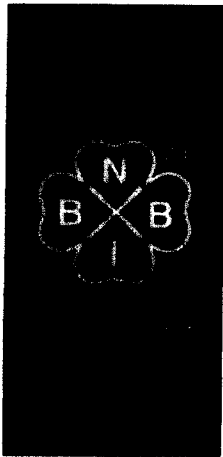


Date Distributed: August 18, 2008



THE  
NATIONAL  
BOARD  
OF BOILER AND  
PRESSURE VESSEL  
INSPECTORS

**SUBGROUP  
ON REPAIRS and ALTERATIONS  
SPECIFIC**

*MINUTES*

---

*Meeting of July 22, 2008  
Seattle, Washington*

*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 – 8:00 a.m.**

The Chairman was unable to attend the meeting and there is no Vice Chairman for this SG. In accordance with NBIC Committee procedure, the Secretary temporarily took the Chair to accept nominations for a Chairman for this specific meeting. Jim Pillow was nominated and elected as Chairman. The Secretary turned the Chair over to Mr. Pillow.

### **2. Announcements**

An announcement was made concerning the National Board reception, breakfast and lunch. Also, the SG on PRD has been elevated to a SC.

### **3. Adoption of the Agenda**

A new business item was proposed for deletion of Table 2.5.3. A motion was made to approve the agenda as revised. The motion was unanimously approved.

### **4. Approval of Minutes of January 15, 2008 meeting**

A motion was made to approve the Minutes of January 15, 2008. The motion was unanimously approved.

### **5. Review of the Roster**

The attendance sheet is attached (Attachment 1 pgs. 1-3)

Mr. Darryl Peetz has resigned his position on this Subgroup. A thank you letter has been sent.

Mr. Wayne Jones would like to become a member of the subgroup on Repairs and Alterations Specific. A motion to select Mr. Jones for appointment as a member of the SG was unanimously approved. (Attachment 1 pgs. 4-7)

### **6. Action Items**

**NB03-1901 Part 3 SG on R/A Specific** Discuss course of action for NBIC Committee to review ASME Post Construction Standards and how to best incorporate PCC information into the NBIC. Develop suggestions and present to Main Committee. A TG of G. Galanes, J. Sekley, W. Sperko and M. Webb is assigned.

A motion was made to approve the item. The motion was unanimously approved. (Attachment 2 pgs. 8-9).

**NB07-1701 Part 3, Supplement 6 SG on R/A General** Add wording to address the requirements for obtaining the TR stamp.

This item was included in this agenda by mistake and was handled by the SG R/A General during their meeting.

**NB07-1702 Introduction SG R/A Spec** Revise terminology regarding accreditation and certification to be more in keeping with the international community's use of ISO terminology. The NBIC Chairman, Terry Parks has developed a recommendation for this action item

A motion was made to close this item without action. The motion was unanimously approved. (Attachment 2 pg. 10)

**NB07-1901 Part 3 SG on R/A Spec.** Suggest including a supplement in Part 3 regarding the repair and alteration of vessels used in LP Gas service. This action item was letter balloted to the SC and passed but with two negative votes. After consideration the TG decided to re-examine the action item.

A motion was made to approve the item. The motion was unanimously approved. (Attachment 2 pgs. 11-12).

**NB07-2401 Part 3, 5.9 c, 5.2.1, 5.2.2 SG on R/A Spec.** This action item is a result of PR07-0801 and PR07-0803 thru PR07-0805. Address Maximum Design Steaming Capacity on nameplates and R forms. A TG of F. Pavlovicz and M. Webb has been assigned.

This item was combined with NB05-1201 due to similarity and overlapping subject matter. A motion was made to reaffirm previous action with a modification to address a negative vote on a letter ballot. The motion was unanimously approved. (Attachment 2 pgs. 13-18).

**NB07-2701 Part 3 5.9.6 and TOC SG on R/A Spec.** This action item is a result of PR07-2506. The text in 5.9.6 deals with more than just pressure relief device stamping. It appears to be more general in nature much like the text in 5.7. Commenter suggests changing the references from 5.9.6 to 5.7 throughout the text and the table of contents. A TG of J. Hoh and J. Ball has been assigned.

A motion was made to approve the item. The motion was unanimously approved. (Attachment 2 pgs. 19-27)

**NB08-0304 Part 3 Forms 5.13.1 SG on R/A Spec.** The instruction guide for "R" Forms needs to be improved. The form also needs to have the ability to expand to accommodate people filling it out completely.

There was no report on this item. TG was assigned – Ron Pulliam as Chair, Mike Webb and Wayne Jones.

**NB08-1001 Part 3 7.1 SG on R/A Specific** This action item is the result of PR08-0204. The new text should read, " In Supplement 6 of this part, Continued Service and Inspection of DOT Transport tanks, the metric units are shown first, with the US Customary units shown in parentheses."

A motion was made to approve this item. The motion was unanimously approved. (Attachment 2 pg. 28)

**NB08-1901 Part 3 S6.7.1 d) 2) SG on R/A Spec.** *This item came in as a public review comment but is not a comment on the proposed addendum.* This subsection (paragraph) should specify the text or the reference to 49 CFR 180.413 (d) requires a DCE Certification of modifications by a DCE - or more generic language in reference to certification requirements of the competent authority.

A motion was made to close this item without action. The motion was unanimously approved. The reason was due to the request not being submitted in the proper format as required by Part 3, Section 8. (Attachment 2 pg. 29)

**NB08-1902 Part 3 S6.9.2 & S6.9.3 SG on R/A Spec.** *This item came in as a public review comment but is not a comment on the proposed addendum.* PWHT or substitutes or elimination for repairs of stress corrosion cracks in MC 331Qualities & Tempered (517) Tanks should be specifically referenced to 49 CFR 180.413 (b) (6) or to CGA TB-2 or to the text (If DOT references are not given.) In the old NBIC, RD1000 gives practical guidance for procedure.

A motion was made to close this item without action. The motion was unanimously approved. The reason was due to the request not being submitted in the proper format as required by Part 3, Section 8. (Attachment 2 pg. 30)

**NB08-1903 Part 3 S6.9.3 b) SG on R/A Spec.** *This item came in as a public review comment but is not a comment on the proposed addendum.* Concurrence of DOT taken literally is not a practical option. This should be clarified. DOT cannot be expected to give permission for every combination and permutation of PWHT.

A motion was made to close this item. The motion was unanimously approved. The reason was due to the

request not being submitted in the proper format as required by Part 3, Section 8. (Attachment 2 pg.31)

#### **8. New Business**

TG was assigned -- George Galanes as Chair, Walt Sperko, Wayne Jones, Brian Boseo, Ed Ortman, and Ron Pulliam to work on a request for deletion of Table 2.5.3. Item number assigned to this is NB09-0401.

#### **9. Future Meetings**

January 2009, Austin, Texas  
July 2009, Northeast Region  
January 2010, Southeast Region

#### **10. Adjournment**

Motion to adjourn was passed unanimously.

