.8 m) in length.

3.4.2 LADDERS AND RUNWAYS

a) All walkways, runways, and platforms shall be:

1) of metal construction;

2) provided between or over the top of boilers that are more than 8 ft. (2.4 m) above the operating floor to afford accessibility for normal operation, maintenance, and inspection;

3) constructed of safety treads, standard grating, or similar material and have a minimum width of 30 in. (760 mm);

4) of bolted, welded, or riveted construction; and

5) equipped with handrails 42 in. (1070 mm) high with an intermediate rail and 4 in. (100 mm) toe board.

b) Stairways that serve as a means of access to walkways, runways, or platforms shall not exceed an angle of 45 degrees from the horizontal and be equipped with handrails 42 in. (1070 mm) high with an intermediate rail.

c) Ladders that serve as a means of access to walkways, runways, or platforms shall:

1) be of metal construction and not less than 18 in. (460 mm) wide;

2) have rungs that extend through the side members and are permanently secured;

3) have a clearance of not less than 30 in. (760 mm) from the front of rungs to the nearest permanent object on the climbing side of the ladder;

4) have a clearance of not less than 6-1/2 in. (165 mm) from the back of rungs to the nearest permanent object; and

5) have a clearance width of at least 15 in. (380 mm) from the center of the ladder on either side across the front of the ladder.

d) There shall be at least two permanently installed means of exit from walkways, runways, or platforms that exceed 6 ft. (1.8 m) in length.

S5.4.2 LADDERS AND RUNWAYS

a) All walkways, runways and platforms shall be:

1) Of metal construction

2) Provided between or over the top of heaters that are more than 8 ft. (2.4 m) above the operating floor to afford accessibility for normal operation, maintenance, and inspection;

3) Constructed of safety treads, standard grating, or similar material and have a minimum width of 30 in. (760 mm);

4) Of bolted, welded, or riveted construction;

5) Equipped with handrails 42 in. (1070 mm) high with an intermediate rail and 4 in. (100 mm) toe-board.

b) Stairways that serve as a means of access to walkways, runways, or platforms shall not exceed an angle of 45 degrees from the horizontal and be equipped with handrails 42 in. (1070 mm) high with an intermediate rail.

c) Ladders that serve as a means of access to walkways, runways, or platforms shall:

1) Be of metal construction and not less than 18 in. (460 mm) wide;

2) Have rungs that extend through the side members and are permanently secured;

3) Have a clearance of not less than 30 in. (760 mm) from the front of rungs to the nearest permanent object on the climbing side of the ladder;

4) Have a clearance of not less than $6^{1/2}$ in. (165 mm) from the back of rungs to the nearest permanent object;

5) Have a clearance width of at least 15 in. (380 mm) from the center of the ladder on either side across the front of the ladder.

d) There shall be at least two permanently installed means of exit from walkways, runways, or platforms that exceed 6 ft. (1.8m) in length.

2.5.2 FUEL

Fuel systems, whether firing coal, oil, gas, or other substance, shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, as applicable.

3.5.2 FUEL

Fuel systems, whether firing coal, oil, gas, or other substance, shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, as applicable.

S5.5.6 FUEL

Fuel systems, whether firing on oil, gas or other substances, shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or other industry standards, as applicable.

2.5.4 VENTILATION AND COMBUSTION AIR

a) The equipment room shall have an adequate air supply to permit clean, safe combustion, minimize soot formation, and maintain a minimum of 19.5% oxygen in the air of the boiler room. The combustion and ventilation air should be supplied by either an unobstructed air opening or by power ventilation or fans.[1]

b) Unobstructed air openings shall be sized on the basis of 1 sq. in. (650 sq. mm) free area per 2000 Btu/hr (586 W) maximum fuel input of the combined burners located in the equipment room, or as specified in the National Fire Protection Association (NFPA) standards for oil and gas burning installations for the particular job conditions. The equipment room air supply openings shall be kept clear at all times.

c) Power ventilators or fans shall be sized on the basis of 0.2 cfm (0.0057 cu meters per minute) for each 1000 Btu/hr (293 W) of maximum fuel input for the combined burners of all boilers located in the equipment room. Additional capacity may be required for any other fuel-burning equipment in the boiler room.

d) When power ventilators or fans are used to supply combustion air, they shall be installed with interlock devices so that the burners will not operate without an adequate number of ventilators/fans in operation.

e) The size of openings specified in NBIC Part 1, 2.5.4 b) may be reduced when special engineered air supply systems approved by the Jurisdiction are used.

f) Care should be taken to ensure that steam and water lines are not routed across combustion air openings, where freezing may occur in cold climates.

3.5.4 VENTILATION AND COMBUSTION AIR

a) The equipment room shall have an adequate air supply to permit clean, safe combustion, minimize soot formation, and maintain a minimum of 19.5% oxygen in the air of the equipment room. The combustion and ventilation air may be supplied by either an unobstructed air opening or by power ventilation or fans.[4]

b) Unobstructed air openings shall be sized on the basis of 1 sq. in. (645 sq mm) free area per 2000 Btu/hr (586 W) maximum fuel input of the combined burners located in the equipment room, or as specified in the National Fire Protection Association (NFPA) standards for oil and gas burning installations for the particular job conditions. The equipment room air supply openings shall be kept clear at all times.

c) Power ventilators or fans shall be sized on the basis of 0.2 ft^3 (0.006 m^3) for each 1,000 Btu/hr (293 W) of maximum fuel input for the combined burners of all boilers and/or water heaters located in the equipment room. Additional capacity may be required for any other fuel burning equipment in the equipment room.

d) When power ventilators or fans are used to supply combustion air, they shall be installed with interlock devices so that the burners will not operate without an adequate number of ventilators/fans in operation.

e) When combustion air is supplied to the heating boiler by an independent duct, with or without the employment of power ventilators or fans, the duct shall be sized and installed in accordance with the manufacturer's recommendations. However, ventilation for the equipment room must still be considered.

f) The size of openings specified in NBIC Part 1, 3.5.4 b) may be reduced when special engineered air supply systems approved by the Jurisdiction are used.

g) Care should be taken to ensure that steam and water lines are not routed across combustion air openings, where freezing may occur in cold climates.

S5.5.8 VENTILATION AND COMBUSTION AIR

a) The equipment room shall have an adequate air supply to permit clean, safe combustion, minimize soot formation, and maintain a minimum of 19.5% oxygen in the air of the equipment room and sufficient to maintain ambient temperatures as recommended by the heater manufacturer. The combustion and ventilation air should be supplied by either an unobstructed air opening or by power ventilation or fans.

Note: When combustion air is supplied to the thermal fluid heater by an independent duct, with or without the employment of power ventilators or fans, the duct shall be sized and installed in accordance with the manufacturer's recommendations. However, ventilation for the equipment room must still be considered.

b) Unobstructed air openings shall be sized on the basis of 1 sq. in. (650 sq. mm) free area per 2000 Btu/hr (586 W) maximum fuel input of the combined burners located in the equipment room, or as specified in the National Fire Protection Association (NFPA) standards for oil and gas burning installations for the particular job conditions. The heater equipment room air supply openings shall be kept clear at all times.

c) Power ventilators or fans shall be sized on the basis of 0.2 cfm (0.0057 cu meters per minute) for each 1000 Btu/hr (293 W) of maximum fuel input for the combined burners of all thermal fluid heaters located in the equipment room. Additional capacity may be required for any other fuel burning equipment in the equipment room. Pressure in the room should be consistently neutral.

d) When power ventilators or fans are used to supply combustion air they shall be installed with interlock devices so that the burners will not operate without an adequate number of ventilators/fans in operation.

e) The size of openings specified in b) may be reduced when special engineered air supply systems approved by the Jurisdiction are used.

f) Care should be taken to ensure that thermal fluid lines are not routed across combustion air openings, where freezing may occur in cold climates.

2.5.5 LIGHTING

The equipment room should be well lighted and it should have an emergency light source for use in case of power failure.

3.5.5 LIGHTING

The boiler room should be well lighted, and it should have an emergency light source for use in case of power failure.

S5.5.9 LIGHTING

The equipment room should be well lighted and it should have an emergency light source for use in case of power failure.

2.6.1 CHIMNEY OR STACK

Chimneys or stacks shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, as applicable.

3.6.1 CHIMNEY OR STACK

Chimneys or stacks shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, as applicable.

S56.1 CHIMNEY OR STACK

Chimneys or stacks shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, as applicable.

2.10.2 PRESSURE TEST

Prior to initial operation, the completed boiler, including pressure piping, water columns, superheaters, economizers, stop valves, etc., shall be pressure tested in accordance with the original code of construction. Any pressure piping and fittings such as water columns, blowoff valves, feedwater regulators, superheaters, economizers, stop valves, etc., which are shipped connected to the boiler as a unit, shall be hydrostatically tested with the boiler and witnessed by an Inspector.

3.10.1 PRESSURE TEST

Prior to initial operation, the completed boiler, individual module, or assembled module, shall be subjected to a pressure test in accordance with the requirements of the original code of construction.

S5.8.2 PRESSURE TEST

Prior to initial operation, the completed thermal fluid heater system, including pressure piping, pumps, stop valves, etc., shall be pressure tested in accordance with the manufactures recommendations. Hydrostatic testing of the system is not recommended due to possible contamination of the system. All pressure testing should be witnessed by an Inspector.

2.10.5 FINAL ACCEPTANCE

A boiler may not be placed into service until its installation has been inspected and accepted by the appropriate jurisdictional authorities.

3.10.2 FINAL ACCEPTANCE

a) In addition to determining that all equipment called for is furnished and installed in accordance with the plans and specifications, all controls shall be tested by a person familiar with the control system.

b) Before any new heating plant (or boiler) is accepted for operation, a final (or acceptance) inspection by a person familiar with the system shall be completed and all items of exception corrected.

S5.8.5 FINAL ACCEPTANCE

A thermal fluid heater may not be placed into service until its installation has been inspected and accepted by the appropriate jurisdictional authorities.

Proposed Supplement to Part 1, Section 6
Supplement 4
Installation of Pressure Vessels for Human Occupancy

(NOTES are reminders and placeholders for the Task Group.)

