THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD SUBCOMMITTEE REPAIRS AND ALTERATIONS

MINUTES

Meeting of July 14th, 2021
Cincinnati, OH

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

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

1. **Call to Order**
   Chairman Troutt called the meeting to order at 8:00 AM

2. **Introduction of Members and Visitors (Attachment 1)**
   Introductions took place amongst all members and visitors, and an attendance was taken by the Secretary.

3. **Check for a Quorum**
   Based on the members present, a quorum was reached.

4. **Awards/Special Recognition**
   Chairman Troutt presented Mr. Ben Schaefer with a 5 Year award for membership on NBIC Committee(s).

5. **Announcements**
   - The National Board will host a reception for all committee members and visitors on Wednesday evening from 5:30pm – 7:30 pm in the Continental Room on the Mezzanine Level.
   - The National Board will host a breakfast for all committee members and visitors on Thursday morning at 7:00 am and a lunch at 11:30 am in the Rosewood room on the 4th floor of the Hotel.
   - A coffee station with snacks will be provided in the morning and afternoon outside of the meeting rooms on the 3rd and 4th floors.
   - The 2021 NBIC is available as of July 1st, 2021.

     - Stress the importance of letter ballot voting
     - Read the workflow procedure and ask for questions
     - New numbering system with (I) or (A) to distinguish between the types of items
     - Finding out the status of the items and asking if "the needle has moved"
     - Expectations for member voting
     - The expectation of increased participation of members and guests in task group
     - The expectation that task group work will be conducted between committee meetings in addition to the week of meetings

     - Rob Troutt BOT Chair – NBIC Committee impact

     - Rick Sturm, BOT Membership – NBIC Committee impact

6. **Adoption of the Agenda**
   A motion was made and seconded to adopt the Agenda and was Unanimously Approved

7. **Approval of the Minutes of the January 13, 2021 Meeting**
   There was a motion to approve the Minutes as published. The motion was seconded and approved

8. **Review of Rosters**
   a. **Membership Nominations**
      The following individuals were considered and unanimously approved for membership on the SC:
      - Steve Frazier – Chief of Seattle
      - Phil Gilston – GE Steam Power

b. Membership Reappointments

i. The following Subgroup R&A memberships are set to expire prior to the January 2022 NBIC meeting: Mr. Ray Miletti, Mr. Michael Quisenberry, Mr. Jim Sekely, Mr. John Siefert, and Mr. Jamie Walker.

- All members were taken as a group and all reappointments were unanimously approved.

ii. The following Subcommittee R&A memberships will expire prior to the January 2022 NBIC meeting: Mr. Rob Troutt, Mr. Paul Edwards, and Mr. Jim Sekely.

- Mr. Troutt will not run for reappointment
- Mr. Paul Edwards, and Mr. Jim Sekely were taken together and both reappointments were unanimously approved.

c. Officer Nominations

i. Mr. Rob Troutt's term as Chair of Subcommittee R&A will expire on August 30, 2021.

- Mr. Troutt will not run for reappointment
- Nominations for Chair of Subcommittee R&A were held. **Kathy Moore** was the only person nominated and was unanimously **approved as Chair**.
- With Kathy Moore (Current Vice Chair) voted as the incoming Chair, nominations were held for Vice Chair. **Marty Toth** was the only person nominated and was unanimously **approved as Vice Chair**.

ii. Mr. Trevor Seime has been recommended to be the new Chair of the Task Group on Historical Boilers

iii. Mr. Paul Edwards is retiring, and a new Chair for NR TG will need to be appointed.

9. Interpretations

Item Number: 20-78	**NBIC Location: Part 3, 3.3.3 s) & 3.4.4 d)**	**No Attachment**
General Description: Repairs and Alterations of Tube Bundles		

Subgroup: Repairs and Alterations

Task Group: Paul Shanks

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.)

INT TG Action: Progress Report – Discussion of this Item (20-78) and Item 20-54 dealing with 3.4 .4 d) resulted in P. Becker opening a new Item (21-12) to better clarify the definition and examples of "Repairs" and "Alterations"

SC ACTION: Mr. Shanks presented a **Progress Report**.

July INT TG Action: P. Shanks presented that this is still being held back. Progress Report till 21-12 is resolved.

Meeting Action: P. Shanks presented that this is still being held back. **Progress Report** till 21-12 is resolved.

Item Number: 20-91	**NBIC Location: Part 3, 1.5.1 h)**	**No Attachment**
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.

INT TG Action: Proposal was Unanimously Approved

SC ACTION: Mr. Underwood presented a proposal that was revised after discussion. The proposal was motioned, seconded and was **Approved** w/ 1 Abstention (P. Shanks)

July INT TG Action: R. Underwood withdrew the inquiry and Closed w/No Action was unanimously approved

Meeting Action: R. Underwood withdrew the inquiry and a motion to **Closed w/No Action** was unanimously approved

New Interpretation Requests:

Item Number: 21-17	**NBIC Location: Part 3, 3.3.3 & 3.3.4**	**No Attachment**

General Description: Using any ASME PCC-2 methods in an R-stamped activity

Subgroup: Repairs and Alterations

Task Group: George Galanes (PM), R. Valdez

Explanation of Need:
Some certificate holders are confused by the reference to PCC-2 in NBIC part 3 and believe they have carte blanche to use any and all PCC-2 methods in an R-stamped activity.

July INT TG Action: G. Galanes presented – P. Shanks withdrew his inquiry. Item Closed w/No Action.

Meeting Action: G. Galanes presented – P. Shanks withdrew his inquiry. A motion to **Closed w/No Action** was unanimously approved.

Item Number: 21-21 **NBIC Location: Part 3, 3.4** **Attachment 2**

General Description: Minimum required thickness determination; Use of Mandatory Appendix 46

Subgroup: Repairs and Alterations

Task Group: Tim McBee (PM), B. Morelock

Explanation of Need:
Pressure vessels are often designed with a single specified corrosion allowance for the entire vessel. Calculating minimum required thicknesses per the original construction code (and not relying only on the specified corrosion allowance listed on the manufacturer's data report) often results in identifying surplus material for use as corrosion allowance that was not utilized at the time of construction nor reflected on manufacturer's data report. Unfortunately, most vessel designs were not optimized on a per-component basis to maximize corrosion allowance and as a result, significant amounts of time and effort have been spent with unnecessary shutdowns, repairs, and / or fitness for service (FFS) evaluations all of which might have been avoided or deferred for years had the vessel originally been optimized for corrosion allowance.

July INT TG Action: T. McBee – The proposal that a letter to inquirer that this is consulting was unanimously approved.
Meeting Action: T. McBee proposed to respond by a **letter to inquirer that this is consulting**. The proposal was motioned and unanimously approved.

Item Number: 21-22 **NBIC Location: Part 3.3.3 & 3.4.4** **Attachment 3**

General Description: Examples of Repairs and Alterations

Subgroup: Repairs and Alterations

Task Group: Trevor Seime (PM)

Explanation of Need:
Disclaimer statement would help clarify that the listed examples are not a set list, and only represent some case examples.

Meeting Action: T. Seime presented. The proposal was revised and **unanimously approved**.

Item Number: 21-28 **NBIC Location: Part 3, 1.5.1 & 3.3.3 c)** **Attachment 4**

General Description: Subcontracted Weld-Overlay Repair

Subgroup: Repairs and Alterations

Task Group: Walter Sperko

Explanation of Need:
(1) To clarify whether it is permitted for an "R" Certificate of Authorization Holder to subcontract weld-overlay repair to another company who does not possess an "R" Certificate.
(2) To clarify whether a subcontractor's shop used on a regular basis may be considered as a field location to allow welding by and under the control of the "R" Certificate Holder at that shop.

Meeting Action: Trevor Seime presented a **PR**

Item Number: 21-32	**NBIC Location: Part 3, 4.2**	**Attachment 5**

General Description: NDE requirements when repairing defects in original weld metal

Subgroup: Repairs and Alterations

Task Group: R. Troutt (PM), M. Toth

Explanation of Need:
This provision will help clarify to "R" Stamp Certificate holders and owners of pressure vessels that are in need of minor repairs to existing welds. Due to the ambiguous wording of this clause any welding on a head to shell joint may be interpreted to require volumetric inspection when the name plate is stamped RT4.

July INT TG Action: : R. Troutt presented – R. Underwood's submitted comment and P. Shanks discussion was considered. Proposal revised and unanimously approved.

Meeting Action: R. Troutt presented, but after much discussion Marty Toth was added to the TG, but the proposal was to be taken back for more work. This was a **PR**.

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)

Meeting Action: No members of the Graphite Task Group were present to discuss the item. This was a **Progress Report**. If no members of the Graphite TG attend the next meeting, this Item will be Closed with No Action.

Meeting Action: PR - The Graphite Task Group is still developing a proposal for this item.

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.

SG R&A Action: Progress Report

SC ACTION: Mr. Shanks presented a **Progress Report.**

Meeting Action: Paul Shanks proposed that this item be **Closed w/No Action** (Closed w/NA). The proposal was motioned, seconded, and unanimously approved.

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)

Meeting Action: No members of the Graphite Task Group were present to discuss the item. This was a **Progress Report**. If no members of the Graphite TG attend the next meeting, this Item will be Closed with No Action.

Meeting Action: PR - The Graphite Task Group is still developing a proposal for this 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)

Meeting Action: No members of the Graphite Task Group were present to discuss the item. This was a **Progress Report**. If no members of the Graphite TG attend the next meeting, this Item will be Closed with No Action.

Meeting Action: PR - The Graphite Task Group is still developing a proposal for this item.

Item Number: 18-100 **NBIC Location: Part 3, 3.3.2** **Attachment 6**

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, T. McBee, M. Winters, R. Underwood

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

SG R&A Action: Progress Report
SC ACTION: Mr. Toth presented a Progress Report.

Meeting Action: M. Toth presented – The proposal was revised and **unanimously approved** (UA).

Item Number: 19-60 **NBIC Location: Part 3, 1.5.1** **Attachment 7**

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, T. Seime

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**.

SG R&A Action: Item 20-68 (Certifications) was incorporated into this Item (19-60) and is to be Closed w/No Action. Item 20-92 (Mech. Assembly vs Repair procedures) was added to this Item (19-60) and Closed w/No Action.

SC ACTION: K. Moore presented a **Progress Report**.

Update: This item was approved by Subcommittee R&A by letter ballot 05/21/21 (14-0).

Meeting Action: K. Moore presented. Mr. J. Sekely pointed out that comments made on the last version submitted via LB were not addressed on the current proposal. The item was taken back to make the appropriate revisions. **This was a PR.**

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

General Description: Threaded Inserts as Alterations Example

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.

SG R&A Action: Progress Report
SC ACTION: Mr. Shanks presented a Progress Report.

Meeting Action: Mr. Shanks presented a **Progress Report**.

Item Number: 19-68	NBIC Location: Part 3, 1.6	Attachment 8

General Description: NR Program Endorsement requirements for the Inspector

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.

SG R&A Action: Progress Report
SC ACTION: Mr. Wielgoszinski presented a Progress Report.
July SG R&A Meeting Action: Mr. Wielgoszinski presented a Progress Report.

Meeting Action: Mr. Wielgoszinski presented a proposal that will go to **Letter Ballot to Main Committee.**

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.

Meeting Action: No members of the Graphite Task Group were present to discuss the item. This was a **Progress Report**. If no members of the Graphite TG attend the next meeting, this Item will be Closed with No Action.

Meeting Action: PR - The Graphite Task Group is still developing a proposal for this 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.

Meeting Action: No members of the Graphite Task Group were present to discuss the item. This was a **Progress Report**. If no members of the Graphite TG attend the next meeting, this Item will be Closed with No Action.

Meeting Action: PR - The Graphite Task Group is still developing a proposal for this 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.

Meeting Action: No members of the Graphite Task Group were present to discuss the item. This was a **Progress Report**. If no members of the Graphite TG attend the next meeting, this Item will be Closed with No Action.

Meeting Action: PR - The Graphite Task Group is still developing a proposal for this item.

Item Number: 20-15	NBIC Location: Part 3, 3.3.2 & 5.7.2	No Attachment

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.

SG R&A Action: Progress Report

SC ACTION: K. Moore presented a **Progress Report**.

Meeting Action: R. Trout presented that he is withdrawing his revision request and proposed **to Close w/NA**. The motion was seconded and unanimously approved.

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), R. Miletti

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.

SG R&A Action: Progress Report

SC ACTION: P. Davis presented a **Progress Report.**

Meeting Action: P. Davis: Explanation of Need is incorrect (reference of PG-106.8 is incorrect.). A motion was made to **Close w/ a Letter to Inquirer** that the 2021 NBIC addresses this concern.

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.

SC ACTION: Mr. Moedinger presented this item is related to Item 20-69. This was a **Progress Report**.

July SG Historical Meeting Action: Progress Report: Now that the item has passed through TG Locomotive, SC R & A, and MC, the TG Historical needs to see how they want to proceed. The TG will work on this item to create a proposal for the January 2022 meeting.

Item Number: 20-47	NBIC Location: Part 3, 9.1	Attachment 9

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**.

SG R&A Action: Progress Report

SC ACTION: Mr. Edwards presented a **Progress Report.**

July SG R&A Meeting Action: R. Spuhl – the Proposal was revised and unanimously approved.

Meeting Action: R. Spuhl presented the Proposal, which was motioned, seconded, and **unanimously approved.**

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.

SG R&A Action: Progress Report

SC ACTION: Mr. Edwards presented a **Progress Report.**

Meeting Action: Mr. Edwards presented a **Progress Report.**

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), P. Edwards

Explanation of Need: This was created based on discussion from Item 20-47 dealing with ANIA requirements.
SG R&A Action: Progress Report

SC ACTION: Mr. Edwards presented a **Progress Report.**

Meeting Action: Mr. Edwards presented a **Progress Report.**

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.
SG R&A Action: Progress Report

SC ACTION: Mr. Chestnut presented a **Progress Report**.

Meeting Action: Scott Chestnut presented a **Progress Report** – Ben Schaefer volunteered forTG. During discussion, B. Underwood stated the 2021 ASME Sect. VIII may address this.

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.

SG R&A Action: Progress Report

SC ACTION: Mr. Siefer presented that EPRI will be drafting a FFS Supplement for consideration in the future. This was a **Progress Report**.

Meeting Action: Mr. Siefert presented that EPRI will be drafting a FFS Supplement for consideration in the future. This was a **Progress Report**.

Item Number: 20-61	NBIC Location: Part 3, S8	Attachment 10

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.

