



*THE NATIONAL BOARD  
OF BOILER AND PRESSURE VESSEL INSPECTORS*

# **NATIONAL BOARD INSPECTION CODE SUBCOMMITTEE REPAIRS & ALTERATIONS**

## **MINUTES**

---

Meeting of January 11, 2023

Charleston, SC

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**

Chair Kathy Moore called the meeting to order at 8:00 a.m. EST in the Gold Ballroom on the 2<sup>nd</sup> Floor of the hotel.

**2. Roll call of Members and introduction of Visitors**

Secretary Hellman called roll of the Members and held introductions of visitors ([Attachment 1](#))

**3. Check for a Quorum**

Secretary Hellman verified a quorum was reached.

**4. Announcements**

- The National Board will be hosting a reception on Wednesday evening from 6:30 p.m. to 8:30 p.m. in the Colonial Ballroom at the hotel.
- The National Board will be hosting breakfast and lunch on Thursday. Breakfast will be served from 7:00 a.m. to 8:00 a.m. in the Colonial Ballroom, and lunch will be served from 11:30 a.m. to 12:30 p.m. in the Colonial Ballroom.

**5. Awards and Special Recognition**

Mr. Brian Boseo was recognized for 10 Years as a member of SC Repairs & Alterations

**6. Adoption of the Agenda**

- **Editorial:** Removal of “Attachment” numbers and Added July 2023 Future Meeting Location (St. Louis, MO)
- **Corrected:** I22-33 Explanation of Need
- **Added:**
  - J. Ferreira as PM for Item A22-27
  - New Interp I23-01
  - New Interp I23-02
  - A23-04
  - A23-05
  - A23-06
  - Re-appointment of P. Becker (Change of Interest Category)

The Agenda was Unanimously Accepted (UA) as revised.

**7. Approval of the Minutes of the July 13, 2022, Meeting**

The minutes are available for review on the National Board website, [www.nationalboard.org](http://www.nationalboard.org). The Minutes were motioned, seconded, and unanimously approved (UA).

**8. Review of Rosters**

**a. Membership Nominations**

- i. Mr. Dutra and Mr. Khssassi would like to be considered for SG R&A membership. - **Both were UA by the SC membership.**
- ii. Mr. Schaser and Mr. Ferreira would also like to be considered for TG Interpretations membership. – **Both were UA by the SC membership..**

**b. Membership Reappointments**

- i. The following **Subgroup R&A** memberships will expire prior to the July 2023 NBIC meeting: Mr. Craig Hopkins, Mr. Walt Sperko, and Mr. Marty Toth.
  - **All member reappointments were UA.**

- ii. The following **Subcommittee R&A** memberships will expire prior to the July 2023 NBIC meeting: Mr. Brian Morelock.
  - **Mr. Morelock’s reappointment was UA.**
- iii. The following **NR Task Group** memberships are set to expire prior to the July 2023 NBIC meeting: Mr. Tom Roberts, Mr. Ben Schaefer, and Mr. Bryan Toth.
  - **All member reappointments were UA.**
- iv. P. Becker has a new Interest Category, and will need to be Reappointed.
  - **Ms. Becker’s reappointment was UA** with new Interest Category of “General Interest”

**c. Officer Nominations**  
 i. **None.**

**d. Resignations**  
 i. **None.**

**9. Interpretations**

<b>Item Number: I21-79</b>	<b>NBIC Location: Part 3, 3.3.3(h)(2)</b>	<a href="#"><b>Attachment 2</b></a>
<b>General Description:</b> Mechanical Replacement of Shell or Head		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> B. Schaefer (PM), M. Quisenberry		
<b>Explanation of Need:</b> This interpretation and corresponding Code revision (A21-80) would provide clarity to NBIC users and address whether mechanical replacement of these components is considered a repair.		
<b>INT TG July 2022 Meeting Action:</b> M. Quisenberry presented a <b>PR</b>		
<b>SC R&amp;A July 2022 Meeting Action:</b> B. Schaefer presented a <b>PR</b>		
<b>INT TG Jan 2023 Meeting Action:</b> M. Quisenberry presented. Discussion took place if 3.3.3 h) should be revised via an Action Item to specify “Welded repair/replacement”. The Committee Q & A were revised to identify the mechanical replacement of a shell or head is a Mech repair but is not required to be documented on a Form R-1. Approved with 1 No Vote (P. Gilston)		
<b>SC R&amp;A Jan 2023 Meeting Action:</b> T. Seime presented. <b>The proposal was UA.</b>		

**General Description:** Overlaid Replacement Parts

**Subgroup:** Repairs and Alterations

**Task Group:** T. McBee (PM), M. Carlson, D. Kinney, M. Quisenberry, P. Gilston, J. Ferreira

**Explanation of Need:** Replacement parts that are documented using a Manufacturer's Partial Data report that have been inspected by an Authorized Inspector may still be supplied as a replacement part under paragraph 3.2.2 b) and therefore not require a Hydro test per Paragraph 3.2.2 e).

