Date Distributed: February 18, 2020

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD SUBCOMMITTEE PRESSURE RELIEF DEVICES

MINUTES

Meeting of January 15, 2020
San Diego, CA

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The National Board of Boiler & Pressure Vessel Inspectors
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1. **Call to Order**

The meeting was called to order at 8:05 AM on Tuesday January 15, 2020 by Chair Marianne Brodeur Members and Visitors in attendance can be found in the signed attendance sheet (Attachments Pages 1-2)

2. **Announcements**

Ms. Brodeur announced the National Board will be hosting a reception for all committee members and visitors on Wednesday evening at 5:30pm at the Smoking Gun.

Mr. Brodeur requested a moment of silence to remember Kevin Simmons who passed away since the last meeting.

3. **Adoption of the Agenda**

The agenda dated December 19, 2019 was presented. A motion was made and seconded to adopt the agenda. The motion was unanimously approved.

4. **Approval of Minutes**

It was moved and seconded to approve the July 2019 minutes. The motion was unanimously approved.

5. **Review of the Roster (Attachments Page 1)**

a. Nominations

- Mr. Del Schirmer and Mr. Jon Wolf are being considered for membership of SG-Pressure Relief Devices. A motion was made and seconded to appoint Mr. Shrimer and Mr. Wolf to SG-Pressure Relief Devices. After discussion a vote was taken and the motion unanimously carried.
- Mr. Del Schirmer, Mr. Jon Wolf, and Mr. Alfred Donaldson are all interested in becoming members of SC-Pressure Relief Devices. After discussion there were no objections. These appointments for SC-Pressure Relief Devices are on the Main Committee agenda for action.

b. Reappointments

- Ms. Marianne Brodeur, Mr. Alton Cox, Mr. Denis DeMichael, Mr. Robert Donalson, Mr. Raymond McCaffrey, Mr. David McHugh, Mr. Brandon Nutter, Mr. Thakor Patel, and Mr Adam Renaldo all have memberships to the subgroup that are set to expire on June 29, 2020. All would like to continue their membership to Sub-Group. A motion was made and seconded to re-appoint the members to Sub-Group. After discussion a vote was taken and unanimously passed with the understanding that not-voting vote will be registered for themselves.

- Mr. Kim Beise and Mr. David McHugh have memberships that are set to expire on January 30, 2020. Both would like to continue their membership. These reappointments for SC-Pressure Relief Devices are on the Main Committee agenda for action.

c. Resignations

- There are no resignations

6. Interpretations

- There are no interpretations

7. Action Items

Item Number: NB12-0901	**NBIC Location: Part 4**	**No Attachment**
General Description: Prepare a guide for repair of tank vents **Task Group:** B. Donalson (PM), D. DeMichael, K. Simmons, K. Beise, B. Nutter, J. Little, S. Artrip, B. Pittel **January 2020 Meeting Action:** This item passed unanimously by a voice vote in SG-PRD. This item will be letter balloted to SC-PRD between meetings.		

Item Number: NB14-0602B	**NBIC Location: Part 2**	**No Attachment**
General Description: Improve index in Part 2 relating to pressure relief devices **Task Group:** D. Marek (PM), B. Donalson, D. DeMichael **January 2020 Meeting Action:** No progress on this item.		

Item Number: NB15-0108B	**NBIC Location: Part 1**	**No Attachment**
General Description: Address pressure relief devices in new supplement on high temperature hot water boilers **Task Group:** D. Marek (PM), A. Renaldo, D. McHugh, B. Nutter, A. Cox, D. Schirmer **January 2020 Meeting Action:** PM was changed to D. Marek. New task group members were added.		

Item Number: NB15-0305	**NBIC Location: Part 4**	**No Attachment**
General Description: Create Guidelines for Installation of Overpressure Protection by System Design. **Task Group:** B. Nutter, A. Renaldo, D. Marek (PM), D. DeMichael, J. Wolf **January 2020 Meeting Action:** Work continues on this item. Jon Wolf was added to the task group.		

Item Number: NB15-0307	**NBIC Location: Part 4**	**No Attachment**
General Description: Create Guidelines for Repair of Pin Devices. **Task Group:** D. McHugh (PM), A. Renaldo, T. Tarbay, R. McCaffrey, Jay Simms, C. Beair **January 2020 Meeting Action:** Work continues on this item. Charlie Beair was added to the task group.		

Item Number: NB15-0308	NBIC Location: Part 4	No Attachment

General Description: - Create Guidelines for Installation of Pressure Relief Devices for Organic Fluid Vaporizers.

Task Group: T. Patel (PM), K. Beise, B. Nutter

January 2020 Meeting Action: Item will be brought back to SG PRD and held pending resolution with ASME action item.

Item Number: NB15-0315	NBIC Location: Part 4, 2.5.6 and 2.6.6 and Part 1, 4.5.6 and 5.3.6	No Attachment

General Description: Review isolation Valve Requirements, and reword to allow installation of pressure relief devices in upstream piping.

Task Group: D. DeMichael (PM), B. Nutter, A. Renaldo, D. Marek

January 2020 Meeting Action: Work continues on this item.

Item Number: NB15-0321	NBIC Location: Part 4, 3.2.5 a) and Part 2, 2.5.7 a)	No Attachment

General Description: Review testing requirements for in-service testing of pressure relief devices

Task Group: A. Cox, A. Renaldo (PM), D. Marek, S. Irvin, D. DeMichael, B. Nutter, J. Ball

January 2020 Meeting Action: Passed SC letter ballot and will be letter balloted to Main Committee following this meeting.

Item Number: NB15-0324	NBIC Location: Part 4	Attachments Pages 3-4

General Description: Create Guidelines for Inspection and Testing Frequencies with respect to shelf life and storage of pressure relief valves.

Task Group: A. Rendaldo (PM), B. Nutter, K. Simmons, D. Marek, J. Little

January 2020 Meeting Action: Item was letter balloted between meetings and received one negative comment. The proposal was revised to address the negative. A motion was made and seconded to accept the attached proposal. A vote was taken and the motion passed unanimously.

Item Number: NB16-0805	NBIC Location: Part 4, 2.6.6 and Part 1, 5.3.6	No Attachment

General Description: Temperature ratings for discharge piping and fittings

Task Group: A. Renaldo (PM), T. Patel, D. Marek

January 2020 Meeting Action: Passed SC letter ballot and will be letter balloted to Main Committee following this meeting.

Item Number: 17-115	NBIC Location: Part 4, Section 2	No Attachment

General Description: Complete rewrite of Section 2 combining common requirements into a general requirements section for all pressure relief devices and look at combining with 2.4.3, 2.4.4.

Task Group: A. Renaldo (PM), D. McHugh, D. Marek

January 2020 Meeting Action: A draft proposal was presented as a progress report. This item will be letter balloted between meetings.

Item Number: 17-119	NBIC Location: Part 4, 2.2.5 and Part 1, 2.9.1.4	No Attachment

General Description: States pressure setting may exceed 10% range. Clarify by how much.

Task Group: T. Patel (PM), D. Marek

January 2020 Meeting Action: It was determined that the same language was in ASME Section I. This item is on hold pending completion of ASME action item.

Item Number: 17-128	NBIC Location: Part 4, 2.4.4.3 and Part 1, 3.9.4.3	Attachments Pages 5-6

General Description: allows Y-base to be used while 2.4.1.6 a) prohibits. This appears to be a conflict.

Task Group: B. Nutter (PM), S. Irvin

January 2020 Meeting Action: A motion was made and accepted to accept the attached proposal. After discussion a vote was taken and the motion unanimously passed.

Item Number: 17-132	NBIC Location: Part 4, 3.2.6 and Part 2, 2.5.8	Attachments Pages 7-10

General Description: Paragraph 3.2.6 can be put into tabular format.

Task Group: B. Nutter (PM), M. Brodeur, D. Marek, D. DeMichael, A. Cox, P. Dhobi, R. McCaffrey, T. Beirne

January 2020 Meeting Action: A motion was made and accepted to accept the attached proposal. After discussion a vote was taken and the motion unanimously passed.

Item Number: 18-73	NBIC Location: Part 4, 2.3 and Part 1, S5.7.6	No Attachment

General Description: Update installation requirements for Thermal Fluid Heaters

Task Group: T. Patel (PM), B. Nutter

January 2020 Meeting Action: Item was letter balloted to Main Committee and received two negatives. However negatives were responded to with no revisions to the proposal. Item will be re-voted on at Main Committee.

Item Number: 18-80	NBIC Location: Part 4, S3.1, S4.1, S6.1	Attachments Pages 11-12

General Description: Addition of a "Scope" section to Part 4, S3.1, S4.1, and S6.1 to stay consistent with other sections

Task Group: T. Patel (PM), A. Renaldo, K. Simmons, P. Dhobi

January 2020 Meeting Action: A motion was made and accepted to accept the attached proposal. After discussion a vote was taken and the motion unanimously passed.

Item Number: 19-1	NBIC Location: Part 4, 4.8.5.4 & 4.8.6.1	No Attachment

General Description: Develop specific content and scope of annual field audits.

Task Group: A. Donaldson (PM), D. Marek, A. Cox, P. Dhobi, M. Brodeur, T. Patel

January 2020 Meeting Action: A proposal will be letter balloted between meetings.

Item Number: 19-2	NBIC Location: Part 4, 4.9.1	No Attachment

General Description: Review and clarify requirements for documented training program for VR and T/O programs.

