

Date Distributed: 11/6/2018



**THE
NATIONAL
BOARD**
OF BOILER AND
PRESSURE VESSEL
INSPECTORS

NATIONAL BOARD SUBCOMMITTEE INSPECTION

MINUTES

Meeting of October 22nd, 2018
WebEx Online Meeting

These minutes are subject to approval and are for committee use only. They are not to be duplicated or quoted for other than committee use.

The National Board of Boiler & Pressure Vessel Inspectors
1055 Crupper Avenue
Columbus, Ohio 43229-1183
Phone: (614)888-8320
FAX: (614)847-1828

1. Call to Order

SC Inspection Chair Mr. Jim Getter called the meeting to order at 2:15pm Eastern Daylight Time.

2. Introduction of Members and Visitors

The following people were present at the meeting:

Jim Getter – Chair

Paul Welch – Member

David Buechel – Member

James Roberts – Member

Jason Safarz – Member

John Mangas – Member

Mark Mooney – Member

Tom Vandini – Member

Tom Shernisky – Member

Jodi Metzmaier – Secretary

Gary Scribner – National Board Staff

Jonathan Ellis – National Board Staff

Brian Moore – Guest

3. Adoption of the Agenda

Agenda was adopted as presented.

4. Public Review Comments

Item Number: PR18-0201	NBIC Location: Part 2, 2.3.6.2 b) 2)	Attachment Page 1
General Description: (Item 17-153) Replace “a R stamp holder” with “an R stamp holder” in the referenced paragraph.		
Meeting Action: Discussion was held on the comment and the changes being proposed. A motion was made and seconded to propose Response 1: Accepted, changes are incorporated. The motion was unanimously approved.		
Item Number: PR18-0202	NBIC Location: Part 2, 2.3.6.8 a) 5)	Attachment Page 3
General Description: (Item 18-7, 18-60) Change spelling of “gauge” to “gage” to stay consistent with the rest of the NBIC.		
Meeting Action: Discussion was held on the comment and the changes being proposed. A motion was made and seconded to propose Response 1: Accepted, changes are incorporated. The motion was unanimously approved.		
Item Number: PR18-0206	NBIC Location: Part 2, S12.2 a)	Attachment Page 5
General Description: (Item NB16-2809) 10 ft is converted to 3050mm in the referenced section instead of 3.0m like the rest of the NBIC.		

Meeting Action: Discussion was held on the comment and the changes being proposed. A motion was made and seconded to propose Response 1: Accepted, changes are incorporated. The motion was unanimously approved.

Item Number: PR18-0207 **NBIC Location: Part 2, S12.2 e)** **Attachment Page 7**

General Description: (Item NB16-2809) 36in is used instead of being converted to 0.9m.

Meeting Action: Discussion was held on the comment and the changes being proposed. A motion was made and seconded to propose Response 1: Accepted, changes are incorporated. The motion was unanimously approved.

Item Number: PR18-0208 **NBIC Location: Part 2, 2.6, 2.7, 2.8, S14** **Attachment Page 9**

General Description: (Items NB17-0403, 18-70, 18-71, 18-72) The T/O program is not an in-service inspection activity, so it should not be included in Part 2.

Meeting Action: Discussion was held on the comment and the changes being proposed. Mr. Scribner explained why the T/O program will not be included in Part 2. A motion was made and seconded to propose Response 1: Accepted, changes are incorporated. The motion was unanimously approved.

5. Future Meetings

January 14-17, 2019 – San Antonio, TX

July 15-18, 2019 – Kansas City, MO

6. Adjournment

A motion was made, seconded, and approved to adjourn the meeting at 2:30pm Eastern Daylight Time.

Respectfully submitted,

Jonathan Ellis

Jonathan Ellis
NBIC Secretary

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Comments Must be Received No Later Than: October 15, 2018

Instructions: If unable to submit electronically, please print this form and fax or mail. Print or type clearly.

Date: Sep. 10, 2018

Commenter Name: Alex Garbolevsky

Commenter Address: Hartford Steam Boiler
One State St., 8th Flr., Hartford, CT 06102-5024

Commenter Phone: (860) 722-5098

Commenter Fax: none

Commenter Email: alex_garbolevsky@hsb.com

Section/Subsection Referenced: NBIC Part 2, 2.3.6.2 b) b) 2) (17-153)

Comment/Recommendation: Proposed Solution: ☐ New Text ☒ Revise Text ☐ Delete Text

Editorial Comment: Replace "a "R" stamp holder" with "an R stamp holder".

