Date Distributed: January 4, 2021

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD SUBCOMMITTEE REPAIRS AND ALTERATIONS

AGENDA

Meeting of January 13th, 2021
San Antonio, TX

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 AM

2. **Introduction of Members and Visitors**

3. **Check for a Quorum**

4. **Awards/Special Recognition**

5. **Announcements**

   The National Board will be hosting a reception for all committee members and visitors on Wednesday evening at 5:30pm.

6. **Adoption of the Agenda**

7. **Approval of the Minutes of the July 15th, 2020 Meeting**

   The minutes are available for review on the National Board website, www.nationalboard.org.

8. **Review of Rosters (Attachment Page 1)**
   a. **Membership Nominations**
      i. Mr. Don Kinney (Jurisdictional Authorities) has expressed interest in becoming a member of Subgroup and Subcommittee R&A, as well as the Historical Boilers Task Group.
      ii. Mr. David Domitrovich (Users) has expressed interest in becoming a member of Task Group Locomotive, and was approved to become a member by the task group at their August 2020 meeting.

   b. **Membership Reappointments**
      i. The following Subgroup R&A memberships are set to expire prior to the July 2021 NBIC meeting: Mr. Frank Johnson, Ms. Kathy Moore, Mr. Brian Morelock, and Mr. Tom White.
      ii. The following Historical Boilers Task Group memberships are set to expire prior to the January 2021 NBIC meeting: Mr. Jim Getter, Dennis Rupert, Mr. Rob Troutt, Mr. Matt Sansone, and Mr. Mike Wahl.

   c. **Officer Nominations**

9. Interpretations

Item Number: 20-3	NBIC Location: Part 3, 3.3.4.8	Attachment Page 2

General Description: Inspector involvement in Fitness-for-Service Assessments

Subgroup: Repairs and Alterations

Task Group: J. Siefert (PM)

Explanation of Need:
The below questions are intended to gain clarity as to first which Inspector (i.e. "IS" Commissioned or "R" Endorsement) signs the FFSA Form NB-403 when an "R" Certificate Holder is involved with a repair in that region as well as determine what level of review of the Fitness-for-Service the Inspector is expected to complete. If it is an Inspector holding a "R" Endorsement with an AI Commission (not tested on NBIC Part 2), shouldn't the relevant pages in NBIC Part 2 concerning Fitness for Service be included in their tested body of knowledge, so they are aware of the detailed rules?

The Body-Of-Knowledge for National Board Inspectors holding either an "IS" Commission or "R" Endorsement does not reference ASME FFS-1/API 579 Fitness-For-Service Standard or have any expectation that the Inspector be capable of determining if the correct Fitness for Service methodology was used or that the assumptions taken by the Engineer in the analysis were the most appropriate or accurate. Clarification is also requested due to the Form NB-403 signature block stating "Verified by" for the Inspector without any other disclaimers as typically found on other Forms signed by Inspectors such as ASME MDRs and NBIC Form R-1/R-2.

July 2020 Meeting Action: J. Siefert presented that Action Item 20-10 may address this inquire and submitted a **Progress Report** to await the outcome of Item 20-10.

Item Number: 20-11	NBIC Location: Part 3, 3.3.3	Attachment Page 4

General Description: Scope of Repairs

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need:
NBIC Part 3 lists several examples of repair but nowhere limits the scope or amount of these examples that can be utilized when performing repairs. This creates some uncertainty when performing some types of repairs, such as replacing the tubesheets of a fixed tubesheet type heat exchanger as listed in 3.3.3 e). According to ASME BPV Code Section VIII Division 1 Part UHX, Section 13, the length of the tubes is a design parameter and therefore replacing the tubesheet in accordance with its original design might require the replacement of the tubes as well to maintain the original design length.

July 2020 Meeting Action: K. Moore presented. Discussion took place on if tubsheet replacement activities may qualify as a Repair or Alteration. Interpretation 17-11 was referenced, and P. Becker indicated that she would be opening a new Action Item to revise the definition of an alteration in 3.4.4 d) for clarification. It was decided that the proposal needs additional work at the TG Interpretation level, and the proposal can be submitted to SC R&A via Letter Ballot once ready. This was a **Progress Report**.

New Interpretation Requests:

Item Number: 20-66	**NBIC Location: Part 3, 3.3.2 e)**	**Attachment Page 6**

General Description: Possible contradictory interpretations of Part 3, 3.3.2 e) 2)

Subgroup: Repairs and Alterations

Task Group: R. Underwood (PM)

Explanation of Need:
Two previously issued interpretations, 95-14 and 95-21, seem to be contradictory with the NBIC itself. The reason for the interpretation request is that two previously published NBIC Interpretations and the NBIC itself seem to be contradictory. Interpretations 95-14 and 95-21 lead the reader to conclude that if the original vessel was postweld heat treated, then the addition of refractory clips by welding, regardless of size, without postweld heat treatment is an alteration. However, NBIC Part 3 [2019 Edition], 3.3.3 b)1) and 2) list addition of welded attachments to pressure parts, such as: Studs for insulation or refractory lining and hex steel or expanded metal for refractory lining as "Examples of Repairs". Furthermore, NBIC Part 3 [2019 Edition], 3.3.2 e) 2) states: "The following repairs may be considered as routine repairs and shall be limited to these categories:

2) The addition or repair of nonload bearing attachments to pressure-retaining items where postweld heat treatment is not required;

Item Number: 20-77	**NBIC Location: Part 3, 1.3.2**	**Attachment Page 7**

General Description: Authorization of repair/alteration activities

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need:
Many R-certificate holders also have U or S stamps and as such have a regular AI (with R endorsement) to whom they tend to have review repair and alteration packages. However, when the physical work will be conducted 'out of state' travel limitations and or jurisdictional authorization requirement prevent the local AI from making the final acceptance inspection thus another AI must do that work, para 1.3.2 a) makes clear that both Inspectors have to be employed by the same agency. Form R-2 has 2 Inspector sign off locations but does not make clear if the two Inspectors must be from the same AIA or not.

Item Number: 20-78	**NBIC Location: Part 3, 3.3.3 s) & 3.4.4 d)**	**Attachment Page 8**

General Description: Repairs and Alterations of Tube Bundles

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need:
Submission is for R Certificate Holders we provide Repair Inspection services for. NBIC Part 3, 3.3.3 s) seems to allow to be a repair, but under 3.4.4 d) where the dimensions change it might be classified as an alteration.)

Item Number: 20-81 **NBIC Location: Part 3, 4.4.2 a) 1)** **Attachment Page 10**

General Description: Minimum Required Test Pressure for Alteration Activities

Subgroup: Repairs and Alterations

Task Group: R. Underwood (PM)

Explanation of Need:
To provide clarity that the minimum test pressure for alterations shall be in accordance with the original code of construction.

Item Number: 20-89 **NBIC Location: Part 3, 4.4.2** **Attachment Page 11**

General Description: LIQUID PRESSURE TEST EXAMINATION METHODS APPLICABLE TO ALTERATIONS

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need:
For Alteration can Minimum Test Pressure Shall be Design Pressure or MAWP considering same Condition as Clause 4.4.1 of Pressure Test for Repairs.

Item Number: 20-90 **NBIC Location: Part 3, 1.4.1** **Attachment Page 12**

General Description: 1.4.1 ACCREDITATION PROCESS / NB-415- Certification of Scope

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need:
The NBIC Certification scope Does not Restrict the Repair Organization to Perform Based on their ASME Certification of scope, as long as Manual Controls are addressed for the Design and Repair/ Fabrication Scope they can perform Repair and Alteration.

Item Number: 20-91 **NBIC Location: Part 3, 1.5.1 h)** **Attachment Page 13**

General Description: Mechanical Repair Procedures

Subgroup: Repairs and Alterations

Task Group: R. Underwood (PM)

Explanation of Need:
Part 3, paragraph 1.5.1(h) requires that control of mechanical assembly/repair procedures be addressed in the R Certificate Holder's Quality Manual. Over the last year or so, there have been National Board Team Leaders requesting these procedures (during joint reviews) for work such as rolling tubes in a

boiler and replacing a bolted fitting on a pressure retaining item. This has resulted in questions from certificate holders and Inspectors about why an "R" certificate holder is required to have procedures for mechanical work that doesn't even require an "R" Stamp.

10. Action Items

Item Number: NB15-2208	**NBIC Location: Part 3**	**No Attachment**

General Description: Develop supplement for repairs and alterations based on international construction standards

Subgroup: Graphite
Task Group: Greg Becherer (PM)

July 2020 Meeting Action: No members of the Graphite Task Group were present to discuss the item. This was a **Progress Report**.

Item Number: 17-134	**NBIC Location: Part 3, Section 5**	**No Attachment**

General Description: Proposed Revision for registration of Form R-1 with the National Board containing ASME pressure part data reports attached.

Subgroup: Repairs and Alterations
Task Group: P. Shanks (PM), Rob Troutt, Joel Amato, Kathy Moore, Paul Edwards

July 2020 Meeting Action: Mr. P. Shanks presented a Progress Report.

Item Number: 17-167	**NBIC Location: Part 3, S3.2 d)**	**No Attachment**

General Description: Clarify repair inspection requirements for machined only graphite parts.

Subgroup: Graphite
Task Group: Aaron Viet (PM)

July 2020 Meeting Action: No members of the Graphite Task Group were present to present the item.

Item Number: 18-94	**NBIC Location: Part 3, S3.2 f), h); S3.4 a), b), c) etc.**	**No Attachment**

General Description: G-mark Requirements for Various Repairs/Alteration to Graphite

Subgroup: Graphite

Task Group: C. Cary (PM)

July 2020 Meeting Action: No members of the Graphite Task Group were present to present the item.

Item Number: 18-100	**NBIC Location: Part 3, 3.3.2**	**No Attachment**

General Description: Revision adding heat exchanger tubes with an outside diameter of ¾" or smaller to NBIC Part 3.3.2 Routine Repairs

Subgroup: Repairs and Alterations

Task Group: M. Toth – PM, B. Schaefer, N. Carter

July 2020 Meeting Action: Mr. M. Toth presented a **Progress Report**.

Item Number: 19-16 **NBIC Location: Part 3, 3.3.2 e)** **No Attachment**

General Description: Reword to provide clarity; contradictory requirement Part 3; 3.2.2 e)

Subgroup: Repairs and Alterations

Task Group: None assigned

Explanation of Need: This wording of this clause is causing confusion. The original submitter has had multiple instances where owners have requested to purchase welded replacement parts directly and read this clause with the belief that they can purchase a replacement part for in some cases a welded pressure part for an ASME Section I boiler and safe money by having the fabricator not Hydro test as per Section I even when it was not impractical to have the testing performed.

July 2020 Meeting Action: T. White presented a **Progress Report**.

Item Number: 19-60 **NBIC Location: Part 3, 1.5.1** **Attachment Page 14**

General Description: Quality System For Qualification For The National Board "R" Certificate

Subgroup: Repairs and Alterations

Task Group: K. Moore (PM), Paul Davis, B. Boseo, M. Toth, P. Shanks, M. Quisenberry, R. Sturm

Explanation of Need: Part 3, 1.5.1 provides a good outline for a Quality Systems Manual. However, the remaining elements of a Quality System, outside of the one's currently being addressed in Item 19-47 and 19-4 need to be embellished to provide a more auditable description of each element.

July 2020 Meeting Action: Ms. K. Moore presented a **Progress Report**.

Item Number: 19-61 **NBIC Location: Part 3, 3.3.4** **No Attachment**

General Description: Quality System For Qualification For The National Board "R" Certificate

Subgroup: Repairs and Alterations

Task Group: Paul Shanks (PM), J. Walker, T. McBee

Explanation of Need: Threaded insert are being used to fix a bolt that has broken off on certain types of boilers (autoclaves) which hold the heating elements in the water side of the boiler. When this happens, the technician correcting the problem will simply drill out the broken bolt with an over sized bit and inset a metallic insert. NBIC does address this this type of alteration.