Task Group: A. Donaldson (PM), A. Cox, B. Donaldson, D. Marek, J. Simms

January 2020 Meeting Action: A draft proposal was presented as a progress report. Work continues on this item.

Item Number: 19-18	NBIC Location: Part 4, 4.8.5.4 n) 5)	Attachments Page 13

General Description: Implementation of QC Manual Revisions

Task Group: A. Donaldson (PM)

January 2020 Meeting Action: A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion passed unanimously.

Item Number: 19-37	NBIC Location: Part 4, 4.3.1 c) 4)	No Attachment

General Description: Origin of Replacement Parts for Pressure Relief Devices

Task Group: A. Cox (PM), T. Patel, P. Dhobi, J. Simms

January 2020 Meeting Action: Work continues on this item.

Item Number: 19-40	NBIC Location: Part 4, Figure 4.7.2-b	Attachments Pages 14-18

General Description: Move Fig. 4.7.2-b to Part 4 Supplement 6.

Task Group: T. Beirne (PM)

January 2020 Meeting Action: A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion passed unanimously.

Item Number: 19-41	NBIC Location: Part 4, 4.7.5	Attachments Pages 19-30

General Description: Review Part 4, Paragraph 4.7.5 and simplify

Task Group: T. Beirne (PM), A. Cox, D. Schirmer

January 2020 Meeting Action: A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion passed unanimously.

8. New Business

Item Number: 19-9	NBIC Location: Part 4, 3.2.3 and Part 2, 2.5.4 &2.5.6	Attachments Pages 31-32

General Description: Inspect shipping plug removal for PRD's.

Task Group: None

January 2020 Meeting Action: Item was transferred from Inspection. A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion passed unanimously.

Item Number: 19-49	NBIC Location: Part 4, 2.2.1 & 2.4.1, Part 1, 2.9.1 & 3.9.1	Attachments Pages 33-34

General Description: Ensure shipping plugs for PRD's are removed during the installation process.

Task Group: None

January 2020 Meeting Action: Item was transferred from Installation. A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion passed unanimously.

Item Number: 19-54	NBIC Location: Part 4, 3.3.4 c) & S7.2 f)1)	Attachments Page 35

General Description: Reconcile conflict regarding sealing adjustments of PRV's in T/O program

Task Group: None

January 2020 Meeting Action: A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion passed unanimously.

Item Number: 19-70	NBIC Location: Part 4, 2.6.3	Attachments Page 36

General Description: Part 4, 2.6.3 references 2.1 through 2.2 and should be 2.2 through 2.4.

Task Group: T. Beirne (PM)

January 2020 Meeting Action: A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion passed unanimously.

Item Number: 19-71	NBIC Location: Part 4, 4.9.2 & 4.9.3	No Attachment

General Description: Use of Personnel from another VR Certificate Holder to perform VR Repairs.

Task Group: A. Donaldson (PM), A. Cox, B. Donaldson, D. Marek, J. Simms

January 2020 Meeting Action: A task group was formed to work on this item.

Item Number: 19-72	NBIC Location: Part 4, 4.6.2	Attachments Page 37

General Description: Documentation of Steam tested on Air Correction Factor

Task Group: B. Nutter (PM), S. Artrip, A. Cox, D. Marek

January 2020 Meeting Action: A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion passed unanimously.

Item Number: 19-75	NBIC Location: Part 4, 2.2.2	Attachments Page 38

General Description: Add PRD requirements for boilers up to 4000 lb/hr to Part 4, Item 19-51 added these requirements to Part 1.

Task Group: T. Beirne (PM)

January 2020 Meeting Action: A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion passed unanimously.

Item Number: 19-76	NBIC Location: Part 4, 3.3.3.4 p)	Attachments Page 39

General Description: Paragraph 3.3.3.4 p) Incorrect Certificate of Authorization Reference

Task Group: T. Beirne (PM)

January 2020 Meeting Action: A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion passed unanimously.

Item Number: 19-83	NBIC Location: Part 4, Part 1	No Attachment

General Description: Address alternate pressure relief valve mounting permitted by ASME CC2887-1.

Task Group: D. Marek (PM), T. Patel, J. Ball

January 2020 Meeting Action: A task group was formed to work on this item

Item Number: 19-85	NBIC Location: Part 4, 2.3.6 j)	No Attachment
General Description: Thermal fluid heaters with no change of phase are not specifically addressed in 2.3.6 j). **Task Group:** T. Patel (PM), B. Nutter **January 2020 Meeting Action:** A task group was formed to work on this item.		

9. Presentations

There were no presentations made at this meeting.

10. Future Meetings

July 13th-16th , 2020 – Louisville, KY
January 11th – 14th, 2021 – New Orleans, LA

11. Adjournment

A motion was made, seconded, voted on, and unanimously passed to adjourn the meeting at approximately 10:30 AM.

Respectfully Submitted,

Thomas P. Beirne, P.E.

Secretary, NBIC Subgroup Pressure Relief Devices

pc: J. Amato
B. Weilgozinski
J. Ellis

NBIC Subcommittee PRD Attendance - 1/15/2020					
First Last	Email	Company	Phone #	Signature	Attending Reception?
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Brandon Nutter	Brandon.K.Nutter-1@dupont.com	E.I. Dupont	804 383-3570		Y
Robert Donalson	bob.donalson@emerson.com	Emerson	281 274-4645		Y
Denis DeMichael	Denis.B.DeMichael@chemours.com	Chemours Co.	302 773-3156	Webex	
J. Alton Cox	alton@jaltoncox.com	JAC Consulting, Inc.	704 301-8532	(Steve Irvine Alternate)	N
Thakor Patel	Tpatel@Curtisswright.com	Farris Engineering	440 838-5090		N
Raymond McCaffrey	raymond@qualityvalve.com	Quality Valve	251 476-1045		
Marianne Brodeur	Marianne@ivicorp.net	International Valve & Instrument Corp.	413 736-3682		Y
Adam Renaldo	adam_renaldo@praxair.com	Praxair	716 879-2928		Y
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David McHugh	mchughd@alliedvalve.com	Allied Valve	312 520-0235		
Daniel Marek	daniel.t.marek@nasa.gov	Mainthia Technologies	216 433-5494	Webex	
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Joel Amato		NB			Y
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NBIC Subcommittee PRD Attendance - 1/15/2020					
First Last	Email	Company	Phone #	Signature	Attending Reception?
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Craig Theiler	ctheiler@lawvalveoftexas.com	Law Valve of Texas	502-648 47-18	Craig Theiler	Y
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Charles Bear	charlie.bear@bsbsystems.com	B&B	918-605 7283	Charles Bear	Y

NB15-0324 Testing, storage, and shelf life guidelines
1-15-20

New glossary entry

Pressure Relief Valve Shelf Life – For a pressure relief valve or pilot valve, the length of time for which the device can be stored, after it has been set and tested or repaired, prior to installation, without requiring a retest or reduced service interval.

New supplement

SUPPLEMENT SX
PRESSURE RELIEF AND PILOT VALVE STORAGE & SHELF LIFE

SX.1 SCOPE

This supplement provides guidance for proper conditions and duration of pressure relief valve storage. This guidance applies to pressure relief valves, temperature & pressure relief valves, and pilot operated pressure relief valves (including the main body valve and the pilot valve).

SX.2 PRESSURE RELIEF VALVE STORAGE

Pressure relief valve set pressure and/or seat tightness can deviate during storage. The manufacturer's recommendations should be followed regarding shelf life. In some cases, it may be necessary to retest the relief valve prior to installation or reduce maintenance interval if the relief valve was in storage for an extended period. When storing relief valves, a first in / first out policy should be followed.

SX.3 PRESSURE RELIEF VALVE STORAGE CONDITIONS
Relief valves should be stored per manufacturer recommendations. Where the manufacturer has no recommendations, the following guidelines should be followed.

a) Storage temperature should be between 40 and 72 °F, where practical. Otherwise, storage temperature should be within the operating or storage temperature range provided by the manufacturer.
b) Ideal relative humidity in the storage area should be 70 percent or less. For relief valves with soft seats, relative humidity should be kept between 30 and 70 percent. Some soft materials require a minimum humidity level to prevent material degradation.
c) Storage area should have a non-corrosive atmosphere. Otherwise, stored relief valves should be protected from the atmosphere.
d) Relief valves that utilize spindles or weights should be stored in a vertical position.
e) Temperature and pressure relief valves should have their probes supported to prevent bending or detachment.
f) All ports should be plugged, blanked, or capped.
g) Relief valves that have been cleaned for oxidizing gas or other specialty service should be sealed in a plastic bag. Plastic wrapping may be acceptable for larger relief valves.
h) Storage should be off the ground (e.g. on a shelf or pallet).
i) Storage area should limit exposure to direct sunlight

j) Relief valves constructed of materials subject to corrosion (such as carbon steel) should be painted or otherwise protected against the environment prior to storage.

SX.4 PRESSURE RELIEF VALVE SHELF LIFE

Pressure Relief valve shelf life shall be determined based upon manufacturer's recommendations and performance history. Shelf life may increase or decrease based upon storage conditions and performance history. In the absence of manufacturer or service provider recommendations, and performance history, the shelf life recommendations per table S8.4 should be used when stored in accordance with S8.3. Shelf life may be increased or decreased, from the recommended values, once performance history is established.