Should be:
an "R" stamp holder

Source: ☒ Own Experience/Idea ☐ Other Source/Article/Code/Standard

Submit Form To: Jonathan Ellis, NBIC Secretary, The National Board of Boiler & Pressure
Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, email: jellis@nationalboard.org

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	<u>a. UT Acceptance Criteria</u> <u>1. For line or crevice corrosion, the depth of the corrosion shall not exceed 25% of the required wall thickness.</u> <u>2. Isolated pits may be disregarded provided that their depth is not more than 50% of the required thickness of the pressure vessel wall (exclusive of any corrosion allowance), provided the total area of the pits does not exceed 7 sq. in. (4,500 sq. mm) within any 8 in. (200 mm) diameter circle, and provided the sum of their dimensions along any straight line within that circle does not exceed 2 in. (50 mm).</u> <u>3. For a corroded area of considerable size, the thickness along the most critical plane of such area may be averaged over a length not exceeding 10 in. (250 mm). The thickness at the thinnest point shall not be less than 75% of the required wall thickness.</u> <u>b. If the corrosion exceeds any of the above criteria, the following options are available to the owner/user.</u> <u>1. The owner/user may conduct a complete UT survey of the vessel to verify remaining vessel wall thickness.</u> <u>2. The vessel shall be removed from service until the vessel is repaired by a "R" stamp holder.</u> <u>3. The vessel shall be removed from service until it can be de-rated to a lower MAWP subject to review and approval by the Jurisdiction.</u> <u>4. A fitness-for service analysis is performed by a qualified organization.</u> <u>5. The vessel is permanently removed from service.</u> 3) Fittings and attachments — Inspect all fittings and attachments for alignment, support, deterioration, damage, and leakage around threaded joints. Any internal attachments such as supports, brackets, or rings shall be visually examined for wear, corrosion, erosion, and cracks; 4) Operation — Check the vessel nameplate to determine the maximum allowed working pressure and temperature of the vessel. Ensure the set pressure of the safety valve does not exceed that allowed on the vessel nameplate and determine that the capacity of the safety valve is greater than the capacity of the compressor. Ensure there is a functioning manual or automatic condensate drain; and 5) Quick-Closure Attachments — Filter-type vessels usually have one quick-type closure head for making filter changes, see NBIC Part 2, 2.3.6.5.
18-7, 18-60 Part 2,	2.3.6.8 INSPECTION OF PRESSURE VESSELS FOR HUMAN OCCUPANCY (PVHO's)

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Commenter Address: Hartford Steam Boiler
One State St., 8th Flr., Hartford, CT 06102-5024

Commenter Phone: (860) 722-5098

Commenter Fax: none

Commenter Email: alex_garbolevsky@hsb.com Should be 2.3.6.8 b) 5)

Section/Subsection Referenced: NBIC Part 2, Part 2, 2.3.6.8 a) 5) (18-7,18-60)

Comment/Recommendation: Proposed Solution: ☐ New Text ☒ Revise Text ☐ Delete Text

General Editorial: For consistency, change spelling of "gauge" throughout NBIC to "gage".
"Gage" is already used in NBIC and ASME Codes

Source: ☐ Own Experience/Idea ☒ Other Source/Article/Code/Standard e.g. NBIC Part 2, 2.2.10. 4; 2.3.5.1

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NOTE: 5) should be red, as it is new wording

prevent a chamber occupant from inadvertently blocking the opening.

- 5) The inlets to all chamber pressure gauge lines should be located where they either protected from possible blockage or fitted with multiple openings.

6) Chamber doors:

- a. should operate freely and smoothly. However, doors should not move on their own when released;
- b. that close/seal with pressure and which are fitted with “dogs” or other restraints to hold them in place until an initial seal is obtained, shall be fitted with features to prevent the door from maintaining a seal in the event the pressure differential on the door is reversed;
- c. should have seals that are supple, free from flat spots, cracking, etc.; and
- d. that close/seal against pressure shall have provisions as follows:
 - 1. Positive protection against pressurization of the vessel unless the restraint mechanism is fully engaged. This includes pressurization by back-up methods as well as primary methods; and
 - 2. Positive protection against release of the restraint mechanism unless pressure in the vessel is fully relieved.

c) External Inspection

- 1) The Inspector should closely examine the external condition of the pressure vessel for corrosion, damage, dents, gouges or other damage.
- 2) The lower half and the bottom portions of insulated vessels should receive special focus, as condensation or moisture may gravitate down the vessel shell and soak into the insulation, keeping it moist for long periods of time. Penetration locations in the insulation or fireproofing such as saddle supports, sphere support legs, nozzles, or fittings should be examined closely for potential moisture ingress paths. When moisture penetrates the insulation, the insulation may actually work in reverse, holding moisture in the insulation and/or near the vessel shell.
- 3) Insulated vessels that are run on an intermittent basis or that have been out of service require close scrutiny. In general, a visual inspection of the vessel’s insulated surfaces should be conducted once per year.
- 4) The most common and superior method to inspect for suspected corrosion under insulation (CUI) damage is to completely or partially remove the insulation for visual inspection. The method most commonly utilized to inspect for CUI without insulation removal is by X-ray and isotope radiography (film or digital) or by real time radiography, utilizing