July 2020 Meeting Action: P. Shanks presented a proposal. The proposal was revised after discussion to add select verbiage from PCC-2 into the NBIC instead of referencing PCC-2. A motion to send the revised proposal to the **SG and SC R&A via Letter Ballot** was made, seconded, and **Unanimously Approved.**

Item Number: 19-68	NBIC Location: Part 3, 1.6	No Attachment

General Description: Quality System For Qualification For The National Board “R” Certificate

Subgroup: Repairs and Alterations

Task Group: B. Wielgoszinski (PM)

Explanation of Need: Review of 1.6 for possible requirement for ANI's and ANII's to hold the (R) Endorsement for "NR" activities.

July 2020 Meeting Action: B. Wielgoszinski presented a **Progress Report**. Mr. R. Spuhl and Mr. T. Roberts volunteered to help work on this item and were added to the Task Group.

Item Number: 19-73	NBIC Location: Part 3, S3	No Attachment

General Description: Requirements for who can make hole plugging repairs on graphite blocks

Subgroup: Graphite

Task Group: C. Cary (PM), A. Viet, A. Stupica

Explanation of Need: Performing hole plugging repairs in graphite blocks is a common repair for graphite pressure vessels, but the NBIC currently has no formal requirements for this type of repair.

July 2020 Meeting Action: No members of the Graphite Task Group were present to present the item.

Item Number: 19-74	NBIC Location: Part 3, S3.3	No Attachment

General Description: Routine repair requirements for partial nozzle replacement

Subgroup: Graphite

Task Group: A. Stupica (PM), M. Bost

Explanation of Need: Currently only nozzle replacement is addressed as a routine repair. The group is planning on defining the types of partial nozzle replacements and repairs that could be defined as routine.

July 2020 Meeting Action: No members of the Graphite Task Group were present to present the item.

Item Number: 19-79	NBIC Location: Part 3, S3.5.4 h)	No Attachment

General Description: Re-word Part 3, S3.5.4 h) to clarify cementing procedure for plugs

Subgroup: Graphite

Task Group: A. Stupica (PM)

Explanation of Need: Existing language includes unnecessary steps and is clunky to read. Text will be reworded to clarify the full procedure.

July 2020 Meeting Action: No members of the Graphite Task Group were present to present the item.

Item Number: 19-82	**NBIC Location: Part 3, 1.5.1 j)**	**No Attachment**

General Description: Review verbiage in Part 3, 5.12.5.1 8) and 5.12.5.1.11)

Subgroup: Repairs and Alterations

Task Group: M. Quisenberry (PM)

Explanation of Need: Safety is not addressed in Part 3. This verbiage could be added to the 1.5.1 j) Method of Performing Work paragraph so Certificate Holders can address the safety concerns specific to their scope of activities.

July 2020 Meeting Action: Mr. M. Quisenberry presented this as a **ProgressReport**.

Item Number: 20-8	**NBIC Location: Part 3, 8.1 b)**	**No Attachment**

General Description: Interpretation revision process

Subgroup: Repairs and Alterations

Task Group: K. Moore (PM)

Explanation of Need: K. Moore presented that this Item can be closed if the NBIC Introduction is revised to address the use of Interpretations as proposed in this Action Item. This will be considered a **Progress Report** until the revised Introduction can be reviewed and this Action Item can be closed.

Item Number: 20-15	**NBIC Location: Part 3, 3.3.2 & 5.7.2**	**Attachment Page 20**

General Description: Stamping requirements for routine repairs

Subgroup: Repairs and Alterations

Task Group: R. Troutt (PM), K. Moore

Explanation of Need: This would offer traceability to the R-Stamp holder responsible for the work.

Meeting Action: R. Troutt presented a proposal. A motion was made, seconded, and **Unanimously Approved to send the proposal to SG and SC R&A via concurrent Letter Ballots**

Item Number: 20-16	NBIC Location: Part 3, 3.4.4	Attachment Page 25

General Description: Rules to address re-cold stretching of vessels built to Appendix 44 rules

Subgroup: Repairs and Alterations

Task Group: P. Shanks (PM)

Explanation of Need: ASME Section VIII Div.1 Mandatory Appendix 44 paragraph 44-6.2(g) clearly sets out that a vessel built to those rules needs to be re-stretch having had repair welding. it is not clear if ASME are referring to in process (at the original manufactures location) repairs or post construction repairs. However, as the NBIC is currently silent this potential issue should be addressed.

Meeting Action: P. Shanks presented a proposal. The proposal was revised after discussion and a decision was made that the proposal needed more work and the PM should ask the submitter of the revision request to attend the next meeting to provide more information on this. This was considered a **Progress Report.**

Item Number: 20-20	NBIC Location: Part 3, 3.2.2 e)	No Attachment

General Description: Revision to Part 3, 3.2.2 e)

Subgroup: Repairs and Alterations

Task Group: P. Davis (PM)

Explanation of Need: The certificate holder should not have to explain or justify why a part was not pressure tested in the manufacturing stage. PG-106.8 of Section I allows the part to be fabricated and shipped as such therefore no explanation should be required.

Meeting Action: P. Davis presented a **Progress Report.**

Item Number: 20-25	NBIC Location: Part 3, S2.13	No Attachment

General Description: Repair Procedure for Fire Boxes

Subgroup: SG Historical

Task Group: M. Wahl (PM), Robin Forbes, T. Dillon, & F. Johnson

Explanation of Need: In NBIC Part 3, S2.13.10.3, S2.13.11 do not define what to do at a riveted joint. On the tubesheet, or firedoor sheet, where it is flanged to rivet to the firebox, the repairs are silent on what to do at the riveted joint.

July 2020 Meeting Action:
This was a **Progress Report.**

Item Number: 20-47	NBIC Location: Part 3, 9.1	No Attachment

General Description: Revision of the definition of ANIA in Section 9 of all Parts

Subgroup: Repairs and Alterations

Task Group: R. Spuhl (PM)

Explanation of Need: ANIA can be revised to clarify requirements and activities of AIA's performing NR inspection activities.

Meeting Action: R. Spuhl presented a **Progress Report**.

Item Number: 20-48	NBIC Location: Part 3, 1.6	No Attachment

General Description: Review NR Program (1.6) to 2015 NQA-1 Edition

Subgroup: Repairs and Alterations

Task Group: P. Edwards (PM)

Explanation of Need: Latest NQA-1 revision to be compared to NR program (1.6) for consistency.

Meeting Action: B. Wielgoszinski presented a **Progress Report**.

New Items:

Item Number: 20-51	NBIC Location: Part 3, 9.1	Attachment Page 27

General Description: Add practicable and its definition to the glossary

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need: This is not a commonly used term in everyday language.

Item Number: 20-52	NBIC Location: Part 3, 1.6.2 a) 2)	No Attachment

General Description: Rvw NR requirements for ASME Section XI Div. 2 potential applications

Subgroup: Repairs and Alterations

Task Group: T. Roberts (PM)

Explanation of Need: This was created based on discussion from Item 20-47 dealing with ANIA requirements.

Item Number: 20-53	NBIC Location: Part 3, 3.3.5.2 a) & 3.4.5.1 b)	No Attachment

General Description: Certification of Repair or Alteration Plans

Subgroup: Repairs and Alterations

Task Group: S. Chestnut (PM)

Explanation of Need: The Clarification of the Certifying Engineer requirements.

Item Number: 20-54	NBIC Location: Part 3, 3.2.2 e)	No Attachment

General Description: Review and Update Part 3, 3.4.4 d)

Subgroup: Repairs and Alterations

Task Group: B. Schaefer (PM)

Explanation of Need: A change in dimension and/or contour is currently listed as an example of an alteration in Part 3, 3.4.4 d). A change in dimension may or may not be an alteration in actuality. Current wording does not allow for a change in dimension, even if it is a minor change not affecting the pressure retaining capability of the PRI, without being an alteration. This can be a burden to the industry.

Item Number: 20-55	NBIC Location: Part 3, 3.3.3 e)	Attachment Page 28

General Description: Examples of repairs

Subgroup: Repairs and Alterations

Task Group: J. Walker (PM)

Explanation of Need: By having an and between boiler and heat exchanger the tube is required to be simultaneously installed in both a boiler and a heat exchanger. This is valid for a boiler as they are heat exchanger but in the case of a pressure vessel heat exchanger they are not boilers as boil may not be happening. Therefore, this example is not applicable to pressure vessel which I do not believe is the intent.

Item Number: 20-60	NBIC Location: Part 3, 3.3.4.8	No Attachment

General Description: Part 3 Supplement for FFS Guidelines

Subgroup: Repairs and Alterations

Task Group: J. Siefert (PM)

Explanation of Need: The NBIC provides little guidance related to FFS activities and repairs in part 3.

Item Number: 20-61	NBIC Location: Part 3, S8	No Attachment

General Description: Revise Supplement 8

Subgroup: Repairs and Alterations

Task Group: J. Siefert (PM)

Explanation of Need: Supplement 8 has one sentence regarding filler metal size that needs to be deleted and dissimilar metal welding needs to be addressed under this Supplement.

Item Number: 20-63	NBIC Location: Part 3, 4.4.2 d)	Attachment Page 29

General Description: Addition of alternative method in lieu of pressure testing

Subgroup: Repairs and Alterations

Task Group: T. McBee (PM)

Explanation of Need: Another alternative method is required when contamination of the pressure-retaining item by liquids is possible or when pressure testing is not practicable, and when NDE is not fully applicable to ensure the structural integrity of the alteration.

Item Number: 20-67	NBIC Location: Part 3, S6	No Attachment

General Description: Revisions to Part 3, Supplement 6

Subgroup: Repairs and Alterations

Task Group: R. Underwood (PM)

Explanation of Need: Supplement 6 was implemented into the 2007 Edition of the NBIC Part 3 to provide requirements and guidelines for repairs, alterations and modifications to DOT Transport Tanks using the National Board's "TR" Program (which was never implemented). S6 has been revised over the years to remove reference to the "TR" Program, but still contains many requirements that are not correct. This purpose of this proposal is to review the entire Supplement and make appropriate revisions that comply with NBIC Part 3 and DOT requirements.

Item Number: 20-68	NBIC Location: Part 3, 1.5.1 e) & f)	Attachment Page 30

General Description: Certifications to be addressed for electric or written signature and date

Subgroup: Repairs and Alterations

Task Group: T. Seime (PM)

Explanation of Need: Certifications, either written or electronic, are not addressed in the NBIC.

Item Number: 20-69	NBIC Location: Part 3, S1.2.11.5	Attachment Page 34

General Description: Welds Across Riveted Lap Seams

Subgroup: Locomotive

Task Group: M. Ray (PM)

Explanation of Need: Clarify wording regarding weld taper and provide a cleaner figure to better illustrate the repair. Historical Boilers is considering adding the same text to their Section.

Item Number: 20-73	NBIC Location: Part 3, 4.4.2 a) 2)	Attachment Page 36

General Description: Pressure Testing of Connecting Welds (Part 3, 4.4.2(a)(2)

Subgroup: Repairs and Alterations

Task Group: R. Underwood (PM)

Explanation of Need: To clarify what the term "replacement part" as used in 4.4.2(a)(2) of Part 3 means.

Item Number: 20-74	NBIC Location: Part 3, 2.2.1	No Attachment

General Description: PQR conditions of validity

Subgroup: Repairs and Alterations

Task Group: P. Shanks (PM)

Explanation of Need: ASME Section IX are planning to issue a new code case under record number 19-2833 which would allow for the normal room temperature tensile test to be replaced with an elevated one due to some material not being capable of passing at room temp. As part of this the WPS may only be used within +- 50°F of the actual test temperature. If this code case is used and a boiler design temperature is changed the validity of the PQR/PWS qualification is in question. This is a similar situation to a PWHT time at temperature- reheat treating an existing PRI may take the PQR/WPS outside of its qualification.