SUPPLEMENT Y

INSTALLATION OF PRESSURE VESSELS FOR HUMAN OCCUPANCY (PVHO) FOR HYPERBARIC OXYGEN THERAPY

Y4.1 SCOPE

This Supplement provides general information to help owners, users, installers, and jurisdictional authorities such as building officials understand these vessels and their unique characteristics. The systems covered in this supplement include only medical systems for Hyperbaric Oxygen Therapy (HBO). ***(NOTE: may need to add a definition to the Glossary)***

Y4.2 General

As medical devices, PVHOs are strictly regulated by federal, state, and local agencies. Such agencies include medical licensing, Food and Drug Administration ***(NOTE: need to verify and list others.)***

a) Federal law restricts sales of these devices to sales by physicians or by order of a physician.

b) Unique Characteristics

1) Fire hazard due to oxygen rich environment
2) Rapid decompression)
3) Pressure boundary valves
4) Purity of gases inside the vessel ***(NOTE: Not only is pure oxygen a potential fire hazard, but a high concentration of gaseous hydrocarbons in the gas supply can be as well.)***
5) Exhaust and vent lines ***(NOTE: Some manufacturers prohibit manifolding in their Installation Instructions to prevent possibly contaminate gases from entering other vessels.)***
6) Grounding the vessel ***(NOTE: Manufacturers have specific grounding requirements unique to their vessels. This includes patient grounding with a wrist strap.)***
7) Life expectancy of acrylic vessel/windows ***(NOTE: This is dependent in part to the manufacturers recommendations and PVHO-2)***

Y4.3 RESPONSIBILITIES

Owners, user, and installers – ***(NOTE: due to the unique nature of these medical devices, this section will explain that the owners, users, and installers have specific responsibilities to follow the manufacturer's installation instruction.)***

Y4.4 CODES AND STANDARDS ***(NOTE: It will be vital to explain that these some of the "possible" codes and standards, but following them is the explicit responsibility as notes in the previous paragraph. In-service inspection responsibility will be explicitly exempted.)***

Depending the codes and standards adopted by the jurisdiction, the following are typically used by manufacturers and installers.

a) Vessel Construction
   1) ASME Section VIII Div 1 and Div 2
   2) ASME PVHO-1

b) Piping
   1) B31.1
   2) B31.3
   3) B31.9

c) Building – NFPA 99

Y4.5 INSTALLATION

The following aspects of installation shall be the responsibility of the owner/user/installer.

a) Construction of treatment room

b) Construction of the vessel

   Hyperbaric chambers are manufactured in accordance with ASME Section VIII, Division 1 and the ASME PVHO-1 Safety Standard for Pressure Vessels for Human Occupancy. They are designed to administer gases from pure O_2 to air at pressures above atmospheric

   The basic components of the chamber are:

   1) Acrylic windows
   2) Quick opening access door(s)
   3) Tie rods (for single occupancy chambers)
   4) Seals
   5) Door locking mechanism and safety interlock device(s)
   6) Pressure control system
   7) Ventilation control
   8) Pressure relief device(s)

c) Operation
The manufacturer's operating instructions shall be followed.

d) Pneumatic pressure control system

e) Communication system

f) Uses
The PVHO should be used for its intended purpose as prescribed by the manufacturer.

Y4.6 DESCRIPTION OF VESSEL

a) Overpressure Protection

1) Relief valve with open manual quick opening valve with frangible seal
2) Venting of relief valve (safe location outside the building)
3) No rupture disk PRDs
4) Exhaust

b) Controls ***(NOTE: This section will describe overall "typical" controls.)***

c) Operation

The vessels should only be operated by qualified personnel under the direction of a fully trained and authorized physician, and should only be used for the intended purpose.

d) Unique Characteristics **move to operation and safety**

1) Fire hazard due to oxygen rich environment
2) Rapid decompression)
3) Pressure boundary valves
4) Purity of gases inside the vessel - Oxygen and medical breathing air supplied to the vessel must be extremely clean (no more than 25 parts per million (ppm) of gaseous hydrocarbons is allowed). A high concentration of gaseous hydrocarbons in the gas supply is also a fire hazard.
5) Exhaust and vent lines should not be manifolded to prevent possibly contaminate gases from entering other vessels.
6) Must be grounded according to manufacturer's requirements. This includes patient grounding with a wrist strap.
7) Just like scuba divers ascending from depth, patients must breath freely and not hold their breath.
8) Life expectancy of acrylic vessel

e) Maintenance

1) Scratches in the acrylic windows
2) Door seals

(NOTE: Other ideas)

- *Permission to use some images from OEMs.*
- *Process flow diagram*
- *Installation, maintenance, and repair only by manufacturer trained technicians*
- *Full-time attendant during patient therapy*
- *Typical MAWP and relief valve setting/capacity*
- *Max operating pressure*
- **Emergency Vent Rate**

References

A. Sechrist User's Manual — Monoplace Hyperbaric Chamber Model 3300H/HR, 3600H/HR, and 4100H/HR Hyperbaric Chamber

B. Sechrist Installation Requirements and Technical Instruction Guide — Monoplace Hyperbaric Chamber H-Series - Classic; H-Series with Gurney Storage and Low Profile Gurney; and Models 3300H/HR, 3600H/HR and 4100H/HR

C. https://en.wikipedia.org/wiki/Hyperbaric_medicine

D. https://en.wikipedia.org/wiki/Undersea_and_Hyperbaric_Medical_Society

E. Undersea and Hyperbaric Medical Society https://www.uhms.org/

F. PVHO-1 and -2

G. NFPA 99

PART 1, SECTION 6

SPECIAL REQUIREMENTS FOR THE INSTALLATION OF CONDENSING BOILERS

S6.1 SCOPE

a) NBIC Part 1 Section 6 Supplement 6 provides requirements for various aspects of the installation of Condensing Boilers which are unique from other products covered by this section.

b) This supplement is intended for the Owner/User/Installer only, and is based on Local, State or National Building Codes requiring the installation of a Carbon Monoxide (CO) detector/alarm in the boiler room.

S6.2 DETERMINATION OF ALLOWABLE OPERATING PARAMETERS

The allowable operating parameters of the combustion air intake and the exhaust gas venting shall be in accordance with jurisdictional, environmental and manufacturers recommendations, as applicable.

S6.3 GENERAL REQUIREMENTS

Condensing boilers shall meet all the requirements of NBIC Part 1, Section 3 and this Supplement.

S6.4 FLUE GAS VENTING SYSTEM PIPING REQUIREMENTS

a) The vent piping shall be corrosion resistant and fabricated from either stainless alloy or plastic material as defined by the boiler manufacturer and certified for the application.

b) The diameter of the vent piping shall be as defined by the boiler manufacturer and shall not be reduced, except as allowed by the boiler manufacturer.

c) The “Total Equivalent Length” of the vent piping, and the pressure drop through the vent piping, shall not exceed that stated in the Boiler Manufacturer’s Installation Manual. (Note Equivalent Length includes the pressure loss effect of various pipe fittings, such as elbows, etc.) Horizontal pipe runs shall slope toward the boiler and the condensate collection point.

d) The termination point of the vent piping shall be positioned such that there is no possibility of vented flue gas being entrained in the combustion air intake, as defined by the manufacturer. Additionally the vent termination shall be located above the highest known snowline for the location involved, and be designed in such a manner, so as to prevent freezing.

S6.5 SEALED COMBUSTION SYSTEM REQUIREMENTS

a) The location of the outside air intake, relative to the flue gas vent, shall be such that there shall be no cross contamination with products of combustion or other airborne corrosive or hazardous contaminants, as defined by the manufacturer. Additionally the location of the combustion air intake shall be above the highest known snowline for the location involved.

b) The diameter, length and routing of the combustion air intake piping shall be such that the pressure drop though the system, including any filters, shall not exceed the maximum pressure drop stated by the boiler/burner manufacturer.

S6.6 CONDENSATE DRAIN SYSTEM REQUIREMENTS

The flue gas condensate from an individual boiler shall be collected at a single point, and the routing of the drain piping shall include the following features:

1) A water trap, the height of which cannot be varied by field manipulation, and is in accordance with boiler manufacturers requirements.

2) A visible means of ensuring that the condensate water trap contains the correct water level.

3) A discharge point away from occupied areas.

4) A method of controlling the pH of the condensate prior to its discharge into a sewer system, if required by local building Codes.

Item Number: NB14-0403 NBIC — Identify terms from Part 1 that need to be added to the index.

Task Group: Brian Moore (PM), Mike Richards, Todd Creacy, Ken Watson, Milton Washington

1. Limit control appears 9 times, but is not indexed.
2. Flue and flue gas – not indexed.
3. Modular/modular boiler not indexed or defined in Glossary.
4. "Scope" – not indexed; appears 27 times. Might be useful for someone looking for the scope of a particular section.
5. ¶ 3.8.1.5 "water glass" is used 7 times and is not indexed. However, “Water-Gage Glass” is indexed, but “gage glass” is not (used 27 times).
6. "Settings" is only indexed 2 times but appears 14 times and "setting" as in "boiler setting" is not indexed. It is, however, used in the context of “boiler setting” 4 times.
7. PVHO is not indexed in Parts 1 or 2.
8. CO_2 and carbon dioxide (appears 12 times) are not indexed. CO_2 does not appear in a word search, but are used in Supplement 3.
9. “shutoff” is not indexed. “Shutoff” is used 14 times and mostly followed by “valve”.
10. “de-rate” is not indexed. It is used 3 times.
11. “Installation report” is not indexed. It is used 21 times.
12. “Platform” is not indexed. It is used 20 times.
13. “Walkway is not indexed. It is used 16 times.
14. “Runway” is not indexed. It is used 21 times. It is, however, indexed with “Ladders and Runways”.

<u>Discovered during index review.</u>

1. Errata or Typo - S3.1 "swimming pool PH control" Should be “pH”.
2. Errata or Typo - "feed water" should be one word in the "Installation Report" in two places.

Action Item Request Form

8.3 CODE REVISIONS OR ADDITIONS

Request for Code revisions or additions shall provide the following:

a) Proposed Revisions or Additions

For revisions, identify the rules of the Code that require revision and submit a copy of the appropriate rules as they appear in the Code, marked up with the proposed revision. For additions, provide the recommended wording referenced to the existing Code rules.

Existing Text

2.5.1.3 PUMPS

a) Boiler feedwater pumps shall have discharge pressure in excess of the maximum allowable working pressure (MAWP) in order to compensate for frictional losses, entrance losses, regulating valve losses, and normal static head, etc. Each source of feedwater shall be capable of supplying feedwater to the boiler at a minimum pressure of 3% higher than the highest setting of any safety valve on the boiler plus the expected pressure drop across the boiler. The following table is a guideline for estimating feed pump differential:

TABLE 2.5.1.3
GUIDE FOR FEEDWATER PUMP DIFFERENTIAL

Boiler Pressure		Boiler Feedwater Pump Discharge Pressure	
psig	(MPa)	psig	(MPa)
200	(1.38)	250	(1.72)
400	(2.76)	475	(3.28)
800	(5.52)	925	(6.38)
1,200	(8.27)	1,350	(9.31)

b) Statement of Need

Provide a brief explanation of the need for the revision or addition.

