2019 NBIC Updates

Presented by:

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THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

SINCE 1919

2019 NBIC Part 1

THE NATIONAL BOARD
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1.6.1 General Requirements

1.6 GENERAL REQUIREMENTS

The following are general requirements for the boilers, potable water heaters, thermal fluid heaters and pressure vessels covered in NBIC Part 1, Section 2, NBIC Part 1 Section 3, NBIC Part 1 Section 4, and NBIC Part 1 Supplement 5. Refer to each referenced section for additional requirements specific to the type of equipment covered by each section.

The same phrase in red was also added to 1.6.1 Supports, Foundations and Settings and 1.6.3 Exit

1.6.9 General Requirements - Carbon Monoxide (CO) Detector/Alarm

1.6.9 Carbon Monoxide (CO) Detector/Alarm

The owner or user shall install a carbon monoxide (CO) detector/alarm in equipment rooms where fuel fired boilers and/or fuel fired pressure vessels are located in accordance with the authority having Jurisdiction.

S6.3 Condensing Boilers - General Requirements

S6.3 General Requirements

Condensing boilers shall meet all the requirements of NBIC Part 1, Section 1, Section 3 and this Supplement. The jurisdictional or National Building Codes may require the installation of a Carbon Monoxide (CO) detector/alarm in the boiler room.

2.7.5 Power Boiler Blowoff

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

3.5.3.1/3.5.3.2/S5.5.7 Electrical Requirements Section IV Boilers and Thermal Fluid Heaters

d) If the equipment room door is on the building exterior, the (manually operated shutdown) switch (or circuit breaker) ~~shall~~ should be located just inside the door. If there is more than one door to the equipment room, there ~~shall~~ should be a switch located at each door of egress.

3.9.4.2 Pressure Relief Valve Requirements for Potable Water Heaters

3.9.4.2 PERMISSIBLE INSTALLATIONS

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, ~~to a Y-base, or to a valveless header connecting water outlets on the same heater.~~

Supplement 7 - Installation of Graphite Pressure Equipment

Added new Supplement 7 - installation requirements.

Outline:

S7.1 Scope

S7.2 Glossary

S7.3 General Requirements

- S7.3.1 Receiving and Initial Inspections of GPE
- S7.3.2 Equipment Parameters/Clearances/Movement
- S7.3.3 Supports/Foundations
- S7.3.4 Piping Connections
- S7.3.5 Instruments and Controls
- S7.3.6 Post-Installation Activities

Glossary

Added or revised the following definitions for the following in all four Parts.

Changeover Valve – A three-way stop (or diverter) valve with one inlet port and two outlet ports designed to isolate either one of the two outlet ports from the inlet port, but not both simultaneously during any mode of operation.

Glossary

Jurisdiction — A governmental entity with the power, right, or authority to interpret and enforce law, rules, or ordinances pertaining to boilers, pressure vessels, or other pressure-retaining items where the pressure retaining item is installed.

It includes National Board member jurisdictions defined as "jurisdictional authorities." Where there is no National Board Member Jurisdiction, the National Board shall act on behalf of the Jurisdiction.

Glossary

Plate Heat Exchanger (PHE) — An assembly of components consisting of heat transfer plates and their supporting frame. The frame provides structural support and pressure containment and may consist of fixed endplates, moveable endplates, an upper carrying bar and lower guide bar which provide plate alignment, and frame compression bolts.

Potable Water Storage Tank — an unfired pressure vessel used to store potable hot water at temperatures not exceeding 210°F (99°C).

2019 NBIC Part 2

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2.3.6.2 Compressed Air Vessels

Added UT examination acceptance criteria and the available options to owner/users if corrosion exceeds the criteria.

New text provides the necessary criteria to be used by Inspectors for this type of vessel and includes some "shall/ shall be" statements for example, "For line or crevice corrosion, the depth of the corrosion shall not exceed 25% of the required wall thickness."

2.3.6.8 Inspection Of Pressure Vessels For Human Occupancy (PVHO's)

Added the following:

-PVHOs built under such Code Cases shall have all the documentation required by the Code Case,

-external inspection requirements for pressure gage line connections and blockage prevention,

-chamber door operation requirements, and

-PVHO-1/PVHO-2 view port penetrations and window defect acceptance criteria.

-ASME BPV Forms U-1, U-1A or U2 and PVHO VP-1, VP-2 and VP-3 forms are required to be available for review during the inspection.