Panels made from Overlaid tubes and for single overlaid tube Dutchman that contain only weld overlay, where the overlay is not considered to be pressure retaining when the overlay is not considered part of the strength of the boiler tube per ASME Section I PW-44. May be supplied as replacement parts under paragraph 3.2.2 b). The purpose of the overlay is to extend the life of boiler tubes in the waste to energy corrosive environment from external wear.

**INT TG July 2022 Meeting Action:** T. McBee presented. Additional members added to task group. **This was a PR.**

**SC R&A July 2022 Meeting Action:** T. McBee presented a **PR.**

**INTERP TG Jan. 2023 Meeting Action:** T. McBee reminded the group this item is currently being balloted to Main Committee for approval.

**SC R&A Jan 2023 Meeting Action:** T. Seime presented a status update that this passed MC.

**New Interpretations Requests:**

<b>Item Number: I22-24</b>	<b>NBIC Location: Part 3, 3.3.4.8</b>	<a href="#">Attachment 4</a>
<p><b>General Description:</b> Repair of pressure retaining items without complete removal of defect</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> M. Quisenberry (PM), L. Dutra</p> <p><b>Explanation of Need:</b> 3.3.4.8 does imply that the defect should be known in regards to characteristics such as orientation, nature, depth, configuration but does not fully state this.</p> <p><b>INTERP TG January 2023 Meeting Action:</b> M. Quisenberry presented. The Committee Q &amp; A were revised. The proposal was <b>UA as revised</b>.</p> <p><b>SC R&amp;A January 2023 Meeting Action:</b> T. Seime presented. <b>The proposal was UA.</b></p>		

<b>Item Number: I22-25</b>	<b>NBIC Location: Part 3, 3.3.2 e) 5)</b>	<a href="#">Attachment 5</a>
<p><b>General Description:</b> ASME Section I Watertube Boilers – Plugging Tubes</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> D. Kinney (PM), R. Derby</p> <p><b>Explanation of Need:</b> The last item in paragraph 3.3.2 e) reads, “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 PWHT.” A repair organization used this paragraph as justification to document a seal welded tube plug on a watertube boiler as routine.</p> <p><b>INTERP TG January 2023 Meeting Action:</b> To be voted on at MC.</p> <p><b>SC R&amp;A January 2023 Meeting Action:</b> To be voted on at MC.</p>		

<b>Item Number: I22-33</b>	<b>NBIC Location: Part 3, 3.4.3</b>	<a href="#">Attachment 6</a>
<p><b>General Description:</b> Encapsulation of Shells and Heads</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> M. Quisenberry (PM), R. Derby, ADDED: L. Dutra</p> <p><b>Explanation of Need:</b> To clarify that encapsulation cannot be used to maintain the pressure retaining capability of shells and heads of pressure retaining items</p> <p><b>INTERP TG January 2023 Meeting Action:</b> M. Quisenberry presented. Added L. Dutra to TG. Proposal was <b>UA as revised</b></p> <p><b>SC R&amp;A January 2023 Meeting Action:</b> T. Seime presented. <b>The proposal was UA.</b></p>		

<b>Item Number: I23-01</b>	<b>NBIC Location: Part 3, 5.2 &amp; 5.7.1</b>	<a href="#">Attachment 7</a>
<p><b>General Description:</b> Stamping Requirements for Repairs and Alterations</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> NEW</p> <p><b>Explanation of Need:</b> There is at least one instance where a nameplate has not been attached to a PRI and the R Form has already been signed. When questioned, the Inspector aptly stated there is no "shall be" requirement in the NBIC for the nameplate to be attached prior signing the R Form. Neither NBIC Part 3, 5.2, 5.7.1 nor the RCI 1, 5 3.12 make this a "shall be" requirement.</p> <p><b>INTERP TG AND SG R&amp;A January 2023 Meeting Action:</b> T. Sieme presented. G. Galanes pointed out that an Action Item revising 5.7.1 will be needed to go with this Interpretation. New Action was opened (A23-05). <b>This Interp was UA.</b></p> <p><b>SC R&amp;A January 2023 Meeting Action:</b> T. Seime presented. The was proposal revised and <b>UA.</b></p>		