Add to the last sentence of Part 1. Pumps 2.5.1.3 a)

2.5.1.3 PUMPS

a) Boiler feedwater pumps shall have discharge pressure in excess of the maximum allowable working pressure (MAWP) in order to compensate for frictional losses, entrance losses, regulating valve losses, and normal static head, etc. Each source of feedwater shall be capable of supplying feedwater to the boiler at a minimum pressure of 3% higher than the highest setting of any safety valve on the boiler plus the expected pressure drop across the boiler. Detailed engineering evaluation of the pump selection shall be performed. The following table is a guideline for estimating feedwater pump differential**:**

c) Background Information

Provide background information to support the revision or addition, including any data or changes in technology that form the basis for the request that will allow the Committee to adequately evaluate the proposed revision or addition. Sketches, tables, figures, and graphs should be submitted as appropriate.

When applicable, identify any pertinent paragraph in the Code that would be affected by the revision or addition and identify paragraphs in the Code that reference the paragraphs that are to be revised or added.

d) TG Assigned

Project Manager:	Don Patten
Members:	Stan Konopacki and Ed Wiggins

2.5 SOURCE REQUIREMENTS

2.5.1 FEEDWATER

2.5.1.1 VOLUME

The source of feedwater shall be capable of supplying a sufficient volume of water as determined by the boiler manufacturer in order to prevent damage to the boiler when all the safety relief valves are discharging at full capacity.

2.5.1.2 CONNECTION

a) To prevent thermal shock, feedwater shall be introduced into a boiler in such a manner that the water will not be discharged directly against surfaces exposed to high temperature gases or to direct radiation from the flame.

b) For boiler operating pressures of 400 psig (2.8 MPa) or higher, the feedwater inlet through the drum shall be fitted with shields, sleeves, or other suitable means to reduce the effects of temperature differentials in the shell or head.

c) Feedwater other than condensate return shall not be introduced through the blowoff.

d) Boilers having more than 500 sq. ft. (46.5 sq. m) of water heating surface shall have at least two means of supplying feedwater. For boilers that are fired with solid fuel not in suspension, and boilers whose setting or heat source can continue to supply sufficient heat to cause damage to the boiler if the feedwater supply is interrupted, one such means of supplying feedwater shall not be subject to the same interruption as the first method. Boilers fired by gaseous, liquid, or solid fuel in suspension may be equipped with a single means of supplying feedwater, provided means are furnished for the immediate removal of heat input if the supply of feedwater is interrupted.

e) For boilers having a water heating surface of not more than 100 sq. ft. (9 sq. m), the feedwater piping and connection to the boiler shall not be smaller than NPS 1/2 (DN 15). For boilers having a water heating surface more than 100 sq. ft. (9 sq. m), the feedwater piping and connection to the boiler shall not be less than NPS 3/4 (DN 20).

f) Electric boiler feedwater connections shall not be smaller than NPS 1/2 (DN 15).

g) High-temperature water boilers shall be provided with means of adding water to the boiler or system while under pressure.

2.5.1.3 PUMPS

a) Boiler feedwater pumps shall have discharge pressure in excess of the maximum allowable working pressure (MAWP) in order to compensate for frictional losses, entrance losses, regulating valve losses, and normal static head, etc. Each source of feedwater shall be capable of supplying feedwater to the boiler at a minimum pressure of 3% higher than the highest setting of any safety valve on the boiler plus the expected pressure drop across the boiler. The following table is a guideline for estimating feedwater pump differential: (15)

TABLE 2.5.1.3
GUIDE FOR FEEDWATER PUMP DIFFERENTIAL

(15)

Boiler Pressure		Boiler Feedwater Pump Discharge Pressure	
psig	(MPa)	psig	(MPa)
200	(1.38)	250	(1.72)
400	(2.76)	475	(3.28)
800	(5.52)	925	(6.38)
1,200	(8.27)	1,350	(9.31)

b) For forced-flow steam generators with no fixed steam or water line, each source of feedwater shall be capable of supplying feedwater to the boiler at a minimum pressure equal to the expected maximum sustained pressure at the boiler inlet corresponding to operation at maximum designed steaming capacity with maximum allowable pressure at the superheater outlet.

c) Control devices may be installed on feedwater piping to protect the pump against overpressure.

2.5.1.4 VALVES

a) The feedwater piping shall be provided with a check valve and a stop valve. The stop valve shall be located between the check valve and the boiler.

b) When two or more boilers are fed from a common source, there shall also be a globe or regulating valve on the branch to each boiler located between the check valve and the feedwater source.

c) When the feedwater piping is divided into branch connections and all such connections are equipped with stop and check valves, the stop and check valve in the common source may be omitted.

d) On single boiler-turbine unit installations, the boiler feedwater stop valve may be located upstream from the boiler feedwater check valve.

e) If a boiler is equipped with duplicate feedwater supply arrangements, each such arrangement shall be equipped as required by these rules.

f) A check valve shall not be a substitute for a stop valve.

g) A combination feedwater stop-and-check valve in which there is only one seat and disk and a valve stem is provided to close the valve when the stem is screwed down shall be considered only as a stop valve, a separate check valve shall be installed.

h) Whenever globe valves are used on feedwater piping, the inlet shall be under the disk of the valve.

i) Stop valves and check valves shall be placed on the inlet of economizers or feedwater-heating devices.

j) The recirculating return line for a high-temperature water boiler shall be provided with the stop valve, or valves, required for the main discharge outlet on the boiler.

2.5.2 FUEL

Fuel systems, whether firing coal, oil, gas, or other substance, shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, as applicable.

Part 1, 2.5.1.3 – Remove "the expected pressure drop across the boiler"

The second sentence in the paragraph 2.5.1.3 a) states that "Each source of feedwater shall be capable of supplying feedwater to the boiler at a minimum pressure of 3% higher than the highest setting of any safety valve on the boiler *plus the expected pressure drop across the boiler*." For a natural circulation boiler there really isn't any pressure drop across the boiler per se. Perhaps a more relevant factor is the pressure drop in the feedwater piping between the boiler feed pump and the boiler. However, the feedwater piping pressure drop is already addressed by the fact that the 3% over pressure is required to be supplied to the boiler.

Section I PG-61.1 has a similar requirement for the 3% overpressure, but without additional the words regarding pressure drop across the boiler. In order to be consistent with Section I, I am submitting the request for revision on the following page for consideration by the Committee.

Response:

PG-61.1: Addresses feedwater supply at the boiler.

Part 1, 2.5.1.3: Addresses pumps which include system losses beyond the boiler and feedwater supply throughout the entire system.

Proposal:

2.5.1.3 PUMPS

a) Boiler feedwater pumps shall have discharge pressure in excess of the ~~maximum allowable working pressure (MAWP)~~ highest set pressure relief valve in order to compensate for frictional losses, entrance losses, regulating valve losses, and normal static head, etc. Each source ~~of feedwater~~ shall be capable of supplying feedwater to the boiler at a minimum pressure of 3% higher than the highest setting of any ~~safety~~ pressure relief valve on the boiler proper ~~plus the expected pressure drop across the boiler~~. Detailed engineering evaluation of the pump selection shall be performed. The following table is a guideline for estimating feedwater pump differential:

Rationale:

Per email from Peter Molvie - 1/28/15

Peter A. Molvie, P.E.
Manager, Codes & Standards
Cleaver-Brooks Product Development
3232 W. Lancaster Ave.

This fixes two problems. It corrects the inconsistency between the first sentence speaking in terms of pressure higher than MAWP and the second speaking of pressure in excess of the highest set safety valve. Secondly, it eliminates the counting of the piping pressure drop twice, making the words consistent with Section I. I have included the exact same words from Section I PG-61.1 as highlighted below.

PG-61 FEEDWATER SUPPLY

PG-61.1 Except as provided for in PG-61.2 and PG-61.4, boilers having more than 500 ft^2 (47 m^2) of water-heating surface shall have at least two means of feeding water. Except as provided for in PG-61.3, PG-61.4, and PG-61.5, each source of feeding shall be capable of supplying water to the boiler at a pressure of 3% higher than the highest setting of any pressure relief valve on the boiler proper. For boilers that are fired with solid fuel not in suspension, and for boilers whose setting or heat source can continue to supply sufficient heat to cause damage to the boiler if the feed supply is interrupted, one

~~Change wording to read: Boiler feedwater pumps shall have discharge pressure in excess of the boiler rated pressure (MAWP) in order to compensate for frictional losses, entrance losses, regulating valve losses, and normal static head, etc. Each source of feedwater shall be capable of supplying feedwater to the boiler at a minimum pressure of 3% higher than the highest setting of any safety valve on the boiler plus the expected pressure losses.drop across the boiler. The following table is a guideline for estimating feed pump differential:~~

2.5 SOURCE REQUIREMENTS

2.5.1 FEEDWATER

2.5.1.1 VOLUME

The source of feedwater shall be capable of supplying a sufficient volume of water as determined by the boiler manufacturer in order to prevent damage to the boiler when all the safety relief valves are discharging at full capacity.

2.5.1.2 CONNECTION

a) To prevent thermal shock, feedwater shall be introduced into a boiler in such a manner that the water will not be discharged directly against surfaces exposed to high temperature gases or to direct radiation from the flame.

b) For boiler operating pressures of 400 psig (2.8 MPa) or higher, the feedwater inlet through the drum shall be fitted with shields, sleeves, or other suitable means to reduce the effects of temperature differentials in the shell or head.

c) Feedwater other than condensate return shall not be introduced through the blowoff.

d) Boilers having more than 500 sq. ft. (46.5 sq. m) of water heating surface shall have at least two means of supplying feedwater. For boilers that are fired with solid fuel not in suspension, and boilers whose setting or heat source can continue to supply sufficient heat to cause damage to the boiler if the feedwater supply is interrupted, one such means of supplying feedwater shall not be subject to the same interruption as the first method. Boilers fired by gaseous, liquid, or solid fuel in suspension may be equipped with a single means of supplying feedwater, provided means are furnished for the immediate removal of heat input if the supply of feedwater is interrupted.

e) For boilers having a water heating surface of not more than 100 sq. ft. (9 sq. m), the feedwater piping and connection to the boiler shall not be smaller than NPS 1/2 (DN 15). For boilers having a water heating surface more than 100 sq. ft. (9 sq. m), the feedwater piping and connection to the boiler shall not be less than NPS 3/4 (DN 20).

f) Electric boiler feedwater connections shall not be smaller than NPS 1/2 (DN 15).

g) High-temperature water boilers shall be provided with means of adding water to the boiler or system while under pressure.