TABLE S8.4 RECOMMENDED RELIEF VALVE SHELF LIFE (IF NOT PROVIDED BY MANUFACTURER)

Pressure Relief Valve Description	Recommended Shelf Life (years)
Temperature and pressure relief valve	2
Pressure relief valve with metal-to-metal seat	5
Pressure relief valve with nonmetal seat	2

SX.4.1 EXCEEDING SHELF LIFE

If shelf life is exceeded, the valve shall either be tested prior to installation or tested using its lift lever (if applicable) following installation. Storage for a length of time less than the shelf life of the pressure relief valve does not reduce the time before the first regularly scheduled retest. If performance history shows that time in storage less than shelf life causes the device to function outside of acceptable tolerance, then the shelf life shall be reduced.

2.4.4.2 PERMISSIBLE INSTALLATIONS (19)

Temperature and pressure relief valves shall be connected directly to a tapped or flanged opening in the top of the water heater or to a fitting connected to the water heater by a short nipple. Temperature and pressure relief valves shall be installed with their spindles upright and vertical with no horizontal connecting pipe, except that, when the temperature and pressure relief valve is installed directly on the water heater vessel with no more than 4 in. (100 mm) maximum interconnecting piping, the valve may be installed in the horizontal position with the outlet pointed down. The center line of the temperature and pressure relief valve connection shall be no lower than 4 in.(100 mm) from the top of the shell. No piping or fitting used to install the temperature and pressure relief valve shall be of nominal pipe size less than that of the valve inlet.

2.4.4.3 REQUIREMENTS FOR COMMON CONNECTION FOR TWO OR MORE VALVES

a) When a potable water heater is fitted with two or more temperature and pressure relief valves on one connection, this connection shall have a cross sectional area not less than the combined areas of inlet connections of all the temperature and pressure relief valves with which it connects.

b) ~~When a Y base is used, the inlet area shall be not less than the combined outlet areas.~~

~~c)~~ When the size of the water heater requires a temperature and pressure relief valve larger than NPS 4 (DN 100) two or more valves having the required combined capacity shall be used. ~~When two or more valves are used on a water heater, they may be single, directly attached, or installed on a Y base.~~

2.4.4.4 THREADED CONNECTIONS

A threaded connection may be used for attaching a temperature and pressure relief valve.

2.4.4.5 PROHIBITED INSTALLATIONS

Temperature and pressure relief valves shall not be connected to an internal pipe in the water heater or a cold water feed line connected to the water heater.

2.4.4.6 USE OF SHUTOFF VALVES PROHIBITED

No shutoff valve of any description shall be placed between the temperature and pressure relief valve and the water heater or on discharge pipes between such valves and the atmosphere.

2.4.4.7 TEMPERATURE AND PRESSURE RELIEF VALVE DISCHARGE PIPING

a) The discharge from temperature and pressure relief valves shall be so arranged that there will be no danger of scalding attendants. When the temperature and pressure relief valve discharge is piped away from the water heater to the point of discharge, there shall be provisions for properly draining the piping and valve body. The size and arrangement of discharge piping shall be such that any pressure that may exist or develop will not reduce the relieving capacity of the relieving devices below that required to protect the water heater.

b) When a discharge pipe is used, it shall be not less than the nominal size of the valve outlet and shall be as short and straight as possible and so arranged as to avoid undue stress on the valve. When an elbow is placed on a temperature and pressure relief discharge pipe, it shall be located close to the valve outlet.

c) Where multiple valves relieve into a common discharge pipe, the cross-sectional flow area of the common discharge pipe shall be equal to or greater than the sum of the individual temperature and pressure valve discharge pipe areas.

PART 1

3.9.4.1 INSTALLATION (19)

Temperature and pressure relief valves shall be installed by either the water heater manufacturer or installer before a water heater is placed in operation.

3.9.4.2 PERMISSIBLE INSTALLATIONS (19)

Temperature and pressure relief valves shall be connected directly to a tapped or flanged opening in the top of the water heater or to a fitting connected to the water heater by a short nipple. Temperature and pressure relief valves shall be installed with their spindles upright and vertical with no horizontal connecting pipe, except that, when the temperature and pressure relief valve is installed directly on the water heater vessel with no more than 4 in. (100 mm) maximum interconnecting piping, the valve may be installed in the horizontal position with the outlet pointed down. The center line of the temperature and pressure relief valve connection shall be no lower than 4 in. (100 mm) from the top of the shell. No piping or fitting used to install the temperature and pressure relief valve shall be of nominal pipe size less than that of the valve inlet.

3.9.4.3 REQUIREMENTS FOR COMMON CONNECTION FOR TWO OR MORE VALVES

a) When a potable water heater is fitted with two or more temperature and pressure relief valves on one connection, this connection shall have a cross-sectional area not less than the combined areas of inlet connections of all the temperature and pressure release valves with which it connects.

b) ~~When a Y base is used, the inlet area shall be not less than the combined outlet areas.~~

~~c)~~ When the size of the water heater requires a temperature and pressure relief valve larger than NPS 4 (DN 100) two or more valves having the required combined capacity shall be used. ~~When two or more valves are used on a water heater, they may be single, directly attached, or installed on a Y base.~~

3.9.4.4 THREADED CONNECTIONS

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No shutoff valve of any description shall be placed between the temperature and pressure relief valve and the water heater or on discharge pipes between such valves and the atmosphere.

3.9.4.7 TEMPERATURE AND PRESSURE RELIEF VALVE DISCHARGE PIPING

a) The discharge from temperature and pressure relief valves shall be so arranged that there will be no danger of scalding attendants. When the temperature and pressure relief valve discharge is piped away from the water heater to the point of discharge, there shall be provisions for properly draining the piping and valve body. The size and arrangement of discharge piping shall be such that any pressure that may exist or develop will not reduce the relieving capacity of the relieving devices below that required to protect the water heater.

b) When a discharge pipe is used, it shall be not less than the nominal size of the valve outlet, and shall be as short and straight as possible and so arranged as to avoid undue stress on the valve. When an

ITEM 17-132 Proposal 1-14-20

PART 4, 3.2.6 RECOMMENDED INSPECTION AND TEST FREQUENCIES FOR PRESSURE RELIEF DEVICES

~~a) Power Boilers~~

~~1) Pressure less than 400 psig (2.76 MPa): Manual check every 6 months; pressure test annually to verify nameplate set pressure or as determined by operating experience as verified by testing history.~~

~~2) Pressure of 400 psig (2.76 MPa) or greater: Set pressure test to verify nameplate set pressure every three years or as determined by operating experience as verified by testing history.~~

~~3) Set pressure tests should be performed prior to bringing the boiler down for planned internal inspection so needed repairs or adjustments can be made while the boiler is down.~~

~~b) High-Temperature Hot-Water Boilers~~

~~Set pressure test annually to verify nameplate set pressure or as determined by operating experience as verified by testing history. For safety reasons, removal and testing on a steam test bench is recommended. Such testing will avoid damaging the pressure relief valve by discharge of a steam-water mixture, which could occur if the valve is tested in place.~~

~~c) Organic Fluid Vaporizers~~

~~Pressure relief valves shall be disconnected from the vaporizer at least once yearly, when they shall be inspected, tested, repaired if necessary, and then replaced on the vaporizer.~~

~~d) Low-Pressure Steam Heating Boilers~~

~~Manual check quarterly; set pressure test annually prior to steam heating season to verify nameplate set pressure.~~

~~e) Hot-Water Heating Boilers~~

~~Manual check quarterly; pressure test annually prior to heating season to verify nameplate set pressure.~~

~~**Note**: The frequencies specified for the testing of pressure relief valves on boilers is primarily based on differences between high-pressure boilers that are continuously manned, and lower-pressure automatically controlled boilers that are not monitored by a boiler operator at all times. When any boiler experiences an overpressure condition such that the pressure relief valves actuate, the valves should be inspected for seat leakage and other damage as soon as possible and any deficiencies corrected.~~

~~f) Water Heaters~~

~~Manual check every two months, or as determined based upon inspection history and manufacturer recommendations. Every 3 years, remove temperature and pressure relief valve to inspect temperature probe for damage, buildup, or corrosion. The temperature probe shall be checked for the condition of the coating material and freedom of movement without detaching. If the probe pulls out or falls off during inspection, the valve shall be repaired or replaced. Due to the relatively low cost of temperature and pressure relief valves for this service, it is recommended that a defective valve be replaced with a new valve if a repair or resetting is indicated.~~

~~g) Pressure Vessels and Piping~~

Frequency of test and inspection of pressure relief devices ~~for pressure vessel and piping service~~ is greatly dependent on the ~~nature of the contents~~service, external environment, and operation of the system, therefore only general recommendations can be given. Inspection frequency should be based on previous inspection history and/or manufacturer's recommendations. If, during inspection, valves are found to be defective or damaged, intervals should be shortened until acceptable inspection results are obtained. Where test records and/or inspection history are not available, the following inspection and test frequencies are suggested:

Table 3.2.6

Service	Inspection Type/Frequency
Power boilers less than 400 psi (2.76 MPa)	Lift lever test every six months, set pressure test annually or prior to planned boiler shutdown
Power boilers 400 psi (2.76 MPa) or greater	Set pressure test every three years or prior to planned boiler shutdown
High-temperature hot water boilers (See Note 1)	Set pressure test annually
Low-pressure steam heating boilers	Lift lever test quarterly, set pressure test annually prior to heating season
Organic Fluid Vaporizers	Remove, inspect, and set pressure test annually
Hot water heating boilers (See Note 2)	Lift lever test quarterly, set pressure test annually prior to heating season
Water heaters (See Note 3)	Lift lever test every two months, remove and inspect temperature probe for damage, buildup or corrosion every three years.
Pressure vessels/piping-steam service	Set pressure test annually
Pressure vessels/piping-air/clean, dry gas	Set pressure test every three years
Pressure vessels/piping-propane/refrigerant	Set pressure test every five years
Pressure relief valves in combination with rupture disks	Set pressure test every five years
All others	Per inspection history

Note 1: For safety reasons, removal and testing on a steam test bench is recommended. Such testing will avoid damaging the pressure relief valve by discharge of a steam water mixture, which could occur if the valve is tested in place.