Respectfully Submitted,  
John Hoh  
Secretary

ATTACHMENT 1

H. MICHAEL RICHARDS  
SOUTHERN COMPANY  
HMRICHAR@SOUTHERNCO.COM

Attendance List Repairs Alterations-Specific Subgroup

Meeting Date: July 22, 2008

<p><b>James T. Pillow</b> Common Arc Corporation 67 Wyndemere Lane Windsor, CT 06035</p> <p>Ph: 860-688-2531 Fax: 860-688-2531 E-mail: <a href="mailto:jpillow@commonarc.com">jpillow@commonarc.com</a></p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>[Signature]</i> Initial</p>	<p><b>George W. Galanes, PE</b> Manager, Metallurgy and QA Midwest Generation EME, LLC Joliet Station/Chicago Annex 1800 Channahon Road Joliet, IL 60436-8539</p> <p>Ph: 815-207-5897 Fax: 312-788-5218 E-mail: <a href="mailto:ggalanes@MWGen.com">ggalanes@MWGen.com</a></p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>[Signature]</i> Initial</p>
<p><b>Jack Given</b> Bureau Chief Department of Labor Boiler Safety Bureau 1101 Mail Service Center Raleigh, NC 27699-1101</p> <p>Ph: 919-807-2774 Fax: 919-807-2762 E-mail: <a href="mailto:jgiven@nclabor.com">jgiven@nclabor.com</a></p>	<p>Attended: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p><i>[Signature]</i> Initial</p>	<p><b>James Sekely</b> Wayne Crouse, Inc. 716 Vanderbilt Drive Monroeville, PA 15146</p> <p>Ph: 412-389-5567 Fax: 724-327-7381 E-mail: <a href="mailto:jsekely@adelphia.net">jsekely@adelphia.net</a></p>	<p>Attended: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p><i>[Signature]</i> Initial</p>
<p><b>Frank Pavlovicz</b> The Babcock &amp; Wilcox Company 20 S. Van Buren Ave. Barberton, Ohio 44133</p> <p>Ph: 330-860-6148 Fax: 330-860-8932 E-mail: <a href="mailto:fjpavlovicz@babcock.com">fjpavlovicz@babcock.com</a></p>	<p>Attended: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p><i>[Signature]</i> Initial</p>	<p><b>John Hoh</b> The National Board 1055 Crupper Ave. Columbus, OH 43229</p> <p>Ph: 614-888-8320 Fax: 614-847-1828 E-mail: <a href="mailto:jhoh@nationalboard.org">jhoh@nationalboard.org</a></p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>[Signature]</i> Initial</p>
<p><i>RON PULLIAM</i> <i>Babcock &amp; Wilcox Construction</i> <i>74 ROBINSON AVE. B207</i> <i>BARBERTON, OH 44203</i> <i>330-860-2856</i> <i>330-860-2180 FAX</i></p>	<p>Attended: Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p><i>[Signature]</i> Initial</p>	<p><i>Mike Webb</i> <i>Xcel Energy</i> <i>4653 TABLE MOUNTAIN DR.</i> <i>GOLDEN, CO 80405</i> <i>Mike.Webb@xcelenergy.com</i> <i>ALTERNATE FOR Jim Sekely</i></p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>[Signature]</i> Initial</p>

*RL.PULLIAM@BABCOCK.COM*  
*(ALTERNATE FOR PAVLOVICZ)*

*BRIAN MORELOCK*  
*EASTMAN CHEMICAL COMPANY*  
*P.O. Box 511, BSAD*  
*KINGSPORT, TN 37662-5054*  
*423-229-1205 (ph)*  
*423-229-6099 (fax)*  
*morelock@eastman.com*

*WAYNE Y. JONES*  
*705 EAST CHM ST*  
*BOY MINETTE, AL 36507*  
*251 937-6225*  
*251 895-8826*  
*WAYNE.JONES@PERSENE.COM*



Don Sage  
State of Washington  
SageD235@LNI.WA.GOV

## Wayne Y, Jones

705 East 4th Street  
Bay Minette, Alabama  
251-937-6225  
251-895-8826 cell

Employment: April 2004 to Present

Arise Incorporated  
6940 South Edgerton Rd  
Brecksville, OH 44141

Chief Inspector

Employment: 2003 to April 2004

Hartford Steam Boiler Inspection Company of Ct.  
200 Ashford Center North  
Suite 300  
Atlanta, Georgia 30338-4860

Authorized Nuclear Inservice Inspector

Performing ASME Section XI inspections to four nuclear power plants owned by Florida Power and Light.

These inspections include a broad range of ASME and Federal Code Regulations.

In February of 2004 a fitness for duty test, along with a complete FBI background check for access to safe guard information and protected areas were experienced with a successful result. This Inspector also passed examination's allowing access to radiation and confined space area's within the confines of the containment structure.

Employment: 1991 to 2003

Factory Mutual Insurance Company,  
Preston Ridge III, 3460  
Preston Ridge Rd.,  
Suite 400,  
Alpharetta, Georgia, 30003.

Field Technical Supervisor/Authorized Nuclear Inservice Inspector

Performing ASME and National Board inspections, jurisdictional and as a Supervisor to clients' certification and recertification to both ASME and National Board accreditation.

Providing leadership and training to both nuclear and non-nuclear Inspectors.

Performing audits to clients' procedures and facilities in preparation of their ASME/NB certification to manufacture and or repair/replace boilers and pressure vessels.

Performing Nuclear Inservice Inspections for Florida Power and Light.

Employment: 1977 to 1991

Kemper Group, Long Grove, IL, 60049

Staff Code Consultant

Providing technical consultation and support to Field Managers, Inspectors and clients regarding ASME/NB Code interface. Consulted with management concerning technical field problems and preparing technical inquiries and directives. Monitored regional technical operations and briefed management in methods and procedures to assure compliance.

Attended ASME Code Committee meetings in New York.

Employment: 1972 to 1977

Hartford Steam Boiler Inspection and Insurance Company

Authorized Nuclear Inspector

Combination Inspector performing risk service inspections to the petrochemical, paper mills and electrical utility environments. ASME/NB nuclear inspection and certification activities.

Employment: 1969 to 1972

Police Officer

Duties were consistent to present day officers.

Employment: 1967 to 1969

Houston Natural Gas Company, Houston, Texas

Plant Engineer

Supervised and maintained a total energy plant. This included (2) two 600# power boilers, (2) two 500 ton chillers and (2) two 600kw turbine generators.

Employment: 1963 to 1967

Machinist Mate 2/C

United States Navy, Vietnam

Education: Air Conditioning and Refrigeration Technology, Gulf Coast Jr. College, Panama City, Florida.

Houston School of Engineering, Stationary Engineering Certification, Houston, Texas.

National Electrical Code Certification, Mobile, Alabama.

References: Mr. Richard Frisbey  
Human Resource Manager  
Westinghouse Electric Company.  
(850-516-8111)

Mr. Jim Keenan  
National Board of Boiler and Pressure Vessel Inspectors.  
(937-645-5042)

Mr. Jerry Sturch  
Director of Engineering  
Arise Inc.  
(704-649-8754)

Summary of  
Qualifications:

Commissioned by the National Board of Boiler and Pressure  
Vessel Inspectors, February 27, 1973.

(NB-7245 A, B, N, I, NS)

Previously qualified Lead Auditor by Westinghouse Electric Corporation.

Previously qualified Lead Auditor by FM Global.

**Professional  
Membership:**

Full member status to the American Society of Mechanical Engineers.

ATTACHMENT 2

NB03 - 1901

NBIC Subcommittee R&A Action Block

1/2

**Subject**                    **Evaluation of ASME Post Construction Committee Repair Standards**

**File Number**                    NB03-1901                    **Prop. on Pg.**                    2

**Proposal**                    Add an new paragraph 3.2.6 to introduce other Codes, Standards and Practices

**Explanation**                    The objective is to review each published ASME PCC Standard and determine if the NBIC Subcommittee on R&A and the NBIC main committee can adopt in part or in whole or make reference to ASME PCC repair guidelines.

After much discussion at the SG level, it was decided to follow the same format for recognition of other Codes, Standards and Practices as currently stated in Part 2 of the NBIC.

**Project Manager**                    G. Galanes                    Task Group Members  
W. Sperko

**SubGroup**                    0                    **SG Meeting Date**                    07/22/08  
**Negatives**

2

Insert new paragraph in Part 3, 3.2.6

### 3.2.6 Reference to Other Codes and Standards

Other codes, standards, and practices pertaining to the repair and alteration of pressure-retaining items can provide useful guidance. Use of these codes, standards and practices is subject to review and acceptance by the Inspector, and when required, by the Jurisdiction.

The user is cautioned that the referenced codes, standards and practices may address methods categorized as repairs; however, some of these methods are considered alterations by the NBIC.