2.5.1.3 PUMPS

a) Boiler feedwater pumps shall have discharge pressure in excess of the maximum allowable working pressure (MAWP) in order to compensate for frictional losses, entrance losses, regulating valve losses, and normal static head, etc. Each source of feedwater shall be capable of supplying feedwater to the boiler at a minimum pressure of 3% higher than the highest setting of any safety valve on the boiler plus the expected pressure drop across the boiler. The following table is a guideline for estimating feedwater pump differential: (15)

TABLE 2.5.1.3
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(15)

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400	(2.76)	475	(3.28)
800	(5.52)	925	(6.38)
1,200	(8.27)	1,350	(9.31)

b) For forced-flow steam generators with no fixed steam or water line, each source of feedwater shall be capable of supplying feedwater to the boiler at a minimum pressure equal to the expected maximum sustained pressure at the boiler inlet corresponding to operation at maximum designed steaming capacity with maximum allowable pressure at the superheater outlet.

c) Control devices may be installed on feedwater piping to protect the pump against overpressure.

2.5.1.4 VALVES

a) The feedwater piping shall be provided with a check valve and a stop valve. The stop valve shall be located between the check valve and the boiler.

b) When two or more boilers are fed from a common source, there shall also be a globe or regulating valve on the branch to each boiler located between the check valve and the feedwater source.

c) When the feedwater piping is divided into branch connections and all such connections are equipped with stop and check valves, the stop and check valve in the common source may be omitted.

d) On single boiler-turbine unit installations, the boiler feedwater stop valve may be located upstream from the boiler feedwater check valve.

e) If a boiler is equipped with duplicate feedwater supply arrangements, each such arrangement shall be equipped as required by these rules.

f) A check valve shall not be a substitute for a stop valve.

g) A combination feedwater stop-and-check valve in which there is only one seat and disk and a valve stem is provided to close the valve when the stem is screwed down shall be considered only as a stop valve, a separate check valve shall be installed.

h) Whenever globe valves are used on feedwater piping, the inlet shall be under the disk of the valve.

i) Stop valves and check valves shall be placed on the inlet of economizers or feedwater-heating devices.

j) The recirculating return line for a high-temperature water boiler shall be provided with the stop valve, or valves, required for the main discharge outlet on the boiler.

2.5.2 FUEL

Fuel systems, whether firing coal, oil, gas, or other substance, shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, as applicable.

2.8.4 PRESSURE CONTROL

Each automatically fired steam boiler shall be protected from overpressure by two pressure-operated controls.

a) Each individual steam boiler or each system of commonly connected steam boilers shall have a control that will cut off the fuel supply when the steam pressure reaches an operating limit, which shall be less than the maximum allowable pressure.

b) Each individual automatically fired steam boiler shall have a safety limit control, with a manual reset, that will cut off the fuel supply to prevent steam pressure from exceeding the maximum allowable working pressure of the boiler. Each control shall be constructed to prevent a pressure setting above the maximum allowable working pressure of the boiler.

c) Shutoff valves of any type shall not be placed in the steam pressure connection between the boiler and the controls described in a) and b) above. These controls shall be protected with a siphon or equivalent means of maintaining a water seal that will prevent steam from entering the control. The connections to the boiler shall not be less than NPS 1/4 (DN 8), but where steel or wrought iron pipe or tubing is used, they shall not be less than NPS 1/2 (DN 15). The minimum size of an external siphon shall be NPS ¼ (DN 8) or 3/8 in. (10 mm) outside diameter nonferrous tubing. For manifold connections, the minimum size shall be as specified in the original code of construction.

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

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) 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.

PROPOSED INTERPRETATION

Inquiry No.	IN15-0501				
Source	Michael Nelson – City of Albuquerque, Boiler Inspector				
Subject	Part 1, 3.8.2.3				
Edition	2013 Edition				
Question	Question 1: In the case of a hot-water supply boiler and storage tank, is it permissible to place the operating limit on the storage tank?				
Reply	A1: Yes				
Committee's Question	Is it permissible to place the operating temperature control on a storage tank located in a hot water supply system?				
Committee's Reply	Yes				
Rationale	Not prohibited by the NBIC. See Part 1 Section 3.8.2.3 a)				
SC Vote	Unanimous X	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
NBIC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
Negative Vote Comments					

3.8.2.3 TEMPERATURE CONTROL

Each automatically fired hot-water heating or hot-water supply boiler shall be protected from over-temperature by two temperature-operated controls.

a) Each individual hot-water heating or hot-water supply boiler or each system of commonly connected boilers shall have a control that will cut off the fuel supply when the water temperature reaches an operating limit, which shall be less than the maximum allowable temperature.

b) In addition to a) above, each individual automatically fired hot-water heating or hot-water supply boiler shall have a safety limit control with manual reset that will cut off the fuel supply to prevent the water temperature from exceeding the maximum allowable temperature at the boiler outlet.

3.8.2.4 LOW-WATER FUEL CUTOFF

a) Each automatically fired hot-water boiler shall have an automatic low-water fuel cutoff with manual reset. The low-water fuel cutoff shall be designed for hot-water service, and it shall be so located as to automatically cut off the fuel supply when the surface of the water falls to the level established in b) below.

b) As there is no normal waterline to be maintained in a hot-water boiler, any location of the low-water fuel cutoff above the lowest safe permissible water level established by the boiler manufacturer is satisfactory.

c) In lieu of the requirements for low-water fuel cutoffs in paragraph a), boilers requiring forced circulation to prevent overheating of the tubes, coils, or vessel, shall have an accepted flow, and/or temperature-sensing device to prevent burner operation at a flow rate inadequate to protect the boiler unit against overheating at all allowable firing rates. This safety control(s) shall shut down the burner and prevent restarting until an adequate flow is restored and shall be independent of all other controls.

d) A means shall be provided for testing the operation of the external low-water fuel cutoff without resorting to draining the entire system. Such means shall not render the device inoperable except as follows. If the means temporarily isolates the device from the boiler during this testing, it shall automatically return to its normal position. The connection may be so arranged that the device cannot be shut off from the boiler except by a cock placed at the device and provided with a tee or lever-handle arranged to be parallel to the pipe in which it is located when the cock is open.

3.8.2.5 MODULAR HOT-WATER HEATING BOILERS

a) Each module of a modular hot-water heating boiler shall be equipped with:

   1) Pressure/altitude gage, see NBIC Part 1, 3.8.2.1;

   2) Thermometer, see NBIC Part 1, 3.8.2.2; and

   3) Temperature control, see NBIC Part 1, 3.8.2.3 a).

b) The assembled modular hot-water heating boiler shall be equipped with:

   1) Temperature control, see NBIC Part 1, 3.8.2.3 b); and

   2) Low-water fuel cutoff, see NBIC Part 1, 3.8.2.4.

Action Item Request Form

8.3 CODE REVISIONS OR ADDITIONS

Request for Code revisions or additions shall provide the following:

a) Proposed Revisions or Additions

For revisions, identify the rules of the Code that require revision and submit a copy of the appropriate rules as they appear in the Code, marked up with the proposed revision. For additions, provide the recommended wording referenced to the existing Code rules.

Existing Text:

There are 7 footnotes which occur throughout Part 1.

1 Caution, some Jurisdictions may independently administer a program of authorization for organizations to perform repairs and alterations within that Jurisdiction.
2 Fans – When combustion air is supplied to the boiler by an independent duct, with or without the employment of power ventilators or fans, the duct shall be sized and installed in accordance with the manufacturer's recommendations. However, ventilation for the equipment room must still be considered.
3 (NB-27) can be found on the National Board web-site, www.nationalboard.org,.
4 Maintenance – This includes the removal of tubes.
5 Fans – When combustion air is supplied to the boiler by an independent duct, with or without the employment of power ventilators or fans, the duct shall be sized and installed in accordance with the manufacturer's recommendations. However, ventilation for the equipment room must still be considered.
6 Side — The top side of the boiler shall mean the highest practicable part of the boiler proper but in no case shall the safety valves be located below the normal operating level and in no case shall the safety relief valve be located below the lowest permissible water level.
7 Pressure roll load, line load, and nip load are terms that are used interchangeably to refer to the interaction between the pressure roll(s) and the Yankee dryer. It is called "nip" load because the pressure roll is rubber-covered and is pressed up against the Yankee with enough force to create a nip (or pinch) that forces the paper into line contact between the rolls and provides some mechanical dewatering. The paper then sticks onto the Yankee surface and follows the Yankee dryer for thermal dewatering by the steam-heated Yankee surface. This "nip load" is called a "line load" because the units are load (force) per length of line contact. The units are pounds per linear inch (PLI) and kilonewtons per meter (kN/m).

b) Statement of Need

Provide a brief explanation of the need for the revision or addition.

The desire is to avoid footnotes where possible in order to better manage changes and revisions within the context of the Part. It was determined that some footnotes could be easily placed within the paragraph and incorporated as part of the section. Where the footnotes can be blended back into the text, maintenance of the Part can be achieved in a more efficient manner. All but one of the footnotes were able to be merged into the paragraph. The one remaining footnote was better applied as a definition, therefore moved to this section.

c) Background Information

Provide background information to support the revision or addition, including any data or changes in technology that form the basis for the request that will allow the Committee to adequately evaluate the proposed revision or addition. Sketches, tables, figures, and graphs should be submitted as appropriate.

When applicable, identify any pertinent paragraph in the Code that would be affected by the revision or addition and identify paragraphs in the Code that reference the paragraphs that are to be revised or added.

See the attached document.

d) TG Assigned – SG Installation

Project Manager: Milton Washington

Members: Brian Moore, Paul Bourgeois, Ken Watson and Todd Creacy

Recommended Revisions for NB15-2303

Page X Introduction

Original Text, Footnote 1. Caution, some Jurisdictions may independently administer a program of authorization for organizations to perform repairs and alterations within that Jurisdiction.

ACCREDITATION PROGRAMS

The National Board administers and accredits three specific repair programs~~1~~ as shown below:

"**R**"…….Repairs and Alterations to Pressure-Retaining Items
"**VR**"……..Repairs to Pressure Relief Valves
"**NR**"……..Repair and Replacement Activities for Nuclear Items

Part 3, Repairs and Alterations, of the NBIC describes the administrative requirements for the accreditation of these repair organizations.

The National Board also administers and accredits four specific inspection agency programs as shown below:

New Construction
Criteria for Acceptance of Authorized Inspection Agencies for New Construction (NB-360) Inservice
Qualifications and Duties for Authorized Inspection Agencies (AIAs) Performing Inservice Inspection
Activities and Qualifications for Inspectors of Boilers and Pressure Vessels (NB-369)
Owner-User
Accreditation of Owner-User Inspection Organizations (OUIO) (NB-371) Owners or users may be accredited for both a repair and inspection program provided the requirements for each accreditation program are met.
Federal Government
Qualifications and Duties for Federal Inspection Agencies Performing Inservice Inspection Activities (FIAs) (NB-390)

These programs can be viewed on the National Board Website at www.nationalboard.org. For questions or further information regarding these programs contact the National Board by phone at (614) 888-8320 or by fax at (614) 847-1828

~~Caution,~~ Note: Some Jurisdictions may independently administer and offer a program of authorization for organizations who only wish to perform repairs and alterations within that Jurisdiction.

