



Date Distributed: December 18, 2013

THE
NATIONAL
BOARD
OF BOILER AND
PRESSURE VESSEL
INSPECTORS

SUBCOMMITTEE REPAIRS and ALTERATIONS

MINUTES

*Meeting of January 15, 2014
San Antonio, TX*

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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 Chair called to meeting to order at 8 a.m.

2. Announcements

The announcements were presented to the committee by the Chair.

3. Adoption of the Agenda

A motion was made to approve the Agenda as presented. The motion was unanimously approved.

4. Approval of Minutes of July 17, 2013

A motion was made to approve the minutes of the July 17, 2013 minutes. The motion was unanimously approved.

5. Review of the Roster (Attachment 1)

Mr. Benjamin Schaefer is eligible for reappointment to the subgroups on Repairs and Alterations General and Specific. A motion was made and was unanimously approved to reappoint Mr. Schaefer to the subgroups on Repair and Alterations, General and Specific.

6. Interpretations (Attachments 2 - 6)

IN13-0301 - Part 3, 3.2.2 c) SC on Repair and Alteration, - Question 1: Does Part 3, 3.2.2 c) prevent an "R" Certificate Holder with the capabilities within his shop from rolling and welding a shell or other such items as headers, nozzles, (flange to pipe) for replacement in a vessel or boiler has is repairing or altering? **Answer 1:** No (Attachment 2, pp.14 - 16)

Question 2: If the answer is No to the above question, if the same Certificate Holder could not fabricate the replacement items within his capabilities and received these parts from an outside source then these items would have to be fabricated by an organization holding the appropriate Code Certificate of Authorization. **Answer 2:** Yes.

January 2014

The action taken by the subcommittee was to recommend waiting on an answer to this interpretation as item NB 14-0701 will address this concern.

IN14-0101 – Part 3, 5.7.5, SC on Repairs and Alterations - Question: Is it acceptable to "NA" on Name plates shown in Figures 5.7.5b) and 5.7.5 c) for the fields "AT____, ____°F" for alterations or re-ratings performed on a Power Boiler constructed in accordance with ASME Section I?

Reply: Yes (Attachment 3, pp. 17-20)

January 2014

The action taken by the subcommittee was to recommend waiting on an answer to this interpretation as item NB-14 1301 will address this concern.

IN14-0201 – Part 3, 1.8.5 q), SC on Repairs and Alterations - Question: If audit personnel are qualified in accordance with the requirements of ANS/ASME N45.2.23, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants may they perform the audits specified in 1.8.5 q)? **Reply:** Yes. NQA-1 is based upon ANSI/ASME N45.2-1977 and the seven daughter standards of N45.2 including ANSI N45.2.23, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants. The qualification requirements are equivalent. (Attachment 4, pp. 21-24)

January 2014

The answer to this interpretation is No as the NBIC requires personnel to be qualified to NQA1. There was a motion to approve this answer. The motion was unanimously approved.

IN14-0301 – Part 3, 3.3.2 d) 1), SC on Repairs and Alterations - Question: Is a standard threaded fitting (such as depicted in ASME Section VIII Figure UW-16.2 sketch L) which is welded through a vessel shell considered to be a nozzle as stated in Section 3.3.2 d) 1)? **Reply:** No (Attachment 5, pp. 25-29)

January 2014

A task group of Marty Toth and Brian Morelock was assigned to the interpretation.

IN14-0401 - Part 3, 1.2 - Question 1: The NBIC Part 3 paragraph 1.2 states that a repair shall be carried out “insofar as possible to the section and edition of the ASME code most applicable to the work planned.” If a vessel is constructed using SA-517-E (P-11B) material to ASME Section VIII Div. 1, where production and weld procedure impact tests were required during construction, would a repair to a crack in the shell require production and weld procedure impact testing under the NBIC? **Proposed Reply 1:** Yes. (Attachment 6, pp. 30-31)

Question 2: If the answer to Question 1 is yes and there was no SA-517-E material from the original lot available, would the repair require the addition of new base material (e.g. a flush patch around the area of the crack) so that production impact tests could be performed with the original base metal to the new base metal? **Proposed Reply 1:** Yes.

Question 3: If the vessel described in Question 1 was to be altered by adding an SA-675 (P-1) pump flange to the shell, would production and weld procedure impact tests be required using the same lot P-1 and P-11B base materials as used in the alteration? **Proposed Reply 1:** Yes.

January 2014

Bob Wielgoszinski presented a document request for interpretation associated with welded repairs to UHT vessels. A task group of Walt Sperko, Bob Wielgoszinski (PM), and George Galanes will work on this inquiry.

IN14-0501 - Part 3, Section 3.3.4.3 d) Inquiry: Does the NBIC Part 3 in Section 3.3.4.3 d) require tubes below “t min” to be repaired? **Reply:** No. The NBIC Part 3 does not provide rules for determining when a repair must be performed. (Attachment 7, pp. 32-33)

January 2014

The Interpretation response was handled in the Subgroup R/A Specific. There was a motion to have the submitter see interpretation 98-5 for a response. The motion was unanimously approved.

7. Action Items (Attachments 8-10)

NB10-0110 - Part 3 S6.19.1 TG DOT- Combine and clarify requirements within S6.15 for TR Forms, S6.18 Preparation of TR-Forms and S6.19 for Reports of Repairs, Alterations and Modifications. (No attachment)

January 2014

Mr. Webb stated that a letter ballot that was sent out and was approved and this item should not have appeared on the agenda.

NB11-1001 - Part 3, 3.3.4.9 SG R/A Specific- Tube plugging for fire tube boilers. (No attachment)

January 2014

Mr. Bramucci presented a progress report. Further action will be required and presented to the committee in July, 2014.

NB11-1201 - Part 3, 1.8, SG R/A General - Revise Part 3, 1.8 “NR” Accreditation requirements to include repairs to ASME Section III stamped components. (No attachment)

January 2014

Mr. Edwards gave a report. He stated that the task group has put together a proposal to send out as a letter ballot to the subgroup and subcommittee. There seems to be acceptance of this proposal by the NRC.

NB12-0403 - Part 3 R/A Specific CSEF Weld Repair Options (No attachment)

January 2014

Mr. Galanes indicated the wording in the title “using temper bead welding should be removed. There was a motion to approve a letter ballot to be sent out to the Subgroup and Subcommittee for a proposed new alternative welding method for welding of p-41 material. The motion was unanimously approved.

NB12-0801 Part 3, SG R/A Specific Repair and Alteration of Gasketed PHE’s in the field.(No attachment)

January 2014

Mr. Ortman gave a progress report. He is monitoring the possible ASME code revisions that could affect the gasketed PHE’s information placed into the NBIC. Once the information is confirmed he will have a letter ballot sent. This is hoped to be prior to the July 2014 meeting.

NB13-0502 Part 3, 2.5.3 e), SG R/A Specific Clarify the wording in this section to state, “After the finished weld has reached ambient temperature and when required by the specific welding method, the surface temper bead reinforcement layer has been removed substantially flush with the surface of the base metal, the weld shall be examined again by either of the above methods to determine that no defects exist using acceptance standards acceptable to the Inspector or original code of construction. (Attachment 8, pp. 32-41)

January 2014

Mr. Pillow reported with proposed wording. A motion was made and unanimously approved to forward this wording onto the main committee.

NB13-0503 Part 3, 5.7.2 c) and 5.7.3 SG R/A General Add wording in these sections to address attaching nameplates. (Attachment 9, pp. 42 - 55)

January 2014

Mr. Milette reported with proposed wording. A motion was made and unanimously approved to forward this onto the main committee.

NB13-1401 Part 3, S.9.2, SG LB Add wording in this section regarding boiler tube welding. (No attachment)

January 2014

Mr. Reetz gave a progress report.

NB13-0403 Part 3, S1.9.2 SG LB Installation of Boiler and Arch Tubes. (No attachment)

January 2014

Mr. Reetz gave a progress report.

NB13-1404-A Part 3 S1, SG LB Fillet welded staybolts. (No attachment)

January 2014

Mr. Reetz gave a progress report.

NB13-1405 Part 3, S1.2.9 SG LB Throttle pipes, dry pipes, superheater headers and front end steam pipes. (No attachment)

January 2014

Mr. Reetz gave a progress report.

NB13-1406 Part 3, S1, SG LB - Superheater units. (No attachment)

January 2014

Mr. Reetz gave a progress report.

NB13-1407 Part 3, S1 SG LB Bolts, nuts and studs. (No attachment)

January 2014

Mr. Reetz gave a progress report.

NB13-1408 Part 3, S1 SG LB- Threaded boiler studs-Taper thread and straight thread types. (No attachment)

January 2014

Mr. Reetz gave a progress report.

NB14-0201 Part 3 RA Specific – Address tube plugging with weld metal. A task group of T. White (PM) and A. Bramucci has been assigned. (No attachment)

January 2014

The submitter of the inquiry, Mr. Brian Moore was at the meeting and the committee informed him we will not pursue a revision to the code at this time. It is recommended a letter be sent to the requester informing him of the decision and also in that letter to refer him to interpretation 98-35. There was a motion to close this item with no action taken. The motion was unanimously approved.

NB14-0202 Part 3 RA Index – Review and update of Part 3 RA Index. A task group of Brian Schaefer (PM) and Jim Pillow has been assigned. (No attachment)

January 2014

Mr. Schaefer gave a progress report.

NB14-0301 Part 3, 3.3.3 and 3.4.2 SC Repairs and Alterations- This item is a result of IN13-0501 Write rules for encapsulation. (No attachment)

January 2014

A progress report was given.

NB14-0302 - Part 3, S6.15 SG on R/A Spec. – Development of TR Forms. (No attachment)

January 2014

Mr. Staniszewski gave a progress report.

NB14-0701 Part 3, 3.2.2 c) SG on R/A Gen. This action item is a result of IN13-0301. The rationalization is to support an intent interpretation that addresses an R-Certificate holder's capability to fabricate ASME pressure parts to be used in a repair or alteration being performed by the same R-Certificate holder who is fabricating the ASME pressure part. The current words in NBIC Part 3 do not support this. (No attachment)

January 2014

Mr. Wielgoszinski gave a progress report.

NB14-1301 Part 3, 5.2.2 b), 5.7.5 a) SG R/A Spec. - Revise the data field for temperature on the alteration and re-rating nameplates. (Attachment 10, pp. 56-61)

January 2014

A motion was made and unanimously approved to add wording to Part 3 for design temperature field.

10. Future Meetings

July 15-18, 2014, Columbus, Ohio

January 19-22, 2015, Orlando, FL

11. Adjournment

Respectfully Submitted,

Bill Vallance, Secretary

:rh

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Attendance List Subcommittee Repairs Alterations

Meeting Date: January 15, 2013

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Mike Webb Xcel Energy 9500 Interstate 76 Henderson, CO 80640 Ph: 303-628-2840 Fax: 303-628-2928 E-mail: mike.webb@xcelenergy.com	Attended: Yes ☒ No ☐ <i>MW</i> Initial	George W. Galanes, PE Metallurgical Consulting Engineer Diamond Technical Services, Inc./Lisle, IL Office Ph: 630-799-8162 Office 312-925-1341 Cell Fax: ggalanes@diamondtechnicalservices.com	Attended: Yes ☒ No ☐ <i>GG</i> Initial
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Attendance List Subcommittee Repairs Alterations

Meeting Date: January 15, 2013

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Wayne Jones Arise Boiler Inspection and Insurance Company 705 East 4 th Street Bay Minette, AL 36507 Ph: 251-937-6225 Fax: E-mail: wayne.jones@ariseinc.com	Attended: Yes ☒ No ☐  Initial	Larry McManamon Great Lakes Apprenticeship Program 566 W. 95th Street Oak Lawn, IL 60453 Ph: 708.636.6656 Fax: E-mail: Lmac@gLabap.com	Attended: Yes ☒ No ☐  Initial
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Attendance List Subcommittee Repairs Alterations

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Attendance List Subcommittee Repairs Alterations

Meeting Date: January 15, 2013

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Attendance List Subcommittee Repairs Alterations

Meeting Date: January 15, 2013

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Meeting Date: January 15, 2013

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Attendance List Subcommittee Repairs Alterations

Meeting Date: January 15, 2013

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PROPOSED INTERPRETATION

Inquiry No.	IN13-0301				
Source	William Tillman				
Subject	Part 3, 3.2.2 c)				
Edition	2011 Edition				
Question	1: Does Part 3, 3.2.2 c) prevent an "R" Certificate Holder with the capabilities within his shop from rolling and welding a shell or other such items as headers, nozzles,(flange to pipe) for replacement in a vessel or boiler he is repairing or altering? Q2: If the answer is No to the above question, if the same Certificate Holder could not fabricate the replacement items within his capabilities and received these parts from an outside source then these items would have to be fabricated by an organization holding the appropriate Code Certificate of Authorization.				
Reply	A1: No A2: Yes				
Committee's Question					
Committee's Reply					
Rationale					
SC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
NBIC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
Negative Vote Comments					

Background

Interpretation 98-28 states that replacement parts requiring inspection by an AI must be fabricated by an organization holding the appropriate Code Certificate of Authorization. Since a repair organization can replace a shell by making circumferential seams, it would seem logical that they can roll and weld a longitudinal seam in a shell if they have the capability.