2.3.6.10.c) Wire Wound Pressure Vessels - Records

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.

2.5.7.2.a) Pressure Relief Device Testing - Valve Adjustments

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 "VR" or "T/O" Certificate Holder to reset the valve to the correct opening pressure

4.3.1.2 Testing Methods - Liquid Pressure Testing

Deleted

“The liquid test pressure shall not exceed the lesser of 150% of MAWP or test pressure established by the original code of construction."

and replaced with

“The test pressure shall not exceed the liquid test pressure of the original code of construction."

5.2 Replacement of Stamping or Nameplate

Complete **reformatting** of 5.2.1 and 5.2.2; deleted 5.2.3 and revised Form NB-136.

Majority of text is kept with some new text added, such as where to locate the NB-136 (**NB website**), retention requirements for the owner/user (**lifetime of vessel or as long as vessel is in his/her ownership**), transfer of NB-136 to new ownership, and user friendly instructions were added for completing the form.

S2.14.16 FIRING OF HISTORICAL BOILERS WITH LIQUID OR GASEOUS FUELS

Added cautionary notes associated with hand firing historical boilers with liquid or gaseous fuels.

- One being checking with Jurisdiction for acceptance.
- Another – owner/user shall have extensive knowledge of the fuel used, fuel transfer system, fuel storage, burner, firing controls, emergency shut off devices and procedures

S12.2 Liquid Carbon Dioxide Storage Vessel General Requirements

S12.2 GENERAL REQUIREMENTS (ENCLOSED AND UNENCLOSED AREAS)

The inspection should verify that LCDSVs are:

a) not located within 10 feet (3.0 m) of elevators, unprotected platform ledges or other areas where falling would result in dropping distances exceeding half the container height;

d) adequately supported to prevent the vessel from tipping or falling, ~~and to meet seismic requirements as required by design~~;

Will impact QCS

May impact QCS

2019 NBIC Part 3

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

SINCE 1919

1.1 Scope

May impact QCS

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~~ four 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

4) “T/O” – Test Only of Pressure Relief Valves

Quality System Outline of Requirements for the NB "R" Certificate of Authorization - 1.5.1 d) Statement of Authority and Responsibility

d) Statement of Authority and Responsibility

A dated *Statement of Authority* *and Responsibility*, signed by ~~an officer~~ a senior management official of the organization, shall be included in the manual. Further, the *Statement* ~~*of Authority*~~ shall include:

1) A statement that all repairs or alterations carried out by the organization shall meet the requirements of the NBIC and the Jurisdiction, as applicable;

~~1)~~2) The title of individual who has the authority and responsibility charged with ensuring the Quality System is implemented as described, and confirming the freedom to identify quality problems and to initiate, recommend and provide solutions;

~~1)~~3) A statement that if there is a disagreement in the implementation of the Quality System, the matter is to be referred for resolution to a higher authority ~~in the company~~ and shall be resolved in a manner that will not conflict with code, jurisdiction/regulatory authority or Quality System requirements; and

~~2) The title of the individual who will be responsible to ensure that 1) above is followed and has the freedom and authority to carry out the responsibility.~~ A statement of the full support of management for the Quality System.

Will impact QCS

Table 1.5.1 c) Continuity Records for a Welder, Welding Operator, Bonder, or Cementing Technician

c) Continuity records for a welder, welding operator, bonder, or cementing technician.	Minimally, continuity records for a welder, bonder, or cementing technician within the Certificate Holder's quality system shall be described and established at the time of the applicant's initial certificate review and demonstrated at each triennial review required thereafter.	As applicable to the scope of work identified on the *Certificate of Authorization*, the continuity records are subject to review during each National Board triennial certificate review. Continuity records shall be maintained for a minimum of 5 years.

Will impact QCS

"NR" Program Category 1 Requirements - 1.6.6.2 b) Statement of Policy and Authority

b) Statement of Policy and Authority shall:

1) identify the titles of individuals who have the authority and responsibility charged with ensuring the quality program is implemented as described,
2) confirm their freedom in the organization to identify quality problems and to initiate, recommend and provide solutions,
3) include a statement that if there is a disagreement in the implementation of the quality assurance program, the matter is to be referred for resolution to a higher authority and shall be resolved in a manner that will not conflict with code, jurisdiction/regulatory authority or quality program requirements
4) include a statement of the full support of management, and

5) be dated and signed by a senior management official within the organization.