Page 12 – Section 2
Original Text, Footnote 2. Fans – When combustion air is supplied to the boiler by an independent duct, with or without the employment of power ventilators or fans, the duct shall be sized and installed in accordance with the manufacturer's recommendations. However, ventilation for the equipment room must still be considered.

2.5.4 VENTILATION AND COMBUSTION AIR

a) The equipment room shall have an adequate air supply to permit clean, safe combustion, minimize soot formation, and maintain a minimum of 19.5% oxygen in the air of the boiler room. The combustion and ventilation air should be supplied by either an unobstructed air opening or by power ventilation or fans.~~2~~ ~~Fans –~~ When combustion air is supplied to the boiler by an independent duct, with or without the employment of power ventilators or fans, the duct shall be

sized and installed in accordance with the manufacturer's recommendations. However, ventilation for the equipment room must still be considered.

Page 15 – Section 2

Original Text, Footnote 3. *The Guide for Blowoff Vessels* (NB-27) can be found on the National Board web-site, www.nationalboard.org

2.7.5 BLOWOFF

p) Boiler blowoff systems shall be constructed in accordance with the *Guide for Blowoff Vessels* (NB-27) ~~3 *The Guide for Blowoff Vessels* (NB-27)~~ which, can be found on the National Board web-site, www.nationalboard.org.

Page 27 – Section 3
Original Text, Footnote 4. Maintenance – This includes the removal of tubes.

3.3.4 CLEARANCES

c) Heating boilers shall be located so that adequate space is provided for proper operation, maintenance~~4 Maintenance – This~~ which, includes the removal of tubes and inspection of equipment and appurtenances.

Page 30 – Section 3
Original Text, Footnote 5. Fans – When combustion air is supplied to the boiler by an independent duct, with or without the employment of power ventilators or fans, the duct shall be sized and installed in accordance with the manufacturer's recommendations. However, ventilation for the equipment room must still be considered.

3.5.4 VENTILATION AND COMBUSTION AIR

a) The equipment room shall ha)e an ade0uate air supply to permit clean, safe combustion, minimize soot formation, and maintain a minimum of 19.5% oxygen in the air of the e0uipment room. The combustion and ventilation air may be supplied by either an unobstructed air opening or by power ventilation or fans.~~5 Fans –~~ When combustion air is supplied to the boiler by an independent duct, with or without the employment of power ventilators or fans, the duct shall be sized and installed in accordance with the manufacturer's recommendations. However, ventilation for the equipment room must still be considered.

Page 47 – Section 3
Original Text, Footnote 6. Side — The top side of the boiler shall mean the highest practicable part of the boiler proper but in no case shall the safety valves be located below the normal operating level and in no case shall the safety relief valve be located below the lowest permissible water level.

3.9.1.1.1 PERMISSIBLE MOUNTING

Safety valves and safety relief valves shall be located at the top side[6] of the boiler. ~~Side -~~ The top side of the boiler shall mean the highest practicable part of the boiler proper but in no case shall the safety valves be located below the normal operating level and in no case shall the safety relief valve be located below the lowest permissible water level. They shall be connected directly to a tapped or flanged opening in the boiler, to a fitting connected to the boiler by a short nipple, to a Y-base, or to a valveless header connecting steam or water outlets on the same boiler. Coil or header type boilers shall have the safety valve or safety relief valve located on the steam or hot-water outlet end. Safety valves and safety relief valves shall be installed with their spindles vertical. The opening or connection between the boiler and any safety valve or safety relief valve shall have at least the area of the valve inlet.

Page 66 – Supplement 1

Original Text, Footnote 7. Pressure roll load, line load, and nip load are terms that are used interchangeably to refer to the interaction between the pressure roll(s) and the Yankee dryer. It is called “nip” load because the pressure roll is rubber-covered and is pressed up against the Yankee with enough force to create a nip (or pinch) that forces the paper into line contact between the rolls and provides some mechanical dewatering. The paper then sticks onto the Yankee surface and follows the Yankee dryer for thermal dewatering by the steam-heated Yankee surface. This “nip load” is called a “line load” because the units are load (force) per length of line contact. The units are pounds per linear inch (PLI) and kilonewtons per meter (kN/m).

S1.2 ASSESSMENT OF INSTALLATION

4) Pressure roll load (line or nip load)[7] due to pressing the wet web onto the dryer. Overload protection is usually provided by a control valve that limits the pneumatic or hydraulic forces on the roll loading arms such that the resultant nip load does not exceed the allowable operating nip load.

Amend this footnote to Part 1, Section 9, Installation - Glossary of Terms

9.1 DEFINITIONS

Pressure roll load – The terms line load, and nip load are ~~terms that are~~ used interchangeably to refer to the interaction between the pressure roll(s) and the Yankee dryer. It is called “nip” load because the pressure roll is rubber-covered and is pressed up against the Yankee with enough force to create a nip (or pinch) that forces the paper into line contact between the rolls and provides some mechanical dewatering. The paper then sticks onto the Yankee surface and follows the Yankee dryer for thermal dewatering by the steam-heated Yankee surface. This “nip load” is called a “line load” because the units are load (force) per length of line contact. The units are pounds per linear inch (PLI) and kilonewtons per meter (kN/m).

parentheses. In Part 2, Supplement 6 and Part 3, Supplement 6 regarding DOT Transport Tanks, the metric units are shown first with the U.S. customary units shown in parentheses.

U.S. customary units or metric units may be used with this edition of the NBIC, but one system of units shall be used consistently throughout a repair or alteration of pressure-retaining items. It is the responsibility of National Board accredited repair organizations to ensure the appropriate units are used consistently throughout all phases of work. This includes materials, design, procedures, testing, documentation, and stamping. The NBIC policy for metrication is outlined in each part of the NBIC.

ACCREDITATION PROGRAMS

The National Board administers and accredits three specific repair programs[1] as shown below:

"**R**".....Repairs and Alterations to Pressure-Retaining Items
"**VR**".....Repairs to Pressure Relief Valves
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Qualifications and Duties for Authorized Inspection Agencies (AIAs) Performing Inservice Inspection Activities and Qualifications for Inspectors of Boilers and Pressure Vessels (NB-369)

Owner-User
Accreditation of Owner-User Inspection Organizations (OUIO) (NB-371) Owners or users may be accredited for both a repair and inspection program provided the requirements for each accreditation program are met.

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CERTIFICATES OF AUTHORIZATION FOR ACCREDITATION PROGRAMS

Any organization seeking an accredited program may apply to the National Board to obtain a Certificate of Authorization for the requested scope of activities. A confidential review shall be conducted to evaluate the organization's quality system. Upon completion of the evaluation, a recommendation will be made to the National Board regarding issuance of a Certificate of Authorization.

Certificate of Authorization scope, issuance, and revisions for National Board accreditation programs are specified in the applicable National Board procedures. When the quality system requirements of the appropriate accreditation program have been met, a Certificate of Authorization and appropriate National Board symbol stamp shall be issued.

1 Caution, some Jurisdictions may independently administer a program of authorization for organizations to perform repairs and alterations within that Jurisdiction.

2.5.4 VENTILATION AND COMBUSTION AIR

(15) a) The equipment room shall have an adequate air supply to permit clean, safe combustion, minimize soot formation, and maintain a minimum of 19.5% oxygen in the air of the boiler room. The combustion and ventilation air should be supplied by either an unobstructed air opening or by power ventilation or fans.[2]

b) Unobstructed air openings shall be sized on the basis of 1 sq. in. (650 sq. mm) free area per 2,000 Btu/hr (586 W) maximum fuel input of the combined burners located in the equipment room, or as specified in the National Fire Protection Association (NFPA) standards for oil and gas burning installations for the particular job conditions. The equipment room air supply openings shall be kept clear at all times.

c) Power ventilators or fans shall be sized on the basis of 0.2 cfm (0.0057 cu meters per minute) for each 1,000 Btu/hr (293 W) of maximum fuel input for the combined burners of all boilers located in the equipment room. Additional capacity may be required for any other fuel-burning equipment in the boiler room.

d) When power ventilators or fans are used to supply combustion air, they shall be installed with interlock devices so that the burners will not operate without an adequate number of ventilators/fans in operation.

e) The size of openings specified in NBIC Part 1, 2.5.4 b) may be reduced when special engineered air supply systems approved by the Jurisdiction are used.

f) Care should be taken to ensure that steam and water lines are not routed across combustion air openings, where freezing may occur in cold climates.

2.5.5 LIGHTING

(15) The equipment room should be well lit and it should have an emergency light source for use in case of power failure.

2.5.6 EMERGENCY VALVES AND CONTROLS

All emergency shut-off valves and controls shall be accessible from a floor, platform, walkway, or runway. Accessibility shall mean within a 6 ft. (1.8 m) elevation of the standing space and not more than 12 in. (305 mm) horizontally from the standing space edge.

2.6 DISCHARGE REQUIREMENTS

2.6.1 CHIMNEY OR STACK

Chimneys or stacks shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, as applicable.

2.6.2 ASH REMOVAL

Ash removal systems shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, as applicable.