In the event of a conflict with the requirements of the NBIC, the requirements of the NBIC take precedence.

Some examples are as follows:

- (a) National Board *Bulletin* – National Board Classic Articles Series.
- (b) ASME PCC-1, Guidelines for Pressure Boundary Bolted Flange Joint Assembly.
- (c) ASME PCC-2, Repair of Pressure Equipment and Piping.

**COMMITTEE CORRESPONDENCE**

**COMMITTEE:** NBIC

**TO:** John Hoh  
Robin Hough  
SG R&A Specific

**ADDRESS WRITER CARE OF:**

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

**FROM:** Terry Parks

**SUBJECT:** NB07-1702

**DATE:** April 10, 2008

My recommendation would be to close this item. It is my opinion the current terminology in the NBIC as it refers to accreditation and certification does reflect international community's use of ISO terminology. The National Board staff will continue to monitor ISO and ASME activities and if necessary will open a new action item concerning this matter.

10

**PART 3 – REPAIRS AND ALTERATIONS**  
**SECTION 6**  
**SUPPLEMENT X**  
**REPAIR AND ALTERATIONS OF PRESSURE VESSELS IN**  
**LIQUEFIED PETROLEUM GAS (LPG) SERVICE**

NBC7-1901  
1/2

**SUPPLEMENT X REPAIR AND ALTERATION OF PRESSURE VESSELS IN**  
**LIQUEFIED PETROLEUM GAS SERVICE**

**Sx.1 SCOPE**

This Supplement provides general and specific requirements that apply to the repairs or alterations to pressure vessels designed for storing Liquefied Petroleum Gas (LPG) and fabricated in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 or the API-ASME Code for Unfired Pressure Vessels for Petroleum Liquid and Gases. In addition to this supplement, the applicable paragraphs of Part 3 of the NBIC and the latest edition of the National Fire Protection Association NFPA 58, Liquefied Petroleum Gas Code shall be met.

**Sx.2 GENERAL AND ADMINISTRATIVE REQUIREMENTS**

- 1) Refer to Section 1 of this Part for all applicable post construction activities pertaining to general and administrative requirements.
- 2) Construction Standards
  - a) ASME is the governing construction code. Repairs or alterations shall conform to the edition of the ASME Code or standard most applicable to the work.
  - b) In addition to meeting the requirements of Part 3 of the National Board Inspection Code and this Supplement, the "R" Certificate Holder shall be familiar with and ensure that pressure vessels intended for liquefied petroleum gas service meet the requirements of NFPA 58, Liquefied Petroleum Gas Code published by the National Fire Protection Association.

**Sx.3 WELDING AND HEAT TREATMENT**

Refer to Section 2 of this Part for all applicable post construction activities pertaining to welding and heat treatment requirements.

**Sx.4 REQUIREMENTS FOR REPAIRS AND ALTERATIONS**

- 1) Refer to Section 3 of this Part for all applicable post construction activities pertaining to requirements for repairs and alterations.
- 2) Radiography Testing (RT) shall be considered a suitable Nondestructive Examination method that may be necessary to assure complete removal of the defect as described in paragraph 3.3.4.1 of this Part.

**PART 3 – REPAIRS AND ALTERATIONS**  
**SECTION 6**  
**SUPPLEMENT X**  
**REPAIR AND ALTERATIONS OF PRESSURE VESSELS IN**  
**LIQUEFIED PETROLEUM GAS (LPG) SERVICE**

NB07-1901  
2/2

- Sx.5 EXAMINATION AND TESTING**  
Refer to Section 4 of this Part for all applicable post construction activities pertaining to examination and testing.
- Sx.6 CERTIFICATION / DOCUMENTATION AND STAMPING**
- 1) Refer to Section 5 of this Part for all applicable post construction activities pertaining to certification / documentation and stamping.
  - 2) The "R" Certificate Holder must assure all repairs or alterations involving a change to the original ASME pressure vessel markings required by NFPA 58 be recorded on the NBIC Form and marked on the NBIC nameplate/stamping. Example: Change in dip tube length or service type. (underground, aboveground, or both) Additional markings must be conspicuously located near the NBIC stamping or on the NBIC nameplate without changing the required format of the NBIC markings. The original markings of the ASME nameplate/stamping shall not be altered. Nameplates and the attachment shall be in accordance with NFPA 58 and jurisdictional requirements.
- Sx.7 INSPECTION**  
Refer to Supplement 7 of Part 2.
- Sx.8 COATINGS**  
When coatings are reapplied the "R" Certificate Holder should verify the coating is compatible with the existing coating, suited for the intended service application and in accordance with NFPA 58.

**-Propose 4-changes-**  
(Revised after ballot vote 5-08)

**Change 1:**

Current '06-edition-Appendix 4	Proposed Change for Section 9 Glossary
<p><b>Alteration:</b> Any change in the item described on the original Manufacturer's Data Report which affects the pressure retaining capability of the pressure-retaining item. Nonphysical changes such as an increase in the maximum allowable working pressure (internal or external) , increase in the design temperature, or a reduction in minimum temperature of a pressure-retaining item shall be considered an alteration.</p>	<p><b>Alteration:</b> Any change in the item described on the original Manufacturer's Data Report which affects the pressure retaining capability of the pressure-retaining item. <u>(See sub-section 3.4.3. EXAMPLES OF ALTERATIONS)</u></p> <p>Nonphysical changes such as an increase in the maximum allowable working pressure (internal or external), increase in the design temperature, or a reduction in minimum temperature of a pressure-retaining item shall be considered an alteration.</p>

**Change 2:**

Existing; '07-edition @ 3.3.3	Proposed @ "3.3.3 <u>underlined</u> @ "t"
<p>3.3.3      <b>EXAMPLES OF REPAIRS</b></p> <p>a) Weld repairs or replacement of pressure parts or attachments that have failed in a weld or in the base material;</p> <p>b) The addition of welded attachments to pressure parts, such as:</p> <p style="padding-left: 20px;">1) Studs for insulation or refractory Lining</p> <p style="padding-left: 20px;">2) Hex steel or expanded metal for Refractory lining</p> <p style="padding-left: 20px;">3) Ladder clips</p> <p style="padding-left: 20px;">4) Brackets, having loadings which do not affect the design of the pressure-retaining item to which they are attached</p> <p style="padding-left: 20px;">5) Tray support rings</p> <p>c) Corrosion resistant strip lining, or weld overlay;</p> <p>d) Weld buildup of wasted areas;</p> <p>e) Replacement of heat exchanger tube sheets in accordance with the original design;</p> <p>f) Replacement of boiler and heat exchanger tubes where welding is involved;</p> <p>g) In a boiler, a change in the arrangement of tubes in furnace</p>	<p>3.3.3      <b>EXAMPLES OF REPAIRS</b></p> <p>a) Weld repairs or replacement of pressure parts or attachments that have failed in a weld or in the base material;</p> <p>b) The addition of welded attachments to pressure parts, such as:</p> <p style="padding-left: 20px;">1) Studs for insulation or refractory Lining</p> <p style="padding-left: 20px;">2) Hex steel or expanded metal for Refractory lining</p> <p style="padding-left: 20px;">3) Ladder clips</p> <p style="padding-left: 20px;">4) Brackets, having loadings which do not affect the design of the pressure-retaining item to which they are attached</p> <p style="padding-left: 20px;">5) Tray support rings</p> <p>c) Corrosion resistant strip lining, or weld overlay;</p> <p>d) Weld buildup of wasted areas;</p> <p>e) Replacement of heat exchanger tube sheets in accordance with the original design;</p> <p>f) Replacement of boiler and heat exchanger tubes where welding is involved;</p> <p>g) In a boiler, a change in the arrangement of tubes in furnace</p>

walls, economizer, or super heater sections;