Will impact "NR" QCS

Repairs/Alterations - 2.1-2.5 Welding, Brazing and Fusing

May impact QCS

Several paragraph revisions in 2019 all centered around the addition of the terms brazing and fusing.

For example, where “welder/welding operator” was previously used the term "person" is now inserted, "welds" are now "joints", "welding continuity" is now "process continuity", “WPS” is “procedure spec.” etc.

9.1 Definitions

Added/revised the following:

Brazing – see Welding

Fusing – see Welding

Welding (Brazing, Fusing) – a group of processes which produce a localized coalescence of metallic or nonmetallic materials.

2.3 and Table 2.3 Standard Welding Procedure Specifications

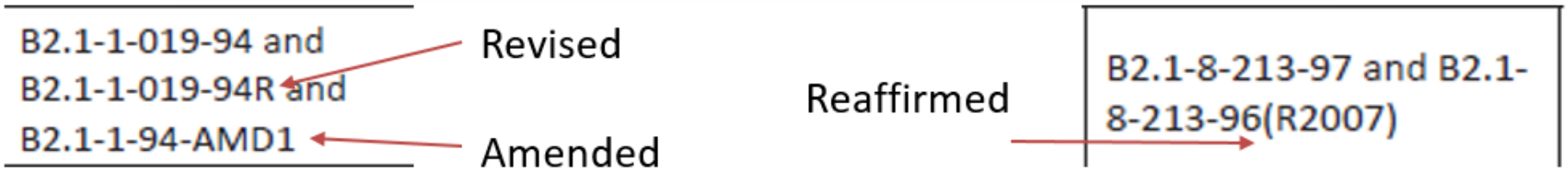
May impact QCS

b) The AWS reaffirms, amends or revises SWPSs in accordance with ANSI procedures.

- Reaffirmed SWPSs: When reaffirmation occurs without revision to the SWPS, the letter R is added to the SWPS designation.
- Amended SWPSs: When an amendment occurs the suffix "AMD1" is added to the SWPS designation Amendments are issued when essential for the prompt correction of an error that could be misleading. Amendments are incorporated into the existing text of the SWPS, which is reprinted and clearly marked as incorporating an amendment(s), and which is identified in the revised Foreword of the amended SWPS.
- Revised SWPSs: When a revision to a published SWPS occurs, the publication date is added to the SWPS designation. The date of the superseded SWPS is also noted on the cover page. Previous versions of the superseded SWPS may be used at the option of the R Certificate holder.

GTAW — Gas Tungsten Arc Welding	
Standard Welding Procedure Specification for Gas Tungsten Arc Welding of Carbon Steel (M-1/P-1/S-1, Groups 1 or 2) to Austenitic Stainless Steel (M-8/P-8/S-8, Group 1), 1/16 in. (1.6 mm) through 1 ½ in. (38 mm) Thick, ER309 (L), As-Welded Condition, Primarily Pipe Applications.	B2.1-1/8-227:2002, 2002 AMD1 and R2013

2.3 and Table 2.3 Standard Welding Procedure Specifications



Alternative Welding Methods without PWHT - 2.5.3 e) Nondestructive Examination of Welds

construction. In addition, welds greater than 3/8 in. (10 mm) deep or welds in a ~~boiler, pressure vessel, or piping system~~ pressure retaining item that were originally required to be ~~radiographed~~ volumetrically examined by the rules of the original code of construction, shall be ~~radiographically~~ examined in accordance with paragraph 4.2 of Part 3. ~~In situations where it is not practical to perform radiography, the accessible surfaces of each non radiographed repair weld shall be fully examined using the MT or PT method to determine that no defects exist and the maximum allowable working pressure and/or allowable temperature shall be re-evaluated to the satisfaction of the jurisdiction at the location of installation.~~

May impact QCS

2.5.3.2 d) 4) Alternative Welding Methods without PWHT Welding Method 2

May impact QCS

~~4) For ASME Section VIII, Division 2 pressure vessels, where application of PWHT on in-service vessels has been demonstrated to cause harm to vessel material, full thickness temper bead repairs are permitted to pressure-retaining items of P-No. 4 and P-No. 5A materials. They shall be completed per NBIC Part 3, 3.3.5 with the following requirements:~~

4) Full thickness temper bead weld repairs are permitted to pressure retaining items of P-No 4 and P-No 5A materials under the following conditions;

a) ASME Section VIII, Division 2 pressure vessels, where application of PWHT on in-service vessels has been demonstrated to cause harm to vessel material.

b) For tube-to-header welds in steam service.