To: Secretary NBIC Committee
The National Board of Boiler and Pressure Vessel Inspectors
1055 Crupper Avenue
Columbus, OH 43229

Background

Interpretation 98-28 states that replacement parts requiring inspection by an AI must be fabricated by an organization holding the appropriate Code Certificate of Authorization. Since a repair organization can replace a shell by making circumferential seams, it would seem logical that they can roll and weld a longitudinal seam in a shell if they have the capability.

Question 1

Does Part 3, Section 3, Paragraph 3.2.2(c) prevent an “R” Certificate Holder with the capabilities within his shop from rolling and welding a shell or other such items as headers, nozzles (flange to pipe) for replacement in a vessel or boiler he is repairing or altering?

Proposed answer: No

Question 2

If the answer is No to the above question, if the same Certificate Holder could not fabricate the replacement items within his capabilities and received these parts from an outside source then these items would have to be fabricated by an organization holding the appropriate Code Certificate of Authorization.

Proposed answer: Yes

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PROPOSED INTERPRETATION

Inquiry No.	IN14-0101				
Source	Jay Vattappilly				
Subject	Part 3, 5.7.5				
Edition	2011 Edition				
Question	Is it acceptable to list “NA [Not Applicable]” on Name Plates shown in Figures 5.7.5-b and 5.7.5-c for the fields “AT-----, ----- oF for alterations or re-ratings performed on a Power Boiler constructed in accordance with ASME Section I?				
Reply	Yes				
Committee’s Question					
Committee’s Reply					
Rationale					
SC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
NBIC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
Negative Vote Comments					

August 23, 2013

Secretary, NBIC Committee
The National Board of Boiler and Pressure Vessel Inspectors
1055 Crupper Avenue
Columbus, OH 43229

Dear Secretary :

On behalf of HSB Global Standards, I am requesting a Code Interpretation and a possible revision to the Specific Requirements for Stamping and Nameplates, 5.7.5, Section 5, Part 3, NBIC 2011 Edition

- a) **Purpose** : Request for Code Interpretation / revision of present Code rules
b) **Background** : The required markings on the nameplates for alterations and re-ratings with use of National Board Form R-2 show a temperature to be listed regardless of the type of pressure equipment being altered or re-rated. Please refer to the sketches shown below from Part 3, Section 5 of NBIC Code 2011 Edition.

FIGURE 5.7.5-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
* Minimum Required Relieving Capacity	
NATIONAL BOARD "R" CERTIFICATE NUMBER	DATE ALTERED

FIGURE 5.7.5-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
* Minimum Required Relieving Capacity	
NATIONAL BOARD "R" CERTIFICATE NUMBER	DATE ALTERED

For a power boiler, constructed in accordance with ASME Section I, the nameplate/stamping doesn't require any temperatures to be listed. Please refer to the sketch below from ASME Section I, 2013 Edition.

Figure PG-106
Form of Stamping

	Certified by
	(Name of Manufacturer)
	(Max. allow. working pressure when built)
	(Heating surface, boiler and waterwalls)
	(Maximum designed steaming capacity)
Manufacturer's serial number	Year built

In light of the two facts stated above, it is unclear what temperature needs to be recorded on the nameplate required by NBIC subsequent to performing an alteration or re-rating on a power boiler built to ASME Section I. Common sense suggests that this field could be marked as “Not Applicable (NA)” because the original code of construction doesn’t have any requirements to list a temperature. However the Q&R2 of the NBIC Interpretation appended below seems to rule out that possibility.

Interpretation:	(NBIC) 95-24
Subject:	Appendix 2, 1995 Edition
Date Issued:	N/A
File:	N/A

Question 1: Are nameplates required to have the same lay-out as the figures shown in Appendix 2?

Reply 1: No. However, all information shown in the figures must be included on the stamping or nameplate and the National Board Certificate number must appear directly below the symbol stamp.

Question 2: Are the instructions (MAWP, ° F, etc.) shown in the figures in Appendix 2 required to be included on the stamping or nameplate?

Reply 2: Yes. However, the words “Certificate Holder” and “National Board “R” Certificate Number” may be omitted.

c) Inquiry

Subject: *Specific Requirements for Stamping and Nameplates, 5.7.5, Section 5, Part 3, NBIC 2011 Edition*

Question:

Is it acceptable to list “NA [Not Applicable]” on Name Plates shown in Figures 5.7.5-b and 5.7.5-c for the fields “AT-----, ----- °F for alterations or re-ratings performed on a Power Boiler constructed in accordance with ASME Section I?

Proposed Reply: Yes

Kindly send me confirmation of the receipt of this inquiry. Please also feel free to contact me if you need any additional information.

Sincerely,

A handwritten signature in black ink, consisting of a large, stylized loop followed by a horizontal line and a small flourish.

Thanks & Regards
Jay Vattappilly, P-Eng,
Senior Engineer, Codes & Standards
HSB Global Standards
Jayaram_Vattappilly@hsbct.com

PROPOSED INTERPRETATION

Inquiry No.	IN14-0201				
Source	Marshall Mlachak				
Subject	Part 3, 1.8.5 q)				
Edition	2013 Edition				
Question	Question: If audit personnel are qualified in accordance with the requirements of ANS/ASME N45.2.23, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants may they perform the audits specified in 1.8.5 q)?				
Reply	Yes. NQA-1 is based upon ANSI/ASME N45.2-1977 and the seven daughter standards of N45.2 including ANSI N45.2.23, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants. The qualification requirements are equivalent.				
Committee's Question					
Committee's Reply					
Rationale					
SC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
NBIC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
Negative Vote Comments					

PROPOSED INTERPRETATION

Inquiry No.	IN14-0201				
Source	Marshall Mlachak				
Subject	Part 3, 1.8.5 q)				
Edition	2013 Edition				
Question	Question: If audit personnel are qualified in accordance with the requirements of ANS/ASME N45.2.23, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants may they perform the audits specified in 1.8.5 q)?				
Reply	Yes. NQA-1 is based upon ANSI/ASME N45.2-1977 and the seven daughter standards of N45.2 including ANSI N45.2.23, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants. The qualification requirements are equivalent.				
Committee's Question	Question: If audit personnel are qualified in accordance with the requirements of ANS/ASME N45.2.23, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants may they perform the audits specified in 1.8.5.1 q)?				
Committee's Reply	No, the NBIC requires audit personnel to be qualified in accordance with NQA-1.				
Rationale					
SC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
NBIC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
Negative Vote Comments					



341 White Pond Drive
Akron, Ohio 44320

November 19, 2013
FMOV-13-003

Secretary, NBIC Committee
The National Board of Boiler and
Pressure Vessel Inspectors
1055 Crupper Avenue
Columbus, OH 43229

Subject: 2013 National Board Inspection Code Inquiry Code Interpretation

Dear Secretary,

Inquiry

If audit personnel are qualified in accordance with the requirements of ANSI/ASME N45.2.23, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants may they perform the audits specified in 1.8.5 q?

Reply

Yes. NQA-1 is based upon ANSI/ASME N45.2-1977 and the seven daughter standards of N45.2 including ANSI N45.2.23, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants. The qualification requirements are equivalent.

Background information

NQA-1 was based upon ANSI/ASME N45.2-1977 and the seven daughter standards of N45.2 including ANSI N45.2.23, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants. Both documents describe the qualification process for Auditors and Lead Auditors.

For Auditors both standards require competence of personnel for performance of the various auditing functions to be developed by one or more of the following methods:

- Orientation
- General and specialized training
- On-the-job training, guidance, and counseling under the direct supervision of a Lead Auditor

For Lead Auditors both standards require the following:

- Communication skill (written and oral) attested to in writing
- Training to the extent necessary to assure their competence in auditing skills
- Audit participation
- Examination covering the training topics to assure auditing competence

ANSI N45.2.23 requires a minimum of ten credits for education and experience prior to being designated as a lead auditor. NQA-1 does not require the same education and experience scoring however; it does require records of qualification to include the basis of qualification for education and experience. The N45.2.23 scoring system provides this basis of qualification for education and experience.

Sincerely



Mark D. Mlachak
FENOC Fleet Oversight Manager

cc: K. L. Ostrowski

PROPOSED INTERPRETATION

Inquiry No.	IN14-0301				
Source	James Dorwin				
Subject	Part 3, 3.3.2 d) 1)				
Edition	2011 Edition				
Question	Is a standard threaded fitting(such as depicted in ASME Section VIII Figure UW-16.2 sketch L) which is welded through a vessel shell considered to be a nozzle as stated in Section 3.3.2 d) 1)?				
Reply	No				
Committee's Question					
Committee's Reply					
Rationale					
SC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
NBIC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
Negative Vote Comments					



James E. Dorwin
Code Programs Engineer
P.O. Box 968, Mail Drop PE27
Richland, WA 99352-0968
Ph. 509.377-8551 F. 509.377-4135
jedorwin@energy-northwest.com

November 19, 2013

Secretary, NBIC Committee
The National Board of Boiler and Pressure Vessel Inspectors
1055 Crupper Avenue
Columbus, OH 43229

Dear Sir or Ma'am:

Please consider my **Code Interpretation** inquiry question below at your earliest availability. I have included a background paper (Enclosure 1) and a copy of the vessel's ASME Section VIII Code Data Report (Enclosure 2) with this letter. Thank you for your support and consideration.

Subject: NBIC, 2011 Edition with no Addenda
Routine Repairs: Part 3, Section 3.3.2 d) 1)

Question: Is a standard threaded fitting (such as depicted in ASME Section VIII Figure UW-16.2 Sketch L) which is welded through a vessel shell considered to be a "nozzle" as stated in Section 3.3.2 d) 1)?

Reply: No.

Sincerely,

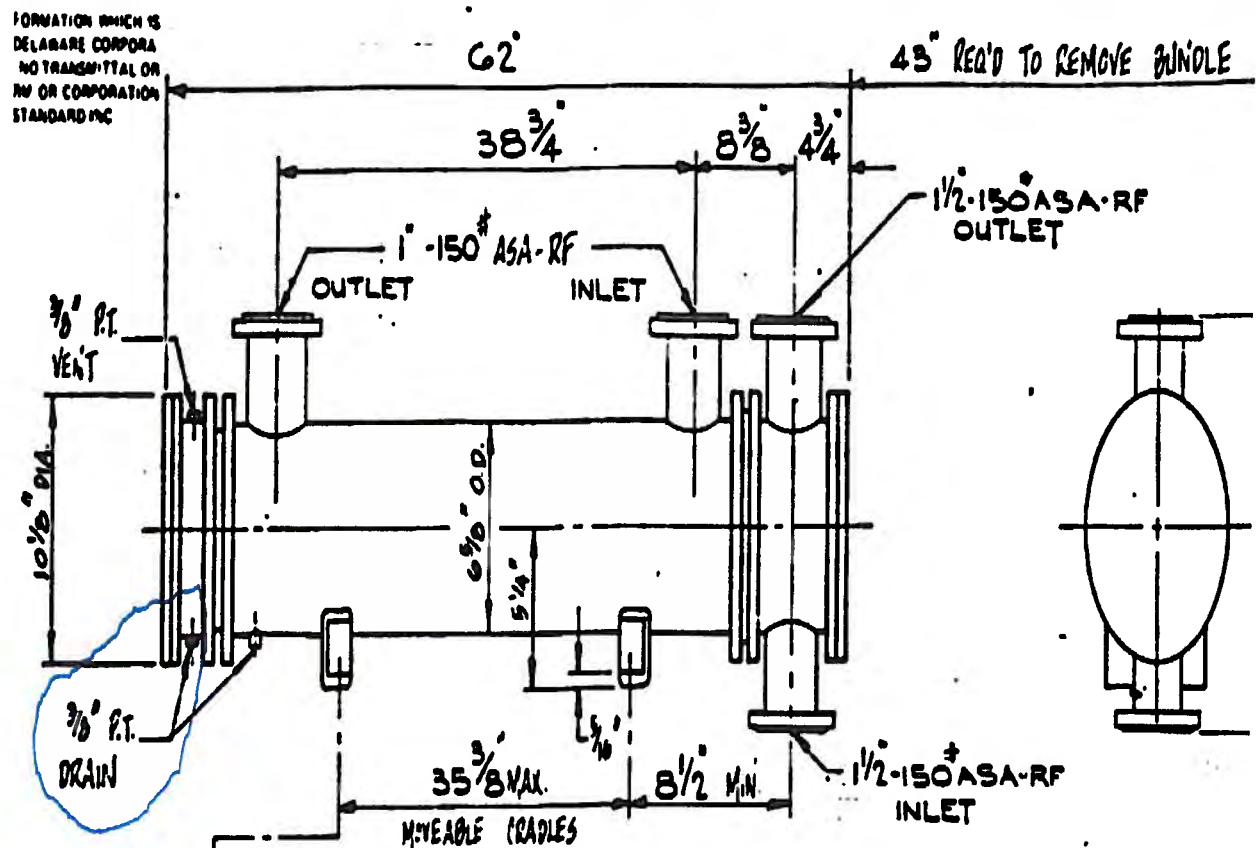
A handwritten signature in blue ink, appearing to be "J. Dorwin", written over a light blue circular background.