PR18-0206

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Commenter Name: Alex Garbolevsky

Commenter Address: Hartford Steam Boiler
One State St., 8th Flr., Hartford, CT 06102-5024

Commenter Phone: (860) 722-5098

Commenter Fax: none

Commenter Email: alex_garbolevsky@hsb.com

S12.2 a)

Section/Subsection Referenced: Part 2 S12.2 (NB 16-2809)

Comment/Recommendation: Proposed Solution: ☐ New Text ☒ Revise Text ☐ Delete Text

Comment: Elsewhere in NBIC, "10 feet" is converted to 3.0 m. rather than 3050 mm. "3.0 m" appears to be consistent with NBIC Parts 1-4, Section 7.3.

Source: ☐ Own Experience/Idea ☒ Other Source/Article/Code/Standard

NBIC Part 2, S12.2

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Project Committee Referred To: _____

Comment No. Issued: _____

	i) <u>SAFETY VALVE: The boilers minimum relieving capacity shall be computed for the type of fuel used.</u> j) <u>COMPRESSED NATURAL GAS (CNG) vs LIQUID PETROLEUM GAS (LPG): CNG is lighter than air and LPG is heavier than air. The owner or user should understand the properties of the fuels to ensure the gas will not accumulate in the boiler (see Purging above).</u>
NB16-2809 Part 2, S12.2	S12.2 GENERAL REQUIREMENTS (ENCLOSED AND UNENCLOSED AREAS) The inspection should verify that LCDSVs are: - not located within 10 feet (3050 mm) of elevators, unprotected platform ledges or other areas where falling would result in dropping distances exceeding half the container height; - installed with clearance to satisfactorily allow for filling, operation, maintenance, inspection and replacement of the vessel parts or appurtenances; - not located on roofs; - adequately supported to prevent the vessel from tipping or falling, and to meet seismic requirements as required by design; - not located within 36 in. (915 mm) of electrical panels; and - located outdoors in areas in the vicinity of vehicular traffic are protected with barriers designed to prevent accidental impact by vehicles.
18-38 Part 3, 1.1	PART 3, SECTION 1 REPAIRS AND ALTERATIONS — GENERAL AND ADMINISTRATIVE REQUIREMENTS 1.1 SCOPE a) This part provides requirements and guidelines that apply when performing repairs and alterations to pressure-retaining items. b) The National Board administers three <u>four</u> specific accreditation programs: 1) “R” – Repairs and Alterations to Pressure-Retaining Items 2) “NR” – Repair and Replacement Activities for Nuclear Items 3) “VR” – Repairs to Pressure Relief Valves <u>4) “T/O” – Test Only of Pressure Relief Valves</u> c) This part describes some of the administrative requirements for the accreditation of repair organizations. Additional administrative requirements can be found in: 1) NB-415, ACCREDITATION OF “R” REPAIR ORGANIZATIONS 2) NB-417, ACCREDITATION OF “NR” REPAIR ORGANIZATIONS 3) NB-514, ACCREDITATION OF “VR” REPAIR ORGANIZATIONS

PR18-0207

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Date: Sep. 10, 2018

Commenter Name: Alex Garbolevsky

Commenter Address: Hartford Steam Boiler
One State St., 8th Flr., Hartford, CT 06102-5024

Commenter Phone: (860) 722-5098

Commenter Fax: none

Commenter Email: alex_garbolevsky@hsb.com S12.2 e)

Section/Subsection Referenced: Part 2 S12.2 (NB 16-2809)

Comment/Recommendation: Proposed Solution: ☐ New Text ☒ Revise Text ☐ Delete Text

~~Comment: [1] S12.2 a) - Elsewhere in NBIC, "10 feet" is converted to 3.0 m. rather than 3050 mm. "3.0 m" appears to be consistent with NBIC Parts 1-4, Section 7.3.~~

Comment [2] S12.2 e) - "36 in" (3 ft) is converted to 0.9 m. in Part 2, S12.4. "0.9 m" appears to be consistent with NBIC Parts 1-4, Section 7.3.