Full thickness weld repairs above shall be completed per NBIC Part 3, 3.3.5 with the following requirements:

3.3.3 Examples of Repairs (plate heat exhangers added)

u) Repairs to plate heat exchangers (PHE) are limited to the following:

1) Welding on any pressure part, i.e. not limited to a flange, nozzle, or endplate;
2) In kind replacement of endplates, or welded nozzles,
3) Replacement of any failed connection or frame bolting, representing the replacement parts described in Part 3, 3.2.2-a), with no change of material or grade as described on the Manufacturer's Data Report (MDR) or Original Equipment Manufacturer's (OEM) drawing,
4) The addition or repair of load bearing attachments (e.g., welded supports or lifting lugs) to the endplates.
5) Replacement of parts bearing certification or manufacturer's stamping with no-change in material allowed as described on the MDR or verifiable OEM drawing.

Will impact QCS of CHs who conduct this type of repair

3.4.4 Examples of Alterations (plate heat exchangers)

j) For plate heat exchangers, in addition to ~~all~~ the applicable examples of alterations above, the following changes from what is listed on the MDR or described on the Original Equipment Manufacturer's (OEM)-drawing:

1) For heat transfer plates:
   a) A change in material grade or nominal thickness;

   b) A reduction in number beyond any minimum, or when no minimum is specified;

   c) An increase in number beyond any maximum, or when no maximum is specified;

   d) A change in model type;

2) Any change in material whether described at 3.3.3 s) or as described at 3.4.4 g):
   a) A change in connection bolt or frame compression bolt diameter or material grade;

   b) A change in material grade or nominal dimensions of any end plates or nozzles.

Will impact QCS of CHs who conduct this type of alteration

3.4.1 d) Alterations - Rerating

d) The pressure-retaining item has been pressure tested, as required, for the new service conditions. Any insulation, coatings, or coverings that may inhibit or compromise a meaningful pressure test shall be removed, to the extent identified by the Inspector. The pressure test may be waived if the original pressure test as recorded on the Manufacture's Data Report is at least equal to the calculated test pressure required to verify the integrity of the pressure-retaining item for the new conditions. If the pressure test is waived it shall be documented on Form R-2 with this statement in the Remarks section: "Pressure test waived in accordance with NBIC Part 3, 3.4.1 d)."

Will impact QCS of CHs with alteration in the scope

3.4.4 e) Examples of Alterations

~~e) In a boiler, an increase in the heating surface or steaming capacity as described on the original Manufacturer's Data Report;~~

e) In a boiler, Heat Recovery Steam Generator (HRSG), or Pressure Retaining Item (PRI), an increase in the steaming capacity by means of increasing heating surface, total heat input, firing rate, adjustment, or other modification to the primary or auxiliary heat source, resulting in the steaming capacity exceeding the original Manufacturer's Minimum Required Relieving Capacity (MRRC) as described on the nameplate and or Manufacturer's Data Report (MDR);

Will impact QCS of CHs with boilers and alteration in the scope

4.4.1 a) 1) Test or Examination Methods Applicable to Repairs - Liquid Pressure Test

Pressure tests shall be conducted using water or other liquid medium. The test pressure shall be the minimum required to verify the leak tightness integrity of the repair. The test pressure shall not exceed the maximum liquid test pressure of the original code of construction. When original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance.

Will impact QCS of CH with alteration in the scope

5.6 Form Registration Log

"R" or "NR" Certificate Holders shall maintain a log or multiple logs documenting unique and sequentially numbered Form "R" Reports that are registered with the National Board. The logs shall include as a minimum, each form's unique registration number, ~~form~~ type (R-1, R-2, NR-1, etc.), description of work performed, date ~~completed~~of acceptance by the Authorized Inspection Agency, and date the report was ~~sent~~ submitted to the National Board

Will impact QCS

Section 5 Certification / Documentation and Stamping

5.2.3 PREPARATION OF FORM R-3 REPORT OF PARTS FABRICATED BY WELDING

a) Using the instructions found at NBIC Part 3, 5.12.4.3 preparation of Form R-3 shall be the responsibility of the "R" Certificate Holder responsible for performing the work.

5.2.4 PREPARATION OF FORM R-4 REPORT SUPPLEMENT SHEET

a) Using the instructions found at NBIC Part 3, 5.12.4.4 preparation of Form R-4 shall be the responsibility of the "R" Certificate Holder responsible for performing the work.