SG R&A Action: The proposal was revised and Unanimously Approved. Additional verbiage addressing Weld Method 6 to be added for consideration at SC R&A

SC ACTION: Mr. Siefert presented a revised proposal incorporating UNS numbers and added changes to Weld Method 6. A motion to send to **Letter Ballot to SC R&A** was made, seconded and Unanimously Approved.

Update: This item was approved by Subcommittee R&A via letter ballot.

Meeting Action: Mr. Siefert presented a proposal which was UA.

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), T. McBee, G. Galanes

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.

SG R&A Action: Progress Report

SC ACTION: Mr. Underwood presented a **Progress Report.**

July SG R&A Meeting Action: Mr. Underwood presented a Progress Report.

Meeting Action: Mr. Underwood presented a **Progress Report**.

Item Number: 20-73	NBIC Location: Part 3, 4.4.2 a) 2)	No Attachment

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.

SG R&A Action: The proposal was revised and Unanimously Approved.

SC ACTION: Mr. Underwood presented a proposal which was motioned, seconded and **Unanimously Approved.**

Update: At the Jan 2021 meeting, Main Committee requested that the task group take the proposal back for further work.

July SG R&A Meeting Action: B. Underwood – PR – Waiting on related Item 21-12 outcome

Meeting Action: B. Underwood presented a **PR**, as he is waiting on related Item 21-12 outcome which may address this revision.

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.
SG R&A Action: Progress Report

SC ACTION: Mr. Shanks presented a **Progress Report**.

July SG R&A Meeting Action: - P. Shanks withdrew -Closed with No Action

Meeting Action: - P. Shanks presented and withdrew his request for revision and proposed this item be **Closed with No Action.** The proposal was UA.

Item Number: 20-76	NBIC Location: Part 3, 9.1	Attachment 11

General Description: Define "Remote" in the NBIC Glossary

Subgroup: Repairs and Alterations

Task Group: R. Valdez (PM), M. Winters

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.

SG R&A Action: The proposal will be sent to each SC (Parts 1-4) and MC as a Rvw and Comment LB.

SC ACTION: Mr. Valdez motioned for **this proposal to be sent to each SC (Parts 1-4) and MC as a Rvw and Comment LB**. The motion was Unanimously Approved.

Meeting Action: R. Valdez presented. The proposal was revised and was ultimately withdrawn by the submitter (T. Hellman) given the text in 4.2.1 of Part 2. This action item was UA to be **Closed w/NA** and a new Item will be submitted to address this in Part 2 for a formal definition.

Item Number: 20-83	NBIC Location: Part 3, 1.5.1 s) & 9.1	Attachment 12

General Description: Revision to Part 3, 3.2.2 e)

Subgroup: Repairs and Alterations

Task Group: T. Hellman

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.

SG R&A Action: The proposal was Unanimously Approved and will be sent to Parts 1, 2, 3, and 4 SC as a Rvw and Comment LB
SC ACTION: Mr. Hellman presented and motioned for the proposal **to be sent to all SC (Parts 1, 2, 3, and 4) as a Rvw and Comment LB**. The motion was Unanimously Approved.

Update: SC R&A (8-0) and MC (7-0) Rvw and Comment LB in progress till 07/06

July SG R&A Meeting Action: T. Hellman presented a proposal that was unanimously approved.

Meeting Action: T. Hellman presented a proposal to go to a **Review and Comment LB to all SC (Parts 1-4) and Main Committee**.

Item Number: 20-87	NBIC Location: Part 3, S6.8	No Attachment

General Description: Registered Inspector requirements per DOT

Subgroup: Repairs and Alterations

Task Group: K. Moore (PM)

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.

SG R&A Action: This Item conflicts with Item 20-67 proposal to remove references to Registered Inspector. This will be a Progress Report until 20-67 is decided.

SC ACTION: Ms. Moore presented a **Progress Report**.

July SG R&A Meeting Action: Ms. Moore requested this item be Closed w/NA, as Item 20-67 already is addressing this issue and more. UA.

Meeting Action: Ms. Moore proposed this item be **Closed w/NA**, as Item 20-67 already is addressing this issue and more. The proposal was motioned, seconded, and UA.

Item Number: 21-10	NBIC Location: Part 3, 5.2 &5.4	No Attachment

General Description: Add a time frame for R forms (for completion of and submittal of forms)

Subgroup: Repairs and Alterations

Task Group: D. Kinney (PM), B. Schaefer, B. McGuire

Explanation of Need: Currently, the NBIC is silent on how much time may go by after work is completed before the applicable R Form is accepted by the inspector after work is completed. The NBIC is also silent on how much time may go by before the applicable R Form is submitted to the NB and Jurisdictions (as applicable).

SG R&A Action: Progress Report – waiting to see outcome of Item 20-15 for Routine Repair stamping

SC ACTION: Mr. Troutt presented a **Progress Report.**

July SG R&A Meeting Action – New TG: D. Kinney (PM), B. Schaefer, B. McGuire, - this was a PR

Meeting Action – With Mr. Troutt stepping down from the SG R&A, a new TG for this item was established with the following volunteers: D. Kinney (PM), B. Schaefer, B. McGuire, - this was a **PR.**

Item Number: 21-12	NBIC Location: Part 3, 3.3.3, 3.4.4, Section 9	No Attachment

General Description: Clarify the definitions and examples of "Repair" and "Alteration"

Subgroup: Repairs and Alterations

Task Group: P. Becker (PM), K. Moore, P. Shanks, R. Underwood, M. Chestnut, T. Seime

Explanation of Need: Clarify the definitions of "Repair" and "Alteration" in the Glossary and revise the list of examples of each to better define the allowable scope of activities.

History: This Item was created as a result of conversation regarding Interp. Item 20-78 and Action Item 20-54

SG R&A Action: Progress Report

SC ACTION: Ms. Becker presented a **Progress Report**.

Meeting Action: P. Becker presented a presentation (placed on SG R&A Cloud).- This was a PR.

New Items:

Item Number: 21-02	**NBIC Location: Part 3, 1.6**	**No Attachment**

General Description: Define "Fuel Loading" as it pertains to NR activities

Subgroup: Repairs and Alterations

Task Group: P. Edwards (PM)

Explanation of Need: The NR TG would like to clarify "Fuel Loading" as used to determine Category 1, 2 or 3 NR activities.

Meeting Action: P. Edwards - PR

Item Number: 21-06	**NBIC Location: Part 3, 4.4.2**	**No Attachment**

General Description: Concessions with pressure testing associated with replacement parts

Subgroup: Repairs and Alterations

Task Group: D. Kinney (PM), R. Miletti, P. Becker, P. Davis, R. Underwood, M. Winters

Explanation of Need: When replacement parts are manufactured and not tested as required by the original code of construction, there needs to be concessions or considerations associated with the pressure testing requirements as to not detrimentally effect the existing pressure retaining item.

Meeting Action: D. Kinney presented - T. Sieme and B. Wielgozinski had several comments and volunteered to join the TG. After discusstion, Mr. Kinney pulled the proposal back for more work. This was a PR

Item Number: 21-07	**NBIC Location: Part 3, 1.3.2 a)**	**No Attachment**

General Description: NBIC Report Form certification clarification.

Subgroup: Repairs and Alterations

Task Group: D. Kinney (PM)

Explanation of Need: The intent is to clarify which Inspector must certify R forms, specifically when there are different AIA's signing the certifications on the R-2 Form.

Meeting Action: D. Kinney presented a **PR**. T. Seime volunteered to join the TG to assist Mr. Kinney on this item.

Item Number: 21-09 **NBIC Location: Part 3, S2** **No Attachment**

General Description: Incorporate new repair methods for through and diagonal stays

Subgroup: Historical

Task Group: None assigned.

Explanation of Need: The code is silent on the inspection of through stays and diagonal stays. Additionally new repair methods are available from ASME that can be incorporated.

Historical TG Meeting Action: Progress Report: Mr. Rose stated he is still working on a proposal to show to the group.

Item Number: 21-14 **NBIC Location: Part 3, 3.4.3** **No Attachment**

General Description: ASME PCC-2 article references are incorrectly formatted

Subgroup: Repairs and Alterations

Task Group: P. Shanks (PM)

Explanation of Need: The 2018 edition of ASME PCC-2 has a different article numbering system than that used in the 2019 NBIC.

July SG R&A Meeting Action – P. Shanks - PR

Meeting Action: P. Shanks presented a **PR**.

Item Number: 21-15 **NBIC Location: Part 3, Section 5** **No Attachment**

General Description: Corrections and revisions to "R" Forms.

Subgroup: Repairs and Alterations

Task Group: D. Kinney (PM)

Explanation of Need: NBIC Part 3 is silent on controls for corrections or revisions to "R" Forms. The NBIC requires quality systems to provide revision controls, and I believe the NBIC should be clear on this as well.

Meeting Action: D. Kinney presented: The proposal was revised and taken back for more work. M. Toth was added to the TG **– This was a PR**

Item Number: 21-19 **NBIC Location: Part 3, 2.5.3.5 c), d), e)** **No Attachment**

General Description: Remove temper bead WPS requirement for 2.5.3.5 in certain applications.

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need: Undue burden on fabricators and constructors to qualify a temperbead WPS in an application where temperbead is otherwise not required or necessary.

Meeting Action: G. Galanes presented that the 2021 NBIC addresses this and proposed to **Close w/a Letter to Inquirer** that this is addressed in the 2021 NBIC and a revision is not needed.

Item Number: 21-26 **NBIC Location: Part 3, 3.3.3 & 3.4.3** **Attachment 13**

General Description: Encapsulation sect. to remove para. conflicts to other referenced codes

Subgroup: Repairs and Alterations

Task Group: B. Boseo (PM)

Explanation of Need: To remove inconsistencies associated with revisions to other referenced codes.

July SG R&A Meeting Action: B. Boseo turned the Chair to B. Schaefer and presented. The proposal was revised and UA.

Meeting Action: B. Boseo presented. The proposal was motioned, seconded, and **UA**.

Item Number: 21-27 **NBIC Location: Part 3, 4.2 a)** **Attachment 14**

General Description: Provision of Exemption for original COC NDE requirements

Subgroup: Repairs and Alterations

Task Group: W. Sperko (PM)

Explanation of Need: Repair organizations that perform shop refurbishment and repair of LPG storage tanks (ASME Section VIII Div 1) encounter repetitive, typical defects that require repair. Many of the typical defects requiring repair meet the definition and could be considered Routine Repair. This being the case one of the frequently observed issues requiring weld repair is defects in original manufacturing butt welds at the head to shell joint with defects that include cold lap, and pinholes. The typical repair involves the excavation of the defect and confirmation of removal via PT. Then the excavation is welded with a typical repair length being less than 6" long. While the CoC in many cases in LPG storage tanks requires a spot RT of the head to shell join, performing RT on the minimal amount of welding typically performed on isolated defects serves no practical purpose in enhancing safety especially when the length of deposited weld metal would be less that the length of the length of the radiographic film used capture the image.

Meeting Action: W. Sperko presented. The proposal was revised and will be sent to **Letter Ballot to all SC and MC.**

Item Number: 21-30 **NBIC Location: Part 3, 3.4.1 & S4.17.5** **Attachment 15**

General Description: Contacting jurisdiction regarding de-rates.

Subgroup: Repairs and Alterations

Task Group: D. Kinney (PM)

Explanation of Need: 1- It is the only time in the Code where it is optional to contact the jurisdiction. 2- Fairness to certificate holders bidding on these jobs.

July SG R&A Meeting Action: D. Kinney presented – The proposal was revised, and unanimously approved.

Meeting Action: D. Kinney presented – The proposal was motioned, seconded, and **unanimously approved**.

Item Number: 21-31 **NBIC Location: NBIC Glossary** **Attachment 16**

General Description: Revise definition of "Field"

Subgroup: Repairs and Alterations

Task Group: R. Miletti (PM), P. Gilston, M. Toth, J. Walker

Explanation of Need: A "Field" site under the current definition could be multiple rented or leased spaces used for repairs/alterations, where there is no single or specific customer or job, but rather the locations(s) are used for conducting repair/alteration activities by personnel employed by the Certificate Holder on a continual basis.

July SG R&A Meeting Action: The proposal was revised, and a TG was assigned: R. Miletti (PM), P. Gilston, M. Toth, - PR

Meeting Action: R. Miletti presented that this was a new Item and adding a definition of "shop" may provide more clarity on this. J. Walker volunteered to be on the TG, - This was a **PR**

Item Number: 21-33	NBIC Location: Part 3, 1.2 f)	Attachment 17

General Description: Use of code cases pertaining to repairs and alterations

Subgroup: Repairs and Alterations

Task Group: R. Underwood (PM)

Explanation of Need: The NBIC Part 3 already references code cases in various paragraphs such as NR quality requirements, welding method 7, and R Form instructions, but there is no direct reference to acceptance of their use. I think it's always been an unwritten rule that they are permitted to be used with acceptance of the Inspector and Jurisdiction. This proposal will address this in a new paragraph 1.2(f).

July SG R&A Meeting Action: R. Underwood presented – The proposal was revised and a motion to send to Rvw & Comment LB to SG and SC R&A was UA.

Meeting Action: R. Underwood presented – The proposal will be sent to **Rvw & Comment LB to SG and SC R&A**.

11. Future Meetings

- January 17th-20st, 2022 – San Diego, CA
- July 2022 – TBD

12. Adjournment

With there being no further business, the Subcommittee was adjourned at 3:45 PM without objection.