**Item Number: I23-02**

**NBIC Location: Part 3, 1.3.2**

**[Attachment 8](#)**

**General Description:** Jurisdictional requirements not meeting NBIC requirements

**Subgroup:** Repairs and Alterations

**Task Group:** NEW

**Explanation of Need:** This Interpretation will clarify that when a Jurisdictional requirement does not meet an NBIC requirement or an NBIC requirement is diminished, the National Board “R” stamp shall not be applied, nor will the R Form be signed.

**INTERP TG 2023 Meeting Action:** T. Hellman presented. The proposal was revised and **UA**.

**SC R&A January 2023 Meeting Action:** T. Seime presented. The proposal was **UA**.

**10. Action Items**

**a. Task Group Graphite**

<b>Item Number:</b> NB15-2208	<b>NBIC Location:</b> Part 3	<b>No Attachment</b>
<b>General Description:</b> Develop supplement for repairs and alterations based on international construction standards		
<b>Subgroup:</b> Graphite		
<b>Task Group:</b> Greg Becherer (PM)		
<b>Explanation of Need:</b> The last item in paragraph 3.3.2 e) reads, “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 PWHT.” A repair organization used this paragraph as justification to document a seal welded tube plug on a watertube boiler as routine.		
<b>SC R&amp;A July 2022 Action:</b> A. Viet presented a <b>PR</b>		
<b>SC R&amp;A January 2023 Meeting Action:</b> No report. - <b>PR</b>		

<b>Item Number:</b> A19-73	<b>NBIC Location:</b> Part 3, S3	<b>No Attachment</b>
<b>General Description:</b> Requirements for who can make hole plugging repairs on graphite blocks		
<b>Subgroup:</b> Graphite		
<b>Task Group:</b> C. Cary (PM), A. Viet, A. Stupica		
<b>Explanation of Need:</b> The last item in paragraph 3.3.2 e) reads, “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 PWHT.” A repair organization used this paragraph as justification to document a seal welded tube plug on a watertube boiler as routine.		
<b>SC R&amp;A July 2022 Action:</b> A. Viet presented a <b>PR</b>		
<b>SC R&amp;A January 2023 Meeting Action:</b> No report. - <b>PR</b>		

**b. Task Group FRP**

There are currently no open FRP items related to Part 3.



c. **Task Group Historical**

<b>Item Number: A20-25</b>	<b>NBIC Location: Part 3, S2.13</b>	<b>No Attachment</b>
<p><b>General Description:</b> Repair Procedure for Fire Boxes</p> <p><b>Subgroup:</b> SG Historical</p> <p><b>Task Group:</b> M. Wahl (PM), Robin Forbes, T. Dillon, &amp; F. Johnson</p> <p><b>Explanation of Need:</b> 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.</p> <p><b>SG Historical July Meeting Action:</b> PROGRESS REPORT: Mr. Dillon spoke on this item stating they were still waiting on locomotive on this item. He said locomotive were close or had passed something and then they would refer to it or add it to the Historical section of NBIC Part 3.</p> <p><b>SC R&amp;A July 2022 Meeting Action:</b> T. Seime presented a <b>PR</b></p> <p><b>SC R&amp;A Jan. 2023 Meeting Action:</b> T. Seime presented a <b>PR</b></p>		

<b>Item Number: A21-09</b>	<b>NBIC Location: Part 3, S2</b>	<b><a href="#">Attachment 9</a></b>
<p><b>General Description:</b> Incorporate new repair methods for through and diagonal stays</p> <p><b>Subgroup:</b> SG Historical</p> <p><b>Task Group:</b> D. Rose (PM), R. Bryce, R. Forbes, C. Jowett</p> <p><b>Explanation of Need:</b> 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.</p> <p><b>SG Historical July Meeting Action:</b> PROGRESS REPORT: Mr. Rose spoke on this item. He has gone through he comments form he LB and has incorporated many of the comments and is still working on a proposal.</p> <p><b>SC R&amp;A July 2022 Meeting Action:</b> T. Seime presented a <b>PR</b></p> <p><b>SC R&amp;A Jan. 2023 Meeting Action:</b> T. Seime presented. <b>The proposal revised and was UA.</b></p>		

**d. Task Group Locomotive**

There are currently no TG Locomotive items open for Part 3.