Item Number: 20-75	NBIC Location: Part 3, 2.5.3.2 d) & h)	No Attachment

General Description: Charpy Impact Test Temperature for Welding Method 2

Subgroup: Repairs and Alterations

Task Group: S. Chestnut (PM)

Explanation of Need: Current text in 2.5.3.2 h) requires Charpy impact tests be conducted "at the temperature determined in accordance with NBIC Part 3, 2.5.3.2 d)." 2.5.3.2 d) only discusses WPS preheat and interpass temperature. It does not discuss the temperature at which to conduct CVN testing. There is no reference made to the MDMT.

Item Number: 20-76	NBIC Location: Part 3, 9.1	Attachment Page 39

General Description: Define "Remote" in the NBIC Glossary

Subgroup: Repairs and Alterations

Task Group: R. Valdez (PM)

Explanation of Need: With the use of indirect inspection equipment from borescopes to tethered drones/vehicles for confined space inspections, there is a need to clarify what is considered a "remote" inspection vs an "indirect" inspection.

Item Number: 20-80	NBIC Location: Part 3, 4.4.2 a) 1)	Attachment Page 40

General Description: Liquid Pressure Testing of Alterations

Subgroup: Repairs and Alterations

Task Group: R. Underwood (PM)

Explanation of Need: To provide clarity that the minimum test pressure for alterations shall be in accordance with the original code of construction.

Item Number: 20-83	NBIC Location: Part 3, 1.5.1 s) & 9.1	Attachment Page 41

General Description: Revision to Part 3, 3.2.2 e)

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need: Action Item 19-60 is proposing revisions/additions to all of 1.5.1. This proposal is to move the definition of "Nonconformance" out of the current 1.5.1 s) paragraph and into the glossary.

Item Number: 20-87	NBIC Location: Part 3, S6.8	Attachment Page 42

General Description: Registered Inspector requirements per DOT

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need: This reference to 49 CFR statutes would clarify the difference between an "Inspector" as used throughout the NBIC and a "Registered Inspector" specific to DOT tank repair/alteration activities.

Item Number: 20-88	NBIC Location: Part 3, S6.15.1	Attachment Page 43

General Description: Remove S6.15.1 - It is redundant and is not needed

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need: The certificate holder should not have to explain or justify why a part was not pressure tested in the manufacturing stage. PG-106.8 of Section I allows the part to be fabricated and shipped as such therefore no explanation should be required.

Item Number: 20-92	NBIC Location: Part 3, 1.5.1 h)	Attachment Page 44

General Description: Changing "Mechanical assembly procedures" to "Mechanical Repair Procedures"

Subgroup: Repairs and Alterations

Task Group: R. Underwood (PM)

Explanation of Need: "Mechanical assembly procedures" appears to be incorrectly referenced in the first sentence of 1.5.1(h) and should state "mechanical repair procedures."

11. Future Meetings

July 12th-15th, 2021 – Cincinnati, OH
January 10th-13th, 2022 – TBD

12. Adjournment

Respectfully submitted,

Jonathan Ellis

Jonathan Ellis
NBIC Secretary

Subcommittee Repairs/Alterations

Last Name	First Name	Interest Category	Role	Exp. Date	More
Troutt	Robby	Jurisdictional Authorities	Chair	08/30/2021	Details
Moore	Kathy	National Board Certificate Holders	Vice Chair	01/30/2022	Details
Hellman	Terrence		Secretary	12/30/2099	Details
Becker	Patricia	National Board Certificate Holders	Member	10/30/2022	Details
Boseo	Brian	National Board Certificate Holders	Member	08/30/2021	Details
Edwards	Paul	National Board Certificate Holders	Member	08/30/2021	Details
Hopkins	Craig	National Board Certificate Holders	Member	01/30/2022	Details
McBee	Timothy	Authorized Inspection Agencies	Member	10/30/2022	Details
Miletti	Ray	Manufacturers	Member	07/30/2022	Details
Moedinger	Linn	Users	Member	01/30/2022	Details
Morelock	Brian	Users	Member	01/30/2023	Details
Quisenberry	Michael	National Board Certificate Holders	Member	10/30/2022	Details
Schaefer	Benjamin	National Board Certificate Holders	Member	01/30/2022	Details
Seime	Trevor	Jurisdictional Authorities	Member	07/30/2023	Details
Sekely	James	General Interest	Member	08/30/2021	Details
Shanks	Paul	Authorized Inspection Agencies	Member	10/30/2022	Details
Siefert	John	General Interest	Member	10/30/2022	Details
Sturm	Rick	Jurisdictional Authorities	Member	07/30/2023	Details
Toth	Marty	General Interest	Member	01/30/2022	Details
Underwood	Robert	Authorized Inspection Agencies	Member	07/30/2023	Details

PROPOSED INTERPRETATION

Inquiry No.	**20-3**
Source	Nathan Carter, HSB nathan_carter@hsb.org
Subject	Inspector involvement in Fitness-for-Service Assessments **Background:** The below questions are intended to gain clarity as to first which Inspector (i.e. "IS" Commissioned or "R" Endorsement) signs the FFSA Form NB-403 when an "R" Certificate Holder is involved with a repair in that region as well as determine what level of review of the Fitness-for-Service the Inspector is expected to complete. If it is an Inspector holding a "R" Endorsement with an AI Commission (not tested on NBIC Part 2), shouldn't the relevant pages in NBIC Part 2 concerning Fitness for Service be included in their tested body of knowledge, so they are aware of the detailed rules? The Body-Of-Knowledge for National Board Inspectors holding either an "IS" Commission or "R" Endorsement does not reference ASME FFS-1/API 579 Fitness-For-Service Standard or have any expectation that the Inspector be capable of determining if the correct Fitness for Service methodology was used or that the assumptions taken by the Engineer in the analysis were the most appropriate or accurate. Clarification is also requested due to the Form NB-403 signature block stating "Verified by" for the Inspector without any other disclaimers as typically found on other Forms signed by Inspectors such as ASME MDRs and NBIC Form R-1/R-2. An example is a R-Certificate holder was hired to repair a weld seam. It was discovered during a repair that multiple base metal laminations existed adjacent to the repair location. A Fitness for Services Evaluation was subsequently performed. The first question is whether or not it is the responsibility of the Repair Inspector to sign the FFSA form once everything has been properly vetted, since the defect being left in place is not necessarily within the scope of the initial repair being performed by the "R" Certificate Holder, or should this be signed off by a Commissioned Inservice Inspector, since they are examined on the rules of NBIC Part 2? Also, Form NB-403 is vague in the signature block region for the scope of what the Inspector is signed for. It could be alluded that without a statement, such as those found on the R-1 and R-2 forms, the Inspector is signing off on the appropriateness and adequacy of the Fitness-For-Service methodology performed by the Engineer.
Edition	2019; Part: Repairs and Alterations; Section: 3; Paragraph: 3.3.4.8 2019; Part: Inspection; Section: 4; Paragraph: 4.4
Question	Question 1: In accordance with NBIC Part 3, 3.3.4.8, a fitness-for-service condition assessment as described in NBIC Part 2, 4.4 shall be completed and adequately documented on the FFSA Form NB-403. Once Form NB-403 is completed, is it required that the Inspector signing this Form hold a National Board "R" Endorsement as described in RCI-1/NB-263? Question 2: NBIC Part 2 4.4.1 d) states that the Inspector shall indicate acceptance of the Report of FFSA by signing. Paragraph 4.4.3 b) states that the Inspector shall review the condition assessment methodology and ensure that the inspection data and documentation are in accordance with Part 2. Is the Inspector's signature on Form NB-403 an indication that the condition assessment and recommendations completed by the Engineer have been fully reviewed for appropriateness and accuracy by the Inspector?

	Question 3: If the answer to Question 2 is No, is the Inspector's signature on Form NB-403 an indication of acceptance solely on the basis of review of the Form for completeness and verification that the requirements outlined in 4.4 were addressed?
Reply	Proposed Reply 1: Yes Proposed Reply 2: No Proposed Reply 3: Yes
Committee's Question	
Committee's Reply	
Rationale	

PROPOSED INTERPRETATION

Inquiry No.	**20-11**
Source	Hugh-Jean Nel, Sasol Hugh-Jean.Nel@sasol.com
Subject	Scope of Repairs **Background:** Historically NBIC has not defined limitations on the scope of repair provided the entire item is being rebuilt, see Question & Reply 2 & 3 in Interpretation 98-28. NBIC Part 3 lists several examples of repair but nowhere limits the scope or amount of these examples that can be utilized when performing repairs. This creates some uncertainty when performing some types of repairs, such as replacing the tubesheets of a fixed tubesheet type heat exchanger as listed in 3.3.3 e). According to ASME BPV Code Section VIII Division 1 Part UHX, Section 13, the length of the tubes is a design parameter and therefore replacing the tubesheet in accordance with its original design might require the replacement of the tubes as well to maintain the original design length.
Edition	2019; Part: Repairs and Alterations; Section: 3; Paragraph: 3.3.3 Examples of Repairs
Question	Question: Is it permissible for repair activities performed on pressure retaining item to have more than one activity listed in 3.3.3 with the scope of repair?
Reply	Proposed Reply: Yes, ~~provided that the scope of repairs has been approved by the Inspector, and when required, by the Jurisdiction.~~
Committee's Question 1	~~Can~~ May multiple repair activities referenced in 3.3.3 of Part 3 be listed on a single Form R-1 Report when performing a repair on a pressure retaining item?
Committee's Reply	Yes
Rationale	There is nothing in the NBIC that restrict the repair work performed on one vessel at the same time.
Committee's Question 2	Other than tube plugging, ~~I~~is it considered an alteration when the heat transfer surface(s)~~tube length~~ of a heat exchanger is ~~changed~~ changed from its original design~~while replacing tube sheets~~ on a ~~ASME~~ ~~Section VIII, Div 1~~ pressure vessel?
Committee's Reply	Yes~~.~~ Reference NBIC Part 3,. 3.4.4 d)
Rationale:	~~The tube length is a dimension as mentioned in 3.4.4. d~~

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3.4.4 EXAMPLES OF ALTERATIONS

d) A change in the dimensions or contour of a pressure-retaining item;

3.3.3 EXAMPLES OF REPAIRS

e) Replacement of heat exchanger tubesheets in accordance with the original design;

INTERPRETATION 98-28

Subject: RC-1050(c) Replacement Parts Fabricated by an "R" Certificate Holder
Appendix 6 Pressure Retaining Replacement Items
RC-1050 Definition of New Replacement Parts

1998 Edition

Question 1: Does RC-1050(c) of the NBIC permit the holder of an "R" Certificate to fabricate by welding new and exact pressure retaining replacement parts for an ASME stamped item that the "R" stamp holder is repairing?

Reply 1: No. ASME replacement parts fabricated by welding that require shop inspection by an Authorized Inspector shall be fabricated by an organization having an appropriate ASME Certificate of Authorization.
Question 2: An ASME stamped item is determined to be corroded beyond repair and the only salvageable part is the ASME Code stamping or nameplate. Is it the intent of the NBIC to permit a holder of an "R" Certificate only to build a complete new and exact pressure retaining replacement item using the original ASME construction Code, Section, Edition and Addenda and same materials, transfer and document the transfer of the ASME stamping or nameplate on an R-1 Form to the new pressure-retaining item and stamp the repair with the "R" stamp?
Reply 2: No.
Question 3: Does the NBIC define the point at which a repair becomes new construction?
Reply 3: No.