Respectfully submitted,

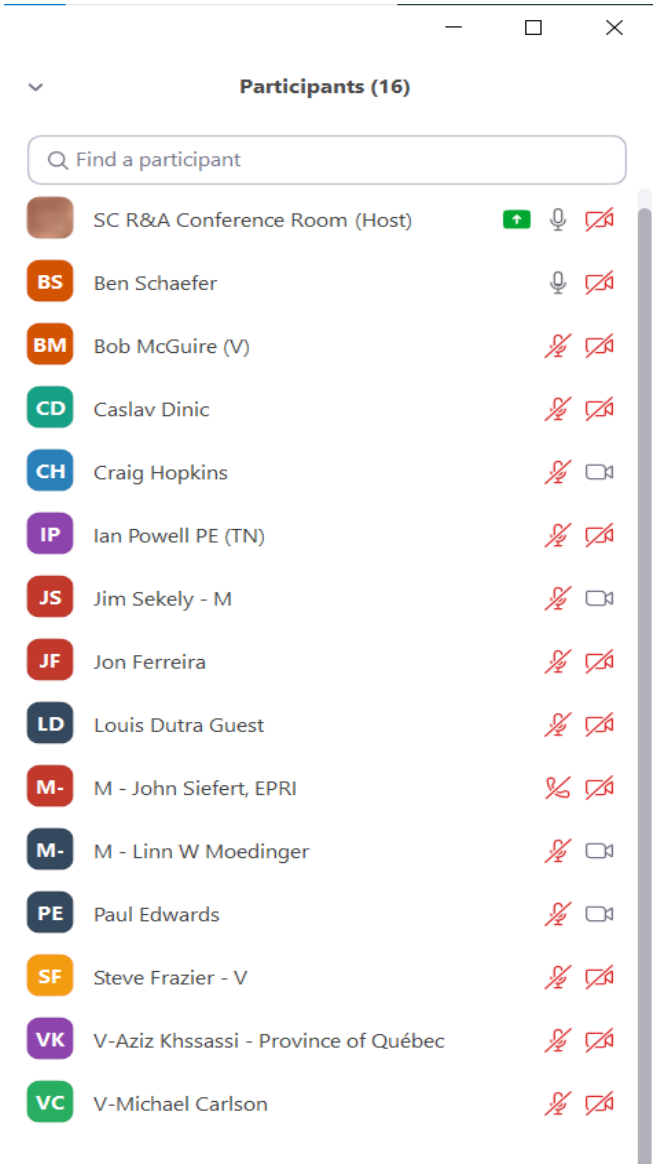
Terrence Hellman

Terrence Hellman

SC R&A Secretary

SC Repairs/Alterations

Last Name	First Name	Interest Category	Role	IN PERSON	ZOOM
Troutt	Robby	Jurisdictional Authorities	Chair	x	
Moore	Kathy	National Board Certificate Holders	Vice Chair	x	
Hellman	Terrence		Secretary	x	
Becker	Patricia	National Board Certificate Holders	Member	x	
Edwards	Paul	National Board Certificate Holders	Member	x	
Hopkins	Craig	National Board Certificate Holders	Member		x
Kinney	Donald	Jurisdictional Authorities	Member	x	
McBee	Timothy	Authorized Inspection Agencies	Member	x	
Miletti	Ray	Manufacturers	Member	x	
Moedinger	Linn	Users	Member		x
Morelock	Brian	Users	Member		
Quisenberry	Michael	National Board Certificate Holders	Member		
Schaefer	Benjamin	National Board Certificate Holders	Member		x
Seime	Trevor	Jurisdictional Authorities	Member	x	
Sekely	James	General Interest	Member		x
Shanks	Paul	Authorized Inspection Agencies	Member	x	
Siefert	John	General Interest	Member		x
Sturm	Rick	Jurisdictional Authorities	Member		
Toth	Marty	General Interest	Member	x	
Underwood	Robert	Authorized Inspection Agencies	Member	x	
Boseo	Brian			x	
Chestnut	Scott	Marathon Petroleum		x	
Gilston	Phil	GE Steam Power		x	
Galanes	George			x	
Rick	Valdez			x	
Ray	Spuhl			x	
Paul	Davis			x	
Ian Powell	Powell	Stand in for B. Moorelock			
Online Attendees on screenshot					


Participants (16)
Find a participant
SC R&A Conference Room (Host)
BS Ben Schaefer
BM Bob McGuire (V)
CD Caslav Dinic
CH Craig Hopkins
IP Ian Powell PE (TN)
JS Jim Sekely - M
JF Jon Ferreira
LD Louis Dutra Guest
M- M - John Siefert, EPRI
M- M - Linn W Moedinger
PE Paul Edwards
SF Steve Frazier - V
VK V-Aziz Khssassi - Province of Québec
VC V-Michael Carlson

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

PROPOSED INTERPRETATION

Item No.

21-21

Subject/Title

Minimum required thickness determination; Use of Mandatory Appendix 46

Project Manager and Task Group

Timothy McBee, Subcommittee Repairs/Alterations

Source (Name/Email)

Christopher Oliver / chrisoliver@chevron.com

Statement of Need

Pressure vessels are often designed with a single specified corrosion allowance for the entire vessel. Calculating minimum required thicknesses per the original construction code (and not relying only on the specified corrosion allowance listed on the manufacturer's data report) often results in identifying surplus material for use as corrosion allowance that was not utilized at the time of construction nor reflected on manufacturer's data report. Unfortunately, most vessel designs were not optimized on a per-component basis to maximize corrosion allowance and as a result, significant amounts of time and effort have been spent with unnecessary shutdowns, repairs, and / or fitness for service (FFS) evaluations all of which might have been avoided or deferred for years had the vessel originally been optimized for corrosion allowance.

Background Information

The 2019 Sec VIII Div 1 edition introduced Mandatory Appendix 46, which allows Div 1 pressure vessel components to be designed using Div 2 rules while still using original material allowable stress values. NBIC considers "minimum required thickness" to be what the original code of construction requires – as listed in Part 2 Section 4.4.7.2. NBIC Interpretation 07-13 clarifies that "original code of construction" does not necessarily mean the original edition/addenda must be used. NBIC Part 3 Section 3.4.1 spells out re-rating as "increasing the maximum allowable working pressure (internal or external) or temperature or decreasing the minimum design metal temperature below which notch toughness testing is required by the original code of construction" and does not mention corrosion allowance or minimum required thickness. NBIC Part 3 Section 3.4.2 states that calculating new minimum wall thickness values by using different allowable stress values provided by different code editions is considered an alteration. However, Mandatory Appendix 46 requires Div 1 allowable stress values be used when calculating required component thicknesses under the Div 2 rules, so the question being proposed is not specifically addressed in NBIC Part 3. NBIC Part 3 Section 9 defines Alteration as "A change in the item described on the original Manufacturer's Data Report which affects the pressure containing capability of the pressure-retaining item. (See NBIC Part 3, 3.4.3, Examples of Alteration) Nonphysical changes such as an increase in the maximum allowable working pressure (internal or external), increase in design temperature, or a reduction in minimum temperature of a pressure-retaining item shall be considered an alteration. Calculating minimum required thicknesses per the original construction code (and not relying only on the specified corrosion allowance listed on the manufacturer's data report), while maintaining the vessel allowable stresses, MAWP, MAEWP, MAWT, and MDMT does not affect the pressure containing capability of the vessel.

Proposed Question

1. Is it permissible for the Owner/User to calculate a new minimum required thickness for a vessel component per the original code of construction where there is no change to allowable stresses, and the vessel MAWP, MAEWP, MAWT, and MDMT do not deviate from what is stated on the Manufacturer's Data Report without performing an Alteration? 2. If yes, is it permissible to invoke Mandatory Appendix 46 of the 2019 edition of ASME Section VIII Division 1 when performing the activities described above when the original code of construction was an earlier edition of ASME Section VIII Division 1?

Proposed Reply

1. NBIC defines "minimum required thickness" to be what the original code of construction requires – as listed in Part 2 Section 4.4.7.2. Therefore, it is permissible for the Owner/User to calculate a new minimum required thickness for a vessel component per the original code of construction where there is no change to the allowable stresses, and the vessel MAWP, MAEWP, MAWT, and MDMT do not deviate from what is stated on the Manufacturer's Data Report, without performing an alternation. 2. NBIC Interpretation 07-13 clarifies that "original code of construction" does not necessarily mean the original edition/addenda must be used, therefore it is permissible to use the 2019 edition of ASME Section VIII Division 1, including Mandatory Appendix 46, when performing the activities described above when the original code of construction is an earlier edition of ASME Section VIII Division 1.

Committee's Question 1
Committee's Reply 1
Rationale
Committee's Question 2
Committee's Reply 2
Rationale

	VOTE:						
COMMITTEE	**Approved**	**Disapproved**	**Abstained**	**Not Voting**	**Passed**	**Failed**	**Date**

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

PROPOSED INTERPRETATION

Item No.

21-22

Subject/Title

Examples of Repairs and Alterations

Project Manager and Task Group

Trevor Seime, Subcommittee Repairs/Alterations

Source (Name/Email)

Terrence Hellman / thellman@nationalboard.org

Statement of Need

Disclaimer statement would help clarify that the listed examples are not a set list, and only represent some case examples.

Background Information

This verbiage may be included in a current Action Item (21-12), however, this interpretation may provide clarity until the proposed verbiage is added to the NBIC.

Proposed Question

Q1 - Are the listed examples of Repairs in 3.3.3 and Alterations in 3.4.4 intended to represent only some case examples and are not meant to limit or dictate whether a particular situation, is or is not, a repair or alteration?

Proposed Reply

A1 - Yes

Committee's Question 1

Q1 - Are the examples of Repairs and Alterations listed in 3.3.3 and 3.4.4, respectively, intended to represent only some case examples?

Committee's Reply 1

A1 – Yes.

Rationale

Committee's Question 2

Committee's Reply 2

Rationale

NBIC 21-28

Question 1. May R-Certificate Holder Company “A” forward a pressure-retaining item to Company “B” for automatic corrosion-resistant weld metal overlay repair, after which Company “A” completes the repair?

Reply 1: Yes, provided Company “B” has an R-Certificate of Authorization covering the work in its scope of activities.

> Alex says:
>
> Section 1.5.1 says "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." However, NBIC Part 3, Section 3.3.3 c) considers "weld overlay" as a "Repair" and no provisions are given in the NBIC to "subcontract" a "Repair" to an organization not in possession of an "R" Certificate of Authorization,
>
> I thought all NBIC work was “repair” work. . .

Question 2. Must Company “B” apply an R-stamped nameplate for the pressure-retaining item weld-overlay repair described in question (1) and prepare a Form R-1?

Reply 2: Yes, however, if the repair is considered “routine” a nameplate is not required.

Question 3: Upon completion of the repair, must Company “A” refer to Company “B”’s Form R-1 under “Remarks” and attach Company B’s R-1 form when preparing Company A’s R-1 Form?

Reply 3: Yes.

Question 4: If Company “A” completes the repair without welding, must Company “A” prepare a Form R-1?

Reply 4: No, unless required by the Jurisdiction or requested by the end user.

Question 5: If the answer to 4 is no, does Company B have to attach a nameplate?

Reply 5: Yes, and good luck with that.

UG-11

(e) The Code recognizes that a Certificate Holder may fabricate parts in accordance with UG-11(d), and that are marked in accordance with UG-11(d)(8). In lieu of the requirement in UG-11(d)(4)(-a),

> UG-11(d)(4) Requirements for welding and brazing are as follows:
> (-a) When welding is performed, it shall meet the requirements of UW-26(a), UW-26(b), UW-26(c), and UW-27 through UW-40. (General rules for welding)

the Certificate Holder may subcontract to an individual or organization not holding an ASME Certificate standard pressure parts that are **fabricated to a standard other than an ASME product standard** provided all the following conditions are met:
(1) The activities to be performed by the subcontractor are included within the Certificate Holder's Quality Control System.
(2) The Certificate Holder's Quality Control System provides for the following activities associated with subcontracting of welding operations, and these provisions shall be acceptable to the Manufacturer's Authorized Inspection Agency:

> (-a) the welding processes permitted by this Division that are permitted to be subcontracted
> (-b) welding operations
> (-c) Authorized Inspection activities
> (-d) placement of the Certificate Holder's marking in accordance with UG-11(d)(8)

(3) The Certificate Holder's Quality Control System provides for the requirements of UG-92 to be met at the subcontractor's facility.
(4) The Certificate Holder shall be responsible for reviewing and accepting the Quality Control Programs of the subcontractor.
(5) The Certificate Holder shall ensure that the subcontractor uses written procedures and welding operations that have been qualified as required by this Division.
(6) The Certificate Holder shall ensure that the subcontractor uses personnel that have been qualified as required by this Division.
(7) The Certificate Holder and the subcontractor shall describe in their Quality Control Systems the operational control of procedure and personnel qualifications of the subcontracted welding operations.
(8) The Certificate Holder shall be responsible for controlling the quality and ensuring that all materials and parts that are welded by subcontractors and submitted to the Inspector for acceptance, conform to all applicable requirements of this Division.
(9) The Certificate Holder shall describe in their Quality Control Systems the operational control for maintaining traceability of materials received from the subcontractor.
(10) The Certificate Holder shall receive approval for subcontracting from the Authorized Inspection Agency prior to commencing of activities.

PROPOSED INTERPRETATION

Item No.	I 21-32
Subject/Title	NDE requirements when repairing minor defects on Pressure Vessel with RT4 marking.
NBIC Location	NBIC Part 3, Section 4, Paragraph 4.2
Project Manager and TaskGroup	Rob Troutt-PM, Kathy Moore, Mike Quesinberry
Source (Name/Email)	Eben Creaser
Statement of Need	This provision will help clarify to "R" Stamp Certificate holders and owners of pressure vessels that are in need of minor repairs to existing welds. Due to the ambiguous wording of this clause any welding on a head to shell joint may be interpreted to require volumetric inspection when the name plate is stamped RT4.
Background Information	An "R" Certificate holder that performs shop repair and refurbishment of ASME Section VIII Div 1 pressure vessels used for propane storage in the propane distribution industry during the refurb process removes all paint from the tank and performs a complete visual inspection. They refurbish approx 10,000 tanks annually and among other repairs that are necessary find tanks that have defects in the original welds connecting head to shell that require weld repair. The defects noted are relatively minor in nature and comprise typically of indications like pin holes, cold lap, and undercut. Repairs like these are localized with the defect being removed by grinding, the weld prep area being examined by PT to confirm complete defect removal and a weld repair performed. If the repair weld in cases like this is required by clause 4.2 to be subject to RT/UT inspection to satisfy RT4 requirements the inspection requirement while providing no technical benefit would make the repair non viable and the otherwise serviceable tank will be scrapped.
Proposed Question	May volumetric NDE (RT/UT) of a repair weld required by NBIC Part 3, Paragraph 4.2 be considered "not practicable" when making a repair to a Section VIII Div 1 pressure vessel, where the name plate of the vessel is stamped RT4, and the scope of the repair is limited to the removal of a defect in an existing head to shell attachment weld, and the subsequent repair by welding of the excavated area and; a) the cumulative length of all weld repair(s) made is less than 15% of the circumference of the vessel or 12" in length, which ever is less. b) the thickness of the weld joint is less than or equal to 1/2" c) the weld is not required to be post weld heat treated d) the vessel is exempt from impact testing
Proposed Reply	Yes
Committee's Question 1	Is a "R" Certificate holder required to perform volumetric NDE when making a welded repair to an ASME Section VIII Division 1 vessel when the nameplate is marked with RT4? OR May volumetric NDE be considered "not practical" when making a welded repair 6 in. (150 mm) in length or less on a circumferential weld of an ASME Section VIII Div. 1 vessel when the weld was spot radiographed in accordance with ASME Section VIII, Div. 1?
Committee's Reply 1	No.
Rationale	ASME Section VIII Division 1 states: "RT4" when only part of the complete vessel has satisfied the radiographic requirements of UW-11(a) or where none of the markings "RT1", "RT2" or "RT3" are applicable.
Committee's Question 2	
Committee's Reply 2	
Rationale	

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date
INT TG							
SC R&A							

CODE INTERPRETATIONS

Requests for code Interpretations shall provide the following:

a) Inquiry

Provide a condensed and precise question, omitting superfluous background information and, when possible, composed in such a way that a “yes” or a “no” reply, with brief provisos if needed, is acceptable. The question should be technically and editorially correct.

b) Reply

Provide a proposed reply that will clearly and concisely answer the inquiry question. Preferably the reply should be “yes” or “no” with brief provisos, if needed.

c) Background Information

Provide any background information that will assist the committee in understanding the proposed Inquiry and Reply Requests for Code Interpretations must be limited to an interpretation of the particular requirement in the code. The Committee cannot consider consulting type requests such as:

1) A review of calculations, design drawings, welding qualifications, or descriptions of equipment or Parts to determine compliance with code requirements;

2) A request for assistance in performing any code-prescribed functions relating to, but not limited to, material selection, designs, calculations, fabrication, inspection, pressure testing, or installation; or

3) A request seeking the rationale for code requirements.