**e. NR Task Group**

<b>Item Number: A21-02</b>	<b>NBIC Location: Part 3, 1.6</b>	<b><a href="#">Attachment 10</a></b>
<b>General Description:</b> Define "Fuel Loading" as it pertains to NR activities		
<b>Subgroup:</b> NR TG		
<b>Task Group:</b> R. Spuhl (PM)		
<b>Explanation of Need:</b> The NR TG would like to clarify "Fuel Loading" as used to determine Category 1, 2 or 3 NR activities.		
<b>NR TG July 2022 Meeting Action:</b> R. Spuhl presented. The <b>proposal was revised and UA.</b>		
<b>SG R&amp;A July 2022 Meeting Action:</b> R. Spuhl presented. <b>The proposal was UA</b>		
<b>SC R&amp;A July 2022 Meeting Action:</b> R. Spuhl presented. <b>The proposal was UA</b>		
<b>NOTE:</b> During discussion of this item at the July 2022 MC meeting, it was determined that the NR TG would review this proposal further.		
<b>SG R&amp;A Jan. 2023 Meeting Action:</b> R. Spuhl presented. The proposal (as revised at the NR TG) was UA.		
<b>SC R&amp;A Jan. 2023 Meeting Action:</b> R. Spuhl presented. <b>The proposal was revised and was UA.</b>		

<b>Item Number: A21-37</b>	<b>NBIC Location: Part 3, 1.6</b>	<b>Attachment 11</b>
<p><b>General Description:</b> Parts used in NR Activities</p> <p><b>Subgroup:</b> NR TG</p> <p><b>Task Group:</b> R. Spuhl (PM)</p> <p><b>Explanation of Need:</b> Clarification that parts used in NR activities are fabricated by NR Certificate Holders and inspected by appropriately endorsed National Board commissioned Inspectors.</p> <p><b>July 2022 Meeting Action:</b> R. Spuhl presented. A Rvw and Comment LB was never sent out after the Jan. meeting. Discussion held regarding the need of both the MDR and Cert. of Compliance as part of the NR-1. Discussion was held regarding parts fabricated by welding and on the need for a new repair form (e.g. NR-3?) for nuclear repairs activities. The proposal to submit this item to a <b>Rvw and Comment LB to NR TG</b> was UA.</p> <p><b>SG R&amp;A July 2022 Meeting Action:</b> R. Spuhl presented a <b>PR</b></p> <p><b>SC R&amp;A July 2022 Meeting Action:</b> R. Spuhl presented a <b>PR</b></p> <p><b>SG R&amp;A Jan. 2023 Meeting Action:</b> R. Spuhl presented. The proposal was Revised and UA.</p> <p><b>SC R&amp;A January 2023 Meeting Action:</b> R. Spuhl presented. <b>The proposal was UA.</b></p>		

<b>Item Number: A22-29</b>	<b>NBIC Location: Part 3, 1.6.6.2 s) &amp; 1.6.7.2 s)</b>	<b>Attachment 12</b>
<p><b>General Description:</b> Removal of the requirement of AIA audits from the NR program</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> R. Spuhl (PM)</p> <p><b>Explanation of Need:</b> This requirement cannot be enforced and is not defined by the the NR Certificate Holder and therefore must be removed.</p> <p><b>SG R&amp;A Jan. 2023 Meeting Action:</b> R. Spuhl presented. The proposal was Revised and UA.</p> <p><b>SC R&amp;A January 2023 Meeting Action:</b> R. Spuhl presented. <b>The proposal was UA.</b></p>		

**f. Subgroup Repairs & Alterations**

<b>Item Number: A20-67</b>	<b>NBIC Location: Part 3, S6</b>	<b>Attachment 13</b>
<p><b>General Description:</b> Revisions to Part 3, Supplement 6</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> R. Underwood (PM), T. McBee, G. Galanes</p> <p><b>Explanation of Need:</b> 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.</p> <p><b>SC R&amp;A July 2022 Meeting Action:</b> B. Underwood presented. <b>The proposal was to go to SC R&amp;A LB for a vote.</b></p> <p><b>SG R&amp;A Jan. 2023 Meeting Action:</b> B. Underwood presented this item passed SG LB 1/9/2023 with one disapproval that has been addressed. <b>The revised proposal UA</b></p> <p><b>SC R&amp;A Jan. 2023 Meeting Action:</b> B. Underwood presented this item passed SG LB 1/9/2023 with one disapproval that has been addressed. <b>The revised proposal UA</b></p>		