PROPOSED INTERPRETATION

Item Number:	**20-66**
Submitted by:	Alexander Garbolevsky Alex_garbolevsky@hsb.com
Subject:	Possible contradictory interpretations of Part 3, 3.3.2 e) 2) **Explanation of Need:** Two previously issued interpretations, 95-14 and 95-21, seem to be contradictory with the NBIC itself. **Background Information:** The reason for the interpretation request is that two previously published NBIC Interpretations and the NBIC itself seem to be contradictory. Interpretations 95-14 and 95-21 lead the reader to conclude that if the original vessel was postweld heat treated, then the addition of refractory clips by welding, regardless of size, without postweld heat treatment is an alteration. However, NBIC Part 3 [2019 Edition], 3.3.3 b)1) and 2) list addition of welded attachments to pressure parts, such as: Studs for insulation or refractory lining and hex steel or expanded metal for refractory lining as "Examples of Repairs". Furthermore, NBIC Part 3 [2019 Edition], 3.3.2 e) 2) states: "The following repairs may be considered as routine repairs and shall be limited to these categories: · 2) The addition or repair of nonload bearing attachments to pressure-retaining items where postweld heat treatment is not required;
NBIC Location:	2019 NBIC Part 3, 3.3.2 e) 2)
Question:	An ASME BPV Code Section VIII, Div. 1 pressure vessel (P-No. 1, 2-1/4 in thick), fabricated in 1971, was completely postweld heat treated (PWHT) in an oven. The vessel nameplate is marked "HT". No special service applies. In 2020, refractory clips are added by welding. The attachment welds are of such size that they are exempted from PWHT per ASME BPV Section VIII, Div. 1, 2019 Edition, Table UCS-56-1 General Note (b)(3)(c). May the welding of the refractory clips be considered as a "routine repair" under NBIC (2019) Part 3, 3.3.2 e) 2)?
Proposed Reply:	Yes.
Committee's Question:	
Committee's Reply:	
Rationale:	

PROPOSED INTERPRETATION

Item Number:	**20-77**
Submitted by:	Paul Shanks paul.shanks@onecis.com
Subject:	Authorization of repair/alteration activities **Explanation of Need:** Many R-certificate holders also have U or S stamps and as such have a regular AI (with R endorsement) to whom they tend to have review repair and alteration packages. However when the physical work will be conducted 'out of state' travel limitations and or jurisdictional authorization requirement prevent the local AI from making the final acceptance inspection thus another AI must do that work, para 1.3.2 a) makes clear that both Inspectors have to be employed by the same agency. Form R-2 has 2 Inspector sign off locations but does not make clear if the two Inspectors must be from the same AIA or not. **Background Information:** Paragraph 1.3.2 a) situates that the inspectors that authorizes the repair/alteration and the inspector that performs the acceptance inspection be employed by the same AIA. However, the activity of authorizing the repair/alteration is not defined and it is not clear what constitutes authorization. Given that form R-2 has sign off locations for design and constructions, if two different Inspectors sign, should they be employed by the same agency?
NBIC Location:	2019 NBIC Part 3, 1.3.2
Question:	Q1: Given the restriction of employment in paragraph 1.3.2 a) if two inspectors are signing an R-2 may they be employed by different AIA's? Q2: if the answer to the above is yes, does this mean the Inspector making the final acceptance inspection is the only Inspector that is suitable to authorize the inspection?
Proposed Reply:	R1: No. R2: Yes.
Committee's Question:	
Committee's Reply:	
Rationale:	

PROPOSED INTERPRETATION

Item Number:	**20-78**
Submitted by:	Micah Davidian mdavidian@dir.ca.gov
Subject:	Repairs and Alterations of Tube Bundles **Explanation of Need:** Submission is for R Certificate Holders we provide Repair Inspection services for. **Background Information:** For the above questions 1-4, NBIC Part 3, 3.3.3 s) seems to allow to be a repair, but under 3.4.4 d) where the dimensions change it might be classified as an alteration.)
NBIC Location:	2019 NBIC Part 3, 3.3.3 s) & 3.4.4 d)
Question:	Question 1: When a tube bundle is replaced where the new tubesheet material is the same as the original bundle but has a thicker tubesheet due to adding corrosion allowance where the original design did not include corrosion allowance, is this considered a repair or alteration? Question 2: When a tube bundle is replaced where the new tubesheet material is the same as the original bundle but has a thicker tubesheet due to adding additional corrosion allowance to the original design, is this considered a repair or alteration? Question 3: When a tube bundle is replaced where the new tubesheet material is the same as the original bundle but has a thicker tubesheet due to adding thickness for future machining allowance, is this considered a repair or alteration? Question 4: For a tube bundle, does NBIC Part 3, 3.4.4 d) mean that any physical changes e.g. tubesheet thickness, tube wall thickness or length of tubes from the original design will be an alteration? Question 5: If a tube bundle is replaced where the new tubesheet material is the same as the original bundle but has a thicker tubesheet due to ASME Sec VIII, Div. 1, Part UHX tubesheet formulas, is this considered a repair or alteration.
Proposed Reply:	Question 1: Alteration (calculations required) Question 2: Alteration (calculations required) Question 3: Repair Question 4: Some may be repairs others alterations. Question 5: Alteration (calculations required)
Committee's Question:	
Committee's Reply:	

Rationale:	

PROPOSED INTERPRETATION

Item Number:	**20-81**
Submitted by:	Micah Davidian robert_underwood@hsb.com
Subject:	Minimum Required Test Pressure for Alteration Activities **Explanation of Need:** To provide clarity that the minimum test pressure for alterations shall be in accordance with the original code of construction. **Background Information:** I have recently had discussions with some repair firms and Repair Inspectors who believe there are no minimum test pressure requirements when performing liquid pressure tests of alterations since it is not specifically stated in paragraph 4.4.2(a)(1). This interpretation, combined with a new proposal to revise 4.4.2(a)(1) will make it clear that minimum test pressures for alteration activities shall comply with the original code of construction, which I believe is the intent.
NBIC Location:	2019 NBIC Part 3, 4.4.2 a) 1)
Question:	When conducting a liquid pressure test of an alteration activity as described in 4.4.2(a)(1), shall the minimum required test pressure be as specified in the original code of construction?
Proposed Reply:	Yes.
Committee's Question:	
Committee's Reply:	
Rationale:	

PROPOSED INTERPRETATION

Item Number:	**20-89**
Submitted by:	Jagadheesan Vellingiri Muthukumaraswamy jaga4021@hotmail.com
Subject:	LIQUID PRESSURE TEST EXAMINATION METHODS APPLICABLE TO ALTERATIONS **Explanation of Need:** For Alteration can Minimum Test Pressure Shall be Design Pressure or MAWP considering same Condition as Clause 4.4.1 of Pressure Test for Repairs. **Background Information:** For an ASME SEC VIII Div 2, Class 1 or Class 2 / ASME SEC I / ASME B 31.1 Equipment is Subjected to Alteration due to Increase in MAWP.
NBIC Location:	2019 NBIC Part 3, 4.4.2
Question:	1. Is it the Intent of the Code that the Minimum Pressure for Liquid Pressure Test for Alteration Shall be as per Original Code of Construction? 2.Can Pressure Test Be Conducted at Design Pressure or MAWP for Alteration Considering Remaining Thickness or Corrosion Condition considering Integrity of the Equipment?
Proposed Reply:	1. No 2. Yes
Committee's Question:	
Committee's Reply:	
Rationale:	

PROPOSED INTERPRETATION

Item Number:	**20-90**
Submitted by:	Jagadheesan Vellingiri Muthukumaraswamy jaga4021@hotmail.com
Subject:	1.4.1 ACCREDITATION PROCESS / NB-415- Certification of Scope **Explanation of Need:** The NBIC Certification scope Does not Restrict the Repair Organization to Peform Based on their ASME Certification of scope, as long as Manual Controls are addressed for the Design and Repair/ Fabrication Scope they can perform Repair and Alteration. **Background Information:** A Repair Organization is Holding an valid R certification under NBIC, and Holds Valid ASME- U Authorization. The Certifcation Scope Under NBIC is issued for Metallic Repair and Alteration, Can the Repair Organization Perform Repair and Alteration on ASME Sec VIII Div 2 / 3 and Section 1 Components.
NBIC Location:	2019 NBIC Part 3, 1.4.1
Question:	1. Is it the Intent of Code that based on the Initial Certification under 1.4.1 / NB-415 Process, and Quality manual Restriction that if the Repair Organization is Authorized for Repair and Alteration on Sec VIII Div 1 Vessels only they are entitled to Perform Repair and alteration of Sec VIII Div 1 Vesels? 2. If the Answer to above Question is No then can the Repair Organization Perform Repair and Alteration on Sec VIII Div 2/Div 3 and Section 1 Components if the controls are addressed in Manual?
Proposed Reply:	1. No 2. Yes
Committee's Question:	
Committee's Reply:	
Rationale:	

PROPOSED INTERPRETATION

Item Number:	**20-91**
Submitted by:	Robert Underwood Robert_Underwood@hsb.com
Subject:	Mechanical Repair Procedures **Explanation of Need:** To provide clarity on whether procedures are required for mechanical repairs that do not require an R Form. **Background Information:** Part 3, paragraph 1.5.1(h) requires that control of mechanical assembly/repair procedures be addressed in the R Certificate Holder's Quality Manual. Over the last year or so, there have been National Board Team Leaders requesting these procedures (during joint reviews) for work such as rolling tubes in a boiler and replacing a bolted fitting on a pressure retaining item. This has resulted in questions from certificate holders and Inspectors about why an "R" certificate holder is required to have procedures for mechanical work that doesn't even require an "R" Stamp.
NBIC Location:	2019 NBIC Part 3, 1.5.1 h)
Question:	Are mechanical repair/assembly procedures that are referenced in Part 3, paragraph 1.5.1(h), required for work where an R Form is not required?
Proposed Reply:	No.
Committee's Question:	
Committee's Reply:	
Rationale:	

1.5 QUALITY SYSTEM

A holder of a National Board *Certificate of Authorization* shall have and maintain a written Quality System. The Quality System shall identify the processes necessary to satisfactorily meet the requirements of the NBIC and shall be available for review. The Quality System may be in the form of a manual or consist of several documents~~brief or voluminous~~, depending on the projected scope of work. It shall be treated confidentially by the National Board.

1.5.1 OUTLINE OF REQUIREMENTS FOR A QUALITY SYSTEM FOR QUALIFICATION FOR THE NATIONAL BOARD "R" *CERTIFICATE OF AUTHORIZATION*

The following ~~is a guide for required~~ features outlined in this section~~of a Quality System which shall be included in the organization's Quality System Manual. As a minimum, each organization~~ shall be ~~address~~ documented ~~the required features~~ relative to the scope of work ~~to be~~ performed within~~.~~ the ~~O~~organization's Quality System. ~~shall explain their~~The intent, capability and applicability for each required feature shall be stated.~~outlined in this section.~~ Work may be subcontracted provided the necessary controls are clearly defined for maintaining full responsibility for code compliance by the National Board ~~repair organization~~Certificate Holder certifying the work.

a) Title Page

The title page shall contain the organization's legal name, accepted abbreviation, physical address, and scope of activities.

b) Content Page

The content page shall list the activities described in the Quality System so that each subject or document, number (if applicable), and revision level is clearly identified.

c) Scope of Work

The scope of work shall clearly indicate the type of repairs or alterations the organization is capable of and intends to carry out. The scope of work indicated shall include the following, as applicable.

- Repairs Only at either Shop or Field or Both
- Alterations Only at either Shop or Field or Both
- Repairs and Alterations at either Shop or Field or Both
- Metallic Repairs
- Non-Metallic Repairs
- Design Only

d) Statement of Authority and Responsibility

A dated ~~dated~~ *Statement of Authority and Responsibility*, ~~signed by a senior management official of the organization,~~ shall clearly identify that the ~~be included in the~~ Quality System has the full support of management and endorsed by signature of a senior management official. Further, the *Statement* shall include:

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

2) The title of the individual who has the authority and responsibility charged with the development and ~~ensuring the Quality System is~~ implementation~~ed~~ of the Quality System and ~~as described, and confirming~~ the freedom to identify quality problems~~,~~ ~~and to initiate, recommend and~~ provide solutions and when required stop or prohibit work from continuing.

3) A statement that ~~if there are~~ conflicts or~~is a~~ disagreements with ~~in~~ the implementation of the Quality System, will be brought to the attention of the organization's senior

management official~~the matter is to be referred~~ for a resolution ~~to a higher authority and shall be resolved~~ ~~in a manner~~ that will not conflict with code, jurisdiction/regulatory authority or Quality System requirements~~; and~~.

e) ~~Manual~~ Quality System Control

The Quality System~~manual~~ shall define how~~include the necessary provisions for~~ revisi~~o~~n~~sg~~ of individual subjects, exhibits or documents will be identified, and how distribution and retrieval~~issuing documents~~ will be achieved to ensure~~keep the manual current~~ only the latest accepted revisions are available for use. In addition, the following shall be documented:

1) The title of the individual responsible for the preparation and~~authorized to~~ approva~~l~~e of the Quality System including review of code editions, standards, and jurisdictional requirements.