Background for Interpretation 18-100

Task Group PM – David Martinez;

Task Group members: Marty Russel and Nathan Carter

Item Number: 18-100 NBIC Location: Part 3, 3.3.2 Attachment Page 44

General Description: Revision adding (plugging) 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: David Martinez (PM)

January 2019 Meeting Action: Progress Report: Mr. Martinez reported on this item and presented interpretations (98-04 and 98-29) that may satisfy the revision request, however after a presentation from TEiC regarding the use of explosive welding of tubes to be considered as a routine repair, Mr. Martinez recommend this be considered progress report to continue working to address explosive welding as a Routine Repair.

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 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. Routine repairs shall be documented on Form R-1 with this statement in the Remarks section: "Routine Repair";

d) Alternative welding methods without postweld heat treatment as described in NBIC Part 3, 2.5.3 shall not be used for routine repairs.

(Example of proposed additional category to examples of Routine Repairs – paragraph e)

e) The following repairs may be considered as routine repairs and shall be limited to these categories:

1) Welded repairs or replacements of valves, fittings, tubes, or pipes NPS 5 (DN 125) in diameter and smaller, or sections thereof, where neither postweld heat treatment nor

NDE other than visual is required by the original code of construction. This includes their attachments such as clips, lugs, skirts, etc., but does not include nozzles to pressure-retaining items;

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

3) Weld buildup of wasted areas in heads, shells, flanges and fittings not exceeding an area of 100 in.2 (64,520 mm2) or a thickness of 25% of nominal wall thickness or 1/2 in. (13 mm), whichever is less;

4) Corrosion resistance weld overlay not exceeding 100 in.2 (64,520 mm2); ~~and~~

5) Seal welding a mechanical connection for leak tightness where by-design, the pressure retaining capability is not dependent on the weld for strength and requires no postweld heat treatment;

6) Plugging of heat exchanger tubes ¾ in. (19 mm) outside diameter and smaller when explosion welding is used as the method of plugging tubes.

Background Interpretation

INTERPRETATION 15-04

Subject: Part 3, Section 3

Edition: 2015

Question: Is explosion welding of plugs into leaking heat exchanger tubes considered a repair per the NBIC Part 3?

Reply: Yes.

Support for Consideration of the Proposed Action

ASME Section IX – 2019 (Addresses Procedure and Performance Qualification for Explosion Welding heat exchanger tubes to tubesheets, but not the plug to the tube)

QW-193 TUBE-TO-TUBESHEET TESTS
When the applicable Code Section requires the use of this paragraph for tube-to-tubesheet demonstration mockup qualification, QW-193.1 through QW-193.1.3 shall apply.

QW-193.1 Procedure Qualification Specimens. Ten mockup welds are required for qualifying each tube-to tubesheet welding procedure. The mockup assembly shall essentially duplicate the tube-to-tubesheet weld joint design to be used in production, within the limits of the essential variables of QW-288. The mockup test assembly shall be prepared with the tubesheet element having a thickness not less than the lesser of the thickness of the production tubesheet or 2 in. (50 mm). For tube-to-tubesheet welds to clad tubesheets, the cladding or overlay may be represented by a base material with a chemical composition that is essentially equivalent to the cladding composition. All welds in the mockup assembly shall be subjected to the following tests and shall meet the applicable acceptance criteria.

QW-193.1.1 Visual Examination. The accessible surfaces of the welds shall be examined visually with no magnification required. The welds shall show complete fusion, be free from visual cracks or porosity indications,
and have no evidence of burning through the tube wall.

QW-193.1.2 Liquid Penetrant. The liquid penetrant examination shall meet the requirements of Section V, Article 6. The weld surfaces shall meet the requirements of QW-195.2.

QW-193.1.3 Macro-Examination. The mockup welds shall be sectioned through the center of the tube for macro-examination. The four exposed surfaces shall be smoothed and etched with a suitable etchant (see QW-470) to give a clear definition of the weld and heat-affected zone. Using a magnification of 10X to 20X, the exposed cross sections of the weld shall confirm
(a) minimum leak path dimension required by the design
(b) no cracking
(c) complete fusion of the weld deposit into the tubesheet and tube wall face

Table QW-288.2
Essential Variables for Procedure Qualification of Tube-to-Tubesheet Welding (Explosion Welding)

Paragraph		Brief of Variables
QW-403 Base Metals	.35	ϕ Tube thickness
QW-410 Technique	.82	ϕ Pressure application
	.83	ϕ Explosive
	.84	ϕ Distance charge to tubesheet
	.85	ϕ Specified clearance

Legend:
ϕ Change

QW-410.83 A change in the type of explosive or a change in the energy content greater than
±10%.

QW-410.84 A change in the distance between the explosive charge and the tubesheet face greater than ±10%.

QW-410.85 A change in the specified clearance between the tube and the tubesheet greater than ±10%.

QW-193.2 Performance Qualification Specimens.
A minimum of five mockup tube-to-tubesheet welds are required to qualify each welder or welding operator. The same rules as those applicable for procedure qualification (QW- 193.1) shall be followed, with the following additional requirements and exceptions:
(a) The essential variables in QW-387 shall apply.
(b) Essential performance qualification variables applicable for each welding process listed in QW-350 or QW-360 shall also be observed in addition to the variables of Table QW-388.
(c) Postweld heat treatment may be omitted.

Only one mockup weld is required to renew a welder's or welding operator's qualification when that qualification has expired or has been revoked per the requirements of QW-322.1.

Logic to consider motion for approval:

- Explosion welding to plug leaking tubes is supported by qualified written welding procedures and welder qualification procedures compared to other mechanical tube- plugging methods that are performed with no NBIC guidance.
- Explosion welding does not rely on fusion to join the two materials. It is a pressure weld in which the explosive force joins the two materials. Unlike fusion welding that is allowed in other examples of Routine Repairs, there is no heat affected zone, and PWHT is not needed nor required.
- The majority, if not all explosion tube plugging is performed on tubes ¾" and smaller, and typically under emergency conditions. No Inspector involvement would be required if this specific category was added to the categories of Routine Repairs
- The explosion tube-plugging method for tubes ¾" and smaller would be more cost and schedule effective and is proven to be a reliable method for plugging leaking heat exchanger tubes for owners and users.

Note: The only realistic test upon completion of explosion tube-plugging is a pressure test.

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~~and may consist of several documents~~brief or voluminous~~, depending on the projected scope of work. The Quality System~~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 identifying features ~~is a guide for required features~~ which should be covered in the written Quality System as outlined in this section and ~~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 ~~by~~within the Certificate Holder's ~~within. the~~ O~~o~~rganization'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~~ Certificate Holder's legal name, ~~accepted abbreviation,~~ physical address, and ~~scope of activities~~Scope of Work.

The scope of work shall clearly indicate the type of repairs and/or alterations the Certificate Holder 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

b) Content Page

The Quality System shall contain a page listing the contents of the manual by section, number (if applicable), revision level, and date of each section, as required for manual control. ~~The content page shall list the activities described for 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 and/or alterations the Certificate Holder 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~~

Formatted: Font: 10 pt
Formatted: Indent: Left: 0", Hanging: 0.5"
Formatted: Indent: Left: 0.5"
Formatted: Indent: Left: 0", Hanging: 0.25"
Formatted: Font: 10 pt
Formatted: Indent: Left: 0", Hanging: 0.5"
Formatted: Indent: Left: 0.5"
Formatted: Indent: Left: 0.5", Hanging: 0.25"
Formatted: Indent: First line: 0"
Formatted: Indent: Left: 0.75"
Formatted: Indent: Left: 0.5", Hanging: 0.25"
Formatted: Indent: Left: 0.75"
Formatted: Indent: Left: 0.5", Hanging: 0.25"
Formatted: Indent: Left: 0"
Formatted: Font: 10 pt
Formatted: Normal, No bullets or numbering
Formatted: Normal, Indent: Left: 0.75", No bullets or numbering
Formatted: Font: (Default) ArialMT, 10 pt, Font color: Custom Color(RGB(35,31,32))
Formatted: Indent: Left: 0.75"

~~d~~c) 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~~The *Statement* shall also include:

1) A statement that all repairs or alterations carried out by the Certificate Holder ~~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~~shall be brought to the attention of the Certificate Holder's ~~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~~d) ~~Manual~~ Quality System Control

The Quality System~~manual~~ shall define how~~include the necessary provisions for~~ revisionsg of individual s~~ubjects~~sections, 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~~ approvale 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~~e) Certification

When electronic certification of documents is used, the Quality System shall include provisions describing the controls and safe guards that are employed to ensure the integrity of the certification.

~~g~~f) Organization

The Quality System shall include A~~a~~n organizational chart which~~shall be described included for in the manual. It shall~~ reflects actual levels of authority~~-~~ and lines of communication associated with ~~the~~ functional job titles identified.~~.~~ In addition, roles and responsibilities associated with ~~the~~ functional job titles identified within the ~~organizational chart~~Quality System, ~~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~~

Formatted: Indent: Left: 0.5", Hanging: 0.25"

Formatted: Indent: Left: 0.5"

Formatted: Indent: Left: 0.5"

Formatted: Indent: Left: 0.75", Hanging: 0.25"

Formatted: Font: (Default) ArialMT, 10 pt, Font color: Custom Color(RGB(35,31,32))

Formatted: Indent: Left: 1", No bullets or numbering

Formatted: Font: (Default) ArialMT, 10 pt, Font color: Custom Color(RGB(35,31,32))

Formatted: List Paragraph, Indent: Left: 0.75", Numbered + Level: 1 + Numbering Style: 1, 2, 3, … + Start at: 1 + Alignment: Left + Aligned at: 1" + Indent at: 1.25"

Formatted: Font: (Default) ArialMT, 10 pt, Font color: Custom Color(RGB(35,31,32))

~~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~~h~~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 ~~jo~~bunique identifying ~~-~~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

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

~~The manual~~Quality System ~~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.~~ The Quality System 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, and when required, the jurisdiction. ~~,~~

~~i~~j~~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.

Formatted: Font: 10 pt
Formatted: Font: 10 pt
Formatted: Font: 10 pt
Formatted: Font: 10 pt
Formatted: Indent: Left: 1", Hanging: 0.25"
Formatted: Font: 10 pt
Formatted: Indent: Left: 1", Hanging: 0.25"
Formatted: Font: 10 pt
Formatted: Indent: Left: 1", Hanging: 0.25", Don't add space between paragraphs of the same style
Formatted: Indent: Left: 0"
Formatted: Font: 10 pt
Formatted: Font: 10 pt
Formatted: Font: 10 pt
Formatted: Font: (Default) Arial
Formatted: Font: (Default) Arial, 10 pt
Formatted: Font: (Default) Arial

kj) Method of Performing Work

The Quality Systemmanual 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.

jlk) Welding, NDE and Heat Treatment

The manual Quality System shall describe controls for welding, nondestructive examinationNDE, and heat treatment.

Welding –

The Quality Systemmanual is to shall indicate identify the title(s) of the individual(s) responsible for development of the welding procedure specification (WPS), and its qualification, and the qualification of welders and welding operators. It is essential that onlyOnly qualified welding procedure specificationWPS's and welders or welding operators qualifiedwillshall , 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 cContinuity for welders and welding operators will be maintainedproficiency as required by the NBIC, while engaged in the repair or alteration of pressure-retaining items. The manualQuality 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.

NOTE: For qualification of welders and welding procedures to the 2019 ASME Code or later, the Quality System shall identify the title and qualifications of personnel performing supervisory activities as defined in ASME Section IX as applicable. Similar responsibility for nondestructive examination and heat treatment shall be described in the manual.

k) Nondestructive examinationNDE –

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

l) Heat treatment

The manualQuality System shall indicatedentify the title(s) of the individual(s) responsible to ensure that a proper heat treatment has been applied to the repair and/or alteration. The Quality System shall indicatedentify the title(s) of the individual(s) responsible for the review and acceptance of subcontracted heat treatment procedures and personnel. It is also essential that theThe use of alternative welding methods per the NBIC, Part 3, 2.5.3 shall be described in the Quality System.

lmkm) Examinations and Tests

The Quality SystemReference 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

Formatted: Indent: Left: -0.25"
Formatted: Indent: Hanging: 0.25"
Formatted: Font: (Default) ArialMT, 10 pt, Font color: Custom Color(RGB(35,31,32))
Formatted: Font: (Default) ArialMT, 10 pt, Font color: Custom Color(RGB(35,31,32))
Formatted: Font: (Default) ArialMT, 10 pt, Font color: Custom Color(RGB(35,31,32))
Formatted: Font: (Default) ArialMT, 10 pt, Font color: Custom Color(RGB(35,31,32))
Formatted: Normal, Indent: Left: 0.75", No bullets or numbering
Formatted: Font: (Default) ArialMT, 10 pt, Font color: Custom Color(RGB(35,31,32))
Formatted: Font: (Default) ArialMT, 10 pt, Font color: Custom Color(RGB(35,31,32))
Formatted: Font: (Default) ArialMT, 10 pt, Font color: Custom Color(RGB(35,31,32))
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted: Font: Bold
Formatted: Indent: Left: 1", No bullets or numbering
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted: Indent: Left: 1", No bullets or numbering
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted: Normal, No bullets or numbering

of the repair or alteration, prior to signing the Form "R" Report and accepted by the Inspector.

mnln) Calibration

The Quality Systemmanual 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 calibratedion date as well as a specified next calibration due date.