2.6.3 DRAINS

2.6.3.1 CONNECTION

2 Fans – When combustion air is supplied to the boiler by an independent duct, with or without the employment of power ventilators or fans, the duct shall be sized and installed in accordance with the manufacturer's recommendations. However, ventilation for the equipment room must still be considered.

d) Two independent slow-opening valves or a slow-opening valve and quick-opening valve may be combined in one body provided the combined fitting is the equivalent of two independent slow-opening valves or a slow-opening valve and a quick-opening valve, and the failure of one to operate cannot affect the operation of the other.

e) Straight-run globe valves or valves where dams or pockets can exist for the collection of sediment shall not be used.

f) The blowoff valve or valves and the pipe and fittings between them and the boiler shall be of the same size. The minimum size of pipe and fittings shall be NPS 1 (DN 25), except boilers with 100 sq. ft (9.3 sq. m) or less of heating surface should be NPS 3/4 (DN 20). The maximum size of pipe and fittings shall not exceed NPS 2-1/2 (DN 65).

g) For electric boilers, the minimum size of blowoff pipes and fittings shall be NPS 1 (DN 25), except for boilers of 200 kW input or less. The minimum size should be NPS 3/4 (DN 20).

h) Fittings and valves shall comply with the appropriate national standard except that austenitic stainless steel and malleable iron are not permitted.

i) When the maximum allowable working pressure exceeds 100 psig (700 kPa), blowoff piping shall be at least Schedule 80 and the required valves and fittings shall be rated for at least 1.25 times the maximum allowable working pressure of the boiler. When the maximum allowable working pressure exceeds 900 psig (6.2 MPa), blowoff piping shall be at least Schedule 80 and the required valves and fittings shall be rated for at least the maximum allowable working pressure of the boiler plus 225 psi (1.6 MPa).

j) All blowoff piping, when exposed to furnace heat, shall be protected by fire brick or other heat resisting material so constructed that the piping may be readily inspected.

k) On a boiler having multiple blowoff pipes, a single master stop valve should be placed on the common blowoff pipe from the boiler and one stop valve on each individual blowoff. Either the master valve or the valves on the individual blowoff lines shall be of the slow-opening type.

l) The discharge of blowoff pipes shall be located so as to prevent injury to personnel.

m) All waterwalls or water screens that do not drain back into the boiler and integral economizers forming part of a boiler shall be equipped with blowoff piping and valves conforming to the requirements of this paragraph.

n) Blowoff piping from a boiler should not discharge directly into a sewer. A blowoff tank, constructed to the provisions of a code of construction acceptable to the Jurisdiction, shall be used where conditions do not provide an adequate and safe open discharge.

o) Galvanized pipe shall not be used.

p) Boiler blowoff systems shall be constructed in accordance with the *Guide for Blowoff Vessels* (NB-27).[3]

q) Where necessary to install a blowoff tank underground, it shall be enclosed in a concrete or brick pit with a removable cover so that inspection of the entire shell and heads of the tank can be made.

r) Piping connections used primarily for continuous operation, such as deconcentrators on continuous blowdown systems, are not classed as blowoffs; but the pipe connections and all fittings up to and including the first shutoff valve shall be equal at least to the pressure requirements for the lowest set pressure of any safety valve on the boiler drum and with the corresponding saturated-steam temperature. Further, such connections shall not exceed NPS 2-1/2 (DN 65).

3 *The Guide for Blowoff Vessels* (NB-27) can be found on the National Board web-site, www.nationalboard.org,.

d) Lugs or Hangers
Lugs, hangers, or brackets made of materials in accordance with the requirements of the code of construction may be attached by fusion welding provided they are attached by fillet welds along the entire periphery or contact edges. NBIC Part 1, Figure 3.3.1.1-b illustrates an acceptable design of hanger bracket with the additional requirement that the center pin be located at the vertical center line over the center of the welded contact surface. The bracket plates shall be spaced at least 2-1/2 in. (64 mm) apart, but this dimension shall be increased if necessary to permit access for the welding operation. The stresses computed by dividing the total load on each lug, hanger, or bracket, by the minimum cross-sectional area of the weld shall not exceed 2,800 psig (19 MPa). Where it is impractical to attach lugs, hangers, or brackets by welding, studs with not less than 10 threads/in. (approximately 4 threads/cm) may be used. In computing the shearing stresses, the root area at the bottom of the thread shall be used. The shearing and crushing stresses on studs shall not exceed that permitted by the code of construction.

3.3.2 SETTINGS

Steam heating, hot-water heating, and hot-water supply boilers of wrought materials of the wet-bottom type having an external width of over 36 in. (914 mm) shall be supported so as to have a minimum clearance of 12 in. (305 mm) between the bottom of the boiler and the floor to facilitate inspection. When the width is 36 in. (914 mm) or less, the clearance between the bottom of the boiler and the floor line shall be not less than 6 in. (150 mm), except when any part of the wet bottom is not farther from the outer edge than 12 in. (305 mm), this clearance shall be not less than 4 in. (100 mm). Boiler insulation, saddles, or other supports shall be arranged so that inspection openings are readily accessible.

3.3.3 STRUCTURAL STEEL

a) If the boiler is supported by structural steel work, the steel supporting members shall be so located or insulated that the heat from the furnace will not affect their strength.

b) Structural steel shall be installed in accordance with jurisdictional requirements, manufacturer's recommendations, and/or industry standards as appropriate.

3.3.4 CLEARANCES

a) Heating boilers shall have a minimum distance of at least 36 in. (914 mm) between the top of the heating boiler and any overhead structure and at least 36 in. (914 mm) between all sides of the heating boiler and adjacent walls, structures, or other equipment. Heating boilers having manholes shall have at least 84 in. (2,135 mm) of clearance between the manhole opening and any wall, ceiling, piping, or other equipment that may prevent a person from entering the heating boiler. Alternative clearances in accordance with the manufacturer's recommendations are subject to acceptance by the Jurisdiction.

b) Modular heating boilers that require individual units to be set side by side, front to back, or by stacking shall provide clearances in accordance with the manufacturer's recommendations, subject to acceptance by the Jurisdiction.

c) Heating boilers shall be located so that adequate space is provided for proper operation, maintenance,[4] and inspection of equipment and appurtenances.

4 Maintenance – This includes the removal of tubes.

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

3.5.3.3 CONTROLS AND HEAT GENERATING APPARATUS

a) Oil- and gas-fired and electrically heated boilers and water heaters shall be equipped with suitable primary (flame safeguard) safety controls, safety limit controls, and burners or electric elements as required by a nationally or internationally recognized standard.

b) The symbol of the certifying organization that has investigated such equipment as having complied with a nationally recognized standard shall be affixed to the equipment and shall be considered as evidence that the unit was manufactured in accordance with that standard.

c) These devices shall be installed in accordance with jurisdictional and environmental requirements, manufacturer's recommendations, and/or industry standards, as applicable.

3.5.4 VENTILATION AND COMBUSTION AIR

a) The equipment room shall have an adequate air supply to permit clean, safe combustion, minimize soot formation, and maintain a minimum of 19.5% oxygen in the air of the equipment room. The combustion and ventilation air may be supplied by either an unobstructed air opening or by power ventilation or fans.[5]

b) Unobstructed air openings shall be sized on the basis of 1 sq. in. (645 sq mm) free area per 2,000 Btu/hr (586 W) maximum fuel input of the combined burners located in the equipment room, or as specified in the National Fire Protection Association (NFPA) standards for oil and gas burning installations for the particular job conditions. The equipment room air supply openings shall be kept clear at all times.

c) Power ventilators or fans shall be sized on the basis of 0.2 ft^3 (0.006 m^3) for each 1,000 Btu/hr (293 W) of maximum fuel input for the combined burners of all boilers and/or water heaters located in the equipment room. Additional capacity may be required for any other fuel burning equipment in the equipment room.

d) When power ventilators or fans are used to supply combustion air, they shall be installed with interlock devices so that the burners will not operate without an adequate number of ventilators/fans in operation.

e) When combustion air is supplied to the heating boiler by an independent duct, with or without the employment of power ventilators or fans, the duct shall be sized and installed in accordance with the manufacturer's recommendations. However, ventilation for the equipment room must still be considered.

f) The size of openings specified in NBIC Part 1, 3.5.4 b) may be reduced when special engineered air supply systems approved by the Jurisdiction are used.

g) Care should be taken to ensure that steam and water lines are not routed across combustion air openings, where freezing may occur in cold climates.

3.5.5 LIGHTING

The boiler room should be well lit, and it should have an emergency light source for use in case of power failure.

5 Fans – When combustion air is supplied to the boiler by an independent duct, with or without the employment of power ventilators or fans, the duct shall be sized and installed in accordance with the manufacturer's recommendations. However, ventilation for the equipmentroom must still be considered.

3.8.2.6 INSTRUMENTS, FITTINGS, AND CONTROLS MOUNTED INSIDE BOILER JACKETS

Any or all instruments, fittings, and controls required by these rules may be installed inside of boiler jackets provided the thermometer and pressure gage are visible through an opening or openings at all times.

3.8.3 POTABLE WATER HEATERS

3.8.3.1 TEMPERATURE CONTROLS

Each individual automatically fired water heater, in addition to the operating control used for normal water heater operation, shall have a separate high limit temperature actuated combustion control that will automatically cut off the fuel supply. The temperature range of the high limit temperature actuated control shall not allow a setting over 210°F (99°C).

a) On gas-fired water heaters, the high limit temperature control when actuated shall shut off the fuel supply with a shutoff means other than the operating control valve. Separate valves may have a common body.

b) On electrically heated water heaters, the high limit temperature control when actuated shall cut off all power to the operating controls.

c) On oil-fired water heaters, the high limit temperature control when actuated shall cut off all current flow to the burner mechanism.

d) On indirect water heating systems, the high limit temperature control when activated shall cut off the source of heat.

3.8.3.2 THERMOMETER

Each installed water heater shall have a thermometer so located and connected that it shall be easily readable. The thermometer shall be so located that it shall at all times indicate the temperature of the water in the water heater at or near the outlet.

3.9 PRESSURE-RELIEVING VALVES

3.9.1 SAFETY VALVE REQUIREMENTS — GENERAL

The following general requirements pertain to installing, mounting, and connecting safety valves on boilers.

3.9.1.1 MOUNTING SAFETY AND SAFETY RELIEF VALVES FOR STEAM HEATING, HOT-WATER HEATING, AND HOT-WATER SUPPLY BOILERS

3.9.1.1.1 PERMISSIBLE MOUNTING

Safety valves and safety relief valves shall be located at the top side[6] of the boiler. They shall be connected directly to a tapped or flanged opening in the boiler, to a fitting connected to the boiler by a short nipple, to a Y-base, or to a valveless header connecting steam or water outlets on the same boiler. Coil or header type boilers shall have the safety valve or safety relief valve located on the steam or hot-water outlet end. Safety

6 Side — The top side of the boiler shall mean the highest practicable part of the boiler proper but in no case shall the safety valves be located below the normal operating level and in no case shall the safety relief valve be located below the lowest permissible water level.

f) The dryer is subjected to a variety of loads over its life. Some of the loads exist individually, while others are combined. Considerations of all the loads that can exist on a Yankee dryer are required to determine the maximum allowable operating parameters. There are four loads that combine during normal operation to create the maximum operating stresses, usually on the outside surface of the shell at the axial center line. These loads and the associated protection devices provided to limit these loads are:

1) Pressure load due to internal steam pressure. Overpressure protection is provided by a safety relief valve;

2) Inertial load due to dryer rotation. Over-speed protection is usually provided by an alarm that indicates higher-than-allowable machine speed;

3) Thermal gradient load due to the drying of the web. Protection against unusual drying loads is usually provided by logic controls on the machine, primarily to detect a "sheet-off" condition that changes the thermal load on the shell exterior from being cooled by the tissue sheet to being heated by the hot air from the hood;