2) ~~revisions shall be included in the manual.~~ Acceptance from the ~~Revisions must be accepted by the~~ Authorized Inspection Agency prior to issuance and implementation of the Quality System~~manual and its implementation~~.

f) Organization

An organizational chart shall be included in the Quality System~~manual. I~~ and it shall reflect actual levels of authority~~-~~ and lines of communication associated with the functional job titles. In addition, roles and responsibilities associated with the functional job titles identified within the organizational chart, ~~include the title of the heads of all departments or divisions that perform functions~~ that can affect the quality of the repair or alteration, shall be clearly defined and documented.~~ and it shall show the relationship between each department or division. The manual shall identify the title of those individuals responsible for preparation, implementation, or verification of the Quality System. The responsibilities shall be clearly defined and the individuals shall have the organizational freedom and authority to fulfill those responsibilities. The following activities shall be documented :~~

~~Responsibilities associated with the Authorized Inspection Agency (AIA) of record.~~
~~Protocol describing when the AIA of record cannot provide coverage.~~
~~Personnel performing supervisory activities for procedure and performance qualifications shall:~~

~~(a) be designated by the organization with responsibility for certifying qualification documents.~~

~~(b) have a satisfactory level of competence in accordance with the organization's quality program.~~

~~(c) have a record, maintained by the organization, containing objective evidence of the qualifications, training, or experience.~~

g) Drawings, Design and Specifications

The ~~manual~~Quality System shall contain controls to ensure that all applicable design information, ~~applicable~~ drawings, ~~design~~ calculations, specifications, and instructions are prepared or obtained, controlled, and interpreted in accordance with the scope of work and the original code of construction, including:~~.~~

- Initiation of job numbers and control of associated work.

- ~~Define~~Description of the ~~-~~scope of work.
- Performance and approval of design including title of approver.
- Drawings and other pertinent information (i.e., Code Edition, pressure, temperature, minimum design metal temperature, nondestructive examination (~~-NDE~~NDE), heat treatment, weld details, etc.)
- Review of design calculations, drawings, material specifications and process control sheets with Inspector to obtain acceptance.
- Revision and distribution control of design documents

h) Repair and Alteration Methods

The ~~manual~~Quality System shall include controls for repairs and alterations, including mechanical assembly procedures, materials, ~~nondestructive examination~~NDE methods, pre-heat, and postweld heat treatment, as applicable. Special requirements such as nonmetallic repairs and alterations to graphite and fiber-reinforced thermosetting plastic pressure-retaining items~~,~~ including bonding or mechanical assembly procedures shall be addressed, if applicable.

i) Materials

The ~~manual~~Quality System shall describe the method used to ensure that only acceptable materials (including welding material) are used for repairs and alterations. The Quality System~~manual~~ shall include a description of how existing material is identified and new material is ordered, verified, and identified. The Quality System~~manual~~ shall identify the title of the individual(s) responsible for each function and a brief description of how the function is to be performed.

j) Method of Performing Work

The Quality System~~manual~~ shall describe the methods for performing and documenting repairs and alterations in sufficient detail to permit the Inspector to determine at what stages specific inspections are to be performed. ~~The method of repair or alteration must have prior acceptance of the Inspector. It is also essential that the Quality System include provisions to ensure safe working conditions during welding, testing, and all activities related to repairs and alterations.~~

k) Welding, NDE and Heat Treatment

The ~~manual~~ Quality System shall describe controls for welding, ~~nondestructive examination~~NDE, and heat treatment.

1) Welding – The Quality System~~manual is to~~ shall indicate the title and qualifications of the individual(s) responsible for the welding procedure specification (WPS) and its qualification, and the qualification of welders and welding operators. It is essential that only ~~welding procedure specification~~WPS's and welders or welding operators qualified ~~,~~ ~~as required by the NBIC,~~ be used in the repair or alteration of pressure-retaining items. It is also essential that ~~that welders and welding operators maintain their~~ continuity for welders and welding operators be maintained~~proficiency~~ as required by the NBIC, while engaged in the repair or alteration of pressure-retaining items. The ~~manual~~Quality System shall also describe controls for ensuring that the required WPS or Standard Welding Procedure Specification (SWPS) is available to the welder or welding operator prior to welding and establish the basis for welder to weld traceability. ~~Similar responsibility for nondestructive examination and heat treatment shall be described in the manual.~~

2) ~~Nondestructive examination~~NDE – The title of the individual(s) responsible to determine the type and extent of NDE required for the repair or alteration shall be identified. It is also essential that ~~this manual~~the Quality System indicate~~s~~ the individual(s) responsible for the review of subcontracted NDE procedures and personnel. When NDE is performed in-house, the individual responsible for the written practice and the standard used for the basis of training, qualification, and records shall be documented.

3) Heat treatment – The ~~manual~~Quality System shall indicate the individual(s) responsible to ensure that a proper heat treatment has been applied to the repair or alteration. It is also essential that the use of alternative welding methods per the NBIC, Part 3, 2.5.3 be described.

l) Examinations and Tests

The Quality System~~Reference~~ shall describe the process used to ensure that all required examinations and tests have been successfully performed and made available to the Inspector for acceptance ~~be made in the manual for examinations and tests upon completion~~ of the repair or alteration, prior to signing the Form "R" Report.

m) Calibration

The Quality System~~manual~~ shall describe a system for the calibration of examination, measuring, and test equipment used in the performance of repairs and alterations. At a minimum, it shall include:

1) Examination, measuring, and test equipment, subject to calibration, shall have a unique identification number and a calibrate~~d~~ion date as well as a specified next calibration due date.

2) The methodology of how the various equipment will be calibrated.

3) The person(s) responsible for the calibration of the equipment.

4) A statement that all calibrations will be ~~tracible~~traceable to the National Institute of Standards and Technology (NIST) or another nationally recognized Standards Organization~~, as much as practical~~. When no nationally recognized standard exists, the basis for calibration shall be documented.

n) ~~Approval, Inspection,~~Authorization and Acceptance ~~and Inspection~~ of Repair or Alteration

The Quality System~~manual~~ shall specifically ~~indicate~~ state that before the work is started, ~~acceptance~~ authorization of the repair/alteration plan and acceptance of the method(s) used shall be obtained from ~~an~~ the Inspector who will make the required inspections.

~~and confirm NBIC compliance by signing and dating the applicable NBIC Form "R" Report Form upon completion of the work. In addition,~~

~~T~~the Quality System~~manual shall specifically address allowance for acceptance of the inspector for application of the "R" symbol stamp to a pressure retaining item~~ and ~~.~~

~~The manual shall provide for adequate control of the "R" Symbol Stamp.~~

o) Inspections and ~~Inspections~~Document Review

The ~~manual~~ Quality System shall make provisions for the Inspector to have access to the physical work, including all drawings, design calculations, specifications, procedures, process sheets, repair or alteration procedures, test results, and other documents as necessary to ensure compliance with the NBIC. A copy of the current ~~manual~~Quality System shall be available to the ~~inspector~~Inspector.

p) Control of Stamp

The Quality System shall provide adequate control of the "R" Symbol Stamp. In addition, the Quality System shall make provisions for Inspector acceptance for the application of the "R" symbol stamp to the pressure retaining item.

~~p~~g) Report of Repair or Alteration Form

The Quality System~~manual~~ shall indicate the title of the individuals responsible for preparing, signing, and presenting the NBIC Report Forms to the Inspector. The Inspector shall confirm NBIC compliance by signing and dating the applicable NBIC Form "R" Report upon completion of the work. The distribution of the NBIC Form "R" Report shall be described in the Quality System.

~~The distribution of the NBIC Form "R" Report Forms shall be described in the manual.~~

~~q~~r) Exhibits

~~Any forms~~Forms referenced in the Quality System~~manual~~ shall be included and~~. The form~~ may be a part of the referencing document or included as an exhibit or appendix. For clarity, the forms may be completed and identified as examples. ~~When forms are identified as examples, a statement shall clearly define the acceptable modifications to the examples without requiring Inspector acceptance.~~Different forms may be utilized as long as they contain the same information as the exhibited forms without the need for acceptance by the Inspector.~~The name and accepted abbreviations of the "R" Certificate Holder shall be included in the manual.~~

~~r~~s) Construction Code

The Quality System~~manual~~ shall include provisions for addressing the requirements that pertain to the specific ~~construction code~~code of construction for the equipment being repaired or altered.

~~s~~t) Nonconformances
~~ing Items~~

A~~There shall be a~~ system shall be established to identify and control a product or service in which any characteristics do not conform to the applicable rules of the NBIC, code of construction~~code~~, or jurisdictional requirements, to prevent their use. ~~acceptable to the Inspector for the correction of nonconformities. A nonconformance is any condition that does not comply with the applicable rules of the NBIC, construction code, jurisdictional requirements, or the quality system.~~ In addition, the responsibility and authority for the disposition of nonconforming items shall be defined including provisions for Inspector involvement~~Nonconformance must be corrected or~~

~~eliminated before the repaired or altered component can be considered in compliance with the NBIC~~. It is also essential that systemic or programmatic nonconformances be identified and corrected ~~and when necessary, corrected~~ within the Quality System.

~~t~~u) Records Retention

The ~~quality manual~~Quality System shall describe a system for ~~filing,~~ maintaining~~,~~ and ~~easily~~ retrieving records supporting or substantiating ~~the administration of~~ the Quality System within the scope of the "R" *Certificate of Authorization*.

1) Records may represent any information ~~used to further substantiate the statements~~ used to provide documented evidence ~~to describe the scope~~ of the quality of items and quality control activities of the work completed to a pressure-retaining item (PRI), and documented on a Form "R" report as applicable.~~.~~

2) Records may include, but are not limited to those depicting or calculating an acceptable design, material compliance or certifications, NDE-reports, PWHT-charts, a WPS used, a welder, bonder, or cementing technician's process continuity records, drawings, sketches, ~~or~~ photographs, etc.

3) The record retention schedule described in the Quality System ~~Manual~~ is to follow the instructions identified in NBIC Part 3, Table 1.5.1.

3.3.2 ROUTINE REPAIRS

a) Routine repairs are repairs for which the requirements for in-process involvement by the Inspector ~~and stamping by the "R" Certificate Holder~~ may be waived as determined appropriate by the Jurisdiction and the Inspector. All other applicable requirements of this code shall be met. Prior to performing routine repairs, the "R" Certificate Holder should determine that routine repairs are acceptable to their Repair Inspector and the Jurisdiction, ~~,~~ where the pressure-retaining item is installed;

b) The Inspector, with the knowledge and understanding of jurisdictional requirements, shall be responsible for meeting jurisdictional requirements and the requirements of this code;

c) The "R" Certificate Holder's Quality System Program shall describe the process for identifying, controlling, and implementing routine repairs, the requirements for stamping by the "R" Certificate Holder shall be met. Routine repairs shall be documented on Form R-1 with this statement in the Remarks section: "Routine Repair". ~~;~~ ~~and the requirements for stamping by the "R" Certificate Holder shall be met~~

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~~ repair name-plate shall be applied adjacent to the original manufacturer's stamping or ~~repair name-name~~plate. A single ~~repair~~repair name ~~name~~plate or stamping may be used for more than one ~~repair to~~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 repair name ~~name~~plate.

5.7.3 STAMPING REQUIREMENTS FOR ALTERATIONS

Pressure-retaining items altered in accordance with this code shall have a ~~name~~~~repair~~alteration name-plate or stamping applied adjacent to the original manufacturer's stamping or ~~name~~~~repair~~ name-plate 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 ~~name~~~~repair~~alteration name-plate. 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 ~~name~~~~repair~~alteration name-plate.