<b>Item Number: A21-12</b>	<b>NBIC Location: Part 3, 3.3.3, 3.4.4, Section 9</b>	<b>Attachment 14</b>
<p><b>General Description:</b> Clarify the definitions and examples of "Repair" and "Alteration"</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> K. Moore, P. Shanks, R. Underwood, M. Chestnut, T. Seime</p> <p><b>Explanation of Need:</b> 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.</p> <p><b>History:</b> This Item was created as a result of Interp. Item 20-78 and Action Item 20-54</p> <p><b>SC R&amp;A July 2022 Meeting Action:</b> P. Becker presented a revised proposal. <b>A Rvw &amp; Comment LB will go to SG R&amp;A.</b></p> <p><b>SG R&amp;A Jan. 2023 Meeting Action:</b> P. Becker presented a PR</p> <p><b>SC R&amp;A Jan. 2023 Meeting Action:</b> P. Becker presented a PR</p>		

<b>Item Number: A21-31</b>	<b>NBIC Location: NBIC Glossary</b>	<b>No Attachment</b>
<p data-bbox="240 245 834 279"><b>General Description:</b> Revise definition of "Field"</p> <p data-bbox="240 310 659 344"><b>Subgroup:</b> Repairs and Alterations</p> <p data-bbox="240 378 1081 411"><b>Task Group:</b> R. Miletti (PM), P. Gilston, M. Toth, J. Walker, E. Cutlip</p> <p data-bbox="240 445 1468 575"><b>Explanation of Need:</b> 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.</p> <p data-bbox="240 609 1062 642"><b>July SG R&amp;A 2022 Meeting Action:</b> P. Gilston presented a <b>PR July</b></p> <p data-bbox="240 676 938 709"><b>SC R&amp;A 2022 Meeting Action:</b> P. Gilston presented a <b>PR</b></p> <p data-bbox="240 743 1416 777"><b>SG R&amp;A Jan. 2023 Meeting Action:</b> R. Miletti presented a PR. Revisions to NB-415 required first.</p> <p data-bbox="240 810 1416 844"><b>SC R&amp;A Jan. 2023 Meeting Action:</b> R. Miletti presented a PR. Revisions to NB-415 required first.</p>		

<b>Item Number: A21-43</b>	<b>NBIC Location: Part 3, Glossary</b>	<b>No Attachment</b>
<b>General Description:</b> Defining and revising "Practicable" and "Practical" within the NBIC		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> M. Toth (PM), B. Underwood , M. Wadkinson, ADDED: J. Walker		
<b>Explanation of Need:</b> Defining and revising Practicable and Practical within the NBIC and revising where applicable		
<b>SG R&amp;A July 2022 Meeting Action:</b> M. Toth presented that a new item may need to be opened to find these words in the other Parts of the NBIC to verify consistency. <b>This proposal will be sent to a LB to all SG (Parts 1, 2, 3, and 4) for a vote.</b>		
<b>SG R&amp;A Jan. 2023 Meeting Action:</b> M. Toth presented a PR. J. Walker added to TG		
<b>SC R&amp;A Jan. 2023 Meeting Action:</b> M. Toth presented. This item is related to previously accepted Item A20-51 defining "Practicable". <b>This was a PR.</b>		

<b>Item Number: A21-44</b>	<b>NBIC Location: Part 3, Glossary</b>	<b>No Attachment</b>
<b>General Description:</b> Defining "De-Rating" within Part 3		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> M. Toth (PM), B. Underwood , M. Wadkinson, L. Dutra, ADDED M. Carlson		
<b>Explanation of Need:</b> Defining de-rating within Part 3		
<b>SG R&amp;A July 2022 Meeting Action:</b> M. Toth presented. A Rvw & Comment LB will go to all SG (Parts 1, 2, 3, and 4).		
<b>SC R&amp;A July 2022 Meeting Action:</b> M. Toth presented a PR.		
<b>SG R&amp;A Jan. 2023 Meeting Action:</b> M. Toth presented a PR. Added M. Carlson, to the TG		
<b>SG R&amp;A Jan. 2023 Meeting Action:</b> M. Toth presented a PR.		