- h) Replacement of pressure-retaining parts identical to those existing on the pressure-retaining item and described on the original manufacturer's data report. For example:
  - 1) Replacement of furnace floor tubes and/or sidewall tubes in a boiler
  - 2) Replacement of a shell or head in Accordance with the original design
  - 3) Rewelding a circumferential or longitudinal seam in a shell or head
  - 4) Replacement of nozzles of a size where reinforcement is not a consideration
- i) Installation of new nozzles or openings of such a size and connection type that reinforcement and strength calculations are not a consideration required by the original code of construction;
- j) The addition of a nozzle where reinforcement is a consideration may be considered to be a repair provided the nozzle is identical to one in the original design, located in a similar part of the vessel, and not closer than three times its diameter from another nozzle. The addition of such a nozzle shall be restricted by any service requirements;
- k) The installation of a flush patch to a pressure-retaining item;
- l) The replacement of a shell course in a cylindrical pressure vessel;
- m) Welding of gage holes;
- n) Welding of wasted or distorted flange faces;
- o) Replacement of slip-on flanges with weld neck flanges or vice-versa;
- p) Seal welding of buttstraps and rivets;
- q) Subject to the administrative procedures of the Jurisdiction and approval of the Inspector, the replacement of a riveted section or part by welding;
- r) The repair or replacement of a pressure part with a code accepted material that has a nominal composition and strength that is equivalent to the original material, and is suitable for the intended service;

walls, economizer, or super heater sections;

- h) Replacement of pressure-retaining parts identical to those existing on the pressure-retaining item and described on the original manufacturer's data report. For example:
  - 1) Replacement of furnace floor tubes and/or sidewall tubes in a boiler
  - 2) Replacement of a shell or head in Accordance with the original design
  - 3) Rewelding a circumferential or longitudinal seam in a shell or head
  - 4) Replacement of nozzles of a size where reinforcement is not a consideration
- i) Installation of new nozzles or openings of such a size and connection type that reinforcement and strength calculations are not a consideration required by the original code of construction;
- j) The addition of a nozzle where reinforcement is a consideration may be considered to be a repair provided the nozzle is identical to one in the original design, located in a similar part of the vessel, and not closer than three times its diameter from another nozzle. The addition of such a nozzle shall be restricted by any service requirements;
- k) The installation of a flush patch to a pressure-retaining item;
- l) The replacement of a shell course in a cylindrical pressure vessel;
- m) Welding of gage holes;
- n) Welding of wasted or distorted flange faces;
- o) Replacement of slip-on flanges with weld neck flanges or vice-versa;
- p) Seal welding of buttstraps and rivets;
- q) Subject to the administrative procedures of the Jurisdiction and approval of the Inspector, the replacement of a riveted section or part by welding;
- r) The repair or replacement of a pressure part with a code accepted material that has a nominal composition and strength that is equivalent to the original material, and is suitable for the intended service;

<p>s) Replacement of a pressure-retaining part with a material of different nominal composition, equal to or greater in allowable stress from that used in the original design, provided the replacement material satisfies the material and design requirements of the original Code of Construction under which the vessel was built.</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"> <p>Last sentence of s) was revised as shown during 1-17-08 MC-meeting as item NB07-2501</p> </div>	<p>s) Replacement of a pressure-retaining part with a material of different nominal composition, equal to or greater in allowable stress from that used in the original design, provided the replacement material satisfies the material and design requirements of the original Code of Construction under which the vessel was built. <i>The minimum required thickness shall be at least equal to the thickness of the material stated on the original Manufacturer's Data Report.</i></p> <p><i>Add "t"</i> → t) The replacement of a pressure relieving device (PRD) provided the replacement device's relieving capacity is equal to or greater than the PRD-capacity originally described, meeting the Minimum Required Relieving Capacity requirements of the original code of construction.</p>
--	--

**Change 3:**

Existing; '07-edition	Proposed change @ "e"
<p>3.4.3 EXAMPLES OF ALTERATIONS</p> <ul style="list-style-type: none"> <li>a) an increase in the maximum allowable working pressure (internal or external) or temperature of a pressure-retaining item regardless of whether or not a physical change was made to the pressure-retaining item;</li> <li>b) a decrease in the minimum temperature;</li> <li>c) the addition of new nozzles or openings in a boiler or pressure vessel except those classified as repairs;</li> <li>d) a change in the dimensions or contour of a pressure-retaining item;</li> <li>e) in a boiler, an increase in the heating surface or steaming capacity such that an increase in the relieving capacity is required;</li> <li>f) the addition of a pressurized jacket to a pressure vessel;</li> <li>g) except as permitted in 3.3.3(s), replacement of a pressure-retaining part in a pressure-retaining item with a material of different allowable stress or nominal composition from that used in the original design;</li> <li>h) The addition of a bracket or an increase in loading on an existing bracket that affects the design of the pressure-retaining item to which it is attached.</li> </ul>	<p>3.4.3 EXAMPLES OF ALTERATIONS</p> <ul style="list-style-type: none"> <li>a) an increase in the maximum allowable working pressure (internal or external) or temperature of a pressure-retaining item regardless of whether or not a physical change was made to the pressure-retaining item;</li> <li>b) a decrease in the minimum temperature;</li> <li>c) the addition of new nozzles or openings in a boiler or pressure vessel except those classified as repairs;</li> <li>d) a change in the dimensions or contour of a pressure-retaining item;</li> <li>e) in a boiler, an increase in the heating surface or steaming capacity, <u>as described on the original Manufacturer's Data Report</u>, <del>such that an increase in the relieving capacity is required;</del></li> <li>f) the addition of a pressurized jacket to a pressure vessel;</li> <li>g) except as permitted in 3.3.3(s), replacement of a pressure-retaining part in a pressure-retaining item with a material of different allowable stress or nominal composition from that used in the original design;</li> <li>h) The addition of a bracket or an increase in loading on an existing bracket that affects the design of the pressure-retaining item to which it is attached.</li> </ul> <p><i>Add &amp; Remove</i> →</p>

**Change 4: item NB05-1201**

**Background:**

Address public comments regarding suggestions to rerating nameplates and maximum design steaming capacity from submitter Wayne Matheson May 17, 2007. Note that it appears that a revision to the Form R-2 may also need to be changed as far as instructions, to address the item. After much discussion, the consensus seems to be that it is not advisable to add words to address specific terms related to objects altered due to increased design steaming capacity. This brought about more discussion that resulted in the real change needed to establish the minimum required relieving capacity if there is an alteration that could affect the minimum required relieving capacity of the PRD or PRDs. The MDSC (max. design steaming capacity) really only applies to Section I boilers. Alterations affecting btu/hr output for water boilers and low-pressure boilers may also be effected.

**Proposed action:**


- I. **Para 5.2.2 (b)-----add new paragraph as follows:**
  - b) The information describing an alteration to a pressure-retaining item shall be identified on the Form R-2 with a complete description of the exact scope of work for physical or non-physical changes. When the scope of work represents a change that will increase the minimum required relieving capacity of a pressure retaining item [such as a change in heating surface, maximum designed steaming capacity (MDSC), or Btu/hr heating capacity] the new minimum required relieving capacity shall be documented on the Form R-2 and indicated on the appropriate nameplate of Figure 5.9.6-b or Figure 5.9.6-c.