Note 2: The frequencies specified for the testing of pressure relief valves on boilers is primarily based on differences between high pressure boilers that are continuously manned, and lower pressure automatically controlled boilers that are not monitored by a boiler operator at all times. When any boiler experiences an overpressure condition such that the pressure relief valves actuate, the valves should be inspected for seat leakage and other damage as soon as possible and any deficiencies corrected.

Note 3: The temperature probe shall be checked for the condition of the coating material and freedom of movement without detaching. If the probe pulls out or falls off during inspection, the valve shall be repaired or replaced. Due to the relatively low cost of temperature and pressure relief valves for this service, it is recommended that a defective valve be replaced with a new valve if a repair or resetting is indicated.

Comment [TB1]: Moved from g) and reworded to be inclusive of valves used in all applications and not just those used in pressure vessels and piping.

Comment [TB2]: Power boiler, High-temp hot water, low pressure steam, organic fluid vaporizer, hot water heating boilers, water heater test frequency recommendations taken from paragraphs a) through f). Pressure vessel portion of table is unchanged.

Comment [TB3]: Directly copied from b) second sentence on. No revisions to text.

Comment [TB4]: Directly copied from Note under e). No revisions to text.

Comment [TB5]: Directly copied from f) third sentence on. No revisions to text.

PART 2, 2.5.8 RECOMMENDED INSPECTION AND TEST FREQUENCIES FOR PRESSURE RELIEF DEVICES

~~a) Power Boilers~~

~~1) Pressure less than 400 psig (2.76 MPa): Manual check every 6 months; pressure test annually to verify nameplate set pressure or as determined by operating experience as verified by testing history.~~

~~2) Pressure of 400 psig (2.76 MPa) or greater: Set pressure test to verify nameplate set pressure every three years or as determined by operating experience as verified by testing history.~~

~~3) Set pressure tests should be performed prior to bringing the boiler down for planned internal inspection so needed repairs or adjustments can be made while the boiler is down.~~

~~b) High-Temperature Hot-Water Boilers~~

~~Set pressure test annually to verify nameplate set pressure or as determined by operating experience as verified by testing history. For safety reasons, removal and testing on a steam test bench is recommended. Such testing will avoid damaging the pressure relief valve by discharge of a steam water mixture, which could occur if the valve is tested in place.~~

~~c) Organic Fluid Vaporizers~~

~~Pressure relief valves shall be disconnected from the vaporizer at least once yearly, when they shall be inspected, tested, repaired if necessary, and then replaced on the vaporizer.~~

~~d) Low-Pressure Steam Heating Boilers~~

~~Manual check quarterly; set pressure test annually prior to steam heating season to verify nameplate set pressure.~~

~~e) Hot-Water Heating Boilers~~

~~Manual check quarterly; pressure test annually prior to heating season to verify nameplate set pressure.~~

~~**Note**: The frequencies specified for the testing of pressure relief valves on boilers is primarily based on differences between high pressure boilers that are continuously manned, and lower pressure automatically controlled boilers that are not monitored by a boiler operator at all times. When any boiler experiences an overpressure condition such that the pressure relief valves actuate, the valves should be inspected for seat leakage and other damage as soon as possible and any deficiencies corrected.~~

~~f) Water Heaters~~

~~Manual check every two months, or as determined based upon inspection history and manufacturer recommendations. Every 3 years, remove temperature and pressure relief valve to inspect temperature probe for damage, buildup, or corrosion. The temperature probe shall be checked for the condition of the coating material and freedom of movement without detaching. If the probe pulls out or falls off during inspection, the valve shall be repaired or replaced. Due to the relatively low cost of temperature and pressure relief valves for this service, it is recommended that a defective valve be replaced with a new valve if a repair or resetting is indicated.~~

~~g) Pressure Vessels and Piping~~

Frequency of test and inspection of pressure relief devices ~~for pressure vessel and piping service~~ is greatly dependent on the ~~nature of the contents~~service, external environment, and operation of the system, therefore only general recommendations can be given. Inspection frequency should be based on previous inspection history and/or manufacturer's recommendations. If, during inspection, valves are found to be defective or damaged, intervals should be shortened until acceptable inspection results are obtained. Where test records and/or inspection history are not available, the following inspection and test frequencies are suggested:

Table 3.2.6

Service	Inspection Type/Frequency
Power boilers less than 400 psi (2.76 MPa)	Lift lever test every six months, set pressure test annually or prior to planned boiler shutdown
Power boilers 400 psi (2.76 MPa) or greater	Set pressure test every three years or prior to planned boiler shutdown
High-temperature hot water boilers (See Note 1)	Set pressure test annually
Low-pressure steam heating boilers	Lift lever test quarterly, set pressure test annually prior to heating season
Organic Fluid Vaporizers	Remove, inspect, and set pressure test annually
Hot water heating boilers (See Note 2)	Lift lever test quarterly, set pressure test annually prior to heating season
Water heaters (See Note 3)	Lift lever test every two months, remove and inspect temperature probe for damage, buildup or corrosion every three years.
Pressure vessels/piping-steam service	Set pressure test annually
Pressure vessels/piping-air/clean, dry gas	Set pressure test every three years
Pressure vessels/piping-propane/refrigerant	Set pressure test every five years
Pressure relief valves in combination with rupture disks	Set pressure test every five years
All others	Per inspection history

Note 1: For safety reasons, removal and testing on a steam test bench is recommended. Such testing will avoid damaging the pressure relief valve by discharge of a steam water mixture, which could occur if the valve is tested in place.

Note 2: The frequencies specified for the testing of pressure relief valves on boilers is primarily based on differences between high pressure boilers that are continuously manned, and lower pressure automatically controlled boilers that are not monitored by a boiler operator at all times. When any boiler experiences an overpressure condition such that the pressure relief valves actuate, the valves should be inspected for seat leakage and other damage as soon as possible and any deficiencies corrected.

Note 3: The temperature probe shall be checked for the condition of the coating material and freedom of movement without detaching. If the probe pulls out or falls off during inspection, the valve shall be repaired or replaced. Due to the relatively low cost of temperature and pressure relief valves for this service, it is recommended that a defective valve be replaced with a new valve if a repair or resetting is indicated.

Comment [TB6]: Moved from g) and reworded to be inclusive of valves used in all applications and not just those used in pressure vessels and piping.

Comment [TB7]: Power boiler, High-temp hot water, low pressure steam, organic fluid vaporizer, hot water heating boilers, water heater test frequency recommendations taken from paragraphs a) through f). Pressure vessel portion of table is unchanged.

Comment [TB8]: Directly copied from b) second sentence on. No revisions to text.

Comment [TB9]: Directly copied from Note under e). No revisions to text.

Comment [TB10]: Directly copied from f) third sentence on. No revisions to text.

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PART 4

SUPPLEMENT 4
RECOMMENDED PROCEDURES FOR REPAIRING PRESSURE RELIEF VALVES
S4.1 ~~INTRODUCTION~~SCOPE

This supplement contains recommended procedures for the repair, packaging, shipping and transportation of pressure relief valves. S4.2 contains recommended procedures for the repair of spring-loaded pressure relief valves. ~~, and~~ S4.3 contains recommended procedures for the repair of pilot operated types of pressure relief valves. S4.4 contains ~~I~~information on packaging, shipping and transportation. ~~is included as S4.5.~~

~~a)~~ It is essential that the repair organization establish basic, specific procedures for the repair of pressure relief valves. The purpose of these recommended procedures is to provide the repair organization with guidelines for this important aspect of valve repair. It is realized that there are many types of valves and conditions under which they are repaired and, for this reason, the specific items in these recommended procedures may not apply, or they may be inadequate for each of those types or to the detailed repairs that may be required for each valve.

~~b) S4.2 contains recommended procedures for the repair of spring-loaded pressure relief valves, and S4.3 contains recommended procedures for the repair of pilot operated types of pressure relief valves. Information on packaging, shipping and transportation is included as S4.5.~~

SUPPLEMENT 5
RECOMMENDED GUIDE FOR THE DESIGN OF A TEST SYSTEM FOR PRESSURE RELIEF DEVICES IN COMPRESSIBLE FLUID SERVICE
S5.1 SCOPE

This supplement provides guidance for the design of a test system using compressible fluids (e.g., steam or air/gas) and permits the determination of pressure relief valve set pressure and valve operating characteristics such as blowdown.
The size of the test vessel needed depends on the size of the valve, its set pressure, the design of the test system, and whether blowdown must be demonstrated. A repair organization may use the information provided in this supplement to determine the minimum size test vessel needed so that the measured performance is characteristic of the valve and not the test system.