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

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

4) A statement that all calibrations will be tracible to the National Institute of Standards and Technology (NIST) or another nationally recognized Standards Organization, as much as practical.described

omon) Approval, Inspection,Authorization and Acceptance and Inspection of Repair and/or Alteration

The Quality Systemmanual 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.

Tthe Quality Systemmanual 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.

pnpo) Inspections and InspectionsDocument Review

The manual Quality System shall make provisions for the Inspector to have access to the physical work and all 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 manualQuality System shall be available to the inspectorInspector.

pqoq) Control of the "R" Symbol 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 or nameplate.

The accepted abbreviation of the "R" Certificate Holder's name shall be included in the manual.

Formatted: Font: (Default) Arial

Formatted: Font: (Default) Arial

Formatted: Font: 10 pt

Formatted: Indent: Left: 1", No bullets or numbering

Formatted: Font: (Default) Arial, 10 pt

Formatted: Indent: Left: 0.5", No bullets or numbering

Formatted: Font: 10 pt

Formatted: Font: 10 pt

Formatted: Indent: Left: 0.75"

Formatted: Font: (Default) ArialMT, 10 pt, Font color: Custom Color(RGB(35,31,32))

Formatted: List Paragraph, Indent: Left: 0.75", Hanging: 0.25"

Formatted: List Paragraph, Indent: Left: 0.5", Numbered + Level: 1 + Numbering Style: 1, 2, 3, … + Start at: 1 + Alignment: Left + Aligned at: 1" + Indent at: 1.25"

Formatted: Indent: Left: 0.75"

Formatted: Indent: Hanging: 0.25"

Formatted: Indent: Left: 0.5", Hanging: 0.25"

prpq)r) Report of Repair or Alteration Form

The Quality Systemmanual shall indicate the title of the individuals responsible for preparing, signingcertifying, and presenting the NBIC Report Forms to the Inspector. The Inspector shall confirm NBIC compliance by certifying 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.

qs)gs) Exhibits

Any formsForms referenced in the Quality Systemmanual 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 without the need for acceptance by the Inspector as long as they contain the same information as the exhibited forms.The name and accepted abbreviations of the "R" Certificate Holder shall be included in the manual.

rtrs) Construction Code

The Quality Systemmanual shall include provisions for addressing the requirements that pertain to the specific construction codecode of construction for the equipment being repaired or altered to include any applicable code cases or interpretations, with acceptance of the jurisdiction.

sustt) Nonconformances
ing Items

AThere shall be a system shall be established to identify and control a product or serviceprocess a nonconformance ocurrs any characteristics do not conform in adherencewhich does not conform to the applicable rules of the NBIC, code of construction code, or jurisdictional requirements, or the Quality System 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, theThe title(s) of the individual(s) who has responsibility and authority for the disposition and resolution disposition of a nonconformance nonconforming itemsshall be defined including provisions for Inspector involvementNonconformance 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.

tvtuu) Records Retention

The quality manual shall describe aA 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*.

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Indent: Left: 0.75"

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~~shall ~~-~~follow the instructions identified in NBIC Part 3, Table 1.5.1.

NB19-68
NR Program Requirements
Endorsement requirements for the Inspector
RVW 01/09/21

Scope: Review Part 3, paragraph 1.6 for the need to define or elaborate on the Endorsement requirements for the ANI inspecting within the NR Program.

Statement of need:
Currently the NBIC only defines the need for the ANI to hold a valid commission with the appropriate endorsement (Ref Part 3, para 1.3). But the concern expressed was that the NBIC does not specify what commission or endorsement is actually required to make inspections. The provisions for qualification of Inspectors, including Endorsements is specified in RCI-1 (NB-263), Rules for Commissioned Inspectors. This document specifies the duties of Inspectors and Supervisors as well as the qualification.

There seems to be a gap in the NBIC with regard to making it clear which Commission and which Endorsement(s) are required to be maintained for the Inspector. So this change to the NBIC is to close that gap without having to repeat the detailed information from RCI-1 into the NBIC. And only pertinent references to RCI-1 are included.

Narrative:
A little history first…In 2010(?) the National Board split the National Board Commission into two separate and distinct Commissions. The IS Commission for the qualification of Inspectors performing inservice inspection of boilers and pressure vessels. (Note here that this does NOT include inservice inspection of nuclear equipment. The second endorsement was the AI Commission, which was for the qualification of Inspectors performing new construction (i.e. ASME) inspection. The purpose of this split was to make it easier for candidates to obtain a Commission to perform new construction inspections. Previous to then, all Inspectors held the single commission which was based on inservice inspection of B/PV's. There were several other advantages to creating the split, but they are not germane to this discussion.

Supporting the new construction theory was the need to focus additional qualification and training for different segments of the B/PV industry, and the role established by ASME for Inspector Supervisors. To achieve this special Endorsements were available for these needs. The table below summarizes these endorsement and their applicability.

Endorsement	Activity
A *	Inspection of ASME non nuclear B/PV's. ASME Sections I, IV, VIII, X, and XII
N	Inspection of ASME nuclear components. ASME Section III Division 1
I	ASME Inservice Inspection of nuclear power plants, ASME Section XI.
C	Inspection of ASME nuclear concrete components. ASME Section III Division 2
B	Supervision of A endorsed Inspectors
S	Supervision of N endorsed Inspectors
IS	Supervision of I endorsed Inspectors
CS	Supervision of C endorsed Inspectors

*Ultimately dropped and made part of the AI Commissioning process.

It should ne noted that these endorsements may only be obtained by a new construction Inspector, or an AI Commissioned Inspector. They were not made available to the IS Commissioned Inspector.

Repair work was considered an inservice (not nuclear) activity and not new construction. Therefore an Inspector performing any repair or alteration work needed to hold the IS commission for this purpose. This would include any work in accordance with Part 3 of the NBIC. You can recall that the NR program

contained an additional requirement that the Inspector must be an Authorized Nuclear Inspector, which would require him to hold the N endorsement.

It was several years later that the National Board determined that repair and alteration work was rather unique since the NBIC contains some special rules that modify or augment the rules on the Code of Construction, i.e. ASME BPV Code. So the National Board created the R endorsement dealing solely with the rules and activities on the NBIC. And they also deemed that the endorsement could be held by either an IS Inspector or an AI Inspector.

As we progressed through time there was never an issue within the NBIC as to which Inspector could perform inspections of repairs/alteration. As long as the individual held a NB Commission they were good to go. But with the advent of the Commission splitting process and development of the R endorsement it makes a difference today who may perform such inspections. And just a bit more complicated with the NR Program.

So now may be the time to make it clear in the NBIC which individuals may make repair and alteration inspections, including the additional requirements for the NR program. RCI-1 contains all the rules for qualification, examination, and maintenance of Commissions and Endorsements. Also, it contains the duties of the Inspectors and Supervisors. There is no need to repeat the information, but with some additional changes to the NBIC Part 3, we can point the reader to RCI-1 to obtain any detailed information they may need.

With regard to the NR Program, is noted that the Authorized Nuclear Inspector (ANI) provisions for Category 3 lack some of the fundamentals that would apply to all Categories of Activities under the NR Program. A change should be made to incorporate some of those fundamentals into Cat 3 activity.

Proposal:

1) Revise paragraph 1.3 to make reference to RCI-1 for qualifications of Inspectors/Supervisors.

2) Revise paragraphs 1.6.6.2 t) and 1.6.7.2 t) to reference 1.6.9, Interface with the Owner.

3) Revise paragraph 1.6.8.2 t) to be more in line with 1.6.6.2 and 1.6.7.2.

THIS PAGE FOR INFORMATION ONLY

1.6.6.2 t) *(NOTE: applicability to Category 1)*

t) Authorized Nuclear Inspector

Measures shall be taken to reference the commissioned rules for National Board Authorized Nuclear Inspector, in accordance with NB-263, RCI-1 *Rules for Commissioned Inspectors*. The “NR” Certificate Holder shall ensure that the latest documents including the Quality Assurance Manual, procedures and instructions are made available to the Authorized Nuclear Inspector. The Authorized Nuclear Inspector shall be consulted prior to the issuance of a repair/replacement plan by the “NR” Certificate Holder in order that the Authorized Nuclear Inspector may select any in-process inspection or hold points when performing repair/replacement activities. The “NR” Certificate Holder shall keep the Authorized Nuclear Inspector informed of progress of the repair/replacement activity so that inspections may be performed. The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless satisfied that all work carried out is in accordance with this Section. The Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor shall have access to areas where work is being performed including subcontractors facilities in order to perform their required duties. The ANI shall be involved in dispositions and verification for non-conformances and corrective actions involving quality or code requirements.

1.6.7.2 t) *(NOTE: Applicability to Category 2)*

t) Authorized Nuclear Inspector

Measures shall be taken to reference the commissioned rules for National Board Authorized Nuclear Inspector, in accordance with NB-263, RCI-1 *Rules for Commissioned Inspectors*. The “NR” Certificate Holder shall ensure that the latest documents including the Quality Assurance Manual, procedures and instructions are made available to the Authorized Nuclear Inspector. The Authorized Nuclear Inspector shall be consulted prior to the issuance of a repair/replacement plan by the “NR” Certificate Holder in order that the Authorized Nuclear Inspector may select any in process inspection or hold points when performing repair/replacement activities. The “NR” Certificate Holder shall keep the Authorized Nuclear Inspector informed of progress of the repair/replacement activity so that inspections may be performed. The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless satisfied that all work carried out is in accordance with this section. The Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor shall have access to areas where work is being performed including subcontractors facilities in order to perform their required duties. The ANI shall be involved in dispositions and verification for nonconformances and corrective actions involving quality or code requirements.

1.6.8.2 t) (*NOTE: Applicability to Category 3. Also, the references to 1.6.6.2 s) and 1.6.7.2 s) are related to Audits. The text therein is almost identical to 1.6.8.2 s) except there is no reference to mandatory compliance to ASME NQA-1 for Category 3.)*

t) Authorized Nuclear Inspector

Qualifications and duties shall be as specified in ASME QAI-1 and NB-263, RCI-1 for the Authorized Inspection Agencies, Authorized Nuclear Inspector and the Authorized Nuclear Inspector Supervisor. Additional requirements are specified in NBIC Part 3, 1.6.6.2 s), 1.6.7.2 s), and 1.6.9.

THIS PAGE FOR INFORMATION ONLY

1.6.9 INTERFACE WITH THE OWNER'S REPAIR/REPLACEMENT PROGRAM (FOR CATEGORIES 1, 2, AND 3 AS APPLICABLE)

Interface with the owner's repair/replacement program shall meet the following:
a) The "NR" Certificate Holder's repair/replacement plan (see Table 1.6.9) shall be subject to the acceptance of the owner and the owner's Authorized Nuclear Inservice Inspector (ANII) and shall be subject to review by the Jurisdiction and Regulatory Authorities having jurisdiction at the plant site.

b) Repair/Replacement activities of nuclear components shall meet the requirements of ASME Section III, ASME Section XI, and/or other applicable standard, and the owner's requirements, and shall be subject to verification by the Jurisdiction and Regulatory Authorities having jurisdiction at the plant site.

c) Documentation of the repair/replacement activities of nuclear components shall be recorded on the Report of Repair/Replacement Activities of Nuclear Components and Systems for Nuclear Facilities, Form NR-1, or Report of Repair/Replacement Activities for Nuclear Pressure Relief Devices, Form NVR-1, in accordance with the NBIC Part 3, Section 5. The completed forms shall be signed by a representative of the "NR" Certificate Holder and the Authorized Nuclear Inspector when the repair/replacement activity meets the requirements of this section. For repair/replacement activities that involve design changes, Form NR-1, or Form NVR-1, as applicable, shall indicate the organization responsible for the design or design reconciliation in accordance with the owner's requirements.

d) The "NR" Certificate Holder shall provide a copy of the signed Form NR-1 or Form NVR-1, as appli cable, to the owner, the Enforcement, and the Regulatory Authority if required, and the Authorized Nuclear Inspection Agency. The original Form NR-1 or Form NVR-1, as applicable, shall be registered with the National Board by the "NR" Certificate Holder. A NB registration log shall be maintained by the "NR" Certificate Holder. See NBIC Part 3, Section 5.5 and 5.6.

e) The "NR" Certificate Holder shall provide a nameplate/stamping for repair/replacement activities for each nuclear component unless otherwise specified by the owner's Quality Assurance Program. The required information and format shall be as shown in NBIC Part 3, Section 5.