NOTE: Comment 1 was address in PR18-0206

Source: ☐ Own Experience/Idea ☒ Other Source/Article/Code/Standard NBIC Part 2, S12.4

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	i) <u>SAFETY VALVE: The boilers minimum relieving capacity shall be computed for the type of fuel used.</u> j) <u>COMPRESSED NATURAL GAS (CNG) vs LIQUID PETROLEUM GAS (LPG): CNG is lighter than air and LPG is heavier than air. The owner or user should understand the properties of the fuels to ensure the gas will not accumulate in the boiler (see Purging above).</u>
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Comments Must be Received No Later Than: October 15, 2018

Instructions: If unable to submit electronically, please print this form and fax or mail. Print or type clearly.

Date: September 24, 2018

Commenter Name: Gary L. Scribner

Commenter Address: 1055 Crupper Ave.
Columbus, Oh 43229

Commenter Phone: 614-888-8320

Commenter Fax: 614-847-1828

Commenter Email: gscribner@nationalboard.org

Section/Subsection Referenced: Part 2, 2.6, 2.7, 2.8, S14

Comment/Recommendation: *Proposed Solution:* ☐ New Text ☐ Revise Text ☒ Delete Text

The proposed wording under item **NB17-0403, 18-70, 18-71, & 18-72** dealing with the T/O Accreditation Program is not an inservice inspection activity, so this working should be limited to NBIC Part 4 and should not be included in NBIC Part 2.

Source: ☒ Own Experience/Idea ☐ Other Source/Article/Code/Standard

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	<u>5) PVH0-2 Form VP-1 Viewport Inspection (one for each window, current within PVH0-2 requirements).</u> <u>6) For any repaired windows, PVH0-2 Form VP-2 Acrylic Window Repair Certificate for Windows. Repaired by the User (or his Authorized Agent) or PVH0-2 Form VP-3 Acrylic Window Repair Certificate for Severely Damaged Windows.</u> h) All PVH0s under the jurisdiction of the U.S. Coast Guard must also comply with 46 CFR Part 197.
NB17-0201 Part 2, 2.3.6.10 c) 1)	c) Record keeping 1) Since these vessels have a finite fatigue life, it is essential a record shall be maintained of each operating cycle, recording both temperature and pressure. Deviation beyond design limits is cause for suspending operation and reevaluation of remaining fatigue life. Vessels having no operating record should-shall be inspected and a fracture mechanics evaluation with a fatigue analysis test be performed to establish remaining life before resuming operation. Vessels having no operating record shall not be used for service until such time as previous operating history can be determined.
NB16-3101 Part 2, 2.5.7.2 a)	a) If a set pressure test indicates the valve does not open within the requirements of the original code of construction, but otherwise is in acceptable condition, minor adjustments (defined as no more than twice the permitted set pressure tolerance) shall be made by a qualified organization accredited by the National Board <u>"VR" or "T/O" Certificate Holder</u> to reset the valve to the correct opening pressure. All adjustments shall be resealed with a seal identifying the responsible organization and a tag shall be installed identifying the organization and the date of the adjustment. Qualified organizations are considered to be National Board "VR" Certificate Holders, or organizations authorized by the Jurisdiction to make adjustments. See Supplement 3 for more information.
NB16-3101 Part 2, 2.5.8.2	2.5.8.2 ESTABLISHMENT OF SERVICE INTERVALS b) Pressure relief valves are mechanical devices that require periodic preventive maintenance even though external inspection and test results indicate acceptable performance. There may be wear on internal parts, galling between sliding surfaces, internal corrosion, or fouling which will not be evident from an external inspection or test. Periodic re-establishment of seating surfaces and the replacement of soft goods such as o-rings and diaphragms are also well advised preventive maintenance activities that can prevent future problems. If the valve is serviced, a complete disassembly, internal inspection, and repair as necessary, such that the valve's condition and performance are restored to a like new condition, should be done by <u>a National Board "VR" Certificate Holder, an organization accredited by the National Board.</u>
NB17-0403, 18-70, 18- 71, 18-72	<u>2.6 ACCREDITATION OF "T/O" TEST ONLY ORGANIZATIONS</u> <u>2.6.1 SCOPE</u>