Will impact QCS when the R-1 Form is used

R Forms

CERTIFICATE OF COMPLIANCE

I, _____, certify that to the best of my knowledge and belief the statements made in this report are correct and that all material, construction, and workmanship on this Repair conforms to the *National Board Inspection Code*. National Board "**R**" *Certificate of Authorization* No. _____ Expiration date: _____

Repair Organization: _____

Signed: _____
(authorized representative)

Date: _____

CERTIFICATE OF INSPECTION

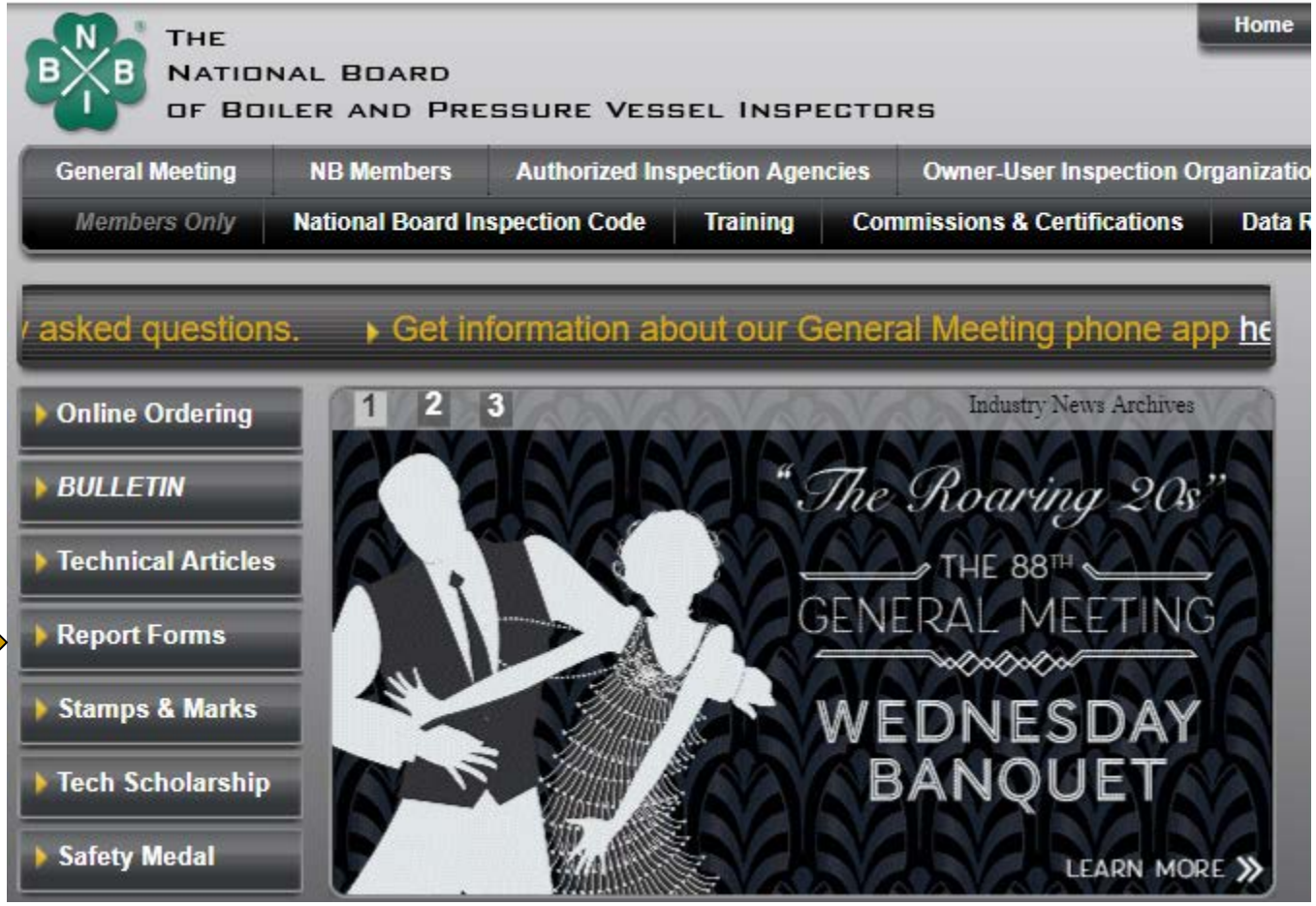
I, _____, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and certificate of competency, where required, issued by the Jurisdiction of _____ and employed by _____ of _____ have inspected the work described in this report on _____, _____ and state that to the best of my knowledge and belief, this work complies with the applicable requirements of the National Board Inspection Code. By signing this certificate, neither the undersigned nor my employer makes any warranty, expressed or implied, concerning the work described in this report. Furthermore, neither the undersigned nor my employer shall be liable in any manner for any personal injury, property damage, or loss of any kind arising from or connected with this inspection.