James E. Dorwin

Enclosures (2)



Background:



ASME Section VIII Heat Exchanger Vessel (1971 Edition with Summer 1973 Addenda)

3/8" threaded fitting (drain) welded through the shell of the vessel (single fillet weld from the exterior of the vessel shell). ** Note that the 3/8" fittings are not listed on the U-1 Code Data Report under "Nozzles." Only the two 1-1/2" and two 1" nozzles are listed. (see Enclosure 2)

The single fillet weld developed a pinhole leak due to corrosion. The pinhole area was excavated (via mechanical grinding) and then re-welded.

FORM U-1 MANUFACTURERS' DATA REPORT FOR UNFIRE PRESSURE VESSELS
As required by the Provisions of the ASME Code Rules SECTION VIII DIVISION 1

1. Manufactured by American Standard Heat Transfer Products Department, Buffalo, N. Y.

2. Manufactured for Ing. B. S. O. L. Rand Co.

3. Type HORIZ. Kind HEAT EXCH. Vessel No. 5-1267401-4 Natl. Bd. No. 25864 Yr. Built 1974

4. SHELL: Material SA53-B T.S. 60,000 Nominal 280 Corrosion 1/16 in. Allowance 1/16 in. Diam. 6 3/4 in. Length 3 ft. 11 in.

5. SEAMS: Long. NONE H.T. NO X.R. NONE Sectioned NO Efficiency 100 %

6. HEADS: (a) Material TS (b) Material TS

7. STAY BOLTS: None

8. JACKET CLOSURE: None

9. Constructed for max. allowable working press. 150 psi. at max. temp. 300 °F. Min. temp. (when less than -20°) None Hydrostatic Test Press. 225 psi.

10. TIME SHEETS: Stationary. Material MUNTZ 3A77 Diam. 5 1/8 in. Thickness 1/2 in. Attachment BOLTED

11. TUBES: Material SA333-B O.D. 5 1/8 in. Thickness 0.042 in. Number 96 Type STRAIGHT

12. CHANNEL: Material SA53-B T.S. 60,000 Nominal 280 Corrosion 1/16 in. Allowance 1/16 in. Diam. 6 3/4 in. Length 3 ft. 11 in.

13. SEAMS: Long. NONE H.T. NO X.R. NONE Sectioned NO Efficiency 100 %

14. HEADS: (a) Material SA53-B T.S. 60,000 (b) Material TS (c) Material TS

15. Constructed for max. allowable working press. 150 psi. at max. temp. 300 °F. Min. temp. (when less than -20°) None Hydrostatic Test Press. 225 psi.

16. SAFETY VALVE ORIFICES: Number None Size None Location IN PIPING

17. NOZZLES: Purpose (Sketch, Section, or Detail) SHELL IN/OUT Number 2 Diam. or Size 1 1/2 in. Type PIPE Material STL Thickness 1/4 in. Reinforcement Material WELDED How Attached WELDED

18. INSPECTION MANHOLES, NO. None Size None Location None

19. SUPPORTS: Skirt NO Size None Location None Other CRADLES Attached MANUALS

20. REMARKS: UPL COOLER

FORM U-1 (back)

J. MALLOY
TSW-HX 6F

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Unfired Pressure Vessels.

Date 4/2 19 74 Signed American Standard Heat Transfer Prod. Dept. (Manufacturer)

By R.L. Warner

Certificate of Authorization Expires

DECEMBER 31 1974

TYPE (HORIZONTAL HEAT EXCH.) KIND 1-4 VESSEL NO. 5-126740 SERIAL

CERTIFICATE OF SHOP INSPECTION

VESSEL MADE BY American Standard Heat Transfer Prod. Dept. at Buffalo, N. Y.

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the NATIONAL BOARD and employed by LUMBERMENS MUTUAL CASUALTY COMPANY of CHICAGO, ILLINOIS have inspected the pressure vessel described in this manufacturer's data report on April 2 19 74, and state that to the best of my knowledge and belief, the manufacturer has constructed this pressure vessel in accordance with the applicable sections of the ASME Boiler and Pressure Vessel Code.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this manufacturer's data report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date April 2 19 74

O.R. Padua
Inspector's Signature

Commission

PA 2237
NB 7493

Not a Board or State and No.

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State of _____ and employed by _____ have compared the statements in this manufacturer's data report

with the described pressure vessel and state that parts referred to as data items _____ not included in the certificate of shop inspection have been inspected by me and that to the best of my knowledge and belief the manufacturer has constructed and assembled this pressure vessel in accordance with the applicable sections of the ASME Boiler and Pressure Vessel Code. The described vessel was inspected and subjected to a hydrostatic test of _____ psi.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this manufacturer's data report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ 19 _____

Inspector's Signature

Commission

Not a Board or State and No.

Printed in U.S.A. (1/64)

Copies of this Form obtainable from the ASME, 345 E. 47th St., New York, N.Y., 10017

Request for Interpretation

Robert V. Wielgoszinski
Hartford Steam Boiler of CT

Item	IN 14-0401
Purpose	Code Interpretation & possible revision to present Code rules
Scope:	Repairs and alterations to vessels constructed of ferritic materials with tensile properties enhanced by heat treatment, i.e. Part UHT material.
Background	During the construction of liquid propane vessels it is typical to use SA-517 Gr. E (P-No. 11B) for use as heads and shells for propane transport tanks. The ASME Code requires the base materials, welding materials, and the WPS's to be qualified with impact tests. Also, the Code requires production impact testing to be performed. This is where the actual vessel material, actual filler materials, are welded with the actual WPS to be used in production, and the weld coupon is impact tested to meet the specified results of Section VIII. To do so, the Manufacturer of the vessel is sure to purchase enough extra base and filler material to perform these tests. When repairs / alterations are made to these vessels the NBIC requires the rules of the original construction Code to be followed. As such, any new material to be added to a vessel or any WPS's used or any filler metal used for the repair must then be impact tested and meet the results stated in Section VIII. Also, production impacts must therefore be made since this is a mandatory Section VIII requirement. This is usually accomplished by making a weld coupon out of existing material cut from the vessel and welding it to the new material to be added to the vessel, and then impact testing specimens from that coupon. But, not all repairs / alterations lend themselves the ability to take existing material from the vessel. If a small nozzle is added to the vessel, only a few inches of material is taken from the vessel. Or say a crack is to be weld repaired or there is weld metal build up to be made on some worn or wasted area. Then there is no extra material to be taken away from the vessel to run coupons for production impacts. Strict interpretation of the ASME Code would now require a piece of steel to be removed to run production impacts and then a flush patch installed over the area removed. Some individuals look at the words in NBIC, Part 3, Section 1, paragraph 1.2, where it says, "...the standard governing the original construction shall conform, <u>insofar as possible...</u>" gives one the leeway to not require production impacts because it's not possible. Others indicated that it is possible but not practical to cut perfectly good material out of a vessel when there is no need to. And others will say that the ASME clearly requires existing material to be removed to run impact tests. One thing is clear though, and that is there is lack of uniformity in applying these rules. So we are looking to the NBIC to provide some guidance in this matter. The Jurisdiction in this case is the US DOT, and 49CFR Chapter 1 § 180.413(a)(1) states that the NBIC is to be followed for repairs and modifications. DOT is also looking to the NBIC for clarification.

	Depending on the responses to the inquiry it may be prudent revise the Code to be more specific in this area of UHT materials.
Proposed Questions	Question 1: The NBIC Part 3 paragraph 1.2 states that a repair shall be carried out “insofar as possible to the section and edition of the ASME code most applicable to the work planned.” If a vessel is constructed using SA-517-E (P-11B) material to ASME Section VIII Div. 1, where production and weld procedure impact tests were required during construction, would a repair to a crack in the shell require production and weld procedure impact testing under the NBIC? Proposed Reply 1: Yes. Question 2: If the answer to Question 1 is yes and there was no SA-517-E material from the original lot available, would the repair require the addition of new base material (e.g. a flush patch around the area of the crack) so that production impact tests could be performed with the original base metal to the new base metal? Proposed Reply 1: Yes. Question 3: If the vessel described in Question 1 was to be altered by adding an SA-675 (P-1) pump flange to the shell, would production and weld procedure impact tests be required using the same lot P-1 and P-11B base materials as used in the alteration? Proposed Reply 1: Yes.

IN14-0501

Code Interpretation

Inquiry: Does the NBIC Part 3 in Section 3.3.4.3 d) require tubes below “t min” to be repaired?

Reply: No. The NBIC Part 3 does not provide rules for determining when a repair must be performed.

Background Information: In this particular case, a boiler tube failed due to OD corrosion in a division wall near the crouch area. Upon review, it was found that several tubes exhibited corrosion due to waterwall washing and migration of the water through the insulation to the tube surface over the course of 60 years of operation. Several wall thickness readings were taken in areas where this corrosion was visually detected and several areas were found below “t min”. Many areas were weld repaired restoring wall thickness in these corrosion areas to at least 80% of “t min”.

The boiler OEM previously issued a bulletin which allowed the owner-operators to operate boilers with tube wall thicknesses down to 70% of “t min” if certain conditions are met in the bulletin. These are presented in the OEM bulletin (attached) and all conditions have been met in this bulletin. The owner presented this information to the Commissioned Inspector (CI) for all tubes that were less than “t min” but greater than 80% and the CI referred to the Jurisdictional authority.

The jurisdiction interprets this section as,

The owner-user believes the intent of this section includes conditions where wall thicknesses are less than t-min. This is further confirmed by the last sentence in this section, “This may be necessary when considering such items as size limitations of repaired areas, minimum tube thickness to be repaired, tube environment, location of tube in the boiler, and other similar conditions”. The owner believes “minimum tube thickness” applies to conditions where actual wall thickness is less than “t min” and continued operation of this boiler where tube thicknesses meets 80% t min and is based on reasonable analyses meets the intent of this section of the code. See interpretation 98-05

INTERPRETATION 98-05

Subject: Foreword

1998 Edition with the 1996 Addendum

Question: Do the rules of the NBIC require the repair of a pressure-retaining item when the pressure-retaining item no longer complies with the original code of construction?

Reply: No, the NBIC does not provide rules for determining when a repair must be performed. (See RB-3180 and RB-3280).



Fw: Question I asked George Galanes concerning temper bead welding
Chuck Withers to: Robin Hough

04/12/2013 07:14 AM

History: This message has been replied to.

Robin,
 Can you open a new action item to address this?

Charles Withers
 Assistant Executive Director -Technical
 The National Board of Boiler
 and Pressure Vessel Inspectors
 1055 Crupper Ave.
 Columbus, OH 43229-1183
 Direct: 614.431.3201
 Fax: 614.847.1828
 cwithers@nationalboard.org

----- Forwarded by Chuck Withers/NationalBoard on 04/12/2013 07:13 AM -----

From: John Hoh/NationalBoard
 To: Chuck Withers/NationalBoard@NationalBoard
 Date: 04/10/2013 12:08 PM
 Subject: Question I asked George Galanes concerning temper bead welding

This is the question I asked George Galanes:

I am writing an article for the NB Bulletin dealing with the basics of welding method 3 (2.5.3.3) but this question would apply to any of the welding methods when the reinforcement layer is removed after the weld has cooled.

In 2.5.3 e), it requires NDE in the form of MT or PT prior to welding and after the finished weld has reached ambient temperature. In your opinion, should the final NDE be performed prior to removal of the reinforcement layer, after removal, or does it matter? I could see a valid argument for performing the NDE after removal of the reinforcement layer when under-bead cracking is a concern, but that's just my non-expert thoughts.

George's reply:

In my opinion, when I re-worked this section of the NBIC regarding welding methods, it was my intention that a final NDT would be performed, and finished weld in this case means when the temper bead reinforcement layer is removed AND after the weld has been substantially ground flush (for examination). For a conventional weld, the finished weld would be no further work (including grinding if required to better interpret the surface) other than NDT.