Part 2, 2.6, 2.7, 28. S14 (Part 4, 1.4, 3.3, 3.4, 3.5, 4.1, 4.2, 4.7.4, S7)	a) This section provides requirements that must be met for an organization to obtain a National Board Certificate of Authorization to use the “T/O” Certification Mark for in-service testing and performing minor adjustments of pressure relief valves constructed in accordance with the requirements of the ASME Code. b) For administrative requirements to obtain or renew a National Board “T/O” Certificate of Authorization and “T/O” Certification Mark, refer to NB-528, Accreditation of “T/O” Test Only Organizations. c) Authorization to use the official National Board “T/O” Certification Mark as shown in Figure 2.8.2-a), will be granted by the National Board provided the requirements of the administrative rules in NB-528 and the NBIC are met. 2.6.2 JURISDICTIONAL PARTICIPATION The National Board member jurisdiction in which the “T/O” 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 testing organization and the demonstration and acceptance of the repair organization’s quality system manual. 2.6.3 QUALITY SYSTEM 2.6.3.1 GENERAL Each applicant for a new or renewed “T/O” <i>Certificate of Authorization</i> shall have and maintain a quality system which shall establish that all of these rules and administrative procedures and applicable ASME Code requirements, testing, inspection, sealing, and applying the T/O certification mark will be met. 2.6.3.2 WRITTEN DESCRIPTION A written description, in the English language, of the system the applicant will use shall be available for review and shall contain, as a minimum, the features set forth in 2.6.3.4. This description may be brief or voluminous, depending upon the projected scope of work, and shall be treated confidentially. In general, the quality system shall describe and explain what documents and procedures the testing firm will use to validate a test and/or
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minor adjustment.

2.6.3.3 MAINTENANCE OF A CONTROLLED COPY

Each applicant to whom a “T/O” Certificate of Authorization is issued shall maintain thereafter a controlled copy of the accepted quality system manual with the National Board. Except for changes that do not affect the quality system, revisions to the quality system manual shall not be implemented until such revisions are accepted by the National Board.

2.6.3.4 OUTLINE OF REQUIREMENTS FOR A QUALITY SYSTEM

The following establishes the minimum requirements of the written description of the quality system. It is required that each testing organization develop its own quality system that meets the requirements of its organization. For this reason it is not possible to develop one quality system that could apply to more than one organization. The written description shall include, as a minimum, the following features:

a) Title Page

The title page shall include the name and address of the company to which the National Board Certificate of Authorization is to be issued.

b) Revision Log

A revision log is required to ensure revision control of the quality system manual. The log should contain sufficient space for date, description and section of revision, company approval, and National Board acceptance.

c) Contents Page

The contents page should list and reference, by section paragraph or page number, the subjects and exhibits contained therein.

d) Statement of Authority and Responsibility

A statement of authority and responsibility shall be dated and signed by an officer of the company. It shall include:

- 1) A statement that the “T/O” Certification Mark shall be used only for pressure relief valves that meet the following conditions:

	a. Are marked with an ASME “V”, “UV”, or “HV” Code symbol or marked with the ASME Certification Mark with “V”, “UV”, or “HV” designator and have been capacity certified by the National Board; b. Have been visually inspected, and successfully tested in accordance with this program; and c. Only external adjustments to restore the nameplate set pressure and/or performance of a pressure relief valve shall be made under the provisions of this program. If disassembly, change of set pressure, or additional repairs are necessary, the valve shall be repaired by a National Board “VR” Certificate Holder or replaced. 2) The title of the individual responsible for ensuring that the quality system is followed and who has authority and freedom to affect the responsibility; 3) A statement that if there is a disagreement in the implementation of the written quality system, the matter is to be referred to a higher authority in the company for resolution; and 4) The title of the individual authorized to approve revisions to the written quality system and the method by which such revisions are to be submitted to the National Board for acceptance before implementation. e) Organization Chart A chart showing the relationship between management, inspection, testing, and quality control personnel is required and shall reflect the actual organization in place. f) Scope of Work 1) The scope of work section shall indicate the scope and type of valve testing the organization is capable of and intends to perform. The location of testing (shop, shop and field, or field only), ASME Code Section(s) to which the tests apply, and the test medium (air, gas, liquid, or steam, or combinations thereof) shall be included. 2) The types and sizes of valves to be tested, pressure ranges and other limitations shall also be addressed. g) Specification Control The specification control system shall provide procedures assuring that the latest applicable specifications and instructions required are used for valve inspection and testing. h) Inspection and Testing Program The inspection and testing program section shall include reference to a
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document (such as an inspection and test report, or checklist) that outlines the specific inspection and testing procedures used in the testing of pressure relief valves. Provisions shall be made to retain this document for a period of at least five years.