Commissions: _____
(National Board and Jurisdiction no. including endorsement)

Signed: _____
(inspector)

Date: _____

R Forms


THE
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Home
General Meeting
NB Members
Authorized Inspection Agencies
Owner-User Inspection Organizatio
Members Only
National Board Inspection Code
Training
Commissions & Certifications
Data R
asked questions.
Get information about our General Meeting phone app he
Online Ordering
BULLETIN
Technical Articles
Report Forms
Stamps & Marks
Tech Scholarship
Safety Medal
1
2
3
Industry News Archives
"The Roaring 20s"
THE 88TH
GENERAL MEETING
WEDNESDAY
BANQUET
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S1.2.5.1 Steam Locomotive - Welded Installation of Staybolts - Unthreaded Fillet Welded Staybolts

Added the following to beginning of paragraph: "The **replacement of threaded staybolts with fillet welded staybolts is permissible.** The work shall be done in accordance with the ASME BPVC, Section I, Part PL-30 and Figure PL-30.4.2-1. When replacing a threaded staybolt with a fillet welded staybolt, **the existing threads in the sheets must be removed prior to installation. Cautionary Note:** Larger minimum diameter staybolts will transfer stresses to other structures and will be subject to higher extreme fiber stresses."

Also added a new requirement to item c) "Minor leakage (sweat ports) may be repaired by gently caulking the fillet weld. However, identifiable cracks shall be removed before re-welding."

May impact QCS of CHs with steam locomotives in the scope

S1.2.11.5 Steam Locomotive - Repair of Firebox, Wrapper, and Tubesheet Knuckles

i) For one-piece flange knuckle joint patches in portions of a riveted lap joint or in mud ring corners with a lap joint in the firebox, the knuckle patch shall be supported on at least one of the two planes adjacent to the flange, by means other than the weld. See Figure S1.2.11.5-c1. The weld shall be at least the full thickness of the new plate being installed. Volumetric examination is not required. This type of repair shall be considered a repair.

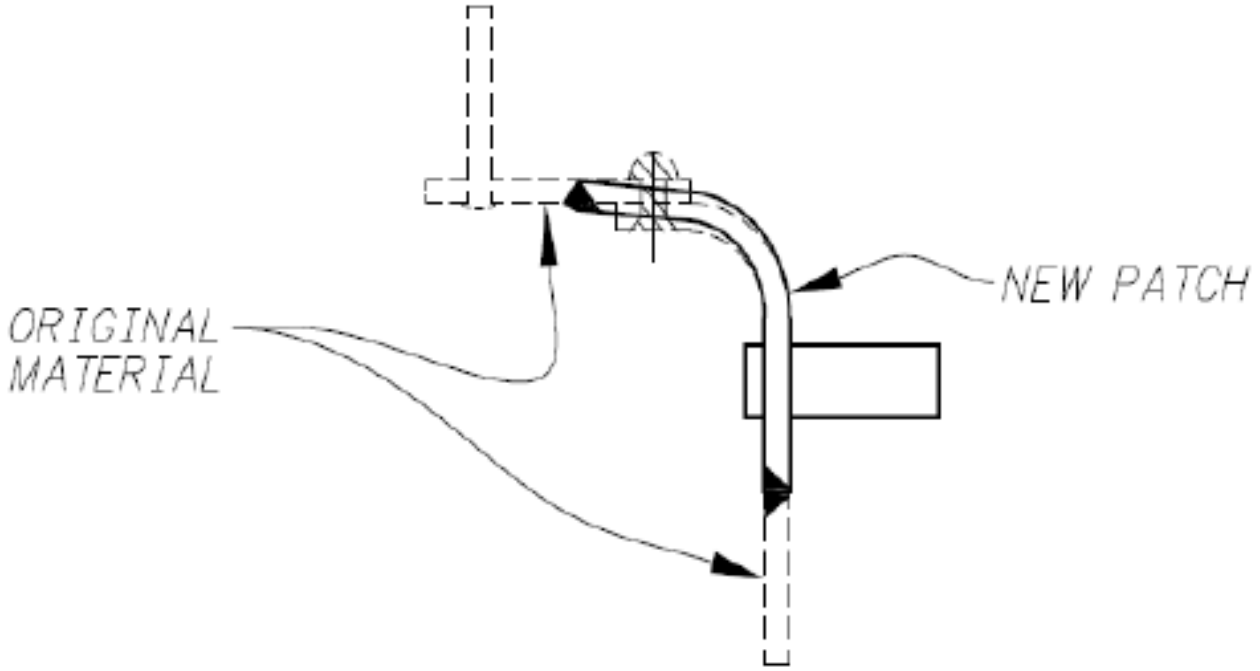
Cautionary note: Where a double-riveted lap joint is replaced with a seamless plate, stay pitch and stress must be considered since the doubling effect of the lap seam is being eliminated.