<b>Item Number: A21-45</b>	<b>NBIC Location: Part 3, Supplements</b>	<b>No Attachment</b>
<b>General Description:</b> Add a supplement to address oil, gas and chemical repair & alteration scope		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> R. Underwood (PM), Added P. Shanks		
<b>Explanation of Need:</b> There has been interest from companies operating with the Oil, Gas and Chemical industries to address certain types of repairs that may exist in ASME PCC-2 or API. NBIC does not have many of these repair methods within the book.		
<b>SG R&amp;A July 2022 Meeting Action:</b> B. Underwood presented. Discussion held regarding lap patches being considered as “repairs” instead of “alterations”. Per Gary Scribner, BOT may change NB-415 or may create a new document that would give direction as to where this proposal will go (i.e. new type of “R” Stamp, new ‘Division’ created within the “R” Cert. program, etc.) <b>This was a PR.</b>		
<b>SC R&amp;A July 2022 Meeting Action:</b> B. Underwood presented a <b>PR.</b>		
<b>SG R&amp;A Jan. 2023 Meeting Action:</b> B. Underwood presented a PR		
<b>SC R&amp;A Jan. 2023 Meeting Action:</b> B. Underwood presented a <b>PR. Added P. Shanks to TG.</b>		

<b>Item Number: A21-53</b>	<b>NBIC Location: Part 3, S8.5 a)</b>	<b>No Attachment</b>
<b>General Description:</b> Post Repair Inspection of weld repairs to CSEF steels		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> P. Gilston (PM), E. Cutlip		
<b>Explanation of Need:</b> The requirement for Inspector involvement in post-repair inspections to CSEF weld repairs is to ensure future safe operation of the boiler. This is a function of the inservice Authorized Inspection Agency, not the Repair Inspector, whose duties end with completion of repair documentation.		
<b>SG R&amp;A July 2022 Meeting Action:</b> P. Gilston presented a <b>PR.</b>		
<b>SC R&amp;A July 2022 Meeting Action:</b> P. Gilston presented a <b>PR.</b>		
<b>SG R&amp;A Jan. 2023 Meeting Action:</b> P. Gilston presented a <b>PR.</b>		
<b>SC R&amp;A Jan. 2023 Meeting Action:</b> P. Gilston presented a <b>PR.</b> Meetings with Part 2 will be needed to determine impacts across both Parts (2 & 3)		

<b>Item Number: A21-67</b>	<b>NBIC Location: Part 3, 3.4.9</b>	<b>No Attachment</b>
<p><b>General Description:</b> Add welding requirements to plugging firetubes</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> P. Gilston (PM), K. Moore, Trevor Sieme , M. Quisenberry</p> <p><b>Explanation of Need:</b> The current NBIC does not have enough direction or requirements for welding tube plugs in firetubes.</p> <p><b>SG R&amp;A July 2022 Meeting Action:</b> P. Gilston presented. Discussion took place on if omitting mechanical plugging of firetubes and changing 3.3.4.9 to be specific to plugging by welding would be received as “mechanical repairs” would not be allowed by the NBIC (as opposed to just not addressed). Trevor Sieme and M. Quisenberry volunteered to join the Task Group. The proposal was taken back for work. This was a PR.</p> <p><b>SC R&amp;A July 2022 Meeting Action:</b> P. Gilston presented a <b>PR</b></p> <p><b>SG R&amp;A Jan. 2023 Meeting Action:</b> P. Gilston presented a <b>PR</b>.</p> <p><b>SC R&amp;A Jan. 2023 Meeting Action:</b> P. Gilston presented a <b>PR</b>.</p>		