- 1) Each valve or group of valves shall be accompanied by the document referred to above for processing through the plant. Each valve shall have a unique identifier assigned by the Test Only organization (e.g., job serial number, shop order number, work order number, etc.) appearing on the test documentation and test nameplate such that traceability is established.
- 2) The document referred to above shall describe the original nameplate information, including the ASME Code symbol stamping and, if applicable, the repair nameplate information. In addition, it shall include pressure test methods to be used. Application of the "T/O" Certification Mark to the test nameplate shall be recorded in this document. There shall be a space for "signoffs" at each operation to verify that each step has been properly performed by qualified personnel.
- 3) The system shall also describe the controls used to ensure that any personnel engaged in the testing of pressure relief valves are trained and qualified in accordance with 2.7.

i) Valve Adjustment and Sealing

- 1) The system shall include provisions that each pressure relief valve requiring adjustment as permitted by 2.5.7.2 shall have existing seal(s) removed only for the required adjustment(s), be tested, set, and external adjustment(s) re-sealed according to the requirements of the applicable ASME Code Section and the NBIC. The seal shall identify the "T/O" Certificate Holder performing the test or making the adjustment. Abbreviations or initials are permitted, provided such identification is defined in the quality system and acceptable to the National Board.
- 2) The system shall include provisions that each pressure relief valve requiring the use of a Lift Assist Device for testing as permitted by 2.5.7 c) may have the seal(s) removed for testing. Upon completion of testing, external adjustments shall be re-sealed in accordance with i) 1) above.

j) Test Only Nameplates

The quality system shall include a description of a nameplate or a drawing. An

effective valve marking system shall be established to ensure proper marking and nameplate attachment for each valve as required by 2.8.2. The manual shall include a description of the nameplate or a drawing

k) Calibration

1) The quality system shall describe a system for the calibration of examination, measuring, and test equipment used in the performance of testing. Documentation of these calibrations shall include the standard used and the results.

2) All calibration standards shall be calibrated against certified equipment having known valid relationships to nationally recognized standards.

l) Manual Control/Procedures

The quality system manual and referenced procedures 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 and NBIC;

3) The title(s) of the individual(s) responsible for preparation, revision distribution, approval, and implementation of the quality system manual;

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

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

m) Nonconformities

The quality system shall establish measures for the identification, documentation, evaluation, segregation, and disposition of nonconformities. A non-conformity is a condition of any material, item, product, or process in which one or more characteristics do not conform to the established requirements. These may include, but are not limited to, data discrepancies, procedural and/or documentation deficiencies, or material defects. Also, the title(s) of the individual(s) involved in this process shall be included.

n) Testing Equipment (See NBIC Part 4, Supplement 5)

The quality system shall include a means to control the development, addition, or modification of testing equipment to ensure the requirements of NBIC Part 4, 4.6.1 b) are met.

o) Field Testing

If field testing is included in the scope of work, the system shall address any differences or additions to the quality system required to properly control this activity, including the following:

1) Provisions for annual audits of field activities shall be included;

2) Provisions for use of owner-user measurement and test equipment, if applicable, shall be addressed.

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" Certificate of Authorization. The record retention schedule described in the Quality System Manual is to follow the instructions identified in Table 2.6.3.4 p).

q) Exhibits

Forms used in the quality system shall be included in the manual with a written description. Forms exhibited shall should be marked "SAMPLE" and completed in a manner typical of actual valve testing procedures.

Table 2.6.3.4p)

Reports, Records, or Documents for "T/O" Certificate Holders	Instructions	Minimum Retention Period	
a) Record of testing or inspection	The testing and inspection program section shall include reference to a document (such as a report, traveler, or checklist) that outlines the specific testing and inspection procedures used in the testing of pressure relief valves.	5 years	

	b) Records related to equipment qualification and instrument calibration	Prior to use, all performance testing equipment shall be qualified by the certificate holder to ensure that the equipment and testing procedures will provide accurate results when used within the ranges established for that equipment. This qualification may be accomplished by benchmark testing, comparisons to equipment used for verification testing as specified in the quality system, or comparisons to field performance.	5 years after the subject piece of equipment or instrument is retired.	
	c) Record of lift assist device qualification	Prior to use, all lift assist devices shall be qualified by the certificate holder to ensure that the equipment and testing procedures will provide accurate results when used within the ranges established for that equipment used for verification testing as specified in the quality system or comparisons to field performance. This qualification shall be documented.	5 years after the lift assist device is retired.	
	d) Records of employee training and qualification	Each testing organization shall establish minimum qualification requirements for those positions within the organization as they directly relate to pressure relief valve testing. Each testing	5 years after termination of employment.	