~~S5.2 GENERAL~~

a) The National Board administrative rules and procedures for the “VR” *Certificate of Authorization* and symbol stamp require that pressure relief valves, after repair, be tested in accordance with the manufacturer’s recommendations and the applicable ASME Code. The purpose of this testing is to provide reasonable assurance that valves will perform according to design when they are returned to service.

b) It is recognized that a full evaluation of the performance of some pressure relief valve designs requires testing at maximum allowable overpressure. However, it is beyond the scope of this supplement to define test equipment or facilities for such testing.

c) Section 6 of this part provides a glossary, S5.3 describes typical test equipment, and S5.4 provides data for estimating the size of test vessels required.

(Renumber all remaining sections)

SUPPLEMENT 6
PROCEDURES FOR REPAIRS TO ASME "NV" STAMPED PRESSURE RELIEF DEVICES

S6.1 ~~INTRODUCTION~~SCOPE

This supplement provides procedures and requirements for repair of ASME Code "NV" Class 1, 2, or 3 stamped pressure relief devices, which have been capacity certified by the National Board~~, may be repaired provided the following requirements are met~~.

Item 19-18: Change to Part 4, 4.8.5.4 n) 5)

Explanation of Need: Current wording allows for implementation of the revision once the change is merely submitted to the National Board for approval.

Background Information: When changes are made to a QC Manual at times other than reviews, they may be done so by submission to NB via mail, email etc. But implementation of the change should not take place until after NB acceptance of the change is received.

Proposed Text:

n) Manual Control

The quality system shall include:

1) Measures to control the issuance of and revisions to the quality system manual;

2) Provisions for a review of the system in order to maintain the manual current with these rules and the applicable sections of the ASME Code;

3) The title(s) of the individual(s) responsible for control, revisions, and review of the manual;

4) Provision of a controlled copy of the written quality system manual to be submitted to the National Board; and

5) Revisions shall be submitted to ~~for acceptance~~ and accepted by the National Board prior to being implemented.

(19) **4.7.2 REPAIR NAMEPLATE**

When a pressure relief valve is repaired, a metal repair nameplate stamped with the information required below shall be securely attached to the valve adjacent to the original manufacturer's stamping or nameplate. If not installed directly on the valve, the nameplate shall be securely attached to the valve independent of the external adjustment seals in a manner that does not interfere with valve operation and sealed in accordance with the quality system.

a) Prior to attachment of the repair nameplate, the previous repair nameplate, if applicable, shall be removed from the repaired valve.

b) As a minimum, the information on the valve repair nameplate (see Figure 4.7.2-a) shall include:

1) The name of the repair organization preceded by the words "repaired by";

2) The "VR" repair symbol stamp and the "VR" certificate number;

3) Unique identifier (e.g., repair serial number, shop order number, etc.);

4) Date of repair;

5) Set pressure;

6) Capacity and capacity units (if changed from original nameplate due to set pressure or service fluid change);

7) Type/Model number (if changed from original nameplate by a conversion. See 4.2); and

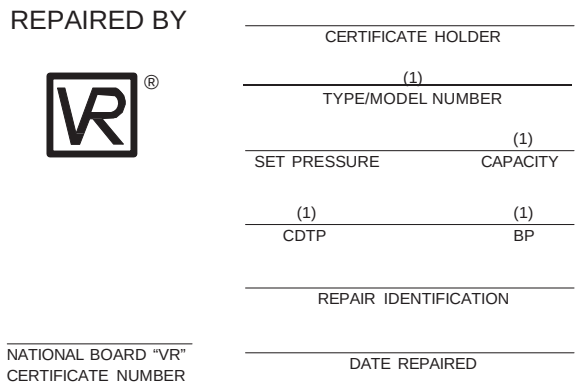
8) When an adjustment is made to correct for service conditions of superimposed back pressure and/or temperature or the differential between popping pressure between steam and air (see 4.6.2), the information on the valve repair nameplate shall include the:

a. Cold Differential Test Pressure (CDTP); and

b. Superimposed Back Pressure (BP) (only when applicable).

FIGURE 4.7.2-a

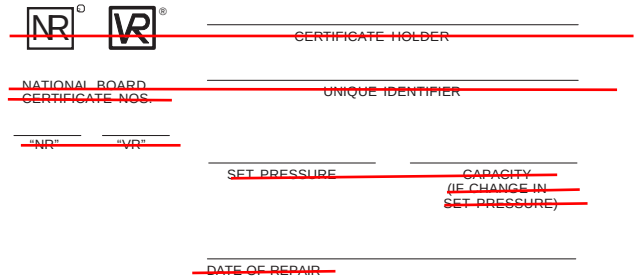
EXAMPLE LAYOUT OF REQUIRED MARKINGS FOR REPAIR OF ASME/NATIONAL BOARD "V," "UV," AND "HV"- STAMPED PRESSURE RELIEF VALVES



Note:. To be indicated only when changed.

~~**FIGURE 4.7.2-b**~~

~~REQUIRED MARKINGS FOR REPAIR OF NUCLEAR PRESSURE RELIEF VALVES~~



Relocate to Supplement 6

4.7.3 CHANGES TO ORIGINAL PRESSURE RELIEF VALVE NAMEPLATE INFORMATION

a) If the set pressure is changed, the set pressure, capacity, and blowdown, if applicable, on the original nameplate or stamping shall be marked out but left legible. The new capacity shall be based on that for which the valve was originally certified.

b) If the service fluid is changed, the capacity, including units, on the original nameplate or stamping shall be marked out but left legible. The new capacity shall be based on that for which the valve was originally certified, or if a conversion has been made, as described in 4.2 on the capacity certification for the valve as converted.

c) If the Type/Model number is changed, the Type/Model number on the original nameplate or stamping shall be marked out but left legible.

d) If the blowdown is changed, the blowdown, if shown on the original nameplate or stamping, shall be marked out but left legible. The new blowdown may be based on the current ASME Code requirements.

e) Repair organizations shall verify the Type/Model number, inlet size, set pressure, and capacity on the original nameplate or stamping that is not marked out. Incorrect information on the original manufacturer's nameplate or stamping shall be marked out but left legible. Corrected information shall be indicated on the repair nameplate and noted on the document as required by the quality system.

4.7.4 REPLACEMENT OF ILLEGIBLE OR MISSING NAMEPLATES

a) Illegible Nameplates

When the information on the original manufacturer's or assembler's nameplate or stamping is illegible, but traceability can be confirmed, the nameplate or stamping shall be augmented by a nameplate furnished by the "VR" stamp holder stamped "Duplicate." It shall contain all information that originally appeared on the nameplate or valve, as required by the applicable section of the ASME Code, except the "V," "HV," or "UV" symbol and the National Board mark. The repair organization's nameplate, with the "VR" stamp and other required data specified in 4.7.2, will make the repairer responsible to the owner and the Jurisdiction that the information on the duplicate nameplate is correct.

b) Missing Nameplates

When the original valve nameplate is missing, the repair organization is not authorized to perform repairs to the valve under the "VR" program, unless positive identification can be made to that specific valve and verification that the valve was originally stamped with an ASME "V" or UV" symbol or marked with an ASME "HV" symbol. Valves that can be positively identified shall be equipped with a duplicate nameplate,

SUPPLEMENT 6
PROCEDURES FOR REPAIRS OF NUCLEAR SAFETY RELATED PRESSURE RELIEF VAVLES

S6.1 SCOPE

Nuclear safety related pressure relief valves and power actuated pressure relief valves may be repaired provided the following requirements are met. Valves being repaired under these provisions are intended to be those protecting the nuclear pressure boundary. Other pressure relief valves in the nuclear power plant (such as pressure relief valves on air compressors and auxiliary boilers) shall be repaired as required by the applicable Jurisdiction.

S6.2 DEFINITIONS

Safety Related – As used in this supplement and when applied to nuclear power plants, safety related means a structure, system, or component or part thereof that affects its safety function necessary to assure:

a) The integrity of the reactor coolant pressure boundary;

b) The capability to shut down the reactor and maintain it in a safe shutdown condition; or

c) The capability to prevent or mitigate the consequence of accidents which could result in potential offsite exposures.

S6.3 NUCLEAR SAFETY RELATED VALVE GROUPS

These rules classify nuclear safety related pressure relief valves into three groups based upon the original code of construction and capacity certification status.

Group 1: ASME Section I and Section VIII pressure relief valves accepted by the Jurisdiction for use in nuclear safety related service with National Board capacity certification.

Group 2: ASME Section III "NV" stamped Class 1, 2, or 3 pressure relief valves with National Board capacity certification.

Group 3: Pressure relief valves not addressed in Group 1 or Group 2. This group shall include pressure relief valves without National Board capacity certification and/or pressure relief valves constructed to codes or standards other than ASME (see NBIC Part 3, Category 3).

The term pressure relief valve includes power actuated pressure relief valves. Replacement of rupture disks in rupture disk holders or in systems is not considered a repair activity under the scope of this supplement.