Added Figure S1.2.11.5-c1

May impact QCS of CHs with steam locomotives in the scope

S1.2.11.5 Steam Locomotive - Repair of Firebox, Wrapper, and Tubesheet Knuckles

Figure S1.2.11.5-c1



VIEW SHOWING NEW PATCH ALIGNMENT WITH ORIGINAL MATERIAL

S1.2.14 THROTTLE/DRY PIPES, SUPERHEATER HEADERS & FRONT END STEAM PIPES

a) Cracks in throttle pipes, dry pipes, superheater headers, and front end steam pipes made from steel may be repaired by welding. All welded repairs shall be done in accordance with NBIC Part 3.

b) Throttle castings, dry pipes, super heater headers, and front end steam pipes constructed of cast iron may be repaired by brazing provided the components are internal to the boiler shell or smokebox shell. Brazing shall be done in accordance with NBIC Part 3, appropriate to the type of repair, and shall be acceptable to the Inspector and the jurisdiction if applicable. Cast iron shall not be fusion welded.

c) Weld build-up may be used for repair of steel components in accordance with NBIC Part 3.

d) Throttle pipes, dry pipes and superheater headers, should be supported by hangers, brackets or other structural methods as needed.

May impact QCS of CHs with steam locomotives in the scope

Graphite Pressure Equipment - Repairs

Major part of revision was the deletion of S3.5.4 Reimpregnation of Graphite Parts (Tubesheets, Heads, and Blocks) and the addition of S3.5.4 f) Installation of Graphite Tube Plugs and Figure S3.5.4.

2019 NBIC allows the installation of tube plugs to be conducted by any "R" Certificate holder, regardless if the Certificate includes the "G". The "twist test" is also better explained, including acceptance criteria.

May impact QCS of CHs with “G” designator

Graphite Pressure Equipment - Repairs

e) Plugging of leaking or damaged tubes shall be performed by certified cementing technicians, using qualified cementing procedures, in accordance with the requirements of the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, Part UIG.

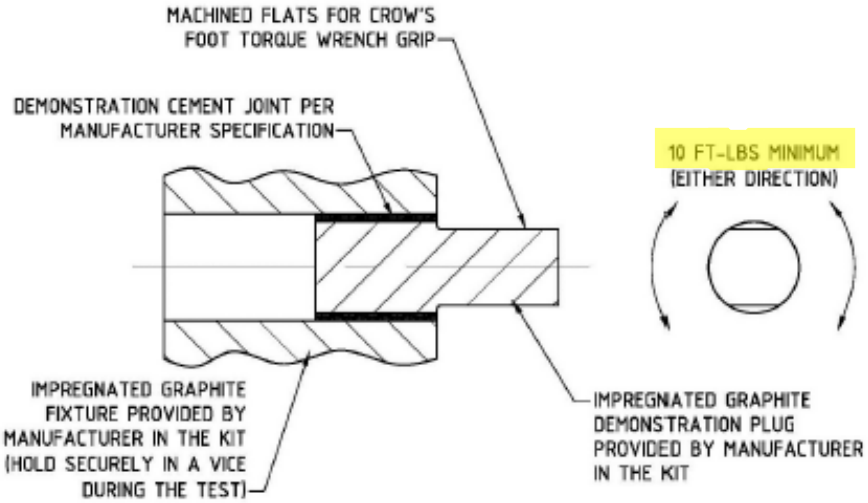
f) As an alternative to e) any "R" Certificate Holder, with or without the letter "G" included on the "R" Certificate of Authorization, may install graphite tube plugs provided the following conditions are met. The "R" Certificate Holder shall gain the concurrence of the Inspector, and shall utilize a tube plugging kit provided by an ASME Certificate Holder authorized to use the "G" designator. The kit shall include the following items:

Item f) is new text.