**Revise current paragraph references:**

- II. **The present paragraph 5.2.2 (b) will become 5.2.2 (c).**
- III. **The current paragraph 5.2.2 (c) will become 5.2.2 (d)**
- IV. **Revise nameplate Figures 5.9.6-b and 5.9.6-c to add, "Minimum Required Relieving Capacity" on nameplates. Add footnotes a-c as noted, adjacent to the proposed figure examples 5.9.6-b and 5.9.6-c**

**Change 4 (cont.): item NB05-1201**


**FIGURE 5.9.6-b**  
Required markings for alterations, with use of National Board Form R-2

ALTERED BY  	CERTIFICATE HOLDER	
	M.A.W.P.	P.S.I.
	AT	*F
	DATE ALTERED	
NATIONAL BOARD "R" CERTIFICATE NUMBER		

Add with the line:

\* Minimum Required Relieving Capacity

**FIGURE 5.9.6-c**  
Required markings for re-ratings, with use of National Board Form R-2

RE-RATED BY  	CERTIFICATE HOLDER	
	M.A.W.P.	P.S.I.
	AT	*F
	DATE ALTERED	
NATIONAL BOARD "R" CERTIFICATE NUMBER		

Add with the line:

\* Minimum Required Relieving Capacity

- \* Note:
- a) Not required when the scope of work does not change the Minimum Required Relieving Capacity.
  - b) If the line identifying Minimum Required Relieving Capacity is represented on the nameplate and the scope of work does not affect the Minimum Required Relieving Capacity, the line shall be "X'd" or otherwise defaced to represent "no change".
  - c) Minimum Required Relieving Capacity may be abbreviated to M.R.R.C.

Added the 3- footnotes

Rational for:

3.3.3 "t":

Safety valve manufacturers are finding ways to improve or increase the coefficient of discharge in safety valve design. Some current replacement models now represent a 10% capacity increase over originally provided models. "Capacity creep" will likely continue as a result of manufacturing improvements and refinements in valve component design. At a glance, capacity creep does not appear detrimental, however, if feedwater control does not maintain drum water level, then a boil-dry situation could take place, upsetting the balance originally designed by the boiler manufacturer...and the requirements of the original code of construction.

Additionally, after many comments and lengthy discussion, at the R&A Sub-committee meeting 1-16-08 a general consensus identified that the Inservice Inspector has the principle responsibility in assuring that adequate overpressure protection exists. Therefore, from a repair and alteration standpoint only the attachment weld or point of attachment of the PRD is within the purview of the Inspector reviewing work to a pressure-retaining item. The pressure-retaining item is represented as the boiler or pressure vessel not the PRD.

3.4.3 "e":

An increase in relieving capacity; whether required or not required should be fully reported on the Form R-2 per interpretation 01-41. The issue of sufficient relieving capacity should be routinely addressed...and would be with the acceptance of new proposed language @ 5.2.2 b)

About proposed change 4:

Revising Nameplate Stamping (New '07-edition figure 5.9.6 –b and c), so that the Inspector is aware of successive projects where any surface area or steaming capacity may have been changed, representing the definition of "alteration".

This line if marked, would identify the minimum required relieving capacity as a result of a change in heating surface or steaming capacity than what was originally provided by the original manufacturer. The ensuing stamped nameplate located adjacent to the original boiler nameplate would, at a minimum, provide a historical trail, recognizing document retention may be limited for 5-years per Part 3, Section 5.5 (c).

- 3.3 Repairs to Pressure-Retaining Items ..... 62
  - 3.3.1 Defect Repairs ..... 62
  - 3.3.2 Routine Repairs ..... 62
  - 3.3.3 Examples of Repairs ..... 62
  - 3.3.4 Repair Methods ..... 63
    - 3.3.4.1 Scope ..... 63
    - 3.3.4.2 Defect Repairs ..... 64
    - 3.3.4.3 Wasted Areas ..... 66
    - 3.3.4.4 Seal Welding ..... 70
    - 3.3.4.5 Re-Ending or Piecing Pipes or Tubes ..... 71
    - 3.3.4.6 Patches ..... 72
    - 3.3.4.7 Stays ..... 74
  - 3.3.5 Repair of ASME Section VIII, Division 2 or 3, Pressure Vessels ..... 74
    - 3.3.5.1 Scope ..... 74
    - 3.3.5.2 Repair Plan ..... 74
- 3.4 Alterations ..... 74
  - 3.4.1 Re-Rating ..... 74
  - 3.4.2 Alterations Based on Allowable Stress Values ..... 75
  - 3.4.3 Examples of Alterations ..... 75
  - 3.4.4 Alteration of ASME Code Section VIII, Division 2 or 3, Pressure Vessels ..... 76
    - 3.4.4.1 Alteration Plan ..... 76
- Section 4 Examination and Testing..... 77
  - 4.1 Scope ..... 78
  - 4.2 Nondestructive Examination ..... 78
  - 4.3 Pressure Gages, Measurement, Examination, and Test Equipment ..... 78
  - 4.4 Examination and Test for Repairs and Alterations ..... 78
    - 4.4.1 Test or Examination Methods Applicable to Repairs ..... 79
    - 4.4.2 Test or Examination Methods Applicable to Alterations..... 80
  - 4.5 Pressure Relief Valve Performance Testing and Testing Equipment ..... 81
    - 4.5.1 Test Medium and Testing Equipment ..... 81
    - 4.5.2 Owner-User ASME Code Section VIII Steam Testing ..... 82
    - 4.5.3 Lift Assist Testing ..... 82
    - 4.5.4 Pressure Test of Parts ..... 82
- Section 5 Certification / Documentation and Stamping..... 85
  - 5.1 Scope ..... 86
  - 5.2 Documentation ..... 86
    - 5.2.1 Preparation of Form R-1 (Repairs) ..... 86
    - 5.2.2 Preparation of Form R-2 (Alterations) ..... 86
  - 5.3 Distribution of Form R-1 ..... 87
  - 5.4 Distribution of Form R-2 ..... 87
  - 5.5 Registration of "R" Forms – General ..... 87
    - 5.5.1 Registration for Repairs ..... 87
    - 5.5.2 Registration for Alterations ..... 87
    - 5.5.3 Registration for Fiber-Reinforced Vessels ..... 87
    - 5.5.4 Registration for Nuclear Repair/Replacement Activities ..... 87
    - 5.5.5 Registration for Graphite Vessels..... 88
  - 5.6 Form "R" Log ..... 88
  - 5.7 Stamping Requirements for Repairs and Alterations..... 88
    - 5.7.1 General ..... 88
    - 5.7.2 Stamping Requirements for Repairs ..... 88
    - 5.7.3 Stamping Requirements for Alterations *and Re-Ratings* ..... 88
  - 5.8 Removal of Original Stamping or Nameplate ..... 88

(5.7.4 Stamping Requirements for Parts ..... ?  
 5.7.5 Specific Requirements for Stamping and Nameplates ..... ?