Chuck,

I used Method 3 when writing my article, but Methods 2, 3, and 4 all share the same last step - the surface temper bead reinforcement shall be removed substantially flush with the base metal surface.

Maybe 2.5.3 e)1) could be clarified to state "After the finished weld has reached ambient temperature and, when required by the specific welding method, the surface temper bead reinforcement layer has been removed substantially flush with the surface of the base metal, the weld shall be examined again by either of the above methods to determine that no defects exist using acceptance standards acceptable to the



Inspector or original code of construction."

John Hoh
Senior Staff Engineer
National Board



- A13 5) The term t , as used above to determine SB, HB and GCB shall be the nominal thickness of either a full penetration weld, or the groove weld depth of a partial penetration repair weld. If a fillet weld is used in combination with a groove weld, the nominal thickness for PWHT shall be the depth of the groove weld.

2.5.3 ALTERNATIVE WELDING METHODS WITHOUT POSTWELD HEAT TREATMENT

- a) Under certain conditions, postweld heat treatment, in accordance with the original code of construction, may be inadvisable or impractical. In such instances, the following alternative methods may be used.
- b) Competent technical advice shall be obtained from the manufacturer of the pressure-retaining item or from another qualified source, such advice being especially necessary if the alternative is to be used in highly stressed areas, if service conditions are conducive to stress corrosion cracking, if materials are subject to hydrogen embrittlement, or are operating at temperatures in the creep range, or if the alternative is being considered for "on-stream" repairs or "hot tapping" on piping systems. Selection of the welding method used shall be based on the rules of the original code of construction together with the above mentioned advice concerning the adequacy of the weld in the as-welded condition at operating and pressure test conditions.
- c) When reference is made in this Section to materials by the ASME designation, P-Number and Group Number, the requirements of this Section apply to the applicable materials of the original code of construction, either ASME or other, which conform by chemical composition and mechanical properties to the ASME P-Number and Group Number designations.
- d) The detailed welding methods listed in the following subsections may be used as an alternative to postweld heat treatment (PWHT). NBIC Part 3, 2.5.3.1 is a method in which the welding procedure requires an elevation of the preheat temperature. In contrast, NBIC Part 3, 2.5.3.2 thru 2.5.3.5, are methods in which the welding procedure requires the use of a temper-bead welding technique. In 2.5.3.5 is a method in which the welding procedure used for joining dissimilar materials requires either an elevation of the preheat temperature or a temper-bead welding technique, depending on the chemical composition of the base metal that is joined to an austenitic steel. Temper bead welding procedure nomenclature is defined and, when required by the specific welding method, the surface temper bead reinforcement layer has been removed substantially flush with the surface of the base metal, bead welding in ASME Section IX. The Welding Procedure and Welder Performance Qualifications shall, in all cases, be in accordance with the requirements of the latest Edition of Section IX of the *ASME Boiler and Pressure Vessel Code*.

e) Nondestructive Examination of Welds

Prior to welding, the area prepared for welding shall be examined using either the Magnetic Particle (MT) or the Liquid Penetrant (PT) examination method to determine that no defects exist. After the finished weld has reached ambient temperature, the weld shall be examined again by either of the above methods to determine that no defects exist using acceptance standards acceptable to the Inspector or original code of construction. In addition, welds greater than 3/8 in. (9.6 mm) deep or welds in a boiler, pressure vessel, or piping system that were originally required to be radiographed by the rules of the original code of construction, shall be radiographically examined. 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.

- f) Methods that may be used as alternatives to postweld heat treatment are described in the following subsections.

No change to this page

2.5.3.1 WELDING METHOD 1

When using this method, the following is required:

- a) This method may be used when the applicable rules of the original code of construction did not require notch toughness testing;
- b) The materials shall be limited to P-No. 1, Groups 1, 2, and 3 and to P-No. 3, Groups 1 and 2 (excluding Mn-Mo steels in Group 2), as permitted for welded construction by the applicable rules of the original code of construction;
- c) The welding shall be limited to the Shielded Metal-Arc welding (SMAW), Gas Metal-Arc Welding (GMAW), Fluxcored Arc Welding (FCAW), and Gas Tungsten-Arc Welding (GTAW) processes;
- d) The Welders and Welding Operators, Welding Procedures Specifications shall be qualified in accordance with the applicable rules of the original code of construction, except that no postweld heat treatment shall be applied to the test coupon;
- e) The weld area shall be preheated and maintained at a minimum temperature of 300°F (149°C) during welding. Alternatively, for P-No. 1, Groups 1, 2 and 3 materials, the preheat may be reduced to 175°F (79°C) provided:
 - 1) Provided the carbon equivalent of the base material to be welded is determined to be 0.40 or less.
 - 2) The electrodes and filler metals are classified by the filler metal specification with a diffusible – hydrogen designator of H4 or lower.
 - 3) When shielding gas is used, it shall have a dew point that is -60°F (-50°C) or lower.
- f) The preheat temperature shall be checked to assure that 4 in. (102 mm) of the material or four times the material thickness (whichever is greater) on each side of the groove (or full thickness of joint for a groove weld) is maintained at the preheat temperature during welding. When the weld does not penetrate through the full thickness of the material, the preheat need only be maintained at a distance of 4 in. (102 mm) or four times the depth of the repair weld, whichever is greater, on each side of the joint.

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2.5.3.2 WELDING METHOD 2

When using this method, the following is required:

- a) This method shall be used when the applicable rules of the original code of construction required notch toughness testing or shall be used when the applicable rules of the original code of construction did not require notch toughness testing provided the adequacy of the notch toughness of the weld, including the heat-affected zone, in the as-welded condition at operating and pressure test conditions is verified;
- b) The materials shall be limited to carbon and low alloy steels permitted for welded construction by the applicable rules of the original code of construction, including those materials conforming to any of the following ASME P-No. designations: P-No. 1, Groups 1, 2, and 3; P-No. 3, Groups 1, 2, and 3; P-No. 4; P-No. 5A; P-No. 9A; P-No. 10A; P-No. 10B; P-No. 10C; P-No. 11A; or P-No. 11B;
- c) The welding shall be limited to the Shielded Metal-Arc Welding (SMAW), Gas Metal-Arc Welding (GMAW), Fluxcored-Arc Welding (FCAW), and Gas Tungsten-Arc Welding (GTAW) processes.
- d) The Welding Procedures Specifications shall be qualified in accordance with the temper bead procedure qualification requirements in QW-290 of ASME Section IX, and shall include the following additional requirements:

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- 1) For P-No. 1 Groups 1, 2, and 3 and P-No. 3 Groups 1, 2, and 3, the minimum preheat temperature shall be 350°F (177°C), and the maximum interpass shall be 450°F (232°C).
- 2) For P-No. 9A, P-No. 10A, P-No. 10B, P-No. 10C, P-No. 11A, or P-No. 11B, the minimum preheat and interpass temperature requirements shall be in accordance with the guidelines in NBIC Part 3, 2.5.1.
- 3) For P-No. 4 and P-No. 5A materials, the minimum preheat, interpass temperature, and technique shall be in accordance with NBIC Part 3, 2.5.3.4. The repair depth for temper bead repairs to pressure retaining items of P-No. 4 and P-No. 5A materials is limited to welds not penetrating through full thickness.
- 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:
 - a) The full thickness repair weld shall be verified as being the full penetration.
 - b) Volumetric examination of the full thickness weld shall be performed.
- e) The test material for the welding procedure qualification shall be of the same material specification (including specification type, grade, class, and condition of heat treatment) as the material being repaired. In the event that the notch toughness of the material to be repaired is unknown, evidence from tests of that material or from another acceptable source (see NBIC Part 3, 2.5.3) may be used for the base metal notch toughness when qualifying the WPS as required in NBIC Part 3, 2.5.3.2(h). In the event that the original material specification is obsolete, the test material used should conform as closely as possible to the original material used for construction based on nominal composition and carbon equivalent (IIW Formula),⁷ but in no case shall the material be lower in strength.
- f) The qualification thickness for the test plates and repair groove depths shall be in accordance with ASME Section IX;
- g) The organization making the repair shall include, when qualifying its WPS, sufficient tests to determine that the notch toughness of the weld metal and the heat-affected zone of the base metal in the "as-welded" condition is adequate at the minimum operating and pressure test temperatures (including start-up and shutdown). If for reasons of corrosion resistance, special hardness limits are necessary, such limits shall be included when qualifying the WPS;
- h) Notch toughness shall be determined and evaluated by Charpy impact tests in accordance with the provisions of the original code of construction at the temperature determined in accordance with NBIC Part 3, 2.5.3.2(d). Exemptions from impact testing described in the original code of construction are not applicable;
- i) For the welding process in NBIC Part 3, 2.5.3.2(c), use of austenitic or ferritic filler metals is permitted. For ferritic filler metals, use only electrodes and filler metals that are classified by the filler metal specification with a diffusible-hydrogen designator of H8 or lower. When shielding gases are used with a process, the gas shall exhibit a dew point that is below -60°F (-50°C). Surfaces on which welding will be done shall be maintained in a dry condition during welding and be free of rust, mill scale, and hydrogen producing contaminants such as oil, grease, and other organic materials;
- j) After the weld has been deposited flush with the base metal, a surface temper reinforcing weld layer shall be applied;

⁷ The IIW Carbon Equivalent Formula is $CE = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15$. Elements are expressed in Weight Percent Amounts.

- k) For welds made by SMAW and FCAW, after completion of welding and without allowing the weldment to cool below the minimum preheat temperature, the temperature of the weldment shall be raised to a temperature of 450°F (232°C) minimum for a minimum period of two hours. This hydrogen bake-out treatment may be omitted provided the electrode used is classified by the filler metal manufacturer with a diffusible-hydrogen designator of H4 (e.g., E7018-H4);
- l) After the finished repair weld has cooled to ambient temperature, the surface temper reinforcing layer shall be removed substantially flush with the surface of the base material.

2.5.3.3 WELDING METHOD 3

When using this method, the following is required:

- a) This method may be used when the applicable rules of the original code of construction did not require notch toughness testing;
- b) The materials shall be limited to any P-No. 1 or P-No. 3 material as permitted for welded construction by the applicable rules of the original code of construction;
- c) The welding shall be limited to the SMAW, FCAW, and GTAW processes;
- d) The test material for the welding procedure qualification shall be of the same P-No. and Group No. as the base material specification of the repair. In the event that the original material specification is obsolete, the test material used should conform to the nominal composition and carbon equivalent (IIW Formula)⁸ as the material being repaired, but in no case shall the material be lower in strength;
- e) If for reasons of corrosion resistance, special hardness limits are necessary, such limits shall be included when qualifying the WPS;
- f) The qualification thickness for the test plates and repair groove depths shall be in accordance with ASME Section IX;
- g) The WPS shall be qualified in accordance with the temper bead procedure qualification requirements in QW-290 of ASME Section IX, and shall include the following additional requirements:
 - 1) The minimum preheat temperature for welding shall be 350°F (177° C) and the maximum interpass temperature shall be 450°F (232°C);
 - 2) For the welding processes in NBIC Part 3, 2.5.3.3 c), use of austenitic or ferritic filler metal is permitted. For ferritic filler metals, use only electrodes or filler metals that are classified by the filler metal specification with a diffusible-hydrogen designator of H8 or lower may be used. When shielding gases are used with a process, the gas shall exhibit a dew point that is below -60°F (-50°C). Surfaces on which welding will be done shall be maintained in a dry condition during welding and be free of rust, mill scale, and hydrogen producing contaminants such as oil, grease, and other organic materials;
 - 3) After completion of welding using SMAW and without allowing the weldment to cool below the minimum preheat temperature, the temperature of the weldment shall be raised to a temperature of 450°F (232°C) minimum for a minimum period of two hours. This hydrogen bake-out treatment may be omitted, provided the electrode used is classified by the filler metal manufacturer with a diffusible-hydrogen designator of H4 (e.g., E7018-H4);

8 The IIW Carbon Equivalent Formula is $CE = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15$. Elements are expressed in Weight Percent Amounts.

- 4) After the finished repair weld has cooled to ambient temperature, the final temper bead reinforcement layer shall be removed substantially flush with the surface of the base material.

2.5.3.4 WELDING METHOD 4

A13 When using this method, the following is required:

- a) This method is limited to repair welds in pressure retaining items for which the applicable rules of the original code of construction did not require notch toughness testing. The repair depth for temper bead repairs to pressure retaining items is limited to welds not penetrating through the full thickness.