5.7.4 STAMPING REQUIREMENTS FOR PARTS

Stamping or ~~name~~~~repair~~ part name-plate shall be applied in a conspicuous location on the part.

5.7.5 SPECIFIC REQUIREMENTS FOR STAMPING AND ~~NAME~~REPAIR NAME PLATES

a) Required data shall be in characters of at least 5/32 in. (4 mm) high, except that characters for pressure relief valve ~~repair name~~repair/alteration name-plates 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-e.

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 ~~name~~repair/alteration name-plate affixed to the item.

d) The certificate holder shall use its full ~~name~~ 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 ~~name~~repair/alteration name-plate shall be securely attached using a method compatible with the structure or stand-off bracket supporting the ~~name~~repair/alteration name-plate, in a manner that will impede easy removal. The method of attaching this ~~name~~repair/alteration name ~~name~~ plate, as permitted by the original code of construction, may include, but is not limited to:

1) Welding
2) Adhesive, bonding or cementing

~~2)~~

Page 235 – Liquid Petro gas
S7.7 CERTIFICATION/DOCUMENTATION AND STAMPING
a) Section 5 of this part is applicable for all post construction activities pertaining to certification/documentation
and stamping.

b) The "R" Certificate Holder shall assure all repairs or alterations involving a change to the following are recorded on the proper NBIC form and marked on the NBIC nameplate or stamping without changing the required format of the NBIC markings.

1) Service for which the container is designed (for example, underground, aboveground, or both).
2) Dip tube length.
3) Maximum filling limit with liquid temperature reference. Tamper-resistant

Page 229 - DOT
S6.15 GENERAL STAMPING REQUIREMENTS
The stamping of or attaching of a nameplate to a pressure-retaining item shall indicate that the work was performed

1) in accordance with the requirements of this code and any requirements of the Competent Authority. mechanical fasteners of suitable metal construction

Such stamping or attaching of a nameplate shall be done only with the knowledge and authorization of the Inspector and Competent Authority. The "R" Certificate Holder responsible for the repair or the construction portion of the modification/alteration shall

apply the stamping. For a re-rating where no physical changes are made to the pressure-retaining item, the "R" Certificate Holder responsible for the design shall apply the stamping. Requirements for stamping and nameplate information are shown in NBIC Part 3, Section 5.

S6.15.1 SPECIFIC "R" STAMPING AND NAMEPLATE REQUIREMENTS

The holder of a "R" *Certificate of Authorization* is required to affix a stamping or nameplate on the Transport Tank that indicates, the repair, alteration, or modification has been performed in accordance with the requirements of NBIC Part 3, Supplement 6 and the additional requirements of the code of construction. All repairs, alterations, and modifications, after acceptance by the Registered Inspector, shall have the "R" Symbol affixed to the stamping or the nameplate. The stamping or nameplate information shall satisfy the requirements of a) thru g) below:

a) The required data shall be in characters at least 4 mm (5/32 in.) high;

b) The markings may be produced by casting, etching, embossing, debossing, stamping, or engraving;

c) The selected method shall not result in any harmful contamination or sharp discontinuities to the pressure- retaining boundary of the Transport Tank;

d) Stamping directly on the Transport Tank, when used, shall be done with blunt-nose continuous or bluntnose interrupted dot die stamps. If direct stamping would be detrimental to the item, required markings and the embossed Code Symbol stamping may appear on a nameplate affixed to the Transport Tank;

e) The "R" Certificate Holder shall use its full name as shown on the *Certificate of Authorization* or use an approved abbreviation acceptable to the National Board;

f) The non-embossed Code Symbol stamping, when directly applied on the item or when a nameplate is used shall be applied adjacent to the original manufacturer's stamping or nameplate. A single repair stamping or nameplate may be used for additional activities performed, provided the repair activity is carried out by the same "R" Certificate Holder;

g) The date of each repair, alteration, or modification corresponding with the date on the applicable "R" form shall be applied to the exiting stamping or nameplate.

Pg 221 – Yankee Dryers

S5.5 PROCEDURES THAT DO NOT REQUIRE STAMPING OR NAMEPLATE ATTACHMENT

All repair procedures, shall be acceptable to the Inspector, and when verified by the owner-user to not affect pressure-retaining capability of the Yankee dryer, do not require stamping or nameplate attachment.

Pg 207 – FRP

S4.14.1 STAMPING

Stamping requirements for FRP vessels are identified in NBIC Part 3, Section 5.

Pg 184 - Graphite

S3.4 ALTERATIONS

a) The requirements provided in this section shall apply, insofar as they are applicable to the materials discussed herein. Completed alterations shall be subjected to a pressure test not less than that required by the code of construction. The test pressure shall be maintained for a minimum of 30 minutes. The pressure shall be reduced to MAWP and maintained for inspection.

b) The nameplate shall be applied in accordance with Section 5 of this part. The letter "G" shall be applied to the nameplate under the "R" stamp when graphite alterations are made. The alternate procedure defined in 5.10 may be used in lieu of the stamping and nameplate attachment requirements of NBIC Part 3, Section 5.

~~1)~~

Item 20-16
Part 3, 3.4.4
Submitted by: Paul Shanks

Explanation of Need: ASME Section VIII Div.1 Mandatory Appendix 44 paragraph 44-6.2(g) clearly sets out that a vessel built to those rules needs to be re-stretched, having had repair welding. It is not clear if ASME is referring to in process (at the original manufactures location) repairs or post construction repairs. However, the NBIC is currently silent on this and this potential issue should be addressed.

Background Information: ASME Section VIII Div.1 Mandatory Appendix 44 establishes rules that allow a vessel to be designed and built for use at low temperatures using allowable stresses which are higher than would normally be allowed at 'room temperature'. The condition for doing so is that said vessels are subject to a pre-stressing operation that actually stretches the base material. The use of these higher stresses is contingent on certain design and manufacturing criteria.

Proposed Change:
3.4.4 EXAMPLES OF ALTERATIONS

a) An increase in the maximum allowable working pressure (internal or external) or temperature of a pressure- retaining item regardless of whether or not a physical change was made to the pressure-retaining item;

b) A decrease in the minimum temperature;

c) The addition of new nozzles or openings in a boiler or pressure vessel except those classified as repairs;

d) A change in the dimensions or contour of a pressure-retaining item;

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

f) The addition of a pressurized jacket to a pressure vessel;

g) Except as permitted in NBIC Part 3, 3.3.3 s); replacement of a pressure retaining part in a pressure retaining item with a material of different allowable stress or nominal composition from that used in the original design;

h) The addition of a bracket or an increase in loading on an existing bracket that affects the design of the pressure-retaining item to which it is attached;

i) The replacement of a pressure relieving device (PRD) as a result of work completed on a pressure-retaining item (PRI) that changes the resultant capacity to exceed the minimum required relieving capacity (MRRC) required by the original code of construction as described on the original Manufacturer's Data Report;

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

1) For heat transfer plates:
   a. A change in material grade or nominal thickness;
   b. A reduction in number beyond any minimum, or when no minimum is specified;
   c. An increase in number beyond any maximum, or when no maximum is specified;
   d. A change in model type;

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

k) Performing postweld heat treatment where none was originally performed on the pressure retaining item; ~~and~~

l) The installation of a welded leak box~~.~~; and

m) Welding on a vessel, marked with the cold stretching 'CS' mark, without subsequent renewed cold stretching operations witnessed by the Inspector.

PROPOSED ACTION ITEM

Item Number:	**20-51**
Submitted by:	Kathy Moore kathymoore@joemoorecompany.com
Subject:	Add practicable to the glossary and it's definition **Explanation of Need:** The current formula has no nomenclature to define the variables. This is not a commonly used term in everyday language. **Background Information:**
NBIC Location:	2021 NBIC All Parts, 9.1

Current Text:	**Proposed Text:**
	Practicable: capable of being put into practice or being done or accomplished

PROPOSED ACTION ITEM

Item Number:	**20-55**
Submitted by:	Paul Shanks paul.shanks@onecis.com
Subject:	Examples of repairs **Explanation of Need:** By having an and between boiler and heat exchanger the tube is required to be simultaneously installed in both a boiler and a heat exchanger. This is valid for a boiler as they are heat exchanger but in the case of a pressure vessel heat exchanger they are not boilers as boil may not be happening. Therefore this example is not applicable to pressure vessel which I do not believe is the intent. **Background Information:** Per the Oxford English dictionary: and is a word used to connect words, clause or terms; or is a word used to link alternatives
NBIC Location:	NBIC Part 3, 3.3.3 f)

Current Text:	**Proposed Text:**
f) Replacement or plugging of boiler and heat exchanger tubes where welding is involved	**f) Replacement or plugging of boiler or heat exchanger tubes where welding is involved**

July 30, 2020

Kobe Steel, Ltd.

PROPOSED REVISION OF NBIC PART 3, SECTION 4

4.4.2 TEST OR EXAMINATION METHODS APPLICABLE TO ALTERATIONS

Based on the nature and scope of the alterations activity, one or a combination of the following examination and test methods shall be applied to alterations (unless waived in accordance with 3.4.1 d) of this Part) and replacement parts used in alterations.

a) Liquid Pressure Test

Pressure testing of alterations shall meet ….

b) Pneumatic Test

A pneumatic test may be conducted when contamination of the pressure-retaining item by liquids is possible or when liquid pressure testing is not practicable. Concurrence of the owner shall be obtained in addition to the Inspector and Jurisdiction where required. Pneumatic test requirements and precautions shall be in accordance with the original code of construction.

c) Nondestructive Examination

NDE may be conducted when contamination of the pressure-retaining item by liquids is possible or when pressure testing is not practicable. Concurrence of the owner shall be obtained in addition to the Inspector, and where required, the Jurisdiction. Exclusive use of Visual Examination (VT) shall not be permitted. In all cases NDE methods or combination of methods used shall be suitable for providing meaningful results to verify the integrity of the alteration.

d) Finite-Element Analysis (FEA)

FEA may be conducted when contamination of the pressure-retaining item by liquids is possible or when pressure testing is not practicable, and when NDE is not effective to ensure the structural integrity of the alteration. Concurrence of the owner shall be obtained in addition to the Inspector, and where required, the Jurisdiction. Requirements for FEA shall be in accordance with the original code of construction.

ITEM 20-68
NBIC Part 3, 1.5.1 Revision

Trevor Sieme
tsseime@nd.gov

Purpose	Revise 1.5.1 e) and f) of NBIC Part 3 to reference Certifications, either written or electronic.
Scope:	Adding verbiage to 1.5.1 e) Manual Control and adding new paragraph f) Certification
Background:	ASME has had this requirement to address Certifications, but the NBIC does not specifically address this. See proposed change attached.
Proposed Revision:	See below for the proposed revisions in red

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1.5.1 OUTLINE OF REQUIREMENTS FOR A QUALITY SYSTEM FOR QUALIFICATION FOR THE NATIONAL BOARD "R" *CERTIFICATE OF AUTHORIZATION*

The following is a guide for required features of a Quality System which shall be included in the organization's Quality System Manual. As a minimum, each organization shall address the required features relative to the scope of work to be performed. Organizations shall explain their intent, capability and applicability for each required feature outlined in this section. Work may be subcontracted provided controls are clearly defined for maintaining full responsibility for code compliance by the National Board repair organization certifying the work.

a) Title Page

The name and complete address of the company to which the National Board *Certificate of Authorization* is issued shall be included on the title page of the Quality System Manual.

b) Contents Page

The manual should contain a page listing the contents of the manual by subject, number (if applicable), and revision number of each document.

c) Scope of Work

The manual shall clearly indicate the scope and type of repairs or alterations the organization is capable of and intends to carry out.

d) Statement of Authority and Responsibility

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

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

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

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

e) Manual Control

The manual shall include the necessary provisions for revising and issuing documents to keep the manual current. The title of the individual authorized to approve revisions shall be included in the manual. The manual and any ~~R~~revisions must be accepted by ~~the~~ an Inspector holding a valid commission with the appropriate endorsement(s) issued by the National Board for the scope of activities addressed in the manual ~~Authorized Inspection Agency~~ prior to ~~issuance of the manual and~~ its implementation.

f) Certification

The manual shall include provisions for certifications, authorizations and approvals that require signature and date. If certification methods other than written are used, the manual shall include provisions describing the controls and safe guards that are employed to ensure the integrity of the certification, authorization or approval.