2 of 2

5.9	Stamping Requirements for Pressure Relief Devices .....	89
5.9.1	Nameplates .....	89
5.9.2	Repair Nameplate .....	89
5.9.3	Changes to Original Pressure Relief Valve Nameplate Information ...	89
5.9.4	Test Only Nameplate .....	90
5.9.5	Replacement of Illegible or Missing Nameplates .....	90
5.9.6	Requirements for Stamping and Nameplate Information .....	90
5.9.6.1	Scope .....	90
5.9.6.2	General Requirements for Stamping and Nameplates .....	91
5.9.6.3	Additional Stamping Requirements for Repairs .....	91
5.9.6.4	Additional Stamping Requirements for Alterations and Re-Ratings .....	91
5.9.6.5	Additional Stamping Requirements for Parts .....	91
5.10	Alternative Marking and Stamping for Graphite Pressure Equipment .....	91
5.11	Stamping for Fiber Reinforced Vessels .....	92
5.11.1	Removal of Original Stamping or Nameplate .....	92
5.11.2	Stamping for Repairs .....	92
5.11.3	Stamping for Alterations .....	93
5.12	Stamping Requirements for Yankee Dryers .....	93
5.13	Repair and Alteration Forms and Guidelines for Completing Forms .....	94
5.13.1	Form R-1 <i>Report of Repair</i> .....	95
5.13.2	Form R-2 <i>Report of Alteration</i> .....	96
5.13.3	Form R-3 <i>Report of Fabricated Parts</i> .....	98
5.13.4	Form R-4 <i>Report Supplementary Sheet</i> .....	100
5.13.4.1	Guide for Completing National Board Form "R" Reports .....	101
5.13.5	Form NR-1 <i>Nuclear Components and Systems in Nuclear Power Plants</i> .....	104
5.13.6	Form NVR-1 <i>Nuclear Pressure Relief Devices</i> .....	106
5.13.6.1	Guide for Completing National Board Form NR-1 and NVR-1 Reports .....	107
Section 6	Supplements .....	109
Supp. 1	Steam Locomotive Firetube Boiler Repairs .....	110
S1.1	General Requirements .....	110
S1.1.1	Federal Railroad Administration (FRA) .....	110
S1.1.2	Requirements for Welding Activities .....	110
S1.1.3	Materials .....	110
S1.1.3.1	Material List for Steam Locomotive Boilers .....	110
S1.1.4	Formula and Calculations for Steam Locomotive Boilers .....	111
S1.2	Locomotive Firetube Boiler Repairs .....	111
S1.2.1	Repair of Staybolt Holes .....	111
S1.2.2	Threaded Staybolts .....	111
S1.2.3	Ball Socket-Type Flexible Staybolts, Sleeves, and Caps .....	113
S1.2.4	Seal Welded Staybolts .....	113
S1.2.5	Welded Installation of Staybolts .....	113
S1.2.6	Diagonal Braces, Gusset Braces, and Throat Sheet/Tubesheet Braces .....	116
S1.2.7	Threaded Studs .....	116
S1.2.8	Patch Bolts .....	117
S1.2.9	Flues, Arch Tubes, Circulators, Thermic Siphons .....	117
S1.2.9.1	Flue and Tube Re-Ending .....	117
S1.2.9.2	Arch Tubes .....	117
S1.2.9.3	Tube Wall Thickness for Arch Tubes .....	119
S1.2.9.4	Thermic Siphons .....	119

e

20

3.25.2

**5.5.5 REGISTRATION FOR GRAPHITE VESSELS**

Organizations performing repair/replacement activities under the "R" stamp program shall register such repairs or alterations with the National Board.

b) Subject to the acceptance of the Jurisdiction and the concurrence of the Inspector, nameplates and stamping may not be required for routine repairs (See 3.3.2). In all cases, the type and extent of repairs necessary shall be considered prior to waiving the requirement.

c) *(Handwritten scribble)*

**5.6 FORM "R" LOG**

The "R" Certificate Holder shall maintain a single, sequential log of "R" Form numbers assigned for NBIC Report Forms (e.g., R-1, R-2, and R-3) that are registered with the National Board.

**5.7.3 STAMPING REQUIREMENTS FOR ALTERATIONS**

*AKC 9E-4471110*

Pressure-retaining items altered in accordance with this code shall have a nameplate or stamping applied adjacent to the original manufacturer's stamping or nameplate in accordance with this section. For an alteration where physical changes are made to the pressure-retaining item, the "R" Certificate Holder responsible for the construction portion of the alteration shall apply the stamping or nameplate. For an alteration where no physical changes are made to the pressure-retaining item (e.g., a re-rating) the "R" Certificate Holder, assuming responsibility for the design, shall apply the stamping or nameplate.

**5.7 STAMPING REQUIREMENTS FOR REPAIRS AND ALTERATIONS**

**5.7.1 GENERAL**

The stamping of or attaching of a nameplate to a pressure-retaining item shall indicate that the work was performed in accordance with the requirements of this Code. Such stamping or attaching of a nameplate shall be done only with the knowledge and authorization of the Inspector. The "R" Certificate Holder responsible for the repair or the construction portion of the alteration shall apply the stamping. For a re-rating where no physical changes are made to the pressure-retaining item, the "R" Certificate Holder responsible for design shall apply the stamping. Required stamping and nameplate information is shown in 5.9.6.

**5.8 REMOVAL OF ORIGINAL STAMPING OR NAMEPLATE**

If it becomes necessary to remove the original stamping, the Inspector shall, subject to the approval of the Jurisdiction, witness the making of a facsimile of the stamping, the obliteration of the old stamping, and the transfer of the stamping to the new item. When the stamping is on a nameplate, the Inspector shall witness the transfer of the nameplate to the new location. Any relocation shall be described on the applicable NBIC "R" Form. The re-stamping or replacement of a code symbol stamp shall be performed only as permitted by the governing code of construction.

**5.7.2 STAMPING REQUIREMENTS FOR REPAIRS**

a) Pressure-retaining items repaired in accordance with the NBIC shall be stamped as required by this section.

*600*

**5.9 STAMPING REQUIREMENTS FOR PRESSURE RELIEF DEVICES**

**5.9.1 NAMEPLATES**

Proper marking and identification of tested or repaired valves is critical to ensuring acceptance during subsequent inspections, and also provide for traceability and identification of any changes made to the valve. All operations that require the valve's seals to be replaced shall be identified by a nameplate as described in 5.9.2 or 5.9.4.

**5.9.2 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 mounted directly on the valve, the nameplate shall be securely attached so as not to 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 5.9.6-e) 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 Supplement S7.2; 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 4.5.2), 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).

**5.9.3 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 Supplement S6.2 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 shall be marked out but left legible.
- d) If the blowdown is changed, the blowdown on the original nameplate or stamping shall

22

be marked out but left legible. The new blowdown may be based on the current ASME Code requirements.

- e) Incorrect information on the original manufacturer's nameplate 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.

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 5.9.2, will make the repairer responsible to the owner and the Jurisdiction that the information on the duplicate nameplate is correct.

#### 5.9.4 TEST ONLY NAMEPLATE

- a) Where a valve has been tested and adjusted, as permitted by Supplement S6.8.1, but not otherwise repaired, a "Test Only" nameplate shall be applied that contains the following information:
  - 1) Name of responsible organization;
  - 2) Date of test;
  - 3) Set Pressure; and
  - 4) Identification, such as "Test Only."
- b) A "test only" nameplate is also recommended when periodic testing has been performed, even when no adjustments have been made, for the purpose of identifying the date the valve was tested.
- c) The existing repair nameplates, if applicable, shall not be removed during such testing.

#### 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 will 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 5.9.5(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 stamping.

#### 5.9.5 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 will be augmented or replaced by a nameplate furnished by the "VR" stamp holder

#### 5.9.6 REQUIREMENTS FOR STAMPING AND NAMEPLATE INFORMATION

##### 5.9.6.1 SCOPE

When a pressure-retaining item is repaired or altered, the Certificate Holder shall attach a nameplate or stamp the item, except when otherwise permitted by these rules. Similarly, when pressure relief devices are repaired, the

629

attachment of a nameplate is required. The specific requirements for nameplates/stamping are described in this Part. See Figures 5.9.6-a thru 5.9.6-g.

**5.9.6.3 ADDITIONAL STAMPING REQUIREMENTS FOR REPAIRS**

5.7.2

Stamping or nameplate shall be applied adjacent to the original manufacturer's stamping or nameplate. A single repair nameplate or stamping may be used for more than one repair to a pressure-retaining item provided it is carried out by the same Certificate Holder. The date of each repair, corresponding with the date on the associated Form R-1, shall be stamped on the nameplate.

~~5.9.6.2~~ <sup>SPECIFIC</sup> **GENERAL REQUIREMENTS FOR STAMPING AND NAMEPLATES**  
5.7.5

- a) Required data shall be in characters of at least 5/32 in. (4 mm) high, except that characters for pressure relief valve repair nameplates may be smaller. Markings may be produced by casting, etching, embossing, debossing, stamping, or engraving. The selected method shall not result in any harmful contamination of or sharp discontinuities to the pressure-retaining item. See Figures 5.7.5-a thru 5.7.5-g.
- b) The National Board code symbols ("R", "VR", and "NR") are to be stamped; do not emboss.
- c) Stamping directly on items, when used, shall be done with blunt-nose continuous or blunt-nose interrupted dot die stamps. If direct stamping would be detrimental to the item, required markings may appear on a nameplate affixed to the item.
- d) The Certificate Holder shall use its full name as shown on the *Certificate of Authorization* or an abbreviation acceptable to the National Board.
- e) The letters "RP" shall be stamped below the "R" symbol stamp to indicate organizations accredited for performing repairs or alterations to fiber-reinforced plastic items.
- f) The letter "G" shall be stamped below the "R" symbol stamp to indicate organizations accredited for performing repairs or alterations to graphite pressure equipment.