S6.4 ADMINISTRATIVE PROCEDURES

a) The repair organization shall obtain a “VR” *Certificate of Authorization*.

b) The repair organization shall obtain a National Board “NR” *Certificate of Authorization.* The requirements for said certificate include, but is not limited to, the following. The repair organization shall:

1) Maintain a documented quality assurance program that meets the applicable requirements of NBIC Part 3, 1.6. This program shall also include all the applicable requirements for the use of the “VR” stamp;

2) Have a contract or agreement with an Authorized Nuclear Inspection Agency that is qualified in accordance with the requirements of ASME QAI-1, *Qualifications for Authorized Inspection* to provide inspection of repaired nuclear pressure relief valves;

3) Successfully complete a survey of the quality assurance program and its implementation. This survey shall be conducted by representatives of the National Board, the Jurisdiction wherein the applicant's repair facilities are located, and the applicant's Authorized Inspection Agency. Further verification of such implementation by the survey team may not be necessary if the applicant holds a valid ASME "NV" certificate and can verify by documentation the capability of implementing the quality assurance program for repair of "NV"-stamped pressure relief valves, covered by the applicant's ASME "NV" certificate.

c) The application of the "NR" *Certificate of Authorization* and stamp shall clearly define the scope of intended activities with respect to the repair of nuclear pressure relief valves.

d) Revisions to the quality assurance program shall be acceptable to the Authorized Nuclear Inspector Supervisor and the National Board before being implemented.

e) The scope of the "VR" *Certificate of Authorization* shall include repair of nuclear pressure relief valves (denoted on the "VR" Certificate as Section III).

f) Verification testing of valves repaired by the applicant shall not be required provided such testing has been successfully completed under the applicant's "VR" certification program for the applicable test fluids.

g) A survey of the applicant for the "VR" *Certificate of Authorization* and endorsement of the repair of nuclear pressure relief valves may be made concurrently.

S6.5 GENERAL RULES

a) Group 1 and Group 2 pressure relief valves which have been repaired in accordance with these rules, shall be stamped with both the "VR" and "NR" stamps. They shall be classified as either "NR" Category 1 or Category 2 as applicable. Group 3 pressure relief valves which have been repaired in accordance with these rules shall be stamped with the "NR" stamp. They shall be classified as either "NR" Category 2 or Category 3 as applicable.

b) The "VR" and "NR" stamps shall be applied only to nuclear safety related pressure relief valves that have been disassembled, inspected, and repaired as necessary, such that the valves' condition and performance are equivalent to the standards for new valves. As a minimum, the information on the valve repair nameplate (see Figure S6.5-a) shall include:

1) The name of the certificate holder;
2) The "VR" and "NR" sybol stamps and certificate numbers;
3) Unique identifier (e.g., repair serial number, shop order number, etc.);
4) Date of repair;
5) Set pressure;
6) Capacity and capacity units (if changed from the original nameplate due to set pressure)

c) All measuring and test equipment used in the repair of pressure relief valves shall be calibrated against certified equipment having known valid relationships to nationally recognized standards.

d) Documentation of the repair of nuclear safety related pressure relief valves shall be recorded on the National Board Form NVR-1, *Report of Repair/ Replacement Activities for Nuclear Pressure Relief Devices*, in accordance with the requirements of NBIC Part 3, 1.6. The original code of construction and capacity certification status shall be identified on the NVR-1 form.

e) When an ASME "V", "UV" or "NV" stamped pressure relief device requires a duplicate nameplate because the original nameplate is illegible or missing, it may be applied using the procedures of NBIC Part 4, 4.7.5 provided concurrence is obtained from the Authorized Nuclear Inspector and Jurisdiction. In this case the nameplate shall be marked "SEC. I", "SEC. III", or "SEC. VIII" to indicate original ASME Code stamping.

f) Repair activities for pressure relief valves shall not include rerating of the device. Set pressure changes within the range of the valve manufacturer's capacity certification and the design pressure of the valve (see NBIC Part 4, 4.7.3) are permitted, provided the new set pressure and capacity rating are reconciled with the design of the system where the device will be used. These changes are not considered to be rerating.

g) Conversions of pressure relief valves as described in NBIC Part 4, 4.2 b) are permitted as part of repair activities.

h) Set pressure changes or conversions of pressure relief valves shall be described in the "Remarks" section of Form NVR-1.

FIGURE ~~4.7.2-b~~S6.5-a

EXAMPLE LAYOUT OF REQUIRED MARKINGS FOR REPAIR OF NUCLEAR PRESSURE RELIEF VALVES

CERTIFICATE HOLDER

UNIQUE IDENTIFIER

NATIONAL BOARD CERTIFICATE NOS.

"NR" "VR"

SET PRESSURE

CAPACITY (IF CHANGE IN SET PRESSURE)

DATE OF REPAIR

Relocate from from 4.7.2-b

4.7.3 CHANGES TO ORIGINAL PRESSURE RELIEF VALVE NAMEPLATE INFORMATION

a) If the set pressure is changed, the set pressure, capacity, and blowdown, if applicable, on the original nameplate or stamping shall be marked out but left legible. The new capacity shall be based on that for which the valve was originally certified.

b) If the service fluid is changed, the capacity, including units, on the original nameplate or stamping shall be marked out but left legible. The new capacity shall be based on that for which the valve was origi- nally certified, or if a conversion has been made, as described in 4.2 on the capacity certification for the valve as converted.

c) If the Type/Model number is changed, the Type/Model number on the original nameplate or stamping shall be marked out but left legible.

d) If the blowdown is changed, the blowdown, if shown on the original nameplate or stamping, shall be marked out but left legible. The new blowdown may be based on the current ASME Code requirements.

e) Repair organizations shall verify the Type/Model number, inlet size, set pressure, and capacity on the original nameplate or stamping that is not marked out. Incorrect information on the original manufacturer's nameplate or stamping shall be marked out but left legible. Corrected information shall be indicated on the repair nameplate and noted on the document as required by the quality system.

4.7.4 ~~REPLACEMENT OF~~ ILLEGIBLE OR MISSING NAMEPLATES

The VR Certificate Holder shall not perform repairs under the VR Program on any PRV that cannot be positively identified by the manufacturer or through in-house sources. Such identification shall include the verification of the original ASME Stamping. Pressure relief valves that have missing or illegible nameplates and can be positively identified shall be equipped with a nameplate marked "DUPLICATE", which contains all original nameplate data. The duplicate nameplate shall not bear the "NB" Mark or the ASME Certification Mark with the "V", "HV", or "UV" Designator or the supplanted "V", "HV", or "UV" Symbol. Instead, the nameplate shall be stamped "Sec. I", "Sec. IV", or "Sec. VIII", as applicable, to indicate the original stamping. Illegible nameplates, if applicable, shall not be removed.

~~a) Illegible Nameplates~~

~~When the information on the original manufacturer's or assembler's nameplate or stamping is illegible, but traceability can be confirmed, the nameplate or stamping shall be augmented by a nameplate furnished by the "VR" stamp holder stamped "Duplicate." It shall contain all information that originally appeared on the nameplate or valve, as required by the applicable section of the ASME Code, except the "V," "HV," or "UV" symbol and the National Board mark. The repair organization's nameplate, with the "VR" stamp and other required data specified in 4.7.2, will make the repairer responsible to the owner and the Jurisdiction that the information on the duplicate nameplate is correct.~~

~~b) Missing Nameplates~~

~~When the original valve nameplate is missing, the repair organization is not authorized to perform repairs to the valve under the "VR" program, unless positive identification can be made to that specific valve and verification that the valve was originally stamped with an ASME "V" or UV" symbol or marked with an ASME "HV" symbol. Valves that can be positively identified shall be equipped with a duplicate nameplate.~~

~~as described in this section, in addition to the repairer's "VR"-stamped nameplate. The repairer's respon- sibilities for accurate data, as defined in 4.7.5 a) shall apply.~~

~~c) Marking of Original Code Stamp~~

~~When a duplicate nameplate is affixed to a valve, as required by this section, it shall be marked "Sec. I," "Sec. IV," or "Sec. VIII," as applicable, to indicate the original ASME Code stamping.~~

~~(19) 4.7.5 REPLACEMENT OF ILLEGIBLE OR MISSING NAMEPLATES~~

~~a) Illegible Nameplates~~

~~When the information on the original manufacturer's or assembler's nameplate or stamping is illegible, but traceability can be confirmed, the nameplate or stamping shall be augmented by a nameplate furnished by the "VR" stamp holder stamped "Duplicate." It shall contain all information that originally appeared on the nameplate or valve, as required by the applicable section of the ASME Code, except the ASME Certification Mark and the "V", "UV", or "HV" Designator or the supplanted "V", "UV", or "HV" symbol and the National Board mark. The repair organization's nameplate, with the "VR" stamp and other required data specified in 4.7.2, will make the repairer responsible to the owner and the Jurisdiction that the information on the duplicate nameplate is correct.~~

~~b) Missing Nameplates~~

~~When the original valve nameplate is missing, the repair organization is not authorized to perform repairs to the valve under the "VR" program, unless positive identification can be made to that specific valve and verification that the valve was originally marked with the ASME Certification Mark and the "V", "UV", or "HV" Designator or the supplanted ASME "V" , "UV" or "HV" symbol. Valves that can be positively identified shall be equipped with a duplicate nameplate, as described in this section, in addition to the repairer's "VR"-stamped nameplate. The repairer's responsibilities for accurate data, as defined in 4.7.5(a) (Illegible Nameplates), shall apply.~~

~~c) Marking of Original Code Stamp~~

~~When a duplicate nameplate is affixed to a valve, as required by this section, it shall be marked "Sec. I", "Sec. IV", or "Sec. VIII", as applicable, to indicate the original ASME Code marking.~~

4.8 ACCREDITATION OF "VR" REPAIR ORGANIZATIONS

4.8.1 SCOPE

a) This section provides requirements that must be met for an organization to obtain a National Board *Certificate of Authorization* to use the "VR" Symbol Stamp for repair activities of pressure relief devices constructed in accordance with the requirements of the ASME Code.

b) For administrative requirements to obtain or renew a National Board "VR" *Certificate of Authorization* and "VR" Symbol Stamp, refer to NB-514, *Accreditation of "VR" Repair Organizations*.