~~f)~~g) Organization

An organizational chart shall be included in the manual. It shall include the title of the heads of all departments or divisions that perform functions that can affect the quality of the repair or alteration, and it shall show the relationship between each department or division. The manual shall identify the title of those individuals responsible for preparation, implementation, or verification of the Quality System. The responsibilities shall be clearly defined and the individuals shall have the organizational freedom and authority to fulfill those responsibilities.

~~g)~~h) Drawings, Design and Specifications

The manual shall contain controls to ensure that all design information, applicable drawings, design calculations, specifications, and instructions are prepared or obtained, controlled, and interpreted in accordance with the original code of construction.

~~h)~~i) Repair and Alteration Methods

The manual shall include controls for repairs and alterations, including mechanical assembly procedures, materials, nondestructive examination methods, pre-heat, and postweld heat treatment, as applicable. Special requirements such as nonmetallic repairs and alterations to graphite and fiber- reinforced thermosetting plastic pressure-retaining items including bonding or mechanical assembly procedures shall be addressed, if applicable.

~~i)~~j) Materials

The manual shall describe the method used to ensure that only acceptable materials (including welding material) are used for repairs and alterations. The manual shall include a description of how existing material is identified and new material is ordered, verified, and identified. The manual shall identify the title of the individual(s) responsible for each function and a brief description of how the function is to be performed.

~~j)~~k) Method of Performing Work

The manual shall describe the methods for performing and documenting repairs and alterations in sufficient detail to permit the Inspector to determine at what stages specific inspections are to be performed. The method of repair or alteration must have prior acceptance of the Inspector.

~~k)~~l) Welding, NDE and Heat Treatment

The manual shall describe controls for welding, nondestructive examination (NDE), and heat treatment. The manual is to indicate the title of the individual(s) responsible for the welding procedure specification (WPS) and its qualification, and the qualification of welders and welding operators. It is essential that only welding procedure specifications and welders or welding operators qualified, as required by the NBIC, be used in the repair or alteration of pressure-retaining

items. It is also essential that welders and welding operators maintain their proficiency as required by the NBIC, while engaged in the repair
or alteration of pressure-retaining items. The manual shall also describe controls for ensuring that the required WPS or Standard Welding Procedure Specification (SWPS) is available to the welder or welding operator prior to welding. Similar responsibility for nondestructive examination and heat treatment shall be described in the manual.

l)m) Examinations and Tests

Reference shall be made in the manual for examinations and tests upon completion of the repair or alteration.

m)n) Calibration

The manual shall describe a system for the calibration of examination, measuring, and test equipment used in the performance of repairs and alterations.

n)o) Acceptance and Inspection of Repair or Alteration

1) The manual shall specifically indicate that before the work is started, acceptance of the repair/alteration shall be obtained from an Inspector who will make the required inspections and confirm NBIC compliance by signing and dating the applicable NBIC Report Form upon completion of the work.

2) The manual shall specifically address allowance for acceptance of the inspector for application of the “R” symbol stamp to a pressure retaining item.

3) The manual shall provide for adequate control of the “R” Symbol Stamp.

o)p) Inspections

The manual shall make provisions for the Inspector to have access to all drawings, design calculations, specifications, procedures, process sheets, repair or alteration procedures, test results, and other documents as necessary to ensure compliance with the NBIC. A copy of the current manual shall be available to the inspector.

p)q) Report of Repair or Alteration Form

The manual shall indicate the title of the individuals responsible for preparing, signing, and presenting the NBIC Report Forms to the Inspector. The distribution of the NBIC Report Forms shall be described in the manual.

q)r) Exhibits

Any forms referenced in the manual shall be included. The form may be a part of the referencing document or included as an appendix. For clarity, the forms may be completed and identified as examples. The name and accepted abbreviations of the “R” Certificate Holder shall be included in the manual.

r)s) Construction Code

The manual shall include provisions for addressing the requirements that pertain to the specific construction code for the equipment being repaired or altered.

s)t) Nonconforming Items

There shall be a system acceptable to the Inspector for the correction of nonconformities. A nonconformance is any condition that does not comply with the applicable rules of the NBIC, construction code, jurisdictional requirements, or the quality system. Nonconformance must be corrected or eliminated before the repaired or altered component can be considered in compliance with the NBIC.

~~t)~~u) Records Retention

The quality manual shall describe a system for filing, maintaining, and easily retrieving records supporting or substantiating the administration of the Quality System within the scope of the “R” *Certificate of Authorization*.

1) Records may represent any information used to further substantiate the statements used to describe the scope of work completed to a pressure-retaining item (PRI), and documented on a Form “R” report.

2) Records are not limited to those depicting or calculating an acceptable design, material compliance or certifications, NDE-reports, PWHT-charts, a WPS used, a welder, bonder, or cementing technician’s process continuity records, drawings, sketches, or photographs.

3) The record retention schedule described in the Quality System Manual is to follow the instructions identified in NBIC Part 3, Table 1.5.1.

Task Group Locomotive Boilers

Summary

Add a sentence in S1.2.11.5 i); Replace drawing in Figure S1.2.11.5-c1 with new drawing below.

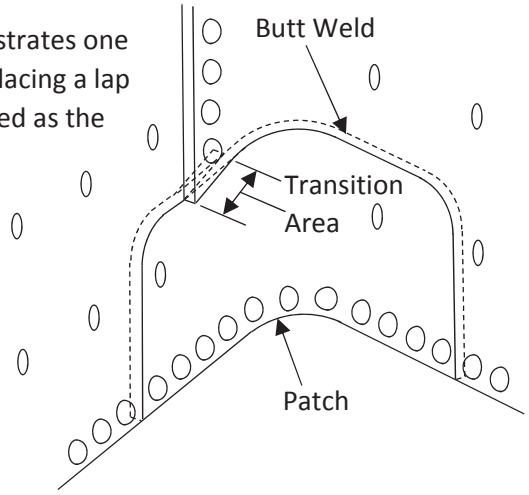
Proposal

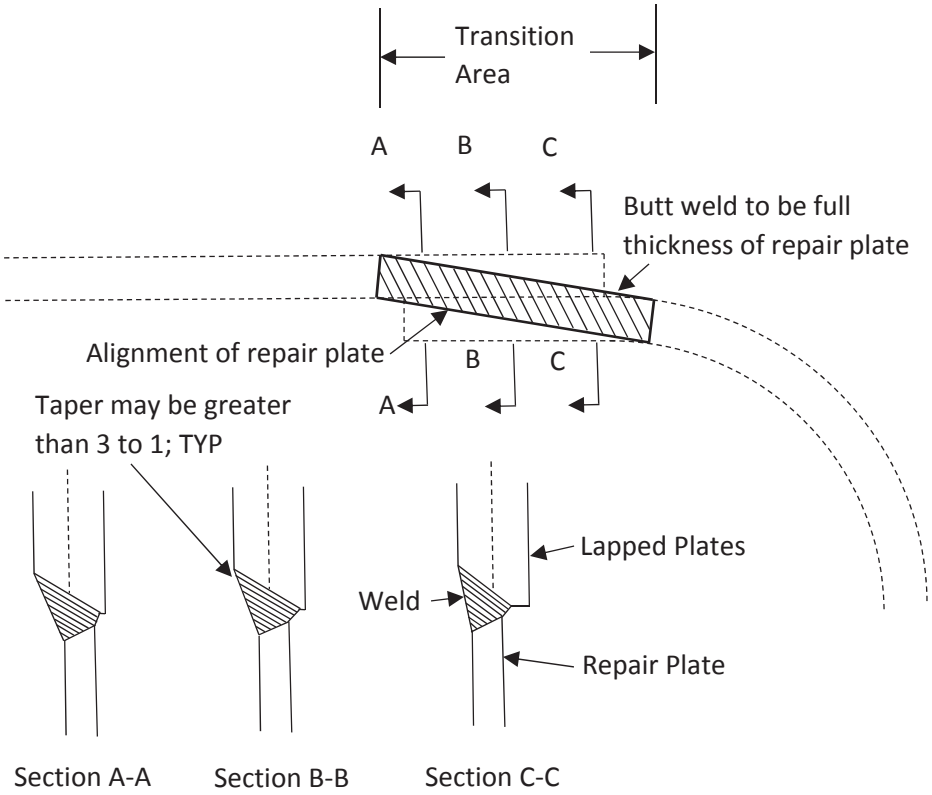
S1.2.11.5 REPAIR OF FIREBOX, WRAPPER, AND TUBESHEET KNUCKLES

i) For one-piece flange knuckle joint patches in portions of a riveted lap joint or in mud ring corners with a lap joint in the firebox, the knuckle patch shall be supported on at least one of the two planes adjacent to the flange, by means other than the weld. See Figure S1.2.11.5-c1. The weld shall be at least the full thickness of the new plate being installed. Taper of weld in transition area may be greater than 3 to 1. Volumetric examination is not required. This type of repair shall be considered a repair.

FIGURE S1.2.11.5-c1
NEW PATCH ALIGNMENT WITH ORIGINAL MATERIAL

This isometric view illustrates one instance of a patch replacing a lap seam and is not intended as the only location where this geometry may be used.





NBIC Part 3 Inquiry

Robert Underwood
Hartford Steam Boiler
10/30/2020

Item No.	**20-73 –** Pressure testing of connecting welds
Purpose	Revise 4.4.2(a)(1) and (2) to clarify the term replacement part
Statement of Need:	To clarify that "replacement part" as specified in 4.4.2(a)(1) and (2) is referring to those parts fabricated by welding as described in 3.3.2(c) and (d).
Background Information:	We have had some inquiries from repair firms and Repair Inspectors who are confused by the term "replacement part" as it is used in paragraphs 4.4.2(a)(1) and (2). I believe that "replacement part" in 4.4.2(a)(1) and (2) refers to those parts fabricated by welding as described in 3.3.2(c) and (d), and not those as described in 3.3.2(a) and (b). This proposal would clarify that alternative pressure testing of connecting welds of "replacement parts" is referring to replacement parts fabricated by welding such as economizers, superheaters, etc... and not material such as nozzles and piping.
Existing Text:	**4.4.2(a)(1 and 2) From 2021 Edition** a) Liquid Pressure Test Pressure testing of alterations shall meet the following requirements: 1) A pressure test as required by the original code of construction shall be conducted. The test pressure shall not exceed the maximum hydrostatic test pressure of the original code of construction. When the original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance. The pressure test for replacement parts may be performed at the point of manufacture or point of installation. 2) As an alternative to pressure testing connecting welds in accordance with the original code of construction, connecting welds may be tested or examined in accordance with the rules for repairs (see NBIC Part 3, 4.4.1). Connecting welds are defined as welds attaching the replacement part to the pressure-retaining item;

Proposed Text:	**4.4.2(a)(1) and (2) (From 2021 Edition)** a) Liquid Pressure Test Pressure testing of alterations shall meet the following requirements: 1) A pressure test as required by the original code of construction shall be conducted. The test pressure shall not exceed the maximum hydrostatic test pressure of the original code of construction. When the original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance. The pressure test for replacement parts fabricated by welding may be performed at the point of manufacture or point of installation. 2) As an alternative to pressure testing connecting welds in accordance with ~~the original code of construction,~~ 4.4.2(a)(1) above, connecting welds may be tested or examined in accordance with the rules for repairs (see NBIC Part 3, 4.4.1). Connecting welds are defined as welds attaching ~~the~~ a replacement part fabricated by welding to the pressure-retaining item;

3.2.2 REPLACEMENT PARTS

Replacement parts to be used in repairs or alterations shall meet the following applicable requirements:

a) Replacement parts that will be subject to internal or external pressure that consist of new materials which should be formed to the required shape by casting, spinning, forging, die forming, and on which no fabrication welding is performed, shall be supplied as material. Such parts shall be marked with the material and part identification and the name or trademark of the parts manufacturer. In lieu of full identification marking on the material or part, the part manufacturer may use a coded marking system traceable to the original marking. Such markings shall be considered as the parts manufacturer's certification that the part complies with the original code of construction. Examples include seamless or welded tubes or pipe, forged nozzles, heads or tubesheets, or subassemblies attached together mechanically;

b) Replacement parts that will be subject to internal or external pressure that are preassembled by attachment welds shall have the welding performed in accordance with the original code of construction. The supplier or manufacturer shall certify that the material and fabrication are in accordance with the original code of construction. This certification shall be supplied in the form of bills of material and drawings with statement of certification. Examples include boiler furnace wall or floor panel assemblies, prefabricated openings in boiler furnace walls, such as burner openings, air ports, inspection openings, or sootblower openings;

c) When ASME Code is the original code of construction, replacement parts subject to internal or external pressure fabricated by welding, which require inspection by an Authorized Inspector shall be fabricated by an organization having an appropriate ASME *Certificate of Authorization*. The item shall be inspected and stamped as required by the applicable section of the ASME Code. A completed ASME *Manufacturer's Partial Data Report* shall be supplied by the manufacturer.