Existing	Proposed
1.3 INSPECTOR a) Inspection and certification shall be made by an Inspector holding a valid commission with the appropriate endorsement issued by the National Board and employed by an Authorized Inspection Agency (see NBIC Part 3, Section 9, Glossary of Terms for definition of Authorized Inspection Agency).	**1.3 INSPECTOR** a) Inspection and certification shall be made by an Inspector holding a valid **National Board** Commission with the **"R"** ~~appropriate~~ endorsement issued by the National Board and employed by an Authorized Inspection Agency **in accordance with RCI-1.** (see NBIC Part 3, Section 9, Glossary of Terms for definition of Authorized Inspection Agency).
1.6.6.2 t) t) Authorized Nuclear Inspector Measures shall be taken to reference the commissioned rules for National Board Authorized Nuclear Inspector, in accordance with NB-263, RCI-1 *Rules for Commissioned Inspectors*. The "NR" Certificate Holder shall ensure that the latest documents including the Quality Assurance Manual, procedures and instructions are made available to the Authorized Nuclear Inspector. The Authorized Nuclear Inspector shall be consulted prior to the issuance of a repair/replacement plan by the "NR" Certificate Holder in order that the Authorized Nuclear Inspector may select any in-process inspection or hold points when performing repair/replacement activities. The "NR" Certificate Holder shall keep the Authorized Nuclear Inspector informed of progress of the repair/replacement activity so that inspections may be performed. The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless satisfied that all work carried out is in accordance with this Section. The Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor shall have access to areas where work is being performed including subcontractors facilities in order to perform their required duties. The ANI shall be involved in dispositions and verification for non-conformances and corrective actions involving quality or code requirements.	Add the following: **The Authorized Nuclear Inspector shall hold the "N", "I", and "R" endorsements on his/her Commission.** **Additional requirements regarding Owner Interface are specified in 1.6.9**
1.6.7.2 t) t) Authorized Nuclear Inspector Measures shall be taken to reference the commissioned rules for National Board Authorized Nuclear Inspector, in accordance with NB-263, RCI-1 *Rules for Commissioned Inspectors*. The "NR" Certificate Holder shall ensure that the latest documents including the Quality Assurance Manual, procedures and instructions are made available to the Authorized Nuclear Inspector. The Authorized Nuclear Inspector shall be consulted	Add the following: **The Authorized Nuclear Inspector shall hold the "N", "I", and "R" endorsements on his/her Commission.**

Existing	Proposed
prior to the issuance of a repair/replacement plan by the "NR" Certificate Holder in order that the Authorized Nuclear Inspector may select any in-process inspection or hold points when performing repair/replacement activities. The "NR" Certificate Holder shall keep the Authorized Nuclear Inspector informed of progress of the repair/replacement activity so that inspections may be performed. The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless satisfied that all work carried out is in accordance with this Section. The Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor shall have access to areas where work is being performed including subcontractors facilities in order to perform their required duties. The ANI shall be involved in dispositions and verification for non-conformances and corrective actions involving quality or code requirements.	**Additional requirements regarding Owner Interface are specified in 1.6.9**
1.6.8.2 t) t) Authorized Nuclear Inspector Qualifications and duties shall be as specified in ASME QAI-1 and NB-263, RCI-1 for the Authorized Inspection Agencies, Authorized Nuclear Inspector and the Authorized Nuclear Inspector Supervisor. Additional requirements are specified in NBIC Part 3, 1.6.6.2 t), 1.6.7.2 t), and 1.6.9.	**1.6.8.2 t)** **t) Authorized Nuclear Inspector** **Measures shall be taken to reference the commissioned rules for National Board Authorized Nuclear Inspector, in accordance with NB-263, RCI-1 *Rules for Commissioned Inspectors*. The Authorized Nuclear Inspector shall hold the "N", "I", and "R" endorsements on his/her Commission. The "NR" Certificate Holder shall ensure that the latest documents including the Quality Assurance Manual, procedures and instructions are made available to the Authorized Nuclear Inspector. The Authorized Nuclear Inspector shall be consulted prior to the issuance of a repair/replacement plan by the "NR" Certificate Holder in order that the Authorized Nuclear Inspector may select any in-process inspection or hold points when performing repair/replacement activities. The "NR" Certificate Holder shall keep the Authorized Nuclear Inspector informed of progress of the repair/replacement activity so that inspections may be performed.** **The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless** **satisfied that all work carried out is in accordance with this Section. The Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor shall have access to areas where work is being performed including subcontractors facilities in order to perform**

Existing	Proposed
	their required duties. The ANI shall be involved in dispositions and verification for non-conformances and corrective actions involving quality or code requirements. Additional requirements regarding Owner Interface are specified in 1.6.9.

PROPOSED REVISION OR ADDITION

Item No.	20-47
Subject/Title	Definition of Authorized Nuclear Inspection Agency needs to be updated to clarify what is
NBIC Location	**NBIC Location: Part 3, 9.1**
Project Manager and TaskGroup	R. Spuhl (PM), B. Wielgoszinski and T. Roberts
Source (Name/Email)	
Statement of Need	ANIA definition should be revised to clarify requirements and activities of AIA's performing NR inspection activities by adding reference to the NB-360 and the applicable ASME QAI-1 Section III and XI scopes required to be included on the ASME Certificate of Accreditation.
Background Information	The National Board should consider more specific details be listed on the Certificate of Acceptance when acceptance is based on the ASME Certificate of Accreditation. Such as "Accreditation to provide third party inspection services for repairs and alterations, and nuclear repair/replacement in accordance with the National Board Inspection Code".
Existing Text	**Authorized Nuclear Inspection Agency** -- An Authorized Inspection Agency intending to perform nuclear inspection activities and employing nuclear Inspectors / Supervisors.
Proposed Text	**Authorized Nuclear Inspection Agency** -- An Authorized Inspection Agency meeting the qualification and duties of NB-360, National Board Acceptance of Authorized Inspection Agencies (AIA) Accredited by the American Society of Mechanical Engineers (ASME) and intending to perform nuclear inspection activities and employing Authorized Nuclear nuclear Inspectors / Supervisors. The Certificate of Accreditation from ASME must include the performance of inspection activities covering Section III and Section XI of the ASME Boiler and Pressure Vessel Code in accordance with the applicable parts of ASME QAI-1.

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date
SG R&A							
SC R&A							

CODE REVISIONS OR ADDITIONS

Request for code revisions or additions shall provide the following:

a) Proposed Revisions or Additions

For revisions, identify the rules of the code that require revision and submit a copy of the appropriate rules as they appear in the code, marked up with the proposed revision. For additions, provide the recommended wording referenced to the existing code rules.

b) Statement of Need

Provide a brief explanation of the need for the revision or addition.

c) Background Information

Provide background information to support the revision or addition, including any data or changes in technology that form the basis for the request that will allow the Committee to adequately evaluate the proposed revision or addition. Sketches, tables, figures, and graphs should be submitted as appropriate. When applicable, identify any pertinent paragraph in the code that would be affected by the revision or addition and identify paragraphs in the code that reference the paragraphs that are to be revised or

Record 20-47

PM Raymond Spuhl

Last Updated 4/1/21

Scope of Proposal: Definition of Authorized Nuclear Inspection Agency needs to be updated to clarify what is required in the ASME Certificate of Accreditation scope of work.

Current definition

Authorized Inspection Agency (AIA)

Inservice: An Authorized Inspection Agency is either:

a) a Jurisdictional authority as defined in the National Board Constitution; or

b) an entity that is accredited by the National Board meeting NB-369, *Accreditation of Authorized Inspection Agencies Performing Inservice Inspection Activities*; NB-371, *Accreditation of Owner-User Inspection Organizations (OUIO);* or NB-390, *Accreditation of Federal Inspection Agencies (FIA).*

New Construction: An Authorized Inspection Agency is one that is accredited by the National Board meeting the qualification and duties of NB-360, *National Board Acceptance of Authorized Inspection Agencies (AIA) Accredited by the American Society of Mechanical Engineers (ASME).*

Authorized Nuclear Inspection Agency — An Authorized Inspection Agency intending to perform nuclear inspection activities and employing nuclear Inspectors / Supervisors.

Proposed definition

Authorized Nuclear Inspection Agency — An Authorized Inspection Agency meeting the qualification and duties of NB-360, *National Board Acceptance of Authorized Inspection Agencies (AIA) Accredited by the American Society of Mechanical Engineers (ASME)* and intending to perform nuclear inspection activities and employing Authorized Nuclear ~~nuclear~~ Inspectors / Supervisors. The Certificate of Accreditation from ASME must include the performance of inspection activities covering Section III and Section XI of the ASME Boiler and Pressure Vessel Code in accordance with the applicable parts of QAI-1.

The National Board should consider more specific details be listed on the Certificate of Acceptance when acceptance is based on the ASME Certificate of Accreditation.

Such as “Accreditation to provide third party inspection services for repairs and alterations, and nuclear repair/replacement in accordance with the National Board Inspection Code”.

Other definitions to be considered

Nuclear Inspector – An individual who holds a valid and current National Board AI Commission with the R, N, and I endorsements.

Repair / Replacement Activity (from Section XI)

The term *repair/replacement activity* includes those activities previously known as *repair, replacement, modification*, or, *alteration*. Those previous terms no longer have a unique meaning or significance and are combined in the term *repair/replacement activity*. Reasons for repair/replacement activities may include the following:

(a) discrepancies detected during inservice inspection, maintenance, or service
(b) regulatory requirements change
(c) design changes to improve equipment service
(d) changes to improve reliability
(e) damage
(f) failure during service
(g) personnel exposure
(h) economics
(i) end of service life
(j) addition of new items or systems

Risk-Informed Safety Class (RISC)–1 structures, systems, and components (SSCs) means safety-related SSCs that perform safety significant functions.
Risk-Informed Safety Class (RISC)–2 structures, systems and components (SSCs) means nonsafety-related SSCs that perform safety significant functions.
Risk-Informed Safety Class (RISC)–3 structures, systems and components (SSCs) means safety-related SSCs that perform low safety significant functions.
Risk-Informed Safety Class (RISC)–4 structures, systems and components (SSCs) means nonsafety-related SSCs that perform low safety significant functions.

Safety significant function means a function whose degradation or loss could result in a significant adverse effect on defense-in-depth, safety margin, or risk.

Item Number: 20-61	NBIC Location: Part 3, S8

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.

Summary of changes (January 12, 2021):

- Minor editorial items have been fixed or clarified.
- Section S8.1 a) has been modified to reflect the incorporation of dissimilar metal welds.
- Section S8.2.2 is added to provide guidance for dissimilar metal weld repairs
- The language in S8.3 was confusing, and this has been resolved.
- Section S8.4 a) has been revised to reflect qualification for dissimilar metal weld repairs and language in S8.4 c) has been simplified.

Summary of changes (January 13, 2021):
Added minor edits in Welding Method 6 [Part 3, 2.5.3.6 c) 5)] and Welding Method 7 [Part 3, 2.5.3.7 i)] approved language for 2021 edition to remove reference to Code Cases 2733 and 2734 and to reference the UNS number for these respective filler materials that are covered by the Code Cases.

Summary of changes (July 12, 2021):
Item was balloted at the repairs and alterations subcommittee (closed March 9, 2021). Comments and suggested revisions were received from Ray Miletti, Kathy Moore, Jim Sekely, and Paul Shanks. The present rev 3 document reflects the feedback from these individuals.

Voting Window	Committee	Vote Result	Votes Approved	Votes Disapproved	Votes Abstention	Votes Not Voting
02/09/2021 to 03/10/2021	Subcommittee Repairs/Alterations	Pass	16	1	0	0

Ballot Description:

This item makes several editorial changes to Supplement 8 as well as modicifcations and revisions to the language in S8.1, S8.2.2, S8.3, and S8.4 to provide clarification and guidance on the use of dissimilar metal welds.

The deadline for this ballot is March 9, 2021.

Committee Member: Ray Miletti **Vote Date:** 2021-03-07 **Vote:** Disapproved **Uploads:** 5294.BALREPLY.A38A.docx

Member Comment: See file attached

PM Reply: Ray, thank you for your comment. Your suggestion will be included in the revision.

Committee Member: Linn Moedinger **Vote Date:** 2021-02-09 **Vote:** Approved **Uploads:**

Committee Member: Kathy Moore **Vote Date:** 2021-02-10 **Vote:** Approved **Uploads:**

Member Comment: a) The welding procedure qualification test coupon shall be ASME P-No. 15 E, Group 1, joined to itself, or P-No. 4 or P-No. 5A or P-No. 8, P-No. 42, P-No. 43, or P-No. 45. I think this has too many "ors"a) The welding procedure qualification test coupon shall be ASME P-No. 15 E, Group 1, joined to itself, P-No. 4, P-No. 5A , P-No. 8, P-No. 42, P-No. 43, or P-No. 45.

PM Reply: Thank you for your edit - I agree with your suggestion and make this edit.

Committee Member: James Sekely **Vote Date:** 2021-02-12 **Vote:** Approved **Uploads:**

Member Comment: I agree with Kathy - "too many ors" and I withdraw my comment relating to UNS numbers based on your reply.
Thanks

PM Reply: Thank you for your comment. We did agree to list the UNS No. because the referenced filler materials for 'EPRI P87' are still Code Cases without an AWS specification. It was highlighted that the NBIC prefers not to reference Code Cases. Thus the discussion during the January meeting led to general agreement that the best course of action was to list the UNS number.

Committee Member: Paul Shanks **Vote Date:** 2021-02-10 **Vote:** Approved **Uploads:**

Member Comment: Para 8.1 b) is marten- site a typo?8.2 a) didn't we agree to drop the ERNiCR-3 stuff and just say F-43 UNS N08087?In 8.3 d) we say 50% overlap or grater then 25-50% then a rule of thumb gets us to 40% overlap- whats going on? Also it says machined excavation, does that mean I cannot grind the site?8.3 e) is it acceptable to have a rod larger than 1/8" touch the base material outside the excavation? Possible say weld beads onto the base material…I agree with Kathy on the comma vs or suggestion

PM Reply: Paul, a few responses and thank you for your comments. Marten-site is a typo (it was pulled from the current language), will edit this to read 'martensite.' For the filler materials which list an AWS classification, it is our preference to list the AWS classification. The caveat here is that the EPRI P87 filler metal is still a Code Case without an AWS classification and thus the decision was made to list the UNS number for this filler metal only. Regarding 'machined excavation', I believe you are right to highlight that this is too specific - I will edit so that it reads 'excavation' because grinding should be permitted. The intent of the language regarding rod size is to ensure that smaller diameter rods are used in direct contact with the excavation. Once this layer is completed, larger rods could be used.

S8.1 SCOPE

a) The technical information provided in this supplement pertains to weld repair and post repair inspection of creep strength enhanced ferritic steel (CSEF) pressure retaining items. The present guidance covers P-No. 15E, Group 1, Grade 91 and dissimilar welds made to this material (e.g. P-No. 4, P-No. 5A or P-No. 8, P-No. 42, P-No. 43 or P-No. 45). This Supplement provides guidance for full penetration and partial penetration weld repairs not covered under Welding Method 6 (NBIC Part 3, 2.5.3.6) or Welding Method 7 (NBIC Part 3, 2.5.3.7).

b) Creep Strength Enhanced Ferritic alloys (CSEFs) are a collection of ferritic steels whose creep strength is enhanced by the creation of a precise condition of micro-structure, specifically martensite or bainite, which is stabilized during tempering by controlled precipitation of temper-resistant carbides, carbo-nitrides, or other stable and/or meta-stable phases. Careful consideration shall be given to pressure-retaining items that are fabricated from CSEF steels~~CSEF's~~. The behavior of these materials in low temperature (i.e. fracture toughness and/or fatigue) and in high temperature (i.e. creep and/or creep-fatigue) components can be degraded by not adhering to the welding procedures and/or improper application of post-weld heat treatment (PWHT). Experienced inspection personnel should oversee weld repairs of this nature for strict compliance with all welding procedure and repair requirements.

Commented [SJ1]: Edited per Paul Shank's comment

c) Post construction access and in-service operation may not allow the practicable application of PWHT following original construction fabrication requirements and repair weld joint design. This supplement provides guidelines for weld repair options and post repair inspection using a well-engineered approach for CSEF steels. The user is cautioned to seek technical guidance for welding and selection of heat treating requirements.

d) Prior to using this guideline an engineering evaluation shall be performed to determine the scope of the repair and impact to safety prior to returning the pressure-retaining item to service for a specified period of time, based on acceptance by the Inspector, and when required the Jurisdiction. The organization performing the engineering evaluation shall have demonstrated experience with Grade 91 CSEF steels.