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. They shall be completed per NBIC Part3, 3.3.5 with the following requirements:

- 1) The full thickness repair weld shall be verified as being full penetration.
 - 2) Volumetric examination of the full thickness weld shall be performed.
- b) The materials shall be limited to P-No. 4, Groups 1 and 2, and P-No. 5A steels as permitted for welded construction by the applicable rules of the original code of construction;
- c) The welding shall be limited to the SMAW, FCAW, GMAW or GTAW processes using low-hydrogen electrodes and filler metals classified by the filler metal specification with a diffusible-hydrogen designator of H8 or lower, and suitably controlled by maintenance procedures to avoid contamination by hydrogen producing sources. The surface of the metal prepared for welding shall be free of contaminants;
- d) The test material for the welding procedure qualification shall be of the same P-No. and Group No. as the original material specification for the repair. In the event that the original material specification is obsolete, the test material used shall conform to the nominal composition and carbon equivalent (IIW formula)⁹ as the original material used for construction, and in no case shall the material be lower in strength;
- e) If for reasons of corrosion resistance, special hardness limits are necessary, such limits shall be included when qualifying the WPS;
- f) The qualification thickness for the test plates and repair groove depths shall be in accordance with ASME Section IX;
- g) The welding procedures (WPS) shall be qualified in accordance with the temper bead procedure qualification requirements in QW-290 of ASME Section IX, and shall include the following additional requirements:
- 1) The minimum preheat temperature for welding shall be 300°F (150°C) for P-No. 4 material and 400°F (200°C) for P-No. 5A material. The preheat temperature shall be checked to ensure that 4 in. (102mm) of the material or four times the material thickness (whichever is greater) on each side of the groove (or full thickness of joint for a groove weld) is maintained at the minimum temperature during welding. The interpass temperature shall not exceed 800°F (430°C). When the weld does not penetrate through the full thickness of the material, the minimum preheat and maximum interpass temperature need only be maintained for 4 in. (102mm) or four times the depth of the repair weld (whichever is greater) on each side of the joint;

⁹ The IIW Carbon Equivalent Formula is $CE = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15$. Elements are expressed in Weight Percent Amounts

- 2) For the welding processes in NBIC Part 3, 2.5.3.4 c), use of austenitic or ferritic filler metal is permitted. For ferritic filler metals, use only electrodes or filler metals that are classified by the filler metal specification with a diffusible-hydrogen designator of H8 or lower. When shielding gases are used with a process, the gas shall exhibit a dew point that is below -60°F (-50°C). Surfaces on which welding will be done shall be maintained in a dry condition during welding and be free of rust, mill scale, and hydrogen producing contaminants, such as oil, grease, and other organic materials;
- 3) After the weld has been deposited flush with the base metal, a surface temper reinforcing weld layer shall be applied.;
- 4) For welds made by the SMAW and FCAW processes, after completion of welding and without allowing the weldment to cool below the minimum preheat temperature, the temperature of the weldment shall be raised to 450°F (232°C) minimum for a minimum period of two hours. This hydrogen bake-out treatment may be omitted, provided the electrode used is classified by the filler metal manufacturer with a diffusible-hydrogen designator of H4 (e.g., E7018 H4);
- 5) After the finished repair weld has cooled to ambient temperature, the surface temper reinforcing weld layer shall be removed substantially flush with the surface of the base metal (and for a fillet weld to the required size and suitable contour of the toes).

2.5.3.5 WELDING METHOD 5

When using this method, the following is required:

- a) This welding method may be used when the applicable rules of the original code of construction or the construction standard or code selected permit joining dissimilar materials used in pressure-retaining items;
- b) The materials shall be limited to ASME P-No. 1, Groups 1, 2, and 3, P-No. 3, Groups 1, 2, and 3, P-No. 4, P-No. 5A, P-No. 9A, P-No. 10A, P-No. 10B, P-No. 10C, P-No. 11A, P-No. 11B joined to either P-No. 8, P-No. 42, P-No. 43, or P-No. 45, as permitted for welded construction by the applicable rules of the original code of construction;
- c) The welding shall be limited to the SMAW, FCAW, GMAW and machine or automatic GTAW processes. The filler metal used for joining the dissimilar materials shall be either A-No 8 or Nickel-Chrome alloy classification (F-No 43). When selecting a filler metal for dissimilar metal weld joints, determine if the weld joint will be exposed to elevated temperature service. A-No 8 filler metals exposed to service temperatures greater than 800°F (427°C) will exhibit reduced creep life along the fusion zone of the ferritic material due to carbon diffusion. Instead, a low hydrogen, Nickel-Chromium alloy classification filler metal shall be used for dissimilar weld joints exposed to service temperatures at or above 800°F (427°C);
- d) The WPS shall be qualified in accordance with the temper bead rules of QW-290 in ASME Section IX;
- e) If the original code of construction did not require notch toughness testing, qualification of welding procedures (WPS) for joining ASME P-No. 1, P-No. 3 ferritic materials to either P-No. 8, P-No. 42, P-No. 43, or P-No. 45 materials shall be in accordance with requirements in either NBIC Part 3, 2.5.3.1, Welding Method 1 or in NBIC Part 3, 2.5.3.3, Welding Method 3.
- f) If the original code of construction did not require notch toughness testing, qualification of welding procedures (WPS) for joining ASME P-No. 4, P-No. 5A ferritic materials to either P-No. 8, P-No. 42, P-No. 43, P-No. 45 materials shall be in accordance with the requirements in NBIC Part 3, 2.5.3.4, Welding Method 4;



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Robin Hough
NBIC Committee Coordinator
The National Board of Boiler and Pressure Vessel Inspectors
1055 Crupper Avenue
Columbus, OH 43229

October 4, 2013

Robin,
Please include this proposed Code revision (seen below) on the R&A Subcommittee agenda for the January, 2014 meeting.
A progress report was given at the July, 2013 meeting under new business (NB13-0503).

Sincerely,

Ray L. Milette
Quality Assurance Manager
Babcock & Wilcox Construction Company
rlmilette@babcock.com
Office: 330-860-2589
Mobile: 330-289-1931

Subject: Request for Code Revision

Reference: NBIC (2013), Part 3, Section 5, Paragraphs 5.7.2(c) & 5.7.3

Background Information:

During the January, 2013 SC meeting, an Interpretation (IN13-0201) was submitted by Mr. John Hoh (Senior Staff Engineer) and reviewed by the SC. Mr. Hoh questioned why the Code was silent regarding the method of attaching both Repair and Alteration nameplates (attachment #1).

The SC reviewed Mr. Hoh's question and proposed reply related to the attachment of a Repair or Alteration nameplate using welding, soldering, brazing or by mechanical fasteners. The SC felt that currently no words exist in the NBIC text that specifies or requires the method of attachment. The SC decision was to request withdrawal of the Inquiry by Mr. Hoh and instead, address this issue as an action item to revise the Code to include Repair and Alteration nameplate attachment requirements (attachment #2).

Statement of Need:

By not having established requirements in the Code for nameplate placement (attachment #3), it may lead to nameplates being attached by methods that will not assure permanent placement. NBIC shall state that it requires nameplate to be attached by permanent means that will prevent/minimize the willful destruction of the nameplate or its attachment mechanism.

Proposed Revision:

The following is a proposed revision to the paragraphs in question. There was no need to eliminate any text but only add text as noted below in red and italicized.

Reasoning:

In an attempt to give direction regarding the placement of nameplates, I have researched the ASME Code in an attempt to provide consistency with other construction codes. The only written direction found in **Section I**, PG-106.5 and PG-111.13, states that the nameplates are to be "**securely attached**" (attachment #4 & #5). Additionally, in **Section IV**, HG-530.1, states that the nameplates shall be "**permanently fastened or attached**" (attachment #6). However, **Section VIII**, UG-119 (attachment #7) does **provide more detail for directing nameplate placement**. I have tried to capture the text from Section VIII within the subject revision.

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.
- 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 NBIC Part 3, 3.3.2). In all cases, the type and extent of repairs necessary shall be considered prior to waiving the requirement.
- c) 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 each is carried out by the same certificate holder. The date of each repair, corresponding with the date on associated Form R-1, shall be stamped on the nameplate.

The subject nameplate shall be securely attached by a method that will not allow for easy removal. The methods may include, but not limited to:

- Welding
- Brazing
- Soldering
- Tamper-resistant mechanical fasteners of a material and design compatible with the structure supporting the nameplate. Please note that this method may require welding, brazing or soldering of the fastener head.
- Adhesives in accordance with the original Code of construction.
- Any other method permitted by the original Code of construction.

Rev. 1
Addition to c

- d) *The subject nameplate shall be securely attached using a method compatible with the structure or standoff-bracket supporting the nameplate, in a manner that will impede easy removal. The method of attaching this nameplate, as permitted by the original Code of construction, may include, but is not limited to:*
- *Welding*
 - *Bonding or cementing*
 - *Tamper-resistant mechanical fasteners of suitable metal construction*

Rev.2
Revised Rev.1
text to read as
item "d" now

5.7.3 STAMPING REQUIREMENTS FOR ALTERATIONS

a) 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.

~~The subject nameplate shall be securely attached by a method that will not allow for easy removal. The methods may include, but not limited to:~~

- ~~-Welding~~
- ~~-Brazing~~
- ~~-Soldering~~
- ~~-Tamper-resistant mechanical fasteners of a material and design compatible with the structure supporting the nameplate. Please note that this method may require welding, brazing or soldering of the fastener head.~~
- ~~-Adhesives in accordance with the original Code of construction.~~

Rev.1
Addition

b) The subject nameplate shall be securely attached using a method compatible with the structure or standoff-bracket supporting the nameplate, in a manner that will impede easy removal. The method of attaching this nameplate, as permitted by the original Code of construction, may include, but is not limited to:

- Welding
- Bonding or cementing
- Tamper-resistant mechanical fasteners of suitable metal construction

Rev.2
Revised Rev.1
text to read as
item "b" now and
noted existing text
as "a"

Att #1

ATTACHMENT 3

IN18-0201



THE
NATIONAL
BOARD
OF BOILER AND
PRESSURE VESSEL
INSPECTORS

November 8, 2012

Secretary, NBIC Committee
The National Board of Boiler and Pressure Vessel Inspectors
1055 Crupper Ave.
Columbus, OH 43229

RECEIVED

NOV 08 2012

THE NATIONAL BOARD OF
BOILER & PRESSURE VESSEL
INSPECTORS

Please accept this letter as a request for interpretation of NBIC Part 3, 5.7.2c) and 5.7.3 regarding attachment of a nameplate for repairs and alterations.

Question 1:

In accordance with Part 3, 5.7.2c), is the attachment of a repair nameplate to be by a method such as welding, brazing, soldering, or tamper-resistant mechanical fasteners which will not allow easy removal of the nameplate?

Proposed Reply 1:

Yes.

Question 2:

In accordance with Part 3, 5.7.3, is the attachment of an alteration nameplate to be by a method such as welding, brazing, soldering, or tamper-resistant mechanical fasteners which will not allow easy removal of the nameplate?

Proposed Reply 2:

Yes.

Background:

The NBIC does not appear to establish requirements for nameplate attachment methods. This has led to nameplates being attached by non-permanent methods such as screws or bolts. To remain consistent with construction codes such as the ASME Boiler and Pressure Vessel Code, a nameplate should be attached by a method which will require the willful destruction of the nameplate or its attachment system.

Respectfully submitted,

John Hoh
Senior Staff Engineer

Attachment: Photograph of nameplate with screws

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PR13-0221 *Part 3, Table 4.4.2* Delete this table. It should be identical to Table 4.4.1.4. Also the math symbols in Table 4.4.2 need corrected. The slash through the equal sign means not equal. The correct symbol for less than or equal is $\leq$. There is no slash in the symbol.

January 2013

A motion was made and unanimously approved 10-0-0-0 to provide a response of #3 (Accepted in principal) with the action; correct version of revision will be in the 2013 Edition.

PR13-0222 *Part 3: 4.4.1.3.4 SC Repair and Alteration* Delete grade 70 from the SA-515 reference. There are grades 55, 60, and 65 in addition to grade 70. The table should apply to all.

January 2013

A motion was made and unanimously approved 10-0-0-0 to provide a response of #4 (Accepted, changes re incorporated) with the Action; Correct version of revision will be in the 2013 Edition.

PR13-0223 *Part 3: 5.5a) SC Repair and Alteration*-Why are R forms exempt from registration? It is expected and many jurisdictions require registration of pressure vessels. It is not logical to register other organizations paper, but not your own. Registration is also a safety issue. There should be cradle to grave documentation for vessels. There is a considerable market in used vessels, and the documentation does not go with the vessels. All repairs and alterations should be registered.

January 2013

A motion was made and unanimously approved 10-0-0-0 to provide a response of #6 (Rejected) with the Action; Committee previously considered, Action not warranted.

7. Interpretations (Attachment 3, page 12)

*

IN13-0201 *Part 3, 3.2.2 c), SC on Repair and Alteration, - Question 1:* In accordance with Part 3, 5.7.2 c), is the attachment of a repair nameplate to be by a method such as welding, brazing, soldering, or tamper-resistant mechanical fasteners which will not allow easy removal of the nameplate?