		organization shall document the evaluation and acceptance of an individual's qualification for the applicable position.	
	2.6.4 TESTING & ADJUSTMENT a) Each Pressure Relief Valve to be tested shall be inspected in accordance with Section 2.5.3. b) Pressure Relief Valves with missing or illegible nameplates shall not be tested under the T/O program and shall be referred to a VR Certificate Holder or replaced. c) Pressure Relief Valves shall be tested to confirm that the Set Pressure (defined as the average of at least three consecutive tests) is within the allowable tolerance specified by the applicable ASME Code Section and NBIC. Test Results, including Test Gauge Identification, shall be recorded on the document referred to above. Pressure Relief Valve seals shall not be removed unless required for adjustment or testing using a lift assist device. d) Testing organizations may obtain a "T/O" Certificate of Authorization for field testing, either as an extension to their in-shop/plant scope, or as a field-only scope, provided that the Quality System includes the following provisions: 1) Qualified technicians in the employ of the certificate holder perform such testing; 2) An acceptable quality system covering field testing, including field audits is maintained; and 3) Functions affecting the quality of the tested valves are supervised from the address of record where the "T/O" certification is issued. 2.6.4.1 AUDIT REQUIREMENTS Upon issuance of a Certificate of Authorization, provided field tests are performed, annual audits of the work carried out in the field shall be performed to ensure that the requirements of the certificate holder's quality		

system are met. The audit shall include, but not be limited to, performance testing, in accordance with NBIC Part 4, 4.6, of valve(s) that were tested in the field. The audits shall be documented.

2.7 TRAINING AND QUALIFICATION OF PERSONNEL

2.7.1 CONTENTS OF TRAINING PROGRAM

The applicant shall establish a documented in-house training program. This program shall establish training objectives and provide a method of evaluating the training effectiveness. As a minimum, training objectives for knowledge level shall include:

- a) Applicable ASME Code and NBIC requirements;
- b) Responsibilities within the organization's quality system;
- c) Knowledge of the technical aspects and mechanical skills for making set pressure and/or blowdown adjustments to pressure relief valves;
- d) Knowledge of the technical aspects and mechanical skills for marking and sealing of pressure relief valve adjustments.

2.8 MARKING REQUIREMENTS FOR VALVES TESTED UNDER THE T/O PROGRAM

2.8.1 NAMEPLATES

Proper marking and identification of tested valves is critical to ensuring acceptance during subsequent inspections, and also provide for traceability and identification to the valve. All operations that require the valve's seals to be replaced shall be identified by a nameplate as described in 2.8.2.

2.8.2 TEST ONLY NAMEPLATE & VALVE SEALING

When a pressure relief valve is tested, a metal test only nameplate marked with the information required below shall be securely attached to the valve adjacent to the original manufacturer's stamping or nameplate and/or repair 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 to interfere with valve operation and sealed in accordance with the quality system.

- a) Existing manufacturer/assembler and VR nameplates if applicable shall not be removed
- b) Existing manufacturer/assembler, VR, and/or TO seals shall remain in place unless removal is required to perform testing or adjustment.

Following testing, the valve shall be resealed by the responsible T/O Certificate Holder.

c) Any previous test only nameplates shall be removed.

d) As a minimum, the information on the T/O nameplate (see Figure 2.8.2-a) shall include:

- 1) The name of responsible organization preceded by the words "Tested by" shall be applied
- 2) Date of test shall be applied
- 3) Set pressure shall be applied
- 4) Unique identifier of test shall be applied (eg. shop order number, work order number, job serial number, etc.)
- 5) The T/O Certification Mark as provided by the National Board



FIGURE 2.8.2-a

REQUIRED MARKINGS FOR TESTING OF ASME/NATIONAL BOARD "V," "UV," AND "HV" – STAMPED PRESSURE RELIEF VALVES UNDER THE T/O PROGRAM

TESTED BY CERTIFICATE HOLDER

DATE OF TEST

®

SET PRESSURE

UNIQUE IDENTIFICATION

NATIONAL BOARD "T/O"
CERTIFICATE NUMBER

SUPPLEMENT 14

RECOMMENDED PROCEDURES FOR TEST ONLY OF PRESSURE RELIEF VALVES

S14.1 INTRODUCTION

- 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 to 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) S14.2 contains recommended procedures for the test only of spring-loaded and pilot operated pressure relief valves.

S14.2 PRESSURE RELIEF VALVES

Prior to field testing of a relief valve using system pressure or removal for bench testing, ensure that all sources of pressure have been removed from the valve.