S8.2 WELD REPAIR OF GRADE 91 STEEL

S8.2.1 WELD REPAIR OPTIONS

a) 9Cr-1Mo-VNbN Filler Metal (i.e. matching to Grade 91) + Controlled Fill + Low PWHT (Minimum temperature is 1250°F, 675°C). Acceptable filler materials are referenced in Table S8.2.1. The minimum time and maximum heat treatment temperature shall be in accordance with the original code of construction. For reference, where the Ni+Mn content of the filler metal is not known, the maximum PWHT temperature shall be 1425°F (775°C). This maximum shall be

enforced to avoid over-tempering or exceeding the absolute maximum PWHT temperature. PWHT hold times at temperature shall be as follows:

1) Minimum holding time at PWHT temperature is specified as 1 hour per 1.0 inch (25 mm) of thickness, 30 minute minimum provided the component < 0.5 inches (12.5 mm) in thickness;

2) Minimum holding time at PWHT temperature is specified as 5 hours plus 15 minutes for each additional 1.0 inch (25 mm) over 5.0 inches (125 mm);

b) 9Cr-1Mo Filler Metal + Controlled Fill and No PWHT. Acceptable filler materials are detailed in Table S8.2.1~~S11.2.1~~.

c) Ni-base Filler Metal + Controlled Fill and No PWHT. Acceptable nickel base consumables include selected ASME F No. 43 filler metals as detailed in Table S8.2.1.

Commented [SJ2]: Notes to editors
1.Please remove footnotes B and C in Table S8.2.1.
2.Please change reference to EPRI P87 to UNS N08087

TABLE S8.2.1

ALTERNATIVE WELD REPAIR METHODS, FILLER METALS AND WELDING PROCESSES FOR GRADE 91 STEEL.

Acceptable Weld Repair Method		Welding Process and Filler Metal AWS Classification
Filler Metal	**Welding Procedure**	
Matching (9Cr-1Mo-VNbN)	Controlled Fill + Low PWHT	• SMAW – E9015-B9, E9016-B9, E9018-B9 or E9015-B91A, E9016-B91A or E9018-B91A • FCAW – E91T1-B9 or E91T1-B91A • GTAW – ER90S-B9 or ER90S-B91A
9Cr-1Mo	Controlled Fill	• SMAW – E8015-B8, E8016-B8 or E8018-B8 • FCAW – E81T1-B8 • GTAW – ER80S-B8
Ni-base	Controlled Fill	• SMAW – EPRI P87[B], ENiCrFe-2, ENiCrFe-3 • FCAW – None available • GTAW – EPRI P87[C], ERNiCr-3

[A] –B91 AWS classification is pending for the various Grade 91 filler metal product forms (currently –B9)

[B] Incorporated by ASME B&PV Code as Code Case 2734 for classification as an F No. 43 filler material

[C] Incorporated by ASME B&PV Code as Code Case 2733 for classification as an F No. 43 filler material

S8.2.2 WELD REPAIR OPTIONS FOR DISSIMILAR METAL WELDS

a) For repairs in P-No. 15E, Group 1, Grade 91, CSEF steel joined to either P-No. 8, P-No. 42, P-No. 43, or P-No. 45, as permitted for welded construction by the applicable rules of the original code of construction, the filler metal shall be limited to an austenitic, nickel-base filler metal having a designation F-No. 43 and limited

to the following consumables: ERNiCr-3, ENiCrFe-3, ENiCrFe-2, UNS N08087. This weld repair option does not require PWHT.

b) For repairs in P-No. 15E, Group 1, Grade 91, CSEF steel joined to P-No. 4, Group 1, or P-No. 5A, Group 1, the filler metal shall be limited to:

   1) A martensitic, iron-base filler metal having a designation F-No. 4 or F-No. 6 and limited to the following consumables: E8015-B8, E8018-B8 or ER80S-B8. This weld repair option does not require PWHT. Or

   2) A martensitic, iron-base filler metal having a designation F-No. 4 or F-No. 6 and limited to the following consumables: E9015-B9, E9016-B9, E9018-B9, E9015-B91, E9016-B91, E9018-B91, E91T1-B9, E91T1-B91, ER90S-B9 or ER90S-B91. This weld repair option requires PWHT at a minimum temperature of 1250°F (675°C).

S8.3 APPLICATION OF CONTROLLED FILL WELDING PROCEDURE

a) The minimum preheat for the repair procedure shall be 300°F (150°C). The preheat temperature shall be checked to ensure the minimum preheat temperature is maintained during all welding and until welding is completed. The maximum interpass temperature shall be 550°F (290°C). At the completion of welding, a post weld hydrogen bake-out is not required nor prohibited.

b) To control heat input the weld repair shall be performed using a “controlled fill” technique. In this technique, the first layer in contact with the repair groove can be identical or smaller in diameter than the fill passes.

c) Figures S8.3-a through S8.3-d illustrate the types of acceptable weld joint details using the controlled fill technique for full or partial penetration weld repairs.

d) ~~The bead-to-bead overlap should be ~50% or greater.~~ The fill passes should be deposited working from the bevel of the ~~machined~~ excavation towards the center of the excavation with a minimum overlap of 25% and ideally 50%. As a rule of thumb, if the welder aims for the toe of the previously deposited weld bead, an overlap of at least 40% will be achieved.

e) When the SMAW process is specified, the weld beads deposited onto the base material shall not exceed an electrode diameter of 1/8 in. (3.2 mm). The remaining fill passes shall not exceed an electrode diameter of 5/32 in. (4.0 mm). When the GTAW process is specified, any limits for filler metal size shall be reflected in the qualified PQR and WPS.

   ~~When the SMAW process is specified using ferrous filler metals for an initial fill pass layer as a controlled fill welding technique, the electrode diameter is restricted to a maximum size of 1/8 in. (3.2 mm). The remaining fill passes to complete this excavation using this technique and SMAW process are limited to an electrode diameter of 5/32 in. (4.0 mm). When the SMAW process is~~

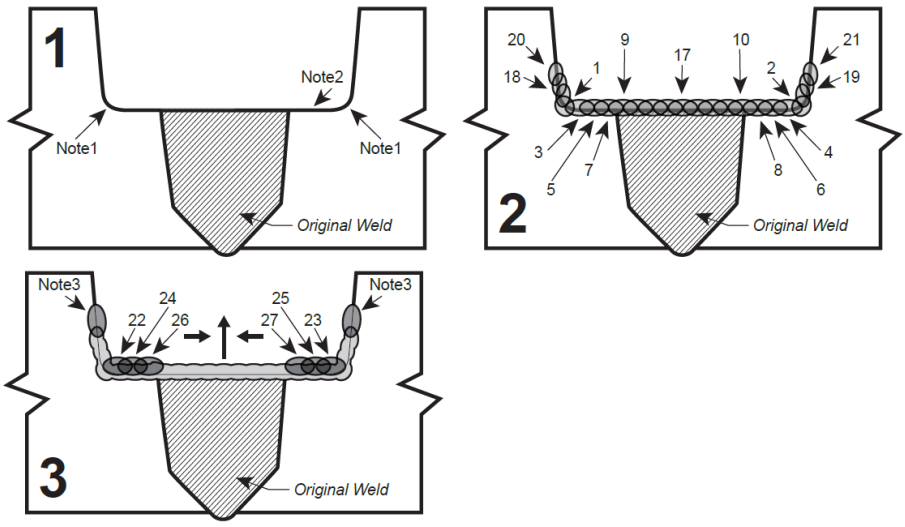
Commented [SJ3]: Simplification of language per Paul Shanks’ comments

Commented [SJ4]: Simplification of language per Paul Shanks’ comments

~~specified with ferrous filler metals, the fill passes are restricted to a maximum electrode diameter of 1/8 in. (3.2 mm). When the SMAW process is specified with nickel base filler metals, the fill passes in immediate contact with the excavation shall not exceed an electrode diameter of 1/8 in. (3.2 mm), and for the remaining fill passes to restore the excavated material an increase in the electrode diameter to 5/32 in. (4.0 mm) is permitted. When the GTAW process is specified, any limits for filler metal size shall be reflected in the qualified PQR and WPS.~~

FIGURE S8.3-a.

SCHEMATIC OF THE CONTROLLED FILL WELDING PROCEDURE FOR GRADE 91 STEEL FOR A PARTIAL PENETRATION WELD REPAIR.



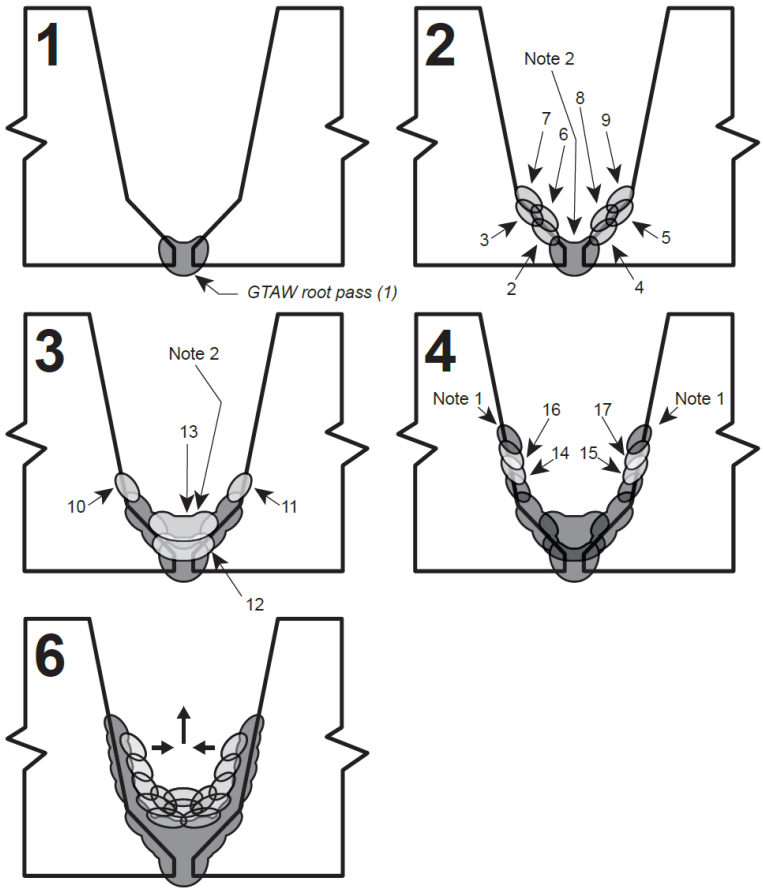
Note 1 – The excavation shall have rounded corners to prevent lack of fusion defects. In these locations it is recommended to use a smaller diameter electrode (such as 3/32 in. (2.4 mm)) to ensure acceptable fusion.

Note 2 – The repair cavity width shall extend at least 0.40 in. (10 mm) beyond the fusion line of the original weld

Note 3 – Where the excavation may pose challenges with electrode access, it is recommended that the fill passes in immediate contact with the machined excavation be restricted in height as the weld repair is performed.

FIGURE S8.3-b.

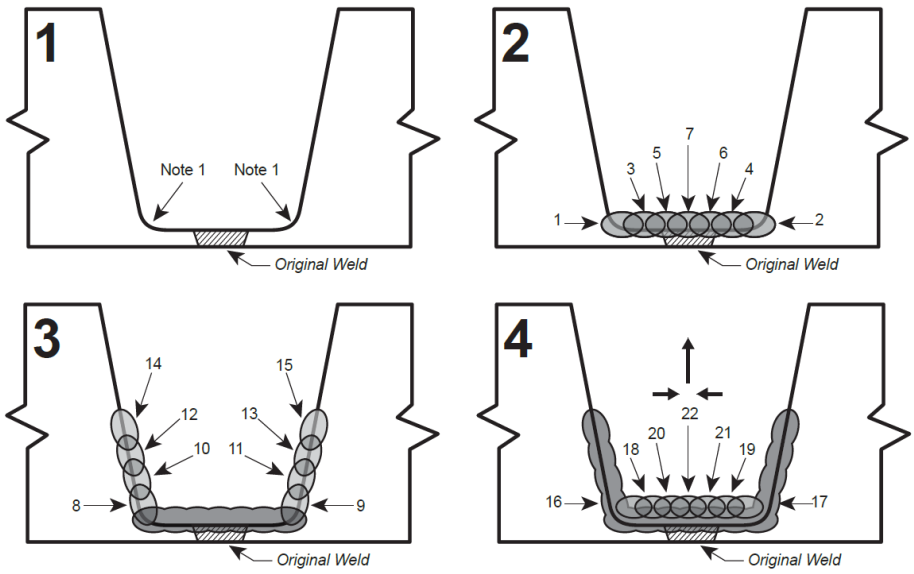
SCHEMATIC OF THE CONTROLLED FILL WELDING PROCEDURE FOR GRADE 91 STEEL FOR A FULL PENETRATION WELD REPAIR USING A COMPOUND BEVEL.



Note 1 – Where the excavation may pose challenges with electrode access, it is recommended that the fill passes in immediate contact with the machined excavation be restricted in height as the weld repair is performed.

FIGURE S8.3-c.

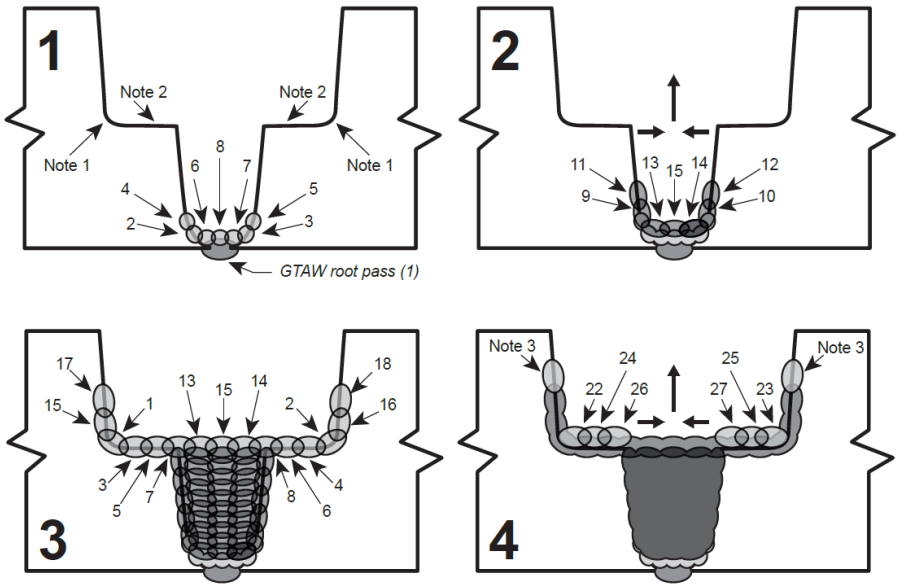
SCHEMATIC OF THE CONTROLLED FILL WELDING PROCEDURE FOR GRADE 91 STEEL FOR FULL PENETRATION WELD REPAIR USING A LAND.