1) ASME stamping and completion of an ASME Manufacturer's Partial Data Report is not required for parts fabricated by the "R" Certificate Holder that will be used on pressure retaining items being repaired or altered by the same "R" Certificate Holder. The controls for this activity shall be described in the quality control system.

2) The "R" Certificate Holder, using replacement parts fabricated and certified to an ASME Code edition and addenda different from that used for the original construction, shall consider and seek technical advice, where appropriate, for change or conflicts in design, materials, welding, heat treatment, examinations and tests to ensure a safe repair/alteration is performed. Note that work once classified as a repair could now be considered an alteration.

d) When the original code of construction is other than ASME Code, replacement parts subject to internal or external pressure, fabricated by welding, shall be manufactured by an organization certified as required by the original code of construction. The item shall be inspected and stamped as required by the original code of construction. Certification to the original code of construction, as required by the original code of construction or equivalent, shall be supplied with the item. When this is not possible or practicable, the organization fabricating the part shall have a National Board "R" *Certificate of Authorization*; replacement parts shall be documented on Form R-3 and the "R" Symbol Stamp applied as described in NBIC Part 3, Section 5.

Action Item 20-76: Request for the addition to NBIC Part 3, Glossary

Rick Valdez
ARB, INC.
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661 331 6024

Background:	With the use of indirect inspection equipment from borescopes to tethered drones/vehicles for confined space inspections, there is a need to clarify what is considered a "remote" inspection vs an "indirect" inspection.
Explanation of need:	Remote Inspections need to be better clarified.
Date opened	9/15/2020
Proposed:	Remote Visual Examination: a visual examination technique used with visual aids for conditions where the area to be examined is inaccessible for direct visual examination.

NBIC Part 3 Inquiry

Robert Underwood
Hartford Steam Boiler
12/15/20

Purpose	Revise 4.4.2(a)(2) to clarify the term replacement part
Statement of Need:	To clarify that the minimum test pressure for alterations shall be in accordance with the original code of construction.
Background Information:	I have recently had discussions with some repair firms and Repair Inspectors who believe there are no minimum test pressure requirements when performing a liquid pressure tests of alterations since it is not specifically stated in paragraph 4.4.2(a)(1). This proposal would revise the second sentence of 4.4.2(a)(1) to specifically address minimum test pressure requirements for alterations.
Existing Text:	**4.4.2(a)(1) (From 2021 Edition)** a) Liquid Pressure Test Pressure testing of alterations shall meet the following requirements: 1) A pressure test as required by the original code of construction shall be conducted. The test pressure shall not exceed the maximum liquid test pressure of the original code of construction. When the original test pressure consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance. The pressure test for replacement parts may be performed at the point of manufacture or point of installation.
Proposed Text:	**4.4.2(a)(1) (From 2021 Edition)** a) Liquid Pressure Test Pressure testing of alterations shall meet the following requirements: 1) A pressure test as required by the original code of construction shall be conducted. The test pressure shall not be less than the minimum or exceed the maximum liquid test pressure of the original code of construction. When the original test pressure consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance. The pressure test for replacement parts may be performed at the point of manufacture or point of installation.

PROPOSED ACTION ITEM

Item Number:	**20-83**
Submitted by:	Terry Hellman thellman@nationalboard.org
Subject:	Definition of Nonconformance **Explanation of Need:** Action Item 19-60 is proposing revisions/additions to all of 1.5.1. This proposal is to move the definition of "Nonconformance" out of the current 1.5.1 s) paragraph and into the glossary. **Background Information:** Current text in 1.5.1 s) that is being revised via Action Item 19-60: s) Nonconforming Items There shall be a system acceptable to the Inspector for the correction of nonconformities. A nonconformance is any condition that does not comply with the applicable rules of the NBIC, construction code, jurisdictional requirements, or the quality system. Nonconformance must be corrected or eliminated before the repaired or altered component can be considered in compliance with the NBIC.
NBIC Location:	NBIC Part 3, 1.5.1 s) and 9.1

Current Text:	**Proposed Text:**
s) Nonconforming Items There shall be a system acceptable to the Inspector for the correction of nonconformities. A nonconformance is any condition that does not comply with the applicable rules of the NBIC, construction code, jurisdictional requirements, or the quality system. Nonconformance must be corrected or eliminated before the repaired or altered component can be considered in compliance with the NBIC.	s) Nonconforming Items There shall be a system acceptable to the Inspector for the correction of nonconformities. ~~A nonconformance is any condition that does not comply with the applicable rules of the NBIC, construction code, jurisdictional requirements, or the quality system.~~ Nonconformance must be corrected or eliminated before the repaired or altered component can be considered in compliance with the NBIC. **9.1 Glossary** Nonconformance – A condition of product or service in which any characteristics do not conform with the applicable rules of the NBIC, construction code, jurisdictional requirements, or the quality system.

PROPOSED ACTION ITEM

Item Number:	**20-87**
Submitted by:	Terry Hellman thellman@nationalboard.org
Subject:	Definition of Nonconformance **Explanation of Need:** This reference to 49 CFR statutes would clarify the difference between an "Inspector" as used throughout the NBIC and a "Registered Inspector" specific to DOT tank repair/alteration activities. **Background Information:** Registered Inspector requirements per DOT: REGISTERED INSPECTOR EXPERIENCE Having a working knowledge of DOT specification cargo tanks is only one aspect of a Registered Inspector. When a person tests and inspects DOT specification cargo tank motor vehicles, he or she has to be trained in the HM regulations (49 CFR Parts 107-180). According to 49 CFR §180.409 any person performing or witnessing the inspections and tests must be registered, familiar with DOT-specification cargo tanks and trained and experienced in the use of equipment needed for tests and inspections, and meet the knowledge and ability requirement of the "Registered Inspector."
NBIC Location:	NBIC Part 3, S6.8

Current Text:	**Proposed Text:**
S6.8 INSPECTION Inspection and certification shall be made by an Inspector holding an appropriate National Board Commission as required by NBIC Part 3, 1.3 and shall be a Registered Inspector meeting the requirements of the Competent Authority.	S6.8 INSPECTION Inspection and certification shall be made by an Inspector holding an appropriate National Board Commission as required by NBIC Part 3, 1.3 and shall be a Registered Inspector meeting the requirements of the Competent Authority and 49 CFR §180.409.

Such stamping or attaching of a nameplate shall be done only with the knowledge and authorization of the Inspector and Competent Authority. The "R" Certificate Holder responsible for the repair or the construction portion of the modification/alteration shall apply the stamping. For a re-rating where no physical changes are made to the pressure-retaining item, the "R" Certificate Holder responsible for the design shall apply the stamping. Requirements for stamping and nameplate information are shown in NBIC Part 3, Section 5.

~~**S6.15.1 SPECIFIC "R" STAMPING AND NAMEPLATE REQUIREMENTS**~~

~~The holder of a "R" *Certiicate of Authorization* is required to affix a stamping or nameplate on the Transport Tank that indicates, the repair, alteration, or modification has been performed in accordance with the requirements of NBIC Part 3, Supplement 6 and the additional requirements of the code of construction. All repairs, alterations, and modifications, after acceptance by the Registered Inspector, shall have the "R" Symbol affixed to the stamping or the nameplate. The stamping or nameplate information shall satisfy the requirements of a) thru g) below:~~

~~a) The required data shall be in characters at least 4 mm (5/32 in.) high;~~

~~b) The markings may be produced by casting, etching, embossing, debossing, stamping, or engraving;~~

~~c) The selected method shall not result in any harmful contamination or sharp discontinuities to the pressure- retaining boundary of the Transport Tank;~~

~~d) Stamping directly on the Transport Tank, 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 and the embossed Code Symbol stamping may appear on a nameplate affixed to the Transport Tank;~~

~~e) The "R" Certificate Holder shall use its full name as shown on the *Certiicate of Authorization* or use an approved abbreviation acceptable to the National Board;~~

~~f) The non-embossed Code Symbol stamping, when directly applied on the item or when a nameplate is used shall be applied adjacent to the original manufacturer's stamping or nameplate. A single repair stamping or nameplate may be used for additional activities performed, provided the repair activity is carried out by the same "R" Certificate Holder;~~

~~g) The date of each repair, alteration, or modification corresponding with the date on the applicable "R" form shall be applied to the exiting stamping or nameplate.~~

S6.15.~~2~~1 REMOVAL OF ORIGINAL STAMPING OR NAMEPLATE

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

S6.16 "R" FORMS

S6.16.1 DOCUMENTATION

Repairs, alterations, or modifications that have been performed in accordance with the NBIC shall be documented on Form R-1, *Report of Repair* or Form R-2, *Report of Alteration* as shown in NBIC Part 3, Section 5. Form R-4, *Report Supplementary Sheet*, shall be used to record additional data when space is insufficient on Form R-1 or R-2.

NBIC Part 3 Inquiry

Robert Underwood
Hartford Steam Boiler
10/30/2020

Inquiry No.	**20-92 –** Mechanical Repair Procedures
Statement of Need:	"Mechanical assembly procedures" appears to be incorrectly referenced in the first sentence of Part 3, paragraph 1.5.1(h) and should state "mechanical repair procedures."
Background Information:	Mechanical assembly appears to only apply to non-metallic repairs per the Supplement 9 Glossary and the way it is used in the last sentence in 1.5.1(h). I believe the more appropriate term to use in the first sentence of 1.5.1(h) is "mechanical repair procedures" which appears to apply to metallic repairs.
Existing Text:	**Part 3, 1.5.1(h)** h) Repair and Alteration Methods The manual shall include controls for repairs and alterations, including mechanical assembly procedures, materials, nondestructive examination methods, pre-heat, and postweld heat treatment, as applicable. Special requirements such as nonmetallic repairs and alterations to graphite and fiber reinforced thermosetting plastic pressure-retaining items including bonding or mechanical assembly procedures shall be addressed, if applicable.
Proposed Text:	**Part 3, 1.5.1(h)** h) Repair and Alteration Methods The manual shall include controls for repairs and alterations, including mechanical ~~assembly~~ repair procedures, materials, nondestructive examination methods, pre-heat, and postweld heat treatment, as applicable. Special requirements such as nonmetallic repairs and alterations to graphite and fiber reinforced thermosetting plastic pressure-retaining items including bonding or mechanical assembly procedures shall be addressed, if applicable.

Part 3, Supplement 9 – Glossary

Mechanical Assembly — The work necessary to establish or restore a pressure retaining boundary, under supplementary materials, whereby pressure-retaining capability is established through a mechanical, chemical, or physical interface, as defined under the rules of the NBIC.

Mechanical Repair Method — A method of repair, which restores a pressure retaining boundary to a safe and satisfactory operating condition, where the pressure retaining boundary is established by a method other than welding or brazing, as defined under the rules of the NBIC.