4.8.2 JURISDICTIONAL PARTICIPATION

The National Board member Jurisdiction in which the "VR" organization is located is encouraged to participate in the review and demonstration of the applicant's quality system. The Jurisdiction may require participation in the review of the repair organization and the demonstration and acceptance of the repair organization's quality system manual.

2) Have a contract or agreement with an Authorized Nuclear Inspection Agency that is qualified in accordance with the requirements of ASME QAI-1, *Qualifications for Authorized Inspection* to provide inspection of repaired nuclear pressure relief valves;

3) Successfully complete a survey of the quality assurance program and its implementation. This survey shall be conducted by representatives of the National Board, the Jurisdiction wherein the applicant's repair facilities are located, and the applicant's Authorized Inspection Agency. Further verification of such implementation by the survey team may not be necessary if the applicant holds a valid ASME "NV" certificate and can verify by documentation the capability of implementing the quality assurance program for repair of "NV"-stamped pressure relief valves, covered by the applicant's ASME "NV" certificate.

c) The application of the "NR" *Certificate of Authorization* and stamp shall clearly define the scope of intended activities with respect to the repair of nuclear pressure relief valves.

d) Revisions to the quality assurance program shall be acceptable to the Authorized Nuclear Inspector Supervisor and the National Board before being implemented.

e) The scope of the "VR" *Certificate of Authorization* shall include repair of nuclear pressure relief valves (denoted on the "VR" Certificate as Section III).

f) Verification testing of valves repaired by the applicant shall not be required provided such testing has been successfully completed under the applicant's "VR" certification program for the applicable test fluids.

g) A survey of the applicant for the "VR" *Certificate of Authorization* and endorsement of the repair of nuclear pressure relief valves may be made concurrently.

S6.5 GENERAL RULES (19)

a) Group 1 and Group 2 pressure relief valves which have been repaired in accordance with these rules, shall be stamped with both the "VR" and "NR" stamps. They shall be classified as either "NR" Category 1 or Category 2 as applicable. Group 3 pressure relief valves which have been repaired in accordance with these rules shall be stamped with the "NR" stamp. They shall be classified as either "NR" Category 2 or Category 3 as applicable.

b) The "VR" and "NR" stamps shall be applied only to nuclear safety related pressure relief valves that have been disassembled, inspected, and repaired as necessary, such that the valves' condition and performance are equivalent to the standards for new valves.

c) All measuring and test equipment used in the repair of pressure relief valves shall be calibrated against certified equipment having known valid relationships to nationally recognized standards.

d) Documentation of the repair of nuclear safety related pressure relief valves shall be recorded on the National Board Form NVR-1, *Report of Repair/ Replacement Activities for Nuclear Pressure Relief Devices*, in accordance with the requirements of NBIC Part 3, 1.6. The original code of construction and capacity certification status shall be identified on the NVR-1 form.

e) When an ASME "V", "UV" or "NV" stamped pressure relief device requires a duplicate nameplate because the original nameplate is illegible or missing, it may be applied using the procedures of NBIC Part 4, ~~4.7.5~~4.7.4 provided concurrence is obtained from the Authorized Nuclear Inspector and Jurisdiction. In this case the nameplate shall be marked "SEC. I", "SEC. III", or "SEC. VIII" to indicate original ASME Code stamping.

f) Repair activities for pressure relief valves shall not include rerating of the device. Set pressure changes within the range of the valve manufacturer's capacity certification and the design pressure of the valve

SUPPLEMENT 7 (19)

RECOMMENDED PROCEDURES FOR TEST ONLY OF PRESSURE RELIEF VALVES

S7.1 INTRODUCTION (19)

a) It is essential that the test only organization establish basic, specific procedures for the testing of pressure relief valves. The purpose of these recommended procedures is to provide the test only organization with guidelines for this important aspect of valve testing. It is realized that there are many types of valves and conditions under which they are tested and, for this reason, the specific items in these recommended procedures may not apply, or they may be inadequate for each of those types or for the detailed test procedures that may be required for each valve.

b) If the valve is to be bench tested, ensure that all sources of pressure have been removed from the valve prior to removal from service. If the valve is to be field tested using system pressure, ensure that all sources of pressure are under the control of the person performing the test.

c) S7.2 contains recommended procedures for the test only of spring-loaded and pilot operated pressure relief valves.

S7.2 PRESSURE RELIEF VALVES (19)

a) Visual inspection

1) This information is to be recorded

a. User (customer) identification number;

b. Complete original pressure relief valve nameplate data, previous "VR" repair nameplate data, previous "T/O" test only nameplate data plus any important information received from customer.

c. If nameplate is missing, illegible or has incorrect information, the pressure relief valve shall not be tested. Relief valve should be sent to "VR" repair shop per paragraph ~~4.7.5~~4.7.4

2) Verify external adjustment seals are installed and match manufacturer and/or "VR" - "T/O" nameplate.

3) Check bonnet for venting on bellows type valves.

4) Check appearance for any unusual damage, missing, or misapplied parts. If sufficient damage or other unusual conditions are detected that may pose a safety risk during testing, set aside for review by the Quality Department.

b) Existing Nameplate

1) An existing "VR" Nameplate, if applicable, shall not be removed from the relief valve.

2) An existing "T/O" Nameplate shall be removed from the relief valve.

c) Relief Valve Data

1) “Set Pressure Definition” shall be obtained from National Board Document # NB-18.

2) Manufacturer’s steam to air correction factor, if applicable, shall be obtained from Manufacturer.

PART 4, SECTION 11
PRESSURE RELIEF DEVICES — INDEX

O

P

Q

R

S

ITEM 19-9 Proposal 1-14-20

PART 4, 3.2.3

3.2.3 INSPECTION REQUIREMENTS FOR INSTALLATION CONDITION

a) Ensure all covers, caps, plugs, and/or lift lever wires utilized for shipping or transport are removed.

~~a~~b) Inlet piping shall be inspected to ensure it meets the requirements of the original code of construction. For pressure relief valves, the inlet pipe shall be checked to ensure the inlet pipe size is not smaller than the device inlet size.

~~b~~c) Discharge piping shall be inspected to ensure it meets the original code of construction. For pressure relief valves, the discharge pipe shall be checked to ensure the discharge pipe size is not smaller than the device outlet size.

~~c~~d) The valve drain piping shall be checked to ensure the piping is open.

~~d~~e) The discharge piping shall be checked to ensure it drains properly.

~~e~~f) The inlet and discharge piping shall be checked to ensure they are not binding or placing excessive stress on the valve body, which can lead to distortion of the valve body and leakage or malfunction.

~~f~~g) The condition and adequacy of the pipe supports shall be inspected. Discharge piping should be supported
independent of the device itself.

~~g~~h) The valve discharge and discharge pipe shall be checked for possible hazards to personnel.

~~h~~i) The installation shall be checked to ensure that there are no intervening isolation valves between the pressure source and the valve inlet or between the valve outlet and its point of discharge. Isolation valves may be permitted in some pressure vessel service. (See 2.5.6 e)), and Jurisdictional requirements. Isolation valves shall not be used for power boilers, heating boilers, or water heaters.

~~i~~j) A change-over valve, which is used to install two pressure relief devices on a single vessel location for the purpose of switching from one device to a spare device, is not considered a block valve if it is arranged such that there is no intermediate position that will isolate both pressure relief devices from the protected system. Change-over valves should be carefully evaluated to ensure they do not have excessive pressure drop that could affect the pressure relief device operation or capacity. These devices are commonly used in pressure vessel service. They may also be used in some boiler applications. It is recommended that the Jurisdiction be contacted to determine their acceptability on boiler applications.

PART 2, 2.5.4

2.5.4 INSPECTION REQUIREMENTS FOR INSTALLATION CONDITION

a) Ensure all covers, caps, plugs, and/or lift lever wires utilized for shipping or transport are removed.

~~a~~b) Inlet piping shall be inspected to ensure it meets the requirements of the original code of construction. For pressure relief valves, the inlet pipe shall be checked to ensure the inlet pipe size is not smaller than the device inlet size.

~~b~~c) Discharge piping shall be inspected to ensure it meets the original code of construction. For pressure relief valves, the discharge pipe shall be checked to ensure the discharge pipe size is not smaller than the device outlet size.

~~c~~d) The valve drain piping shall be checked to ensure the piping is open.

~~d~~e) The discharge piping shall be checked to ensure it drains properly.

~~e~~f) The inlet and discharge piping shall be checked to ensure they are not binding or placing excessive stress on the valve body, which can lead to distortion of the valve body and leakage or malfunction.

~~f~~g) The condition and adequacy of the pipe supports shall be inspected. Discharge piping should be supported
independent of the device itself.

~~g~~h) The valve discharge and discharge pipe shall be checked for possible hazards to personnel.

~~h~~i) The installation shall be checked to ensure that there are no intervening isolation valves between the pressure source and the valve inlet or between the valve outlet and its point of discharge. Isolation valves may be permitted in some pressure vessel service. (See 2.5.6 e)), and Jurisdictional requirements. Isolation valves shall not be used for power boilers, heating boilers, or water heaters.

~~i~~j) A change-over valve, which is used to install two pressure relief devices on a single vessel location for the purpose of switching from one device to a spare device, is not considered a block valve if it is arranged such that there is no intermediate position that will isolate both pressure relief devices from the protected system. Change-over valves should be carefully evaluated to ensure they do not have excessive pressure drop that could affect the pressure relief device operation or capacity. These devices are commonly used in pressure vessel service. They may also be used in some boiler applications. It is recommended that the Jurisdiction be contacted to determine their acceptability on boiler applications.