4) Pressure roll load (line or nip load)[7] due to pressing the wet web onto the dryer. Overload protection is usually provided by a control valve that limits the pneumatic or hydraulic forces on the roll loading arms such that the resultant nip load does not exceed the allowable operating nip load.

g) Steam pressure, inertial, and thermal gradient loads impose steady-state stresses. These stresses typically change when the dryer shell thickness (effective thickness for ribbed dryers) is reduced to restore a paper-making surface, the grade of tissue is changed or speed of the dryer is changed.

h) The pressure roll(s) load imposes an alternating stress on the shell face. The resulting maximum stress is dependent on the magnitude of the alternating and steady-state stresses.

i) Section VIII, Division 1, of the ASME Code only provides specific requirements for the analysis of pressure loads. Although the Code requires analysis of other loads, no specific guidance for thermal, inertial, or pressure roll loads is provided. Hence, additional criteria must be applied by the manufacturer to account for all the steady-state and alternating stresses.

j) To maintain product quality, the dryer surface is periodically refurbished by grinding. This results in shell thickness reduction. Therefore, the manufacturer does not provide a single set of maximum allowable operating parameters relating steam pressure, rotational speed, and pressure roll load for a single design shell thickness. The manufacturer, or another qualified source acceptable to the Inspector, instead provides a series of curves that graphically defines these maximum allowable operating parameters across a range of shell thicknesses. This document is known as the "De-rate Curve." (See NBIC Part 1, Figure S1.1).

k) In addition to the loads on the Yankee dryer due to operation, other nonstandard load events can occur during shipment and installation into the paper machine. These nonstandard load events should be recorded in an incident log. Examples of nonstandard load events include:

1) Damage to the protective packaging of the Yankee dryer during transport;

2) Scratches, gouges, dents in the Yankee dryer shell during packaging removal or installation into the paper machine;

3) Excessive heating of the Yankee dryer shell during the installation and testing of the hot air hood. If the hot air hood will be generating air that is hotter than the Yankee dryer shell material's maximum

7 Pressure roll load, line load, and nip load are terms that are used interchangeably to refer to the interaction between the pressure roll(s) and the Yankee dryer. It is called "nip" load because the pressure roll is rubber-covered and is pressed up against the Yankee with enough force to create a nip (or pinch) that forces the paper into line contact between the rolls and provides some mechanical dewatering. The paper then sticks onto the Yankee surface and follows the Yankee dryer for thermal dewatering by the steam-heated Yankee surface. This "nip load" is called a "line load" because the units are load (force) per length of line contact. The units are pounds per linear inch (PLI) and kilonewtons per meter (kN/m).

Action Item Request Form
NB15-0106

8.3 CODE REVISIONS OR ADDITIONS

Request for Code revisions or additions shall provide the following:

a) Proposed Revisions or Additions

For revisions, identify the rules of the Code that require revision and submit a copy of the appropriate rules as they appear in the Code, marked up with the proposed revision. For additions, provide the recommended wording referenced to the existing Code rules.

Existing Text:

3.8.2.3 TEMPERATURE CONTROL

Each automatically fired hot-water heating or hot-water supply boiler shall be protected from over-temperature by two temperature-operated controls.

a)Each individual hot-water heating or hot-water supply boiler or each system of commonly connected boilers shall have a control that will cut off the fuel supply when the water temperature reaches an operating limit, which shall be less than the maximum allowable temperature.

b) In addition to a) above, each individual automatically fired hot-water heating or hot-water supply boiler shall have a ~~safety~~ high temperature limit control with manual reset that will cut off the fuel supply to prevent the water temperature from exceeding the maximum allowable temperature at the boiler outlet.

NOTE — Paragraph (a) above describes an operating control, while (b) describes a temperature limit control. See Figure 3.7.5.1-c.

b) Statement of Need

Provide a brief explanation of the need for the revision or addition.

Part 1 Section 3.8.2.3 text and Figure 3.7.5-c callouts do not agree with each other and do not agree well with ASME Section IV HG-613 or ASME CSD-1 CW-400 in the labeling of operating temperature controls and high limit temperature controls.

The descriptive language among the NBIC, CSD-1, and Section IV are similar but not identical. The Figures in the NBIC and Section IV are in harmony. The figures do not, however, match the text. A similar suggestion to correct the callouts has been made to Section IV.

c) Background Information

Provide background information to support the revision or addition, including any data or changes in technology that form the basis for the request that will allow the Committee to adequately evaluate the proposed revision or addition. Sketches, tables, figures, and graphs should be submitted as appropriate.

When applicable, identify any pertinent paragraph in the Code that would be affected by the revision or addition and identify paragraphs in the Code that reference the paragraphs that are to be revised or added.

See attached for additional background.

d) TG Assigned

Project Manager: Brian Moore

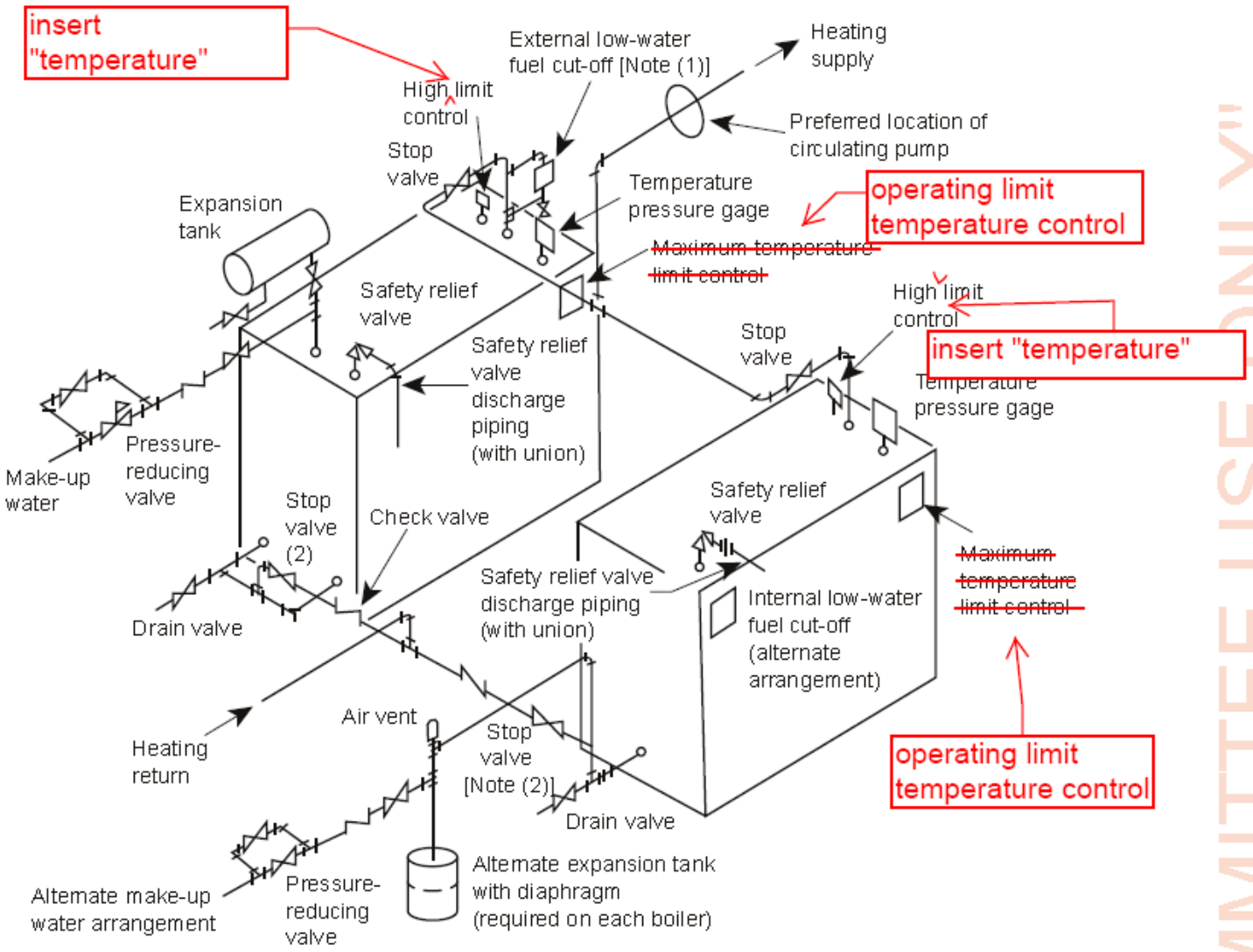
Members: Todd Creacy, Milton Washington

Action Item Request Form
NB15-0106 – additional background

ASME Section IV 2015 Edition	NBIC 2015 – Part 2	CSD-1 2012
HG-613 TEMPERATURE CONTROL Each automatically fired hot water heating or hot water supply boiler shall be protected from over-temperature by **two temperature-operated controls**. These temperature control devices shall conform to UL 353, Standard for Limit Controls, and shall be accepted by a nationally recognized testing agency. (a) Each individual automatically fired hot water heating or hot water supply boiler shall have a **high temperature limit control** that will cut off the fuel supply to prevent water temperature from exceeding its marked maximum water temperature at the boiler outlet. This control shall be constructed to prevent a temperature setting above the maximum. (b) Each individual hot water heating or hot water supply boiler shall have a control that will cut off the fuel supply when the system water temperature reaches a preset **operating temperature**, which shall be less than the maximum water temperature. ***NOTE — Paragraph(a) above describes a temperature high limit control, while (b) an operating control. See Figure hg-703.2.***	3.8.2.3 TEMPERATURE CONTROL Each automatically fired hot-water heating or hot-water supply boiler shall be protected from over-temperature by **two temperature-operated controls**. a)Each individual hot-water heating or hot-water supply boiler **or each system of commonly connected boilers** shall have a control that will cut off the fuel supply when the water temperature reaches an **operating limit**, which shall be less than the maximum allowable temperature. b) In addition to a) above, each individual automatically fired hot-water heating or hot-water supply boiler shall have a **high temperature limit control** with manual reset that will cut off the fuel supply to prevent the water temperature from exceeding the maximum allowable temperature at the boiler outlet. ***NOTE — Paragraph (a) above describes an operating control, while (b) describes a temperature limit control. See Figure 3.7.5.1-c.***	CW-400 TEMPERATURE CONTROLS *(b)* Each automatically fired hot-water boiler **or each system of commonly connected hot-water** boilers shall have at least one temperature-actuated control to shut off the fuel supply when the system water reaches a preset **operating temperature**. This requirement does not preclude the use of additional operating control devices where required. *(c)* In addition to the temperature control required in CW-410(b), each individual automatically fired hot-water boiler unit shall have a **high temperature limit control** that will prevent the water temperature from exceeding the maximum allowable temperature. The upper set point limit or the maximum fixed stop limit of the selected control shall not exceed the maximum allowable temperature. Functioning of this control shall cause safety shutdown and lockout. The manual reset may be incorporated in the temperature limit control. Where a reset device is separate from the temperature limit control, a means shall be provided to indicate actuation of the temperature limit control. EXCEPTION: Lockout is not required for boiler units installed in residences, as defined by the authority having jurisdiction.