Graphite Pressure Equipment - Repairs

FIGURE S3.5.4

DEMONSTRATION PLUG JOINT TWIST TEST



NOTE: THIS DEMONSTRATION APPLIES TO PLUGS OF ALL DIAMETERS AND LENGTHS.

Recent Interpretations

INTERPRETATION 19-03

Subject: ISO/IEC 17025 edition reference in NBIC Part 3, 1.6.6.2 m), 1.6.7.2 m), and 1.6.8.2 m)

Edition: 2019

Question: The listed paragraphs show service to be provided in accordance with ISO/IEC 17025:2005. The 17025 Standard has been revised to the 2017 version, and all labs accredited as such have a 3-year transition window. Is it permissible to use either the 2005 or the 2017 edition of ISO/IEC 17025?

Reply: Yes.

INTERPRETATION 19-02

Subject: Wastage/Wasted areas

Edition: 2019

Question: If there are wasted areas on the fireside does NBIC Part 3, 3.3.4.3-a govern repairs?

Reply: Yes.

3.3.4.3.a) allows weld build up be welding provided that in the judgment of the Inspector the strength of the structure has not been impaired. The Inspector may require an appropriate method of NDE for the completed surface of the repair.

Recent Interpretations

INTERPRETATION 19-01

Subject: "R" Certificate Holder manufacturing parts and sub-assemblies

Edition: 2019

Question: May an "R" stamp Certificate Holder manufacture parts or sub-assemblies for their own use as part of the pressure boundary in their repair/alteration of a pressure retaining item?

Reply: Yes. Reference NBIC Part 3, 3.2.2.

2019 NBIC Part 4

THE NATIONAL BOARD
OF BOILER AND
PRESSURE VESSEL
INSPECTORS
SINCE 1919

1.4 Accreditation

a) The National Board administers four specific accreditation programs:

"**R**" — Repairs and Alterations to Pressure-Retaining Items

"**VR**" — Repairs to Pressure Relief Valves

"**NR**" — Repair and Replacement Activities for Nuclear Items

"**T/O**" – In-service Testing Only of Pressure Relief Valves

2.4.2 Pressure Relief Valve Requirements for Steam Heating Boilers

d) The minimum valve capacity in lbs/hr (kg/hr) shall be ~~the greater of that determined by dividing the maximum Btu/hr (W) output at the boiler nozzle obtained by the firing of any fuel for which the unit is installed by 1,000 Btu/hr/lb (645 W/kg), or shall be determined on the basis of the lbs steam/hr/ft$_2$ of boiler heating surface as given in Table 2.2.4.1.~~ as follows:

1) The minimum pressure relief capacity as declared on the boiler nameplate for the specified fuel.

2) If the capacity is not marked on the boiler nameplate or the fuel has been changed; the capacity shall be the greater of the following:

a) Minimum mass of steam per area of heating surface; lbs steam/hr ft$_2$ (kg steam/hr m$_2$), as specified in Table 2.9.1.3.

b) The maximum output method; required valve capacity is determined by the following equation:

Capacity (lb/hr) = $Heat\ Input\ (BTUhr) 1{,}000\ (BTUlb)$ or

Capacity (kg/hr) = $Heat\ Input\ (kJhr) 2326\ (kJkg)$

The Heat Input shall be based upon the firing of the highest energy content fuel used in the unit.

2.4.2 Pressure Relief Valve Requirements for Steam Heating Boilers

3) For cast-iron boilers, the minimum valve capacity shall be determined by the maximum output method.

In many cases a relieving capacity greater than the minimum capacity specified by these rules will have to be provided. In every case, the requirement of 2.4.2 e) shall be met.

3.3 Accreditation of "T/O" Test Only Organizations

3.3 ACCREDITATION OF "T/O" TEST ONLY ORGANIZATIONS

3.3.1 SCOPE

a) This section provides requirements that must be met for an organization to obtain a National Board Certificate of Authorization to use the "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 3.5.2-a), will be granted by the National Board provided the requirements of the administrative rules in NB-528 and the NBIC are met.

4.7.2 Repair of PRDs - 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 ~~so as~~ not ~~to~~ interfere with valve operation and sealed in accordance with the quality system.

Questions?