January 2013

The SC reviewed the Inquirer's question and reply related to attachment of a repair or alteration nameplate using welding, soldering, brazing or by mechanical fasteners. The SC felt that there are no current words in the NBIC text that specifies or requires the method of attachment. The SC decided to propose that the Secretary go back to the National Board staff member who submitted the Inquiry and ask if they would withdraw the item and in turn the SC would take out a new Action Item to address a code revision for specific attachment requirements of repair or alteration nameplates. There was a motion and the motion was unanimously approved. (R. Miletto will be the Project Manager for this item.



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.
- 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 NBIC Part 3, 3.3.2). In all cases, the type and extent of repairs necessary shall be considered prior to waiving the requirement.
- c) 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 each is carried out by the same certificate holder. The date of each repair, corresponding with the date on associated Form R-1, shall be stamped on the nameplate.



5.7.3 STAMPING REQUIREMENTS FOR ALTERATIONS

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.

5.7.4 STAMPING REQUIREMENTS FOR PARTS

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

5.7.5 SPECIFIC REQUIREMENTS FOR STAMPING AND NAMEPLATES

- 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, or sharp discontinuities to, the pressure-retaining item. See NBIC Part 3, Figures 5.7.5-a through 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.

whichever Manufacturer [see PG-104, Note (1)] has the responsibility for assurance of Code certification for a completed boiler unit, that Manufacturer shall provide a master stamping for the complete unit which shall show the maximum allowable working (minimum design) pressure at the superheater outlet as determined by the Manufacturer as item PG-106.4.1(c). In no case shall the master stamping pressure be more than the maximum allowable working pressure of any part of the unit, excluding the steam piping between the boiler and the prime mover. The master stamping shall be located as required in PG-111.5.2.

- (a) **PG-106.4** In addition to the Certification Mark, the following items shall also be stamped with letters and figures at least $\frac{5}{16}$ in. (8 mm) high [$\frac{5}{32}$ in. (4 mm) on miniature boilers if necessary], arranged as shown in Fig. PG-106.

PG-106.4.1 Items on Boilers.

- (a) Manufacturer's serial number
- (b) certified by (name of Manufacturer)
- (c) maximum allowable working pressure when built
- (d) heating surface (or power input for electric boilers)
- (e) year built
- (f) maximum designed steaming capacity (or, for high-temperature water boilers, maximum designed output)

- (a) **PG-106.4.2 Items on Waterwalls, Superheaters, or Economizers.**

- (a) Manufacturer's serial number
- (b) certified by (name of Manufacturer)
- (c) maximum allowable working pressure when built
- (d) heating surface (not required for integral superheaters) (rated absorption for an isolable economizer)
- (e) for isolable or nonintegral separately fired superheaters, heating surface or the minimum pressure relief valve discharge capacity calculated from the maximum expected heat absorption (as determined by the Manufacturer)

(a) **Figure PG-106**
Form of Stamping

	Certified by
	 (Name of Manufacturer)
	 (Max. allow. working pressure when built)
	 (Heating surface, boiler and waterwalls)
	 (Maximum designed steaming capacity)
Manufacturer's serial number	 Year built



PG-106.5 For boilers with no pressure retaining part larger than 16 in. (400 mm) O.D., or for equipment operating at temperatures above 800°F (425°C), a cast, etched, or stamped metallic nameplate may be used to provide the data required by PG-106 instead of stamping directly on the pressure retaining material. This plate shall be securely attached to the item it describes. If the attachment is by welding, the welding shall meet the requirements of this Section. The Authorized Inspector shall witness the stamping of the Certification Mark and verify that the nameplate has been attached.

PG-106.6 Each Manufacturer shall furnish, in addition, a metallic plate or plates on which the above data are reproduced for all the items manufactured by him, except when the original stampings are so located on the completed (or assembled) boiler unit that all will be readily visible from one place on the operating floor or platform. These plates, if used, shall be located as specified in PG-111.13. All data on such additional plates, including the Certification Mark, shall be cast, etched, or stamped and this marking need not be witnessed by an Authorized Inspector. The letters and figures on these nameplates shall be not less than $\frac{5}{32}$ in. (4 mm) high.

PG-106.7 When the Manufacturer is an Engineering Contractor [see PG-104, Note (1)], either of the sequences specified in PG-106.7.1 and PG-106.7.2 may be selected for the certification and stamping of the completed boiler.

PG-106.7.1 Certification of Field Assembly Prior to Certification of Engineering Contractor. (a)

(a) The Engineering Contractor shall prepare a Form P-3A Master Data Report with the Certification of Engineering Contractor portion remaining blank. This Master Data Report, including all associated Partial Data Reports shall be forwarded to the Assembler.

(b) After the required inspections and the hydrostatic test have been performed, the Assembler and his Authorized Inspector shall certify the field assembly portion of Form P-3A. The Assembler shall then forward the completed Form P-3A, including all associated Partial Data Reports, to the Engineering Contractor.

(c) The Engineering Contractor shall provide a metallic master stamping plate or plates. The letters and figures on this plate shall be not less than $\frac{5}{32}$ in. (4 mm) high. This plate shall include, in addition to the Certification Mark, all the data required by PG-106.4. Such data, except the Certification Mark, may be cast, etched, or stamped on this plate. The Certification Mark shall be stamped. The stamping of the master stamping plate shall be in the presence of the Engineering Contractor's Authorized Inspector after the Inspector has examined the Design Specification for the complete boiler unit, verified the plate data, and is satisfied that the Engineering Contractor has provided for the construction of the complete boiler unit. The Engineering Contractor and his Authorized Inspector shall then sign the Certification of Engineering Contractor portion of Form P-3A.

PG-111.5.2 Forced-flow steam generator with no fixed steam and waterline ← the master stamping (PG-106.3) shall be located on a major pressure part, located near the main operating floor where readily visible. The Data Report Form shall record the location of the master stamping.

PG-111.6 Scotch marine boilers — on either side of the shell near the normal water level line and as near as practical to the front tubesheet.

PG-111.7 Economic boilers — on the front head, above the center row of tubes.

PG-111.8 Miniature and electric boilers — on some conspicuous and accessible place on the boiler proper, or on a stamping plate at least $\frac{3}{64}$ in. (1.2 mm) thick, permanently fastened (adhesives prohibited) to the boiler.

PG-111.9 On any of the above types where there is not sufficient space in the place designated, and for other types and new designs — in a conspicuous place on the boiler proper. The Data Report Form shall record the location of the required stamping.

PG-111.10 Superheaters — on superheater header near the outlet. Other headers shall carry identifying marks.

PG-111.11 Economizers — at a handy location on water inlet header or drums. Other headers shall carry identifying marks.

PG-111.12 Waterwalls — on one end of a lower header. Other headers shall carry identifying marks.

* (a) **PG-111.13** When required by PG-106.6 and PG-106.7, the Manufacturer [see PG-104, Note (1)] shall furnish a nameplate or plates on which the appropriate Certification Mark and design data for the scope of his responsibility are permanently imprinted. The nameplate shall be securely attached to the front of the boiler, its setting or casing, at a place readily visible from the operating floor or platform.

PG-112 MANUFACTURER'S DATA REPORT FORMS

PG-112.1 Ten types of Manufacturer's Data Report Forms are shown in the Appendix under the heading "Data Report Forms and Guides" at the end of this Section. These forms shall be used by the Manufacturer [see PG-104, Note (1)] to record all the items of a complete boiler unit, in accordance with the provisions of PG-112.2. When the certification of the complete boiler unit is accomplished by more than one Data Report, the principal Data Report (P-2, P-2A, P-3, or P-3A) shall be designated as the Master Data Report (see PG-113).

For forced-flow steam generators with no fixed steam and waterline consisting of groups of pressure parts or components designed at several different pressure levels, a separate Manufacturer's Data Report shall clearly identify the pressure parts at each pressure level and

show the maximum allowable working pressure. These several Data Reports shall be attached to a Master Data Report (PG-113) that shall clearly identify each component as part of the complete unit.

PG-112.2 Types of Data Report Forms. The types of Data Report Forms and the purposes for which they are to be used are specified in PG-112.2.1 through PG-112.2.8.

PG-112.2.1 Form P-2, Manufacturer's Data Report for All Types of Boilers Except Watertube and Electric, shall be used to record all types of boilers other than watertube boiler units and parts thereof, which are included under Form P-3.

PG-112.2.1.1 Form P-2A, Manufacturer's Data Report for All Types of Electric Boilers, shall be used to record all types of electric boilers.

PG-112.2.1.2 Form P-2B, Manufacturer's Data Report for Electric Superheaters and Reheaters, shall be used to record electric superheaters and reheaters installed external to the boiler setting.

PG-112.2.2 Form P-3, Manufacturer's Data Report for Watertube Boilers, Superheaters (except electric), Waterwalls, and Economizers, shall be used to record all of the items comprising a watertube boiler. (a)

The Form P-3 shall also be used to record a superheater, waterwall, or economizer when the design of such an item is certified by a manufacturer other than the boiler Manufacturer, or when such an item is to be added to an existing boiler. The item shall be stamped with the Certification Mark with the "S" Designator and the additional information, as applicable, shown in PG-106.4.2.

Item 10 on Form P-3 shall be used to record other parts connected at the openings listed in Item 11 if such parts are fabricated of materials or by processes that require Code inspection. If such parts have not been connected prior to the hydrostatic test, a notation shall be made under Item 10 reading: "No parts connected to the openings listed in Item 11 except as noted."

PG-112.2.3 Form P-3A, Engineering-Contractor Data Report for a Complete Boiler Unit, shall be used when such an organization assumes the Manufacturer's Code responsibility as provided for by PG-104, Note (1). This form shall be used to certify Code responsibility for the design specification of the complete boiler unit, of which the components are individually certified by their individual manufacturers in accordance with the Code rules. This form also provides for field assembly certification. (a)

Form P-3A shall not be used by a Manufacturer to provide Code certification for only a portion of the complete boiler unit.

PG-112.2.4 Form P-4, Manufacturer's Partial Data Report, shall be used to record boiler parts requiring inspection and stamping under this Section which are

FIG. HG-530.1 OFFICIAL SYMBOL FOR STAMP
TO DENOTE THE AMERICAN SOCIETY OF
MECHANICAL ENGINEERS' STANDARD



HG-520.3 Supplementary Sheet, Form H-6, Manufacturer's Data Report Supplementary Sheet, shall be used to record additional data where space was insufficient on a Data Report Form. This Manufacturer's Data Report Supplementary Sheet will be attached to the Manufacturer's Data Report Form where used. If Form H-6 is used in conjunction with Form H-5, the Authorized Inspector's certification is not applicable.

HG-530 STAMPING OF BOILERS

07 HG-530.1 Stamping Requirements for Boilers Other Than Those Constructed Primarily of Cast Iron or Cast Aluminum (See HG-530.2)

(a) All boilers to which the Code Symbol is to be applied shall be built according to the rules of this Section by a manufacturer who is in possession of a Code Symbol Stamp and a valid Certificate of Authorization. Each boiler shall be stamped with the Code Symbol shown in Fig. HG-530.1 and with the following data:

- (1) the boiler manufacturer's name, preceded by the words "Certified by"
- (2) maximum allowable working pressure
- A08 (3) safety or safety relief valve capacity (minimum), as determined according to HG-400.1(d) and HG-400.2(e)
- (4) heating surface, as determined according to HG-403 (or power input for electric boilers)
- (5) manufacturer's serial number
- (6) year built
- (7) maximum water temperature

NOTE: The year built may be incorporated into the serial number as a prefix consisting of the last two digits of the year.

(b) Items (1) through (7) listed in (a) above, with the markings arranged substantially as shown in Fig. HG-530.2 or Fig. HG-530.3, shall be stamped with letters at least $\frac{3}{16}$ in. (8 mm) high [except as permitted in HG-530.1(d)] and in some conspicuous place on the boiler proper or on a nameplate at least $\frac{3}{64}$ in. (1.2 mm) thick permanently fastened to the boiler proper. The location of the stamping shall be as follows:

(1) *Horizontal Tubular Flue Type Boilers:* on the front head above the central rows of tubes or flues.

FIG. HG-530.2 STEAM AND WATER BOILERS
FORM OF STAMPING ON COMPLETED BOILERS OR
THEIR NAMEPLATES

(Not Applicable for Boilers Constructed
Primarily of Cast Iron)

Certified by	
	(Name of Manufacturer) _____
	¹ MAWP, Steam _____
	¹ MAWP, Water _____
	¹ Maximum Water Temp. _____
	² Heating surface _____ boiler
	³ Heating surface _____ water wall
	³ Heating surface _____ extended
^{3,4} Ext HS generating cap _____	
Minimum relief valve capacity _____	
Manufacturer's serial no. _____	
⁶ Year built _____	

GENERAL NOTE: Acceptable abbreviations to any of the stamp wording may be used.