**5.9.6.4 ADDITIONAL STAMPING REQUIREMENTS FOR ALTERATIONS AND RE-RATINGS**

Stamping or nameplate shall be applied adjacent to the original manufacturer's stamping or nameplate.

~~5.9.6.5~~ **ADDITIONAL STAMPING REQUIREMENTS FOR PARTS**  
5.7.4

Stamping or nameplate shall be applied in a conspicuous location on the part.

**5.10 ALTERNATIVE MARKING AND STAMPING FOR GRAPHITE PRESSURE EQUIPMENT**

- a) General Requirements
  - 1) This procedure may be used in lieu of the stamping and nameplate requirements defined in this section.
  - 2) The required data as defined in this section shall be 5/32 in. (4 mm) high, minimum.
  - 3) The National Board code symbol ("R") shall be used to make the impression in the cement.

29

7 of 9

- b) Application of the "R" Code Symbol
  - 1) The graphite surface shall be clean and smooth.
  - 2) Apply a thin coating of cement onto the Code part. The cement should have the consistency of toothpaste.
  - 3) Apply sufficient heat to the cement so that it begins to form a skin.
  - 4) Apply a coating of a thinned release agent, such as "ANTISEIZE" to the tip of the "R" stamp with a brush.
  - 5) Press the coated stamp all the way to the bottom of the cement and remove by pulling straight out before the cement hardens.
  - 6) Cure or heat the impression as required.
  - 7) When cured, the part may be washed to remove any excess release agent.
- c) Application of characters directly to graphite
  - 1) Use a very thin template of a flexible material (stainless steel; flexible and easily cleaned).
  - 2) Place the template over a clean smooth surface.
  - 3) Hold the template securely and trowel over with approved cement to fill all of the template area.
  - 4) Carefully lift the template from the graphite part and examine the detail of the characters.
  - 5) If acceptable, cure the cement.
  - 6) If the characters are incorrect or damaged, wipe off the cement with a compatible solvent and reapply.

**Note:** The preceding methods can be applied jointly to identify the graphite part and to transfer the "R" stamp.

**5.11 STAMPING FOR FIBER-REINFORCED VESSELS**

The attaching of a nameplate to a repaired or altered vessel or tank shall indicate that the work was performed in accordance with the requirements of this Code. The attachment of a nameplate shall be done only with the knowledge and authorization of the Inspector. The Certificate Holder responsible for the repair or alteration shall apply the stamping nameplate. Required stamping and nameplate information are shown in ~~5-9-6~~ 5.7.

**5.11.1 REMOVAL OF ORIGINAL STAMPING OR NAMEPLATE**

If it becomes necessary to remove the original stamping, the Inspector shall, subject to the approval of the Jurisdiction, witness the making of a facsimile of the stamping, the obliteration of the old stamping, and the transfer of the stamping to the new item. When the stamping is on a nameplate, the Inspector shall witness the transfer of the nameplate to the new location. Any relocation shall be described on the applicable NBIC form. The restamping or replacement of a code symbol stamp shall be performed only as permitted by the governing code of construction.

**5.11.2 STAMPING FOR REPAIRS**

Pressure-retaining items repaired in accordance with the NBIC shall have a nameplate as required by Section ~~5-9-6~~ 5.7. Subject to the acceptance of the jurisdiction and the concurrence of the Inspector, nameplates may not be required for routine repairs. See 5.7.2(b). In all cases, the type and extent of repairs necessary shall be considered prior to waiving the requirement.

20

809

5.11.3 STAMPING FOR ALTERATIONS


The nameplate shall be applied in accordance with Section 5.9.6. The location of the nameplate shall be documented on the Form R-2.

5.12 STAMPING REQUIREMENTS FOR YANKEE DRYERS

- a) Stamping is not required for repairs that do not affect the pressure-retaining capability of the Yankee shell, as indicated on the De-rate Curve, or other pressure-retaining parts, as indicated on the original *Manufacturer's Data Report*.
- b) Stamping is required for repairs that do affect the pressure-retaining capability of the Yankee shell, as indicated on the De-rate Curve, or other pressure-retaining parts as indicated on the original *Manufacturer's Data Report*.
- c) Stamping is required for alterations as listed in Supplement S5.7.2
- d) Stamping, when required, shall meet the requirements for stamping in 5.7.3. The location of stamping shall be described in the remarks section of Form R-2.


5.7.5-b

**FIGURE 5.9.6-b**  
Required markings for alterations, with use of National Board Form R-2

ALTERED BY  	CERTIFICATE HOLDER <hr/> M.A.W.P. _____ P.S.I.  AT _____ °F <hr/> DATE ALTERED
NATIONAL BOARD "R" CERTIFICATE NUMBER	


5.7.5-c

**FIGURE 5.9.6-c**  
Required markings for re-ratings, with use of National Board Form R-2

RE-RATED BY  	CERTIFICATE HOLDER <hr/> M.A.W.P. _____ P.S.I.  AT _____ °F <hr/> DATE ALTERED
NATIONAL BOARD "R" CERTIFICATE NUMBER	

5.7.5-a

**FIGURE 5.9.6-a**  
Required markings for repairs, with use of National Board Form R-1


REPAIRED BY  	CERTIFICATE HOLDER <hr/> <hr/> DATE REPAIRED
NATIONAL BOARD "R" CERTIFICATE NUMBER	

26

5.7.5-d

**FIGURE 5.9.6-d**  
Required markings for parts fabricated by welding, with use of National Board Form R-3

**PART**



CERTIFICATE HOLDER \_\_\_\_\_

P.S.I. AT \_\_\_\_\_ °F

M.A.W.P. \_\_\_\_\_



MANUFACTURER'S SERIAL NO. \_\_\_\_\_

NATIONAL BOARD "R" CERTIFICATE NUMBER \_\_\_\_\_

YEAR BUILT \_\_\_\_\_

5.7.5-g

**FIGURE 5.9.6-g**  
Required markings for repair or replacement of nuclear pressure relief valves

CERTIFICATE HOLDER \_\_\_\_\_

NATIONAL BOARD CERTIFICATE NOS. \_\_\_\_\_

COMPLETED IN ACCORDANCE WITH ASME SECTION XI

NR	VR	EDITION	ADDENDA	CODE CASE(S)
REPAIR <input type="checkbox"/>				
REPLACEMENT <input type="checkbox"/>				

SET PRESSURE \_\_\_\_\_


CAPACITY (IF CHANGE IN SET PRESSURE) \_\_\_\_\_

DATE OF REPAIR OR REPLACEMENT \_\_\_\_\_

5.7.5-e

**FIGURE 5.9.6-e**  
Required markings for repair of ASME/National Board "V," "UV," and "HV"-stamped pressure relief valves

REPAIRED BY \_\_\_\_\_



CERTIFICATE HOLDER \_\_\_\_\_

TYPE/MODEL NUMBER \_\_\_\_\_ (2)

SET PRESSURE \_\_\_\_\_ CAPACITY \_\_\_\_\_ (2)

GDTP \_\_\_\_\_ BP \_\_\_\_\_ (2)

REPAIR IDENTIFICATION \_\_\_\_\_

NATIONAL BOARD "VR" CERTIFICATE NUMBER \_\_\_\_\_


DATE REPAIRED \_\_\_\_\_

Note 1: To be indicated only when changed.