2.5.6 PACKAGING, SHIPPING, AND TRANSPORTATION

a) The improper packaging, shipment, and transport of pressure relief devices can have detrimental effects on device operation. Pressure relief devices should be treated with the same precautions as instrumentation, with care taken to avoid rough handling or contamination prior to installation.

b) The following practices are recommended:

1)Valves should be securely fastened to pallets in the vertical position to avoid side loads on guiding surfaces, except threaded and socket-weld valves up to 2 in. (50 mm) may be securely packaged and cushioned during transport;
2) Valve inlet and outlet connection, drain connections, and bonnet vents should be protected during shipment and storage to avoid internal contamination of the valve.
~~Ensure all covers and/or plugs are removed prior to installation;~~

NBIC Part 1 Item 19-49

2.9.1 VALVE REQUIREMENTS – GENERAL (19)

a) Only direct spring loaded, pilot operated, or power actuated pressure relief valves designed to relieve steam shall be used for steam service.

b) Pressure relief valves shall be manufactured in accordance with a national or international standard.

c) Deadweight or weighted-lever pressure relief valves shall not be used.

d) For high-temperature water boilers, safety relief valves shall have a closed bonnet, and valve bodies shall not be constructed of cast iron.

e) Pressure relief valves with an inlet connection greater than NPS 3 (DN 80) used for pressure greater than 15 psig (103 kPa), shall have a flange or a welded inlet connection. The dimensions of flanges subjected to boiler pressure shall conform to the applicable standards.

f) When a pressure relief valve is exposed to outdoor elements that may affect operation of the valve, the valve may be shielded with a cover. The cover shall be vented and arranged to permit servicing and normal operation of the valve.

g) All covers, caps, and/or plugs utilized for shipping or transport shall be removed prior to installation or being placed in service.

h) Any wire or restraining device on lifting lever utilized for shipping or transport shall be removed prior to being placed in service.

3.9.1 PRESSURE RELIEF VALVE REQUIREMENTS – GENERAL

The following general requirements pertain to installing, mounting, and connecting pressure relief valves on heating boilers.

a) All covers, caps, and/or plugs utilized for shipping or transport shall be removed prior to installation or being placed in service.

b) Any wire or restraining device on lifting lever utilized for shipping or transport shall be removed prior to being placed in service.

NBIC Part 4 Item 19-49

2.2.1 VALVE REQUIREMENTS – GENERAL (19)

a) Only direct spring loaded, pilot operated, or power actuated pressure relief valves designed to relieve steam shall be used for steam service.

b) Pressure relief valves shall be manufactured in accordance with a national or international standard.

c) Deadweight or weighted-lever pressure relief valves shall not be used.

d) For high-temperature water boilers, safety relief valves shall have a closed bonnet, and valve bodies shall not be constructed of cast iron.

e) Pressure relief valves with an inlet connection greater than NPS 3 (DN 80) used for pressure greater than 15 psig (103 kPa), shall have a flange or a welded inlet connection. The dimensions of flanges subjected to boiler pressure shall conform to the applicable standards.

f) When a pressure relief valve is exposed to outdoor elements that may affect operation of the valve, the valve may be shielded with a cover. The cover shall be vented and arranged to permit servicing and normal operation of the valve.

g) All covers, caps, and/or plugs utilized for shipping or transport shall be removed prior to installation or being placed in service.

h) Any wire or restraining device on lifting lever utilized for shipping or transport shall be removed prior to being placed in service.

2.4.1 PRESSURE RELIEF VALVE REQUIREMENTS – GENERAL

The following general requirements pertain to installing, mounting, and connecting pressure relief valves on heating boilers.

a) All covers, caps, and/or plugs utilized for shipping or transport shall be removed prior to installation or being placed in service.

b) Any wire or restraining device on lifting lever utilized for shipping or transport shall be removed prior to being placed in service.

ITEM 19-54 Proposal 1-14-20

PART 4, Paragraph S7.2

S7.2 PRESSURE RELIEF VALVES

f) Sealing

1) After completion of set pressure test, set pressure restoration (if applicable) and seat tightness testing, any seals removed by the T/O certificate holder for testing and/or adjustment shall be resealed in accordance with the original code of construction with a seal providing a means of identification of the organization performing the set pressure test.

ITEM 19-70 Proposal 10-3-19

Part 4

2.6.3 LOCATION

Pressure relief devices, except those covered by NBIC Part 4, 2.~~1~~ 2 through 2.~~24~~, may be installed at any location in the system provided the pressure in any portion of the system cannot exceed the maximum overpressure permitted by the original code of construction. Pressure drop to the pressure relief device under flowing conditions shall be considered when determining pressure relief device location. The pressure-relief device shall not be isolated from the piping system except as permitted by 2.6.6 e).

Item 19-72
Proposal
01-14-2020

4.6.2 OWNER-USER ASME CODE SECTION VIII STEAM TESTING

When ASME Code Section VIII valves are repaired by the owner for the owner's own use, valves for steam service may be tested on air for set pressure and, if possible, blowdown adjustment, provided the valve manufacturer's corrections for differential in set pressure between steam and air are applied to determine the ~~set~~ test pressure as follows.

The test pressure using air as the test medium shall be the product of the Manufacturer's correction factor for the differential between steam and air multiplied by the set pressure. If a cold differential test pressure is applicable due to superimposed back pressure and/or service temperature, then the manufacturer's correction factor shall be applied to the cold differential test pressure. The test pressure shall be recorded on the valve repair document described in 4.8.5.4 i).

The correction factor between steam and air shall not be included in the cold differential test pressure marked on the valve repair nameplate per 4.7.2 b) 8).

4.7.2 REPAIR NAMEPLATE

When a pressure relief valve is repaired, a metal repair nameplate stamped with the information required below shall be securely attached to the valve adjacent to the original manufacturer's stamping or nameplate. If not installed directly on the valve, the nameplate shall be securely attached to the valve independent of the external adjustment seals in a manner that does not interfere with valve operation and sealed in accordance with the quality system.

a) Prior to attachment of the repair nameplate, the previous repair nameplate, if applicable, shall be removed from the repaired valve.

b) As a minimum, the information on the valve repair nameplate (see Figure 4.7.2-a) shall include:
   1) The name of the repair organization preceded by the words "repaired by";
   2) The "VR" repair symbol stamp and the "VR" certificate number;
   3) Unique identifier (e.g., repair serial number, shop order number, etc.);
   4) Date of repair;
   5) Set pressure;
   6) Capacity and capacity units (if changed from original nameplate due to set pressure or service fluid change);
   7) Type/Model number (if changed from original nameplate by a conversion. See 4.2); and
   8) When an adjustment is made to correct for service conditions of superimposed back pressure and/ or temperature ~~or the differential between popping pressure between steam and air (see 4.6.2)~~, the information on the valve repair nameplate shall include the:
      a. Cold Differential Test Pressure (CDTP); and
      b. Superimposed Back Pressure (BP) (only when applicable).

Item 19-75: Part 4, 2.2.2

Proposed Change to Part 4:
2.2.2 NUMBER
At least one National Board capacity certified pressure relief valve shall be installed on the boiler. If the boiler has more than 500 ft2 (47~~6~~ m2) of heating surface, or if an electric boiler has a power input of more than 3.76 million BTU/hr (1100 kW), two or more National Board capacity certified pressure relief valves shall be installed. For a boiler with combined bare tube and extended water-heating surface exceeding 500 ft2 (47 m2), two or more pressure relief valves are required only if the maximum designed steaming capacity of the boiler exceeds 4,000 lb/hr (1 800 kg/h).

Explanation of Need: Item 19-51 makes this proposed change to Part 1, 2.9.1.1, but the proposal never included changes to the duplicate section in Part 4. This item will ensure that the approved language for Part 1 gets reflected in Part 4.

Background: There is a discrepancy between ASME Section I, PG-67.1, NBIC Part 1, 2.9.1.1, and NBIC Part 4, 2.2.2. ASME requires 2 or more safety valves if over 500 sq. ft. If there is combined bare tube and extended heating surface exceeding 500 sq. ft., 2 or more safety valves are required only if the boiler exceeds 4000 lbs./hr. NBIC requires 2 or more safety valves if over 500 sq. ft. It does not make allowances for extended heating surface and generating capacity up to 4000 lbs./hr.

Approved Change to Part 1 (for reference):
2.9.1.1 NUMBER
At least one National Board capacity certified pressure relief valve shall be installed on the boiler. If the boiler has more than 500 ft2. (46.5 m2) of heating surface, or if an electric boiler has a power input of more than 3.76 million Btu/hr (1,100 kW), two or more National Board capacity certified pressure relief valves shall be installed. For a boiler with combined bare tube and extended water-heating surface exceeding 500 ft2 (47 m2), two or more pressure relief valves are required only if the maximum designed steaming capacity of the boiler exceeds 4,000 lb/hr (1 800 kg/h).

ITEM 19-76 Proposal 11-7-19

PART 4

3.3.3.4 OUTLINE OF REQUIREMENTS FOR A QUALITY SYSTEM

p) Records Retention

The quality manual shall describe a system for filing, maintaining, and easily retrieving records supporting or substantiating the administration of the Quality System within the scope of the "~~VR~~T/O" *Certificate of Authorization*. The record retention schedule described in the Quality System Manual is to follow the instructions identified in Table 3.3.3.4 p).