<b>Item Number: A21-82</b>	<b>NBIC Location: Part 3, 3.3.3(s)</b>	<b>Attachment 15</b>
<p><b>General Description:</b> Examples of Repairs</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> P. Davis (PM), R. Underwood, P. Gilston, , J. Ferreira, J. Walker, E. Cutlip, P. Miller, L. Dutra</p> <p><b>Explanation of Need:</b> Adding "repair" to 3.3.3(s) would then address use of different weld material. Currently 3.3.3(s) only addresses replacement of the part, not repair (Repair is addressed in 3.3.3(r)).</p> <p><b>SG R&amp;A July 2022 Meeting Action:</b> B. Underwood <b>presented a PR</b>. The PM was changed to P. Davis. P. Miller and L. Dutra were added to the taskgroup.</p> <p><b>SC R&amp;A July 2022 Meeting Action:</b> P. Davis <b>presented a PR</b>.</p> <p><b>SG R&amp;A Jan. 2023 Meeting Action:</b> P. Davis presented a <b>PR</b>.</p> <p><b>SC R&amp;A Jan. 2023 Meeting Action:</b> P. Davis presented. Discussion on consistent addressing of the term for weld metal will require a new item to be opened (P. Gilston as PM).</p> <p>The proposal was revised and was UA approved to go to <b>LB to SG &amp; SC</b> for vote.</p>		



<b>Item Number: A22-02</b>	<b>NBIC Location: Part 3, 3.3.2 e) 1)</b>	<b>No Attachment</b>
<p><b>General Description:</b> Part 4 Item A21-83 may impact part 3, 3.3.2 e) 1)</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> M. Toth (PM), B. Derby, L. Dutra, M. Carlson</p> <p><b>Explanation of Need:</b> Part 4 Item A21-83 was reviewed as it may impact part 3, 3.3.2 e) 1) examples of Routine Repairs. An Item for Part 3 will be opened to address “valve” repairs as they relate to SRVs.</p> <p><b>SG R&amp;A July 2022 Meeting Action:</b> M. Toth presented. The group verified 3.3.2 e) 1) verbiage. Marty to work with Part 4 to verify no impact to Part 3. <b>This was a PR.</b></p> <p><b>SC R&amp;A July 2022 Meeting Action:</b> M. Toth presented a <b>PR</b></p> <p><b>SG R&amp;A Jan. 2023 Meeting Action:</b> M. Toth presented a motion to Close w/No Action, as Part 4 will be reopening/addressing the change from A21-83. Motion to <b>Close w/ No Action was UA</b></p> <p><b>SC R&amp;A Jan. 2023 Meeting Action:</b> : M. Toth presented a motion to Close w/No Action, as Part 4 will be reopening/addressing the change from A21-83. Motion to <b>Close w/ No Action was UA</b></p>		

<b>Item Number: A22-12</b>	<b>NBIC Location: Part 3, 3.3.5.2 &amp; 3.4.5.1</b>	<b>Attachment 16</b>
<p><b>General Description:</b> Lost or Destroyed UDS</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> T. Seime (PM)</p> <p><b>Explanation of Need:</b> To provide the ability to repair/alter these vessels with a reconstructed UDS.</p> <p><b>SG R&amp;A July 2022 Meeting Action:</b> T. Sieme presented. This passed SC LB and will be on MC Agenda. (VERIFY LB MEMBERS – SC looks like SG)</p> <p><b>SC R&amp;A July 2022 Meeting Action:</b> T. Sieme presented. <b>The proposal was UA.</b></p> <p><b>SG R&amp;A Jan. 2023 Meeting Action:</b> T. Sieme presented this has passed LB and is <b>ready for MC</b></p> <p><b>SC R&amp;A Jan. 2023 Meeting Action:</b> T. Sieme presented this has passed LB and is <b>ready for MC</b></p>		

<b>Item Number: A22-18</b>	<b>NBIC Location: Part 3, Glossary</b>	<b>No Attachment</b>
<p><b>General Description:</b> Definition of blowdown and blowoff</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> K. Moore (PM). G. Scribner, M. Wadkinson, M. Quisenberry</p> <p><b>Explanation of Need:</b> These terms are not consistently used throughout the industry. This is to provide guidance to use the correct term when addressing the equipment or the action.</p> <p><b>SG R&amp;A July 2022 Meeting Action:</b> K. Moore presented. The proposal was compared to ASME Sect. I and B31.1 definitions for consistency. G. Scribner commented on the history of these terms and their use in the industry and Codes and the need for these definitions. M. Quisenberry volunteered for the taskgroup. Rvw &amp; Comment LB to all SG (Part 1, 2, 3, and 4)</p> <p><b>SC R&amp;A July 2022 Meeting Action:</b> K. Moore presented a PR.</p> <p><b>SG R&amp;A Jan. 2023 Meeting Action:</b> K. Moore presented a PR</p> <p><b>SC R&amp;A 2023 Meeting Action:</b> K. Moore presented a PR.</p>		