5.13 REPAIR AND ALTERATION FORMS AND GUIDELINES FOR COMPLETING FORMS

5.7.5-f

**FIGURE 5.9.6-f**  
Required markings for nuclear repairs or replacements



CERTIFICATE HOLDER \_\_\_\_\_

NATIONAL BOARD "NR" CERTIFICATE NUMBER \_\_\_\_\_

COMPLETED IN ACCORDANCE WITH ASME SECTION XI

REPAIR	EDITION	ADDENDA	CODE CASE(S)
<input type="checkbox"/>			
REPLACEMENT <input type="checkbox"/>			

DATE OF REPAIR OR REPLACEMENT \_\_\_\_\_

## PART 3, SECTION 7

### REPAIRS AND ALTERATIONS — NBIC POLICY FOR METRICATION

#### 7.1 GENERAL

This policy provides guidance for the use of US customary units and metric units. Throughout the NBIC, metric units are identified and placed in parentheses after the US customary units referenced in the text and associated tables. For each repair or alteration performed, selection of units shall be based on the units used in the original code of construction. For example, items constructed using US customary units shall be repaired or altered using US customary units. The same example applies to items constructed using metric units. Whichever units are selected, those units are to be used consistently throughout each repair or alteration. Consistent use of units includes all aspects of work required for repairs or alterations (i.e. materials, design, procedures, testing, documentation, and stamping, etc.).

#### 7.2 EQUIVALENT RATIONALE

The rationale taken to convert metric units and US customary units involves knowing the difference between a *soft* conversion and a *hard* conversion. A soft conversion is an exact conversion. A hard conversion is simply performing a soft conversion and then rounding off within a range of intended precision. When values specified in the NBIC are intended to be approximate values, a hard conversion is provided. If an exact value is needed to maintain safety or required based on using good engineering judgment, then a soft conversion will be used. In general, approximate accuracy is acceptable for most repairs or alterations performed using the requirements of the NBIC. Therefore, within the NBIC, metric equivalent units are primarily hard conversions.

*In Supplement 6 of this Part, Repair, Alteration, and Modification of DOT Transport Tanks, the metric units are shown first with the US customary units shown in parentheses.*

The following examples are provided for further clarification and understanding of soft conversions versus hard conversions:

**Example 1:** Using 1 in. = 25.4 mm;  
12 in. = 304.8 mm (soft conversion)

**Example 2:** Using the above conversion, a hard conversion may be 300 mm or 305 mm depending on the degree of precision needed.

#### 7.3 PROCEDURE FOR CONVERSION

The following guidelines shall be used to convert between US customary units and metric units within the text of the NBIC:

- a) All US customary units will be converted using a soft conversion.
- b) Soft conversion calculations will be reviewed for accuracy.
- c) Based on specified value in the NBIC, an appropriate degree of precision shall be identified.
- d) Once the degree of precision is decided, rounding up or down may be applied to each soft conversion in order to obtain a hard conversion.
- e) Use of hard conversion units shall be used consistently throughout the NBIC wherever soft conversions are not required.

**Note:** Care shall be taken to minimize percentage difference between units.

NB08-1901

SUBMITTED 11<sup>30</sup>am CDT  
19 MAY 2008

National Board of Boiler and Pressure Vessel Inspectors  
National Board Inspection Code  
Submission of Public Review Comment  
2008 Draft Addendum- Cycle B

PLEASE SUBMIT ONLY ONE COMMENT/RECOMMENDATION PER PAGE  
Make additional copies as needed

Comments **Must** be Received No Later Than: May 19, 2008

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

Date: 19 May 2008

Commenter Name: THOMAS A ROGERS

Commenter Address: PO Box 98186  
LUBBOCK TX 79499

Commenter Phone: 806 790 1238 806 797 3797

Commenter Fax: 806 797 3798

Commenter Email: tr\_containerstech@sbcglobal.net

Section/Subsection Referenced: PART 3 56.7.1 (d)(2)

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

THIS SUBSECTION (PARAGRAPH) SHOULD SPECIFICALLY THE TEXT OF  
THE REFERENCE TO 49 CFR 100.413 (d) REQUIRING  
A DCE CERTIFICATION OF MODIFICATIONS BY  
A DCE - OR MORE GENERIC LANGUAGE IN REFERENCE  
TO CERTIFICATION REQUIREMENTS OF THE  
COMPETENT AUTHORITY.

Source:  Own Experience/Idea  Other Source/Article/Code/Standard 49 CFR PART 180 Subpart F

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1065 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, [rhough@nationalboard.org](mailto:rhough@nationalboard.org)

**NB Use Only**  
Commenter No. Issued: \_\_\_\_\_ Project Committee Referred To: \_\_\_\_\_  
Comment No. Issued: \_\_\_\_\_

25

NB08-1902

SUBMITTED 11<sup>30</sup> CDT  
19 MAY 2008

National Board of Boiler and Pressure Vessel Inspectors  
National Board Inspection Code  
Submission of Public Review Comment  
2008 Draft Addendum- Cycle B

PLEASE SUBMIT ONLY ONE COMMENT/RECOMMENDATION PER PAGE  
Make additional copies as needed

Comments Must be Received No Later Than: May 19, 2008

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

Date: 19 MAY 2008

Commenter Name: THOMAS A ROGERS

Commenter Address: PO Box 98186  
LUBBOCK TX 79499

Commenter Phone: 806 790 1238 806 797 3797

Commenter Fax: 806 797 3798

Commenter Email: tr.containerstech@sbcglobal.net

Section/Subsection Referenced: PART 3 5-6.9.2 & 5-6.9.3

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

PWHT OR SUBSTITUTES OR ELIMINATION FOR  
REPAIRS OF STRESS CORROSION CRACKS IN MC 331  
QUENCHED & TEMPERED (SIF) TANKS SHOULD BE  
SPECIFICALLY REFERENCED TO 49CFR 180.413(b)(6)  
OR TO CGA TB-2 ON TO THE TEXT (IF DOT REFERENCES  
ARE NOT GIVEN. IN THE OLD NBIC RD1000 GIVES  
PRACTICAL GUIDANCE FOR PROCEDURES

Source:  Own Experience/Idea  Other Source/Article/Code/Standard 49CFR PART 180 SUBPART F

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, [rhough@nationalboard.org](mailto:rhough@nationalboard.org)

**NB Use Only**  
Commenter No. Issued: \_\_\_\_\_ Project Committee Referred To: \_\_\_\_\_  
Comment No. Issued: \_\_\_\_\_

NB08-1903

SUBMITTED 11<sup>50</sup> PM CDT  
19 MAY 2008

**National Board of Boiler and Pressure Vessel Inspectors  
National Board Inspection Code  
Submission of Public Review Comment  
2008 Draft Addendum- Cycle B**

PLEASE SUBMIT ONLY ONE COMMENT/RECOMMENDATION PER PAGE  
Make additional copies as needed

**Comments Must be Received No Later Than: May 19, 2008**

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

Date: 19 May 2008

Commenter Name: THOMAS A ROGERS

Commenter Address: PO Box 98186  
Lubbock TX 79499

Commenter Phone: 806 790 1238 806 797 3797

Commenter Fax: 806 797 3798

Commenter Email: tr\_containertech@sbcglobal.net

Section/Subsection Referenced: \_\_\_\_\_

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

PART 3 56.9.3(b)  
CONCERNING OF DOT - TAKING LIBERTY IS NOT  
A PRACTICAL OPTION - THIS SHOULD BE  
CLARIFIED - DOT CAN'T BE EXPECTED TO  
GIVE PERMISSION FOR EVERY COMBINATION &  
PERMUTATION OF PWHT EXCEPTIONS

Source:  Own Experience/Idea  Other Source/Article/Code/Standard 49CFR PART 180 Subpart F

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, [rhough@nationalboard.org](mailto:rhough@nationalboard.org)

**NB Use Only**  
Commenter No. Issued: \_\_\_\_\_ Project Committee Referred To: \_\_\_\_\_  
Comment No. Issued: \_\_\_\_\_