FIGURE 3.7.5.1-c

HOT-WATER BOILERS IN BATTERY — ACCEPTABLE PIPING INSTALLATION



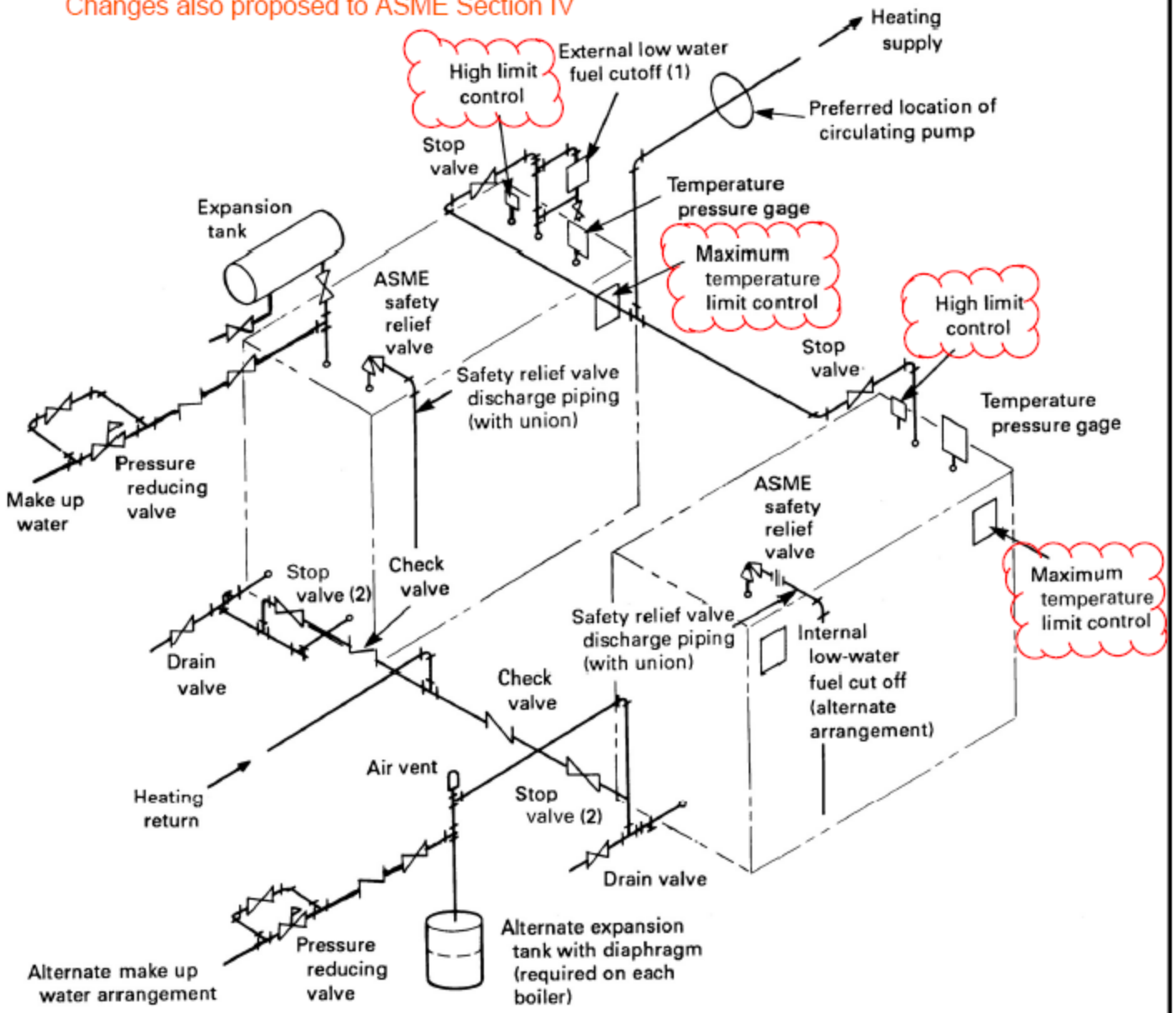
General Notes:

(1) Recommended control. See ASME Section IV, HG-614. Acceptable shutoff valve or cocks in the connecting piping may be installed for convenience or control testing and/or service.

(2) The common return header stop valves may be located on either side of the check valves.

Figure HG-703.2
Hot Water Boilers in Battery - Acceptable Piping Installation

Changes also proposed to ASME Section IV



GENERAL NOTE: Plumbing codes may require the installation of a reduced pressure principle backflow preventer on a boiler when the makeup water source is from a potable water supply.

Attachment Page51

NOTES:

(1) Recommended control. See HG 614. Acceptable shutoff valves or cocks in the connecting piping may be installed for convenience of control testing and/or service.

Action Item Request Form

ITEM NB15-0107

8.3 CODE REVISIONS OR ADDITIONS

Request for Code revisions or additions shall provide the following:

a) Proposed Revisions or Additions

For revisions, identify the rules of the Code that require revision and submit a copy of the appropriate rules as they appear in the Code, marked up with the proposed revision. For additions, provide the recommended wording referenced to the existing Code rules.

Existing Text:

3.8.2.3 TEMPERATURE CONTROL
Each automatically fired hot-water heating or hot-water supply boiler shall be protected from over-temperature by two temperature-operated controls.
a) Each individual hot-water heating or hot-water supply boiler or each system of commonly connected boilers shall have a control that will cut off the fuel supply when the water temperature reaches an operating limit, which shall be less than the maximum allowable temperature.
b) In addition to a) above, each individual automatically fired hot-water heating or hot-water supply boiler shall have a safety limit control with manual reset that will cut off the fuel supply to prevent the water temperature from exceeding the maximum allowable temperature at the boiler outlet.

b) Statement of Need

Provide a brief explanation of the need for the revision or addition.

The text above conflicts with wording in Section IV and CSD-1. All 3 Codes need revision to harmonize the language. An item exists in ASME in BPV IV and I am requesting an item in CSD-1.

c) Background Information

Provide background information to support the revision or addition, including any data or changes in technology that form the basis for the request that will allow the Committee to adequately evaluate the proposed revision or addition. Sketches, tables, figures, and graphs should be submitted as appropriate.

When applicable, identify any pertinent paragraph in the Code that would be affected by the revision or addition and identify paragraphs in the Code that reference the paragraphs that are to be revised or added.

d) TG Assigned

Project Manager: M. Wadkinson

Members: B. Moore, S. Konopacki

HG-613 TEMPERATURE CONTROL

Each automatically fired hot water heating or hot water supply boiler shall be protected from over-temperature by two temperature-operated controls. These temperature control devices shall conform to UL 353, Standard for Limit Controls, and shall be accepted by a nationally recognized testing agency.

[a] Each individual automatically fired hot water heating or hot water supply boiler shall have a high temperature limit control that will cut off the fuel supply ~~to prevent water temperature from exceeding its~~ at or below the marked maximum water temperature at the boiler outlet. This control shall be constructed to prevent a temperature setting above the maximum.

[b] Each individual hot water heating or hot water supply boiler shall have a control that will cut off the fuel supply when the system water temperature reaches a preset operating temperature, which shall be less than the maximum water temperature.

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3.8.2.3 TEMPERATURE CONTROL

Each automatically fired hot-water heating or hot-water supply boiler shall be protected from over-temperature by two temperature-operated controls.

a) Each individual hot-water heating or hot-water supply boiler or each system of commonly connected boilers shall have a control that will cut off the fuel supply when the water temperature reaches an operating limit, which shall be less than the maximum allowable temperature.

b) In addition to a) above, each individual automatically fired hot-water heating or hot-water supply boiler shall have a safety limit control with manual reset that will cut off the fuel supply ~~to prevent the water temperature from exceeding the~~ at or below the maximum allowable temperature at the boiler outlet.

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CW-400 TEMPERATURE CONTROLS

(12) CW-410 Requirements for Temperature Controls for Hot-Water Heating and Supply Boilers

(a) Each temperature control device shall conform to UL 353, Standard for Limit Controls, and shall be accepted by a nationally recognized testing agency.

(b) Each automatically fired hot-water boiler or each system of commonly connected hot-water boilers shall

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have at least one temperature-actuated control to shut off the fuel supply when the system water reaches a preset operating temperature. This requirement does not preclude the use of additional operating control devices where required.

(c) In addition to the temperature control required in CW-410(b), each individual automatically fired hot-water boiler unit shall have a high temperature limit control that will ~~prevent the water temperature from exceeding~~ cut off the fuel supply at or below the maximum allowable temperature. The upper set point limit or the maximum fixed stop limit of the selected control shall not exceed the maximum allowable temperature. Functioning of this control shall cause safety shutdown and lockout. The manual reset may be incorporated in the temperature limit control. Where a reset device is separate from the temperature limit control, a means shall be provided to indicate actuation of the temperature limit control.

EXCEPTION: Lockout is not required for boiler units installed in residences, as defined by the authority having jurisdiction.

(d) Each limit and operating control shall have its own sensing element and operating switch, unless the boiler temperature and limit control functions are performed by a primary safety control system meeting all the requirements of CW-210(a).

(e) A temperature limit control of the automatic or manual reset type shall be electrically connected in accordance with CE-110(i).

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Action Item Request Form

Item NB15-0108

8.3 CODE REVISIONS OR ADDITIONS

Request for Code revisions or additions shall provide the following:

a) Proposed Revisions or Additions

For revisions, identify the rules of the Code that require revision and submit a copy of the appropriate rules as they appear in the Code, marked up with the proposed revision. For additions, provide the recommended wording referenced to the existing Code rules.

Existing Text:

None

b) Statement of Need

Provide a brief explanation of the need for the revision or addition.

Add a supplement to address high temperature hot water boilers. These are power boilers but Section 2 of Part 1 doesn't really address the special requirements for these boilers. Request the addition of a supplement to outline the key installation points

c) Background Information

Provide background information to support the revision or addition, including any data or changes in technology that form the basis for the request that will allow the Committee to adequately evaluate the proposed revision or addition. Sketches, tables, figures, and graphs should be submitted as appropriate.

When applicable, identify any pertinent paragraph in the Code that would be affected by the revision or addition and identify paragraphs in the Code that reference the paragraphs that are to be revised or added.

d) TG Assigned

Project Manager:	**M. Wakdinson**
Members:	**B. Moore, T. Creacy, D. Patten and P. Bourgeois**