NOTES:

- (1) For steam only boilers, MAWP, Water and Maximum Water Temperature markings are optional.
- (2) Kilowatt power input for electric boilers.
- (3) List each type of surface separately. May be omitted if type heating surface is not present.
- (4) Generating capacity for extended heating surface (see HG-403(d)).
- (5) May be omitted when year built is prefix to serial number (see HG-530.1).

(2) *Locomotive Firebox, Compact, or Vertical Fire-tube Type Boilers:* over or near the fire door or handhole or washout plug opening on the front end or side.

(3) *Watertube Type Boilers:* on a head of the top outlet drum. Waterwalls and headers shall carry identifying markings.

(4) *Split-Section and Section Firebox Type Wrought Boilers:* over or near the fire door or handhole or washout plug opening on the front end or side. Each section shall carry identifying markings.

(5) *Scotch Type Boilers:* on either side of the shell near the normal water level line adjacent to the front tube-sheet.

(c) On any of the above type boilers where there is not sufficient space in the places designated and on other types and new designs of boilers, the nameplate shall be located in a conspicuous place.

(d) When there is insufficient space for the nameplate required above, smaller letter dimensions may be used, provided

(1) stamping shall be as required in HG-530.1(a) and (b) above, and

FIG. HG-530.3 BOILERS SUITABLE FOR
WATER ONLY
FORM OF STAMPING ON COMPLETED BOILERS OR
THEIR NAMEPLATES
(Not Applicable for Boilers Constructed
Primarily of Cast Iron)

	Certified by _____
	(Name of Manufacturer) _____
	¹ MAWP, Water _____
	¹ Maximum Water Temp. _____
	² Heating surface _____ boiler
	³ Heating surface _____ water wall
	³ Heating surface _____ extended
	^{3,4} Ext HS generating cap _____
	Minimum relief valve capacity _____
	Manufacturer's serial no. _____
	⁵ Year built _____

GENERAL NOTE: Acceptable abbreviations to any of the stamp wording may be used.

NOTES:

- (1) For steam only boilers, MAWP Water and Maximum Water Temperature markings are optional.
- (2) Kilowatt power input for electric boilers.
- (3) List each type of surface separately. May be omitted if type heating surface is not present.
- (4) Generating capacity for extended heating surface [see HG-403(d)].
- (5) May be omitted when year built is prefix to serial number (see HG-530.1).

(2) character size shall be no smaller than $\frac{3}{32}$ in. (4 mm)

(e) The stamping or nameplate on the boiler proper shall not be covered with insulating or other material unless

(1) the required markings are duplicated and stamped directly on the boiler casing in some conspicuous place using letters and numerals at least $\frac{5}{16}$ in. (8 mm) high

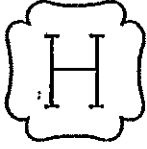
(2) an opening with a removable cover is provided in the jacket or other form of casing so that, when removed, the stamping or nameplate on the boiler proper can be viewed

(3) the required data are duplicated by stamping or marking with letters at least $\frac{1}{8}$ in. (3 mm) high on a nonferrous nameplate at least 3 in. X 4 in. (75 mm X 100 mm) size and permanently attaching the nameplate to the casing in some conspicuous place by mechanical means or by an adhesive system meeting the requirements of Appendix 3

(f) The Code Symbol may be preapplied to a nameplate. The nameplate may be attached to the boiler after the final fabrication and examination sequence but before the hydrostatic test, provided the procedure for sequence of stamping is described in the manufacturer's accepted quality control system. The Code Symbol and manufacturer's

FIG. HG-530.4 STEAM AND WATER BOILERS
FORM OF DATA CAST ON CAST IRON BOILER
SECTIONS

07

	Certified by _____
	(1) _____ (5) _____ Name of Manufacturer for
	MAWP, Steam _____
	MAWP, Water _____ (2)
	(3) _____ (Pattern number)
	(4) _____ (Casting date)

NOTE: (1) through (5) refer to HG-530.2(a)(1)–(a)(5); (5) is optional.

serial number shall be stamped on nameplates but the other data may be stamped, etched, cast, or impressed thereon.

(g) The ASME Code Symbol Stamp(s) shall not be used by an organization to which it was not issued.

HG-530.2 Marking Requirements for Cast Iron or Cast Aluminum Boilers 07

(a) All boiler parts or sections to which the Code Symbol is to be applied shall be built according to the rules of this Section by a manufacturer³ who is in possession of a Code Symbol Stamp and a valid Certificate of Authorization. Each boiler section, including end and intermediate cored sections, shall be cast with the Code Symbol shown in Fig. HG-530.1 and with the following data cast in letters or numerals at least $\frac{5}{16}$ in. (8 mm) high:

(1) the boiler or parts manufacturer's³ name or acceptable abbreviation, preceded by the words "Certified by:" (or "Cert. by" on cast boiler sections only where space for marking is limited; the abbreviation "Cert. by" shall not be used on nameplates)

(2) maximum allowable working pressure⁴

(3) pattern number

(4) casting date

(5) the shop assembler's⁵ name or acceptable abbreviation (if different from manufacturer)⁶

Arrangement of data cast on sections shall be substantially as shown in Fig. HG-530.4 for cast iron steam or hot water heating boilers or Fig. HG-530.5 for cast iron or cast aluminum hot water heating boilers.

³ The foundry that casts the boiler parts or sections and that may shop assemble.

⁴ May be stamped.

⁵ The shop that assembles sections into boilers and that is in possession of a Code Symbol Stamp and valid Certificate of Authorization.

⁶ Optional.

ATT # 7a

UG-117(g)(2) The activity is in conformance with the applicant's Quality Control System.

UG-117(g)(3) The item is stamped with the appropriate Code Symbol and certified once the applicant receives his Certificate of Authorization from the Society.

UG-118 METHODS OF MARKING

UG-118(a) The required marking shall be stamped directly on the vessel as provided in (b) and (c) below or shown on a separate nameplate as provided in UG-119.

UG-118(b) When the marking required by UG-116 is applied directly to the vessel, it shall be stamped with letters and figures at least $\frac{5}{16}$ in. (8 mm) high. Unless the requirements of (b)(1) or (2) below are met, such stamping shall not be used on vessels constructed of steel plates less than $\frac{1}{4}$ in. (6 mm) thick or of nonferrous plates less than $\frac{1}{2}$ in. (13 mm) thick but may be used on vessels constructed of thicker plates. The character size may be reduced as shown below for small diameter vessels with space limitations.

Nominal Outside Vessel Diameter		Character Size,
Min., in. (mm)	Max., in. (mm)	Min., in. (mm)
...	$3\frac{1}{2}$ (89)	$\frac{1}{8}$ (3)
$>3\frac{1}{2}$ (89)	$4\frac{1}{2}$ (114)	$\frac{3}{16}$ (5)
$>4\frac{1}{2}$ (114)	$6\frac{1}{2}$ (168)	$\frac{1}{4}$ (6)

UG-118(b)(1) For ferrous materials:

(a) the materials shall be limited to P-No. 1 Gr. Nos. 1 and 2;

(b) the minimum nominal plate thickness shall be 0.1875 in. (5 mm), or the minimum nominal pipe wall thickness shall be 0.154 in. (4 mm);

(c) the minimum design metal temperature shall be no colder than -20°F (-29°C);

UG-118(b)(2) For nonferrous materials:

(a) the materials shall be limited to aluminum as follows: SB-209 Alloys 3003, 5083, 5454, and 6061; SB-241 Alloys 3003, 5083, 5086, 5454, 6061, and 6063; and SB-247 Alloys 3003, 5083, and 6061;

(b) the minimum nominal plate thickness shall be 0.249 in. (6.30 mm), or the minimum nominal pipe thickness shall be 0.133 in. (3.38 mm).

UG-118(c) The stamping shall be arranged substantially as shown in Fig. UG-118 when space permits and shall be located in a conspicuous place on the vessel [see UG-116(i)].

UG-119 NAMEPLATES

(a) Nameplates shall be used on vessels except when markings are directly applied in accordance with UG-118. Nameplates shall be metal suitable for the intended service and shall bear the markings called for in UG-116. The

FIG. UG-118 FORM OF STAMPING

(10)

Certified by	
 W (if arc or gas welded) RT (if radiographed) HT (if postweld heat treated)	(Name of Manufacturer) _____
	(Pressure) _____ at (temperature) _____ Max. allowable working pressure
	(Pressure) _____ at (temperature) _____ Max. allowable external working pressure (if specified; see Note (1))
	(Temperature) _____ at (pressure) _____ Min. design metal temperature
	Manufacturer's serial number _____
Year built _____	

GENERAL NOTE: Information within parentheses is not part of the required marking. Phrases identifying data may be abbreviated; minimum abbreviations shall be MAWP, MAEWP, MDMT, S/N, and year, respectively.

NOTE:

(1) The maximum allowable external working pressure is required only when specified as a design condition.

marking arrangement shall be substantially as shown in Fig. UG-118. Required nameplates shall be located in a conspicuous place on the vessel [see UG-116(i)].

(b) The nameplate thickness shall be sufficient to resist distortion due to the application of the marking and to be compatible with the method of attachment. The nameplate nominal thickness shall not be less than 0.020 in.

(c) Nameplates may have markings produced by either casting, etching, embossing, debossing, stamping, or engraving, except that the Code Symbol shall be stamped on the nameplate.

(1) The required markings on a nameplate shall be in characters not less than $\frac{1}{32}$ in. (4 mm) high, except that characters for pressure relief device markings may be smaller.

(2) Characters shall be either indented or raised at least 0.004 in. (0.10 mm) and shall be legible and readable.

(d) The nameplate may be marked before it is affixed to the vessel, in which case the Manufacturer shall ensure that the nameplate with the correct marking has been applied to the proper vessel, and the Inspector shall satisfy himself that this has been done.

(e) The nameplate shall be attached to the vessel or to a pad, bracket, or structure that is welded, brazed, soldered, or attached with mechanical fasteners directly to the vessel. Mechanical fasteners shall be of a material and design that is compatible with the vessel, bracket materials, and the vessel service. After installation of the pad, bracket, or structure, the heads of the fasteners shall be welded, brazed,

or soldered to the pad, bracket, or structure that supports the nameplate. The nameplate shall be located within 30 in. (760 mm) of the vessel. Removal shall require the willful destruction of the nameplate, or its attachment system. (See M-3.)

(1) Nameplates may be attached either by welding, brazing, or soldering.

(2) Nameplates may be attached by tamper-resistant mechanical fasteners of suitable metal construction.

(3) Nameplates may be attached with pressure-sensitive acrylic adhesive systems provided that, in addition to the requirements of this paragraph, those of Appendix 18 are met.

(f) An additional nameplate in accordance with (a) through (d) may be installed on the skirt, supports, jacket, or other permanent attachment to a vessel. All data on the additional plate, including the Code Symbol, shall be as required for the mandatory nameplate. The marking need not be witnessed by the Inspector. The additional nameplate shall be marked: "DUPLICATE."

(g) When a nameplate is employed, the Manufacturer's name or identifying trademark, and vessel serial number (or National Board Number, if applicable,) may also be marked directly on the vessel in close proximity to the nameplate attachment. The marking shall be of a visible permanent type that is not detrimental to the vessel, and its location shall be indicated on the Data Report.

(1) If the thickness limitations of UG-118 preclude marking directly on the vessel shell or heads, it may be applied to the skirt, supports, jacket, or other permanent attachment to the vessel.

(10) UG-120 DATA REPORTS

(a) A Data Report shall be filled out on Form U-1 or Form U-1A by the Manufacturer and shall be signed by the Manufacturer and the Inspector for each pressure vessel marked with the Code U Symbol.

(1) Same day production of vessels may be reported on a single Form provided all of the following requirements are met:

- (a) vessels must be identical;
- (b) vessels must be manufactured for stock or for the same user or his designated agent;
- (c) serial numbers must be in uninterrupted sequence; and
- (d) the Manufacturer's written Quality Control System includes procedures to control the development, distribution, and retention of the Data Reports.

(2) The number of lines on the Data Report used to describe multiple components (e.g., nozzles, shell courses) may be increased or decreased as necessary to provide space to describe each component. If addition of lines used to describe multiple components results in the Data Report

exceeding one page, space must be provided for the Manufacturer and Authorized Inspector to initial and date each of the additional pages. Horizontal spacing for information on each line may be altered as necessary. All information must be addressed; however, footnotes described in the remarks block are acceptable, e.g., for multiple cases of "none" or "not applicable."