Note 1 – The excavation shall have rounded corners to prevent lack of fusion defects. In these locations it is recommended to use a smaller diameter electrode (such as 3/32 in.(2.4 mm)) to ensure acceptable fusion.

FIGURE S8.3-d.

SCHEMATIC OF THE CONTROLLED FILL WELDING PROCEDURE FOR GRADE 91 STEEL FOR A FULL PENETRATION WELD REPAIR USING A STEP WELD PREPARATION.



Note 1 – The excavation shall have rounded corners to prevent lack of fusion defects. In these locations it is recommended to use a smaller diameter electrode (such as 3/32 in.(2.4 mm)) to ensure acceptable fusion.
Note 2 – The repair cavity width shall extend at least 0.40 in. (10 mm) beyond the fusion line of the original weld
Note 3 – Where the excavation may pose challenges with electrode access, it is recommended that the fill passes in immediate contact with the machined excavation be restricted in height as the weld repair is performed.

S8.4 QUALIFICATION OF CONTROLLED FILL WELDING PROCEDURE

a) The welding procedure qualification test coupon shall be ASME P-No. 15 E, Group 1 joined to itself, P-No. 4, P-No. 5A, P-No. 8, P-No. 42, P-No. 43, or P-No. 45. ~~The test material for the welding procedure qualification shall be P-No 15E, Group 1, Grade 91.~~

b) Qualification thickness for the test plates and repair groove depths shall be in accordance with ASME Section IX.

c) The Welding Procedure Specification (WPS) shall be qualified in accordance with requirements of ASME Section IX. ~~If qualifying the WPS with PWHT, the PWHT is to be low temperature PWHT, i.e., a minimum temperature of 1250°F (675°C) and a maximum temperature of 1445°F (785°C).~~

Commented [SJ5]: Revised per Kathy Moore's and Paul Shank's comments

Does this address Ray Miletti's comment?

d) For qualification of weld repair procedures using 9Cr-1Mo filler metal and in the as-welded condition, the requirements for the bend test shall be performed using a bend radius which achieves a minimum of 14% elongation in the outer fibers.

S8.5 POST REPAIR INSPECTION

a) After the completion of weld repairs to CSEF steels, post inspection requirements shall be developed and implemented based on acceptance from the Inspector, and if applicable, the Jurisdiction.

b) Post-repair inspection intervals and methods of examination shall be implemented to ensure safe operation and margin to locate and monitor defect growth in the weld repair area. The selected non-destructive examination method shall provide meaningful results and shall follow NBIC Part 3, Section 4.

c) Post repair inspection shall be on-going until the component reaches end of life or is replaced. The Owner/User may revise the re-inspection interval based on inspection results from previous inspections.

Part 3, 2.5.3.6 c) 5)

d. The filler metal shall be limited to an austenitic, nickel-base filler metal having a designation F-No. 43 to those assigned to F-number 43 in Section IX, QW-432 and limited to the following consumables: ERNiCr-3, ENiCrFe-3, ENiCrFe-2, UNS N08087; or ~~ASME B&PV Code Cases 2733 and 2734 (e.g. EPRI P87); or~~

Part 3, 2.5.3.7 i)

5) For the joining of ASME P-No. 15E, Group 1 to P-No. 8, P-No. 42, P-No. 43 or P-No. 45, the filler metal shall be limited to an austenitic, nickel-base filler metal to those assigned to F-No. 43 in ASME Section IX, QW-432 and limited to the following consumables: ERNiCr-3, ENiCrFe-3, ENiCrFe-2, UNS N08087 .~~ASME B&PV Code Cases 2733 and 2734.~~

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

Rick Valdez
ARB, INC.
rvaldez@prim.com
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: an indirect examination technique used with visual aids for conditions where the area to be inspected is inaccessible for direct physical examination.

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

PROPOSED REVISION OR ADDITION

Item No.

20-83

Subject/Title

Definition of Nonconformance

NBIC Location

Part: Repairs and Alterations & Repairs and Alterations; Section: 9 & 1.5; Paragraph: Glossary & 1.5.1 s)

Project Manager and Task Group

Source (Name/Email)

Statement 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.

Existing Text

Proposed Text

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.

	VOTE:						
COMMITTEE	Appr oved	Disapproved	Abs taine d	Not Voting	Passed	Faile d	Date

PROPOSED REVISION OR ADDITION

Item No.	21-26
Subject/Title	In-Service Welding Onto Carbon Steel Pressure Components or Pipelines
NBIC Location	Part 3, Para. 3.4.3
Project Manager and TaskGroup	Brian Boseo
Source (Name/Email)	bmboseo@burnsmcd.com
Statement of Need	Remove any future inconsistencies/conflicts other referenced codes and standards.
Background Information	ASME PCC-2 subject heading appeared to have changed.
Existing Text	3.4.3 Encapsulation is a method used to maintain the pressure retaining capability of pipe, nozzles, fittings and valves an item (with the exception of fire tube boilers) by fabricating a new pressure containing boundary over the item in the form of a ‘‘welded leak box’’ as described by ASME PCC-2, Article 2.4. c)1) When the pressure retaining item will remain in service while implementing this method, the requirements and limitations described within ASME PCC-2, Part-1 shall be used in conjunction with ASME PCC-2, Part-2, Article 2.10.
Proposed Text	3.4.3 Encapsulation is a method used to maintain the pressure retaining capability of piping ~~pipe, nozzles, fittings~~ and valves ~~an item~~ (with the exception of fire tube boilers) by fabricating a new pressure containing boundary over the item in the form of a “welded leak box” as described by ASME PCC-2~~, Article 2.4. c)1)~~. When the pressure retaining item will remain in service while implementing this method, the requirements and limitations described within ASME PCC-2, Part-1 shall be used in conjunction with the Welded Leak Box Repair article in ASME PCC-2, Part-2~~, Article 2.10~~.

	VOTE:						
COMMITTEE	**Approved**	**Disapproved**	**Abstained**	**Not Voting**	**Passed**	**Failed**	**Date**
SG R&A							
SC R&A							

CODE REVISIONS OR ADDITIONS

Request for code revisions or additions shall provide the following:

a) Proposed Revisions or Additions

For revisions, identify the rules of the code that require revision and submit a copy of the appropriate rules as they appear in the code, marked up with the proposed revision. For additions, provide the recommended wording referenced to the existing code rules.

b) Statement of Need

Provide a brief explanation of the need for the revision or addition.

c) Background Information

Provide background information to support the revision or addition, including any data or changes in technology that form the basis for the request that will allow the Committee to adequately evaluate the proposed revision or addition. Sketches, tables, figures, and graphs should be submitted as appropriate. When applicable, identify any pertinent paragraph in the code that would be affected by the revision or addition and identify paragraphs in the code that reference the paragraphs that are to be revised or

Existing words

4.2 NONDESTRUCTIVE EXAMINATION

a) The nondestructive examination (NDE) requirements, including technique, extent of coverage, procedures, personnel qualification, and acceptance criteria, shall be in accordance with the original code of construction for the pressure-retaining item. Weld repairs and alterations shall be subjected to the same nondestructive examination requirements as the original welds. Where this is not possible or practicable, alternative NDE methods acceptable to the Inspector and the Jurisdiction where the pressure-retaining item is installed, where required, may be used.

1) For welds that were subject to volumetric NDE during construction, repairs may be examined by MT or PT in lieu of volumetric examination under all of the following conditions:
   a) The repair depth does not exceed the lesser of 1/8 inch (3 mm) or 25% of the nominal base material thickness;
   b) The aggregate repair length is no longer than the lesser of 6 inches (150 mm) or 10% of the total joint length; and
   c) The base material and each layer of deposited weld shall be examined with MT or PT.

b) Authorized Inspection Agency Acceptance

Following review and certification, the repair plan shall be submitted for acceptance to the Authorized Inspection Agency/Owner-User Inspection Organization whose Inspector will make the acceptance inspection and sign the Form R-1.

3.4 ALTERATIONS

3.4.1 RE-RATING (19)

Except as provided for Yankee dryers in Supplement 5, this code does not provide rules for de-rating boilers or pressure vessels; however, when the MAWP and/or allowable temperature of a boiler or pressure vessel is reduced, the Jurisdiction, if applicable, where the object is installed shall ~~should~~ be contacted to determine if specific procedures should be followed. Re-rating of a pressure-retaining item by increasing the maximum allowableworking pressure (internal or external) or temperature or decreasing the minimum design metal temperaturebelow which notch toughness testing is required by the original code of construction, shall be done only after the following requirements have been met to the satisfaction of the Jurisdiction at the location of the installation:

a) Revised calculations verifying the new service conditions shall be prepared in accordance with the "R" Certificate Holder's Quality Control System. Establishing a higher joint efficiency to re-rate a pressure-retaining item is not permitted;

b) All re-ratings shall be established in accordance with the requirements of the construction standard to which the pressure-retaining item was built;

c) Current inspection records verify that the pressure-retaining item is satisfactory for the proposed service conditions;

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

e) In lieu of pressure testing, alternative methods can be used to ensure the structural integrity of the re-rated pressure-retaining item. The alternative methods shall be documented and subject to review and approval by the Jurisdiction.

3.4.2 ALTERATIONS BASED ON ALLOWABLE STRESS VALUES

For re-rating or re-calculating a new minimum wall thickness for a pressure-retaining item using a later edition/addenda of the original code of construction or selected construction standard or code that permits useof higher allowable material stress values than were used in the original construction, the following requirements shall apply:

a) The "R" Certificate Holder shall verify, by calculations and other means, that the re-rated item can be satisfactorily operated at the new service condition (e.g., stiffness, buckling, external mechanical loadings);

b) The pressure-retaining item shall not be used in lethal service;

S4.17.3 ALTERATION PLAN

The user shall prepare, or cause to have prepared, a detailed plan covering the scope of the alteration.

a) Engineer Review and Certification

The alteration plan shall be reviewed and certified by an engineer meeting the ASME Section X or RTP-1 criteria for an engineer certifying ASME Section X or RTP-1 compliance of the appropriate calculations contained in the Fabricator's Design Report. The review and certification shall be such as to
ensure that the work involved in the alteration is compatible with the user's design specification and the *Fabricator's Data Report*.

Note: The engineer qualification criteria of the jurisdiction where the pressure vessel is installed should be verified before selecting the certifying engineer.

b) Authorized Acceptance

Following review and certification, the alteration plan shall be submitted to the Inspector for his review and acceptance. Alterations to pressure-retaining items shall not be initiated without the authorization of the Inspector.

S4.17.4 CALCULATIONS

A set of calculations shall be completed prior to the start of any physical work. All design work shall be completed by an organization experienced in the design portion of the standard used for the construction of the item. All calculations for ASME Code Section X and RTP-1 alterations shall be certified by an engineer meeting the ASME Section X criteria for an engineer certifying ASME Section X compliance of the calculations contained in the Fabricator's Design Report. All calculations shall be made available for review by theInspector.

Note: The engineer qualification criteria of the jurisdiction where the pressure vessel is installed should be verified before selecting the certifying engineer.

S4.17.5 RE-RATING

a) Re-rating of a pressure-retaining item by increasing the maximum allowable working pressure (internal or external) or temperature , or decreasing the minimum temperature shall be done only after the following requirements have been met to the satisfaction of the Jurisdiction at the location of the installation:

1) Revised calculations verifying the new service conditions shall be prepared in accordance with the Certificate Holder's Quality Control System. Re-rating calculations for ASME Code Section X and RTP-1 vessels shall be performed by a Professional Engineer experienced in the design of reinforced plastic pressure vessels;

2) All re-rating shall be established in accordance with the requirements of the construction standard to which the pressure-retaining item was built;

3) Current inspection records shall verify that the pressure-retaining item is satisfactory for the proposed service conditions;

4) The pressure-retaining item shall be pressure tested, as required, for the new service conditions.

b) This code does not provide rules for de-rating pressure-retaining items; however, when the MAWP and/ or allowable temperature of a pressure-retaining item is reduced, the Jurisdiction, if applicable, where~~in~~ the object is installed ~~should~~ shall be contacted to determine if specific procedures should be followed.

SUPPL. 4

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

PROPOSED REVISION OR ADDITION

Item No.

21-31

Subject/Title

Revise definition of "Field"

NBIC Location

Part: Repairs and Alterations; Section: 9; Paragraph: Section 9

Project Manager and Task Group

Source (Name/Email)

Terrence Hellman / thellman@nationalboard.org

Statement of Need

A "Field" site under the current definition could be multiple rented or leased spaces used for repairs/alterations, where there is no single or specific customer or job, but rather the locations(s) are used for conducting repair/alteration activities by personnel employed by the Certificate Holder on a continual basis.

Background Information

Proposing a revised definition of "Field" to better define locations under the control of the Certificate Holder where "R" Certificate activities may be conducted.

Existing Text

Field — A temporary location, under the control of the Certificate Holder, that is used for repairs and/or alterations to pressure-retaining items at an address different from that shown on the Certificate Holder's Certificate of Authorization.

Proposed Text

Field — A temporary location, under the control of the owner or user of the pressure retaining item(s) to be repaired or altered by an "R" Certificate Holder.

	VOTE:						
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

PROPOSED REVISION OR ADDITION

Item No. 21-33

Subject/Title: Use of code cases pertaining to repairs and alterations

NBIC Location Part: Repairs and Alterations; Section: 1; Paragraph: 1.2(f)

Project Manager and Task Group: Robert Underwood, Subcommittee Repairs/Alterations

Source (Name/Email): Robert Underwood / robert_underwood@hsb.com

Statement of Need: The NBIC Part 3 already references code cases in various paragraphs such as NR quality requirements, welding method 7, and R Form instructions, but there is no direct reference to acceptance of their use. I think it's always been an unwritten rule that they are permitted to be used with acceptance of the Inspector and Jurisdiction. This proposal will address this in a new paragraph 1.2(f).

Background Information: Section IX approved Code Case 3002 which addresses qualification of WPS and WPQ relating to the Explosion Welding Process for Tube Plugging. This Code Case was specifically written for NBIC use. This proposal will clarify that use of code cases are permitted with Inspector and Jurisdiction approval.

Existing Text :

Proposed Text:

1.2(f) Use of active ASME Code Cases pertaining to the repair and alteration of pressure retaining items are subject to review and acceptance of the Inspector, and when required, the Jurisdiction. Use of the ASME Code Case shall be noted on the appropriate Form R Report.