- a) Visual inspection
 - 1) This information is to be recorded
 - a) Record user (customer) identification number;
 - b) Complete original PRV 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, it shall not be tested. Relief valve should be sent to VR repair shop per Part 4, 4.7.5
 - 2) Check 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 Quality Department.
- b) Existing Nameplate
 - 1) An existing VR Nameplate, if applicable, shall not be removed from the relief valve
 - 2) An existing TO 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) <u>CDTP (Cold Differential Test Pressure). Manufacturer's steam to air correction factor, if applicable, shall be obtained from Manufacturer.</u> d) <u>Set Pressure Test</u> 1) <u>If set pressure test indicates the valves opens within the requirements of the original code of construction. Proceed to Seat Tightness.</u> 2) <u>If set pressure test indicates the valve does not open within the requirements of the original code of construction, but opens within twice the set pressure tolerance allowed per the requirements of the original code of construction and is otherwise-is in acceptable condition, set pressure restoration (defined as no more than twice the permitted set pressure tolerance) shall be made. Proceed to Seat Tightness.</u> 3) <u>If set pressure test indicates the valve does not open within twice the set pressure tolerance allowed per the requirements of the original code of construction, valve should be sent to a VR shop for repair or scrapped.</u> e) <u>Seat Tightness</u> 1) <u>Seat tightness must be tested at a level which meets the requirements of the end user.</u> f) <u>Sealing</u> 1) <u>After completion of set pressure test, set pressure restoration (if applicable) and seat tightness testing, all external adjustments shall be sealed in accordance with the original code of construction with a seal providing a means of identification of the organization performing the set pressure test.</u> g) <u>T/O Nameplate</u> 1) <u>The tester shall prepare a T/O nameplate for each valve tested.</u> 2) <u>The nameplate shall, as a minimum, meet the requirements of 2.8.2 a)</u> 3) <u>Nameplate shall be installed onto valve independent of sealing used for external adjustments and/or VR nameplate attachment.</u> 4) <u>Nameplate shall receive a safety seal providing a means of identification of the organization performing the set pressure testing.</u>
17-164 Part 2, 4.3.1.2	4.3.1.2 LIQUID PRESSURE TESTING Test pressure should be selected or adjusted in agreement between the Inspector and owner or user.

1.PR18-0201: Accepted, changes are incorporated.

A.Approved 9/11 (82%)

B.Disapproved 0/11 (0%)

C.Abstention 0/11 (0%)

D.Not Voting 0/11 (0%)

No Answer 2/11 (18%)

A B C D

Brian | | | | |
Jim Getter | X | | | |
Jason Safarz | X | | | |
John Mangas | X | | | |
Mark Mooney | X | | | |
Tom Shernisky | X | | | |
Paul Welch | X | | | |
Gary Scribner | | | | |
Tom Vandini | X | | | |
james Roberts | X | | | |
David Buechel | X | | | |

1.PR18-0202: Accepted, changes are incorporated.

A.Approved 9/11 (82%)

B.Disapproved 0/11 (0%)

C.Abstention 0/11 (0%)

D.Not Voting 0/11 (0%)

No Answer 2/11 (18%)

A B C D

Brian | | | | |
Jim Getter | X | | | |
Jason Safarz | X | | | |
John Mangas | X | | | |
Mark Mooney | X | | | |
Tom Shernisky | X | | | |
Paul Welch | X | | | |
Gary Scribner | | | | |
Tom Vandini | X | | | |
james Roberts | X | | | |
David Buechel | X | | | |

1.PR18-0206: Accepted, changes are incorporated.

A.Approved 9/11 (82%)

B.Disapproved 0/11 (0%)

C.Abstention 0/11 (0%)

D.Not Voting 0/11 (0%)

No Answer 2/11 (18%)

A B C D

Brian | | | | |
Jim Getter | X | | | |
Jason Safarz | X | | | |
John Mangas | X | | | |
Mark Mooney | X | | | |
Tom Shernisky | X | | | |
Paul Welch | X | | | |
Gary Scribner | | | | |
Tom Vandini | X | | | |
james Roberts | X | | | |
David Buechel | X | | | |

1.PR18-0207: Accepted, changes are incorporated.

A.Approved 9/11 (82%)

B.Disapproved 0/11 (0%)

C.Abstention 0/11 (0%)

D.Not Voting 0/11 (0%)

No Answer 2/11 (18%)

A B C D

Brian | | | | |
Jim Getter | X | | | |
Jason Safarz | X | | | |
John Mangas | X | | | |
Mark Mooney | X | | | |
Tom Shernisky | X | | | |
Paul Welch | X | | | |
Gary Scribner | | | | |
Tom Vandini | X | | | |
james Roberts | X | | | |
David Buechel | X | | | |

1.PR18-0208: Accepted, changes are incorporated.

A.Approved 9/11 (82%)

B.Disapproved 0/11 (0%)

C.Abstention 0/11 (0%)

D.Not Voting 0/11 (0%)

No Answer 2/11 (18%)

A B C D

Brian | | | | |
Jim Getter | X | | | |
Jason Safarz | X | | | |
John Mangas | X | | | |
Mark Mooney | X | | | |
Tom Shernisky | X | | | |
Paul Welch | X | | | |
Gary Scribner | | | | |
Tom Vandini | X | | | |
james Roberts | X | | | |
David Buechel | X | | | |