(3) The Manufacturer shall:

(a) furnish a copy of the Manufacturer's Data Report to the user and, upon request, to the Inspector;

(b) submit a copy of the Manufacturer's Data Report to the appropriate enforcement authority in the jurisdiction in which the vessel is to be installed, where required by law;

(c) keep a copy of the Manufacturer's Data Report on file in a safe repository for at least 3 years.

In lieu of (c) above, the vessel may be registered and the Data Report filed with the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229. Where acceptable to the appropriate enforcement authority in the jurisdiction in which the vessel is to be installed, the vessel may be registered and the Data Report filed with the National Board of Boiler and Pressure Vessel Inspectors in lieu of (b) above.

(4) A Manufacturer's Certificate of Compliance on Form U-3 shall be completed and signed by the Manufacturer for each pressure vessel marked with the Code UM Symbol. This Certificate shall be maintained by the Manufacturer for 5 years and a copy made available upon request, or the vessel may be registered and the Data Report filed with the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229. Where acceptable to the appropriate enforcement authority in the jurisdiction in which the vessel is to be installed, the vessel may be registered and the Data Report filed with the National Board of Boiler and Pressure Vessel Inspectors. Identical vessels up to 1 day's production may be recorded on a single Certificate of Compliance.

(b) Both chambers of combination units must be described on the same Data Report. This includes the following as applicable:

(1) for differential pressure design, the maximum differential design pressure for each common element [see UG-19(a)(2) and UHX-19.3] and the name of the higher pressure chamber

(2) for mean metal temperature design, the maximum mean metal design temperature for each common element [see UG-19(a)(3) and UHX-19.3]

(c) *Partial Data Reports.* Data Reports for pressure vessel parts requiring inspection under this Division which are furnished by other than the location of the Manufacturer responsible for the vessel to be marked with the Code Symbol shall be executed on the applicable Partial Data Report, Form U-2 or Form U-2A, by the parts Manufacturer

5.7.5 SPECIFIC REQUIREMENTS FOR STAMPING AND NAMEPLATES

- 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, or sharp discontinuities to, the pressure-retaining item. See NBIC Part 3, Figures 5.7.5-a through 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.

g) The subject nameplate shall be securely attached using a method compatible with the structure or stand-off bracket supporting the nameplate, in a manner that will impede easy removal. The method of attaching this nameplate, as permitted by the original Code of construction, may include, but is not limited to:

- Welding

- Adhesive, bonding or cementing

- Tamper-resistant mechanical fasteners of suitable metal construction



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DU04047 Page 1 of 2

Date:
 The National Board of Boiler
 And Pressure Vessel Inspectors
 1055 Crupper Avenue
 Columbus, Ohio 43229-1183

August 26, 2013

Attention: Secretary, NBIC Committee
 Subject: Request for Code Revision or Addition

Re: NBIC Part 3 Edition 2011, Paragraph: 5.2.2 b), 5.7.5 a) Figure: 5.7.5-b, and 5.7.5-c

Proposed Revision/Addition:

This proposed Revision/Addition to the Code is directed at the data field for Temperature on the Alteration and Re-rating nameplates.

5.2.2 PREPARATION OF FORM R-2 (ALTERATIONS)

b) The information describing an alteration to a pressure-retaining item shall be identified on Form R-2 with a complete description of the 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 (MRRC) of a pressure-retaining item, such as a change in heating, surface, Maximum Designed Steaming Capacity (MDSC), or BTU/hr (W) heating capacity, the new MRRC shall be documented on the R-2 and indicated on the appropriate nameplate of NBIC Part 3, Figure 5.7.5-b of NBIC Part 3, Figure 5.7.5-c.

Requested Addition: *When the Alteration or Re-Rating nameplate (NBIC Part 3, Figure 5.7.5-b of NBIC Part 3, Figure 5.7.5-c.) is for use on an ASME Section I pressure-retaining item (boiler) the _____ °F field shall be indicated as N/A (Not Applicable).*

FIGURE 5.7.5-b Required Markings for alterations, with use of National Board Form R-2			
ALTERED BY	_____ CERTIFICATE HOLDER		
"R" STAMP	M.A.W.P.	P.S.I.	
	AT	**	°F
* Minimum Required Relieving Capacity			
NATIONAL BOARD "R" CERTIFICATE NUMBER		DATE ALTERED	

FIGURE 5.7.5-c Required Markings for re-ratings, with use of National Board Form R-2			
RE-RATED BY	_____ CERTIFICATE HOLDER		
"R" STAMP	M.A.W.P.	P.S.I.	
	AT	**	°F
* Minimum Required Relieving Capacity			
NATIONAL BOARD "R" CERTIFICATE NUMBER		DATE ALTERED	



*** NOTE:**

- a) Not required when the scope of work does not change the Minimum Required Relieving Capacity.
- b) If the line identifying the 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" to represent "no change".
- c) Minimum Required Relieving Capacity may be abbreviated to M.R.R.C.

**** Note:**

a) When the Alteration or Re-Rating nameplate (NBIC Part 3, Figure 5.7.5-b of NBIC Part 3, Figure 5.7.5-c.) is for use on an ASME Section I pressure-retaining item (boiler) the _____ °F field shall be indicated as N/A (Not Applicable).

Statement of Need:

The NBIC does not indicate what temperature is to be placed in the field on the nameplate. Temperature is not required on the OEM ASME Section I Boiler Nameplates. (ASME PG-106.4) Please note that there are multiple temperatures and pressures in a power boiler, different components have different design and operating temperatures and pressures.

Placing a temperature on the Nameplate without identifying what the temperature represents is an opportunity for misinterpretation and could possibly lead to calculating incorrect tube minimum wall thickness and incorrect material specifications for boiler components which could lead to catastrophic failure and loss of life and property.

This request is for the NBIC to clarify that temperature is not applicable on the nameplates when the scope is ASME Section I Boilers.

Regards,

Babco

ck & Wilcox Power Generation Group, Inc

Cod

e Data Coordinator

PART 3, SECTION 5 REPAIRS AND ALTERATIONS — CERTIFICATION/DOCUMENTATION AND STAMPING

5.1 SCOPE

This section provides requirements for certification, stamping, and documentation of repairs and alterations to pressure-retaining items. Applicable forms are provided in this section for reference. Forms may be obtained from the National Board Web site.

5.2 DOCUMENTATION

- a) Repairs that have been performed in accordance with the NBIC shall be documented on Form R-1, *Report of Repair*, as shown in this section. Form R-4, *Report Supplementary Sheet*, shall be used to record additional data when space is insufficient on Form R-1.
- b) Alterations performed in accordance with the NBIC shall be documented on Form R-2, *Report of Alteration*, as shown in this section. Form R-4, *Report Supplementary Sheet*, shall be used to record additional data when space is insufficient on Form R-2.

5.2.1 PREPARATION OF FORM R-1 (REPAIRS)

- A11 a) Using the instructions found at NBIC Part 3, 5.13.4.1 preparation of Form R-1 shall be the responsibility of the "R" Certificate Holder performing the repair.
- A11 b) Information describing the scope of work used to repair a Pressure-Retaining Item (PRI) shall be documented on a Form R-1 and extended to a Form R-4 as needed to fully describe the repair activities completed per the instructions at NBIC Part 3, 5.13.4.1.
- A11 c) An Inspector shall indicate acceptance by signing Form R-1, and Form R-4, if attached.
- A11 d) The Form R-3, Manufacturer's Data Reports, and Certificates of Compliance described in this section shall be a part of the completed Form R-1 and shall be attached thereto.

5.2.2 PREPARATION OF FORM R-2 (ALTERATIONS)

- a) Initial preparation of Form R-2 shall be the responsibility of the "R" Certificate Holder responsible for the design portion of the alteration. The design organization shall complete and sign the "Design Certification" section of the Form R-2. An Inspector shall indicate acceptance of the design by signing the "Certificate of Design Change Review" section of the Form R-2.
- b) The information describing an alteration to a pressure-retaining item shall be identified on Form R-2 with a complete description of the 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 (MRRC) of a pressure-retaining item, such as a change in heating surface, Maximum Designed Steaming Capacity (MDSC), or Btu/hr (W) heating capacity, the new MRRC shall be documented on Form R-2 and indicated on the appropriate nameplate of NBIC Part 3, Figure 5.7.5-b or NBIC Part 3, Figure 5.7.5-c.

When the Alteration or Re-Rating nameplate (NBIC Part 3, Figure 5.7.5-b of NBIC Part 3, Figure 5.7.5-c.) is for use on an ASME Section I pressure-retaining item (boiler) the _____ °F field shall be indicated as N/A (Not Applicable).

FIGURE 5.7.5-a

Required markings for repairs, with use of National Board Form R-1

REPAIRED BY	CERTIFICATE HOLDER
	
NATIONAL BOARD "R" CERTIFICATE NUMBER	DATE REPAIRED

FIGURE 5.7.5-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
* Minimum Required Relieving Capacity	
NATIONAL BOARD "R" CERTIFICATE NUMBER	DATE ALTERED

FIGURE 5.7.5-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
* Minimum Required Relieving Capacity	
NATIONAL BOARD "R" CERTIFICATE NUMBER	DATE ALTERED

FIGURE 5.7.5-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

* NOTE:

- Not required when the scope of work does not change the Minimum Required Relieving Capacity.
- 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" to represent "no change".
- Minimum Required Relieving Capacity may be abbreviated to M.R.R.C.

** Note:

a) When the Alteration or Re-Rating nameplate (NBIC Part 3, Figure 5.7.5-b of NBIC Part 3, Figure 5.7.5-c.) is for use on an ASME Section I pressure-retaining item (boiler) the _____ °F field shall be indicated as N/A (Not Applicable).

Re: NBIC Part 3 Edition 2011, Paragraph: 5.2.2 b), 5.7.5 a) Figure: 5.7.5-b, and 5.7.5-c

Proposed Revision/Addition:

This proposed Revision/Addition to the Code is directed at the data field for Temperature on the Alteration and Re-rating nameplates.

5.2.2 PREPARATION OF FORM R-2 (ALTERATIONS)

b) The information describing an alteration to a pressure-retaining item shall be identified on Form R-2 with a complete description of the 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 (MRRC) of a pressure-retaining item, such as a change in heating, surface, Maximum Designed Steaming Capacity (MDSC), or BTU/hr (W) heating capacity, the new MRRC shall be documented on the R-2 and indicated on the appropriate nameplate of NBIC Part 3, Figure 5.7.5-b of NBIC Part 3, Figure 5.7.5-c.

Requested Addition:

Note (1): When temperature limits are not required to be placed on the manufacturer's nameplate in accordance with the original code of construction, the temperature field for Figures 5.7.5 b) and 5.7.5 c) may be indicated as N/A.

NOTE (2):

a) Not required when the scope of work does not change the Minimum Required Relieving Capacity.

b) If the line identifying the 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" to represent "no change".

c) Minimum Required Relieving Capacity may be abbreviated to M.R.R.C.

Statement of Need:

The NBIC does not indicate what temperature is to be placed in the field on the nameplate.

Temperature is not required on the OEM ASME Section I Boiler Nameplates. (ASME PG-106.4)

Please note that there are multiple temperatures and pressures in a power boiler, different components have different design and operating temperatures and pressures.

Placing a temperature on the Nameplate without identifying what the temperature represents is an opportunity for misinterpretation and could possibly lead to calculating incorrect tube minimum wall thickness and incorrect material specifications for boiler components which could lead to catastrophic failure and loss of life and property.

This request is for the NBIC to clarify that temperature is not applicable on the nameplates when the scope is ASME Section I Boilers.



- 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.

FIGURE 5.7.5-a

Required markings for repairs, with use of National Board Form R-1

REPAIRED BY	
	CERTIFICATE HOLDER
NATIONAL BOARD “R” CERTIFICATE NUMBER	DATE REPAIRED

FIGURE 5.7.5-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	(1) °F
(2) * Minimum Required Relieving Capacity	
NATIONAL BOARD “R” CERTIFICATE NUMBER	DATE ALTERED

FIGURE 5.7.5-c

Required markings for re-ratings, with use of National Board Form R-2

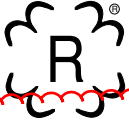
RE-RATED BY	
	CERTIFICATE HOLDER
M.A.W.P.	P.S.I.
AT	(1) °F
(2) * Minimum Required Relieving Capacity	
NATIONAL BOARD “R” CERTIFICATE NUMBER	DATE ALTERED

FIGURE 5.7.5-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

Note (2) → * NOTE:

- Not required when the scope of work does not change the Minimum Required Relieving Capacity.
- 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” to represent “no change”.
- Minimum Required Relieving Capacity may be abbreviated to M.R.R.C.

Note (1): When temperature limits are not required to be placed on the manufacturer's nameplate in accordance with the original code of construction, the temperature field for Figures 5.7.5b) and 5.7.5c) may be indicated as “N/A”.