<b>Item Number: A22-19</b>	<b>NBIC Location: Part 3, 5.2.2</b>	<b>No Attachment</b>
<p><b>General Description:</b> R Certificate Holders with Design Only Scope</p> <p><b>Subgroup:</b> Repairs and Alterations</p> <p><b>Task Group:</b> J. Ferreira (PM). R. Valdez, G. Scribner, B. Schaefer, ADDED M. Schaser</p> <p><b>Explanation of Need:</b> To add new paragraphs 5.2.2 d) and 5.2.2 e) which will provide guidance for R Certificate Holders with "Design Only" on which activities they are permitted to perform and how they and the Inspectors shall complete the R-2 Form.</p> <p><b>SG R&amp;A July 2022 Meeting Action:</b> J. Ferreira presented. After discussion, it was pulled back for more work. Several members added to taskgroup. <b>This was a PR.</b></p> <p><b>SC R&amp;A July 2022 Meeting Action:</b> J. Ferreira presented a PR.</p> <p><b>SG R&amp;A Jan. 2023 Meeting Action:</b> J. Ferreira presented a PR</p> <p><b>SC R&amp;A 2023 Meeting Action:</b> J. Ferreira presented a PR. Added M. Schaser to TG.</p>		

**New Action Items:**

<b>Item Number: A22-27</b>	<b>NBIC Location: Part 3</b>	<b>No Attachment</b>
<b>General Description:</b> Post Repair Activity - Boil Out		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> J. Ferreira (PM), ADDED: L. Dutra, M. Toth and M. Quisenberry		
<b>Explanation of Need:</b> When major repairs are made and the boiler is not properly cleaned of oils, it will cause water level instability and carryover.		
<b>SG R&amp;A Jan. 2023 Meeting Action:</b> J. Ferreira presented a PR. L. Dutra, M. Toth and M. Quisenberry added to TG.		
<b>SC R&amp;A January 2023 Meeting Action:</b> J. Ferreira presented. After discussion it was decided to Close w/No Action since Part 1 is addressing this. <b>Close w/No Action was UA.</b>		

<b>Item Number: A22-41</b>	<b>NBIC Location: Part 3, 1.5</b>	<b>No Attachment</b>
<b>General Description:</b> Reference NB-415 in Quality System		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> P. Davis (PM), M. Carlson, L. Ponce, J. Walker.		
<b>Explanation of Need:</b> Requirements in the NB-415 should be included in the R Cert. Holder's QC Manual. Examples : a) Notifying the National Board when an organization changes scope, ownership, name, location, address, or Inspection Agreement and b) Return of the stamp.		
<b>SG R&amp;A Jan. 2023 Meeting Action:</b> P. Davis selected as PM. Added M. Carlson, L. Ponce and J. Walker to TG – <b>This was a PR</b>		
<b>SC R&amp;A January 2023 Meeting Action:</b> P. Davis presented a PR.		

<b>Item Number: A23-04</b>	<b>NBIC Location: Part 3, 3.3.4.6</b>	<b>No Attachment</b>
<b>General Description:</b> Addressing Flush Patch Plate Weld NDT		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> J. Ferreira (PM), K. Moore, Added M. Schaser, T. McBee, and F. Johnson		
<b>Explanation of Need:</b> NBIC Item to Address Flush Patch Plate Weld NDT.		
<b>Jan. SG R&amp;A 2023 Meeting Action:</b> K. Moore presented. Added M. Schaser, T. McBee, and F. Johnson to TG. <b>This was a PR</b>		
<b>SC R&amp;A 2023 Meeting Action:</b> J. Ferreira presented a <b>PR</b> .		

<b>Item Number: A23-05</b>	<b>NBIC Location: Part 3,</b>	<b><a href="#">Attachment 17</a></b>
<b>General Description:</b> Signing of R Forms		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> R. Underwood (PM)		
<b>Explanation of Need:</b> The current code lists attaching the nameplate after signing the “R” Form.		
<b>Jan. SG R&amp;A 2023 Meeting Action:</b> R. Underwood presented a proposal to validate the Intent Interpretation I23-01. The proposal was revised and UA		
<b>SC R&amp;A Jan.2023 Meeting Action:</b> T. Seime presented a proposal to validate the Intent Interpretation I23-01. The proposal was UA		

<b>Item Number: A23-06</b>	<b>NBIC Location: Part 3, 3.3.4.8 c)</b>	<b><a href="#">Attachment 18</a></b>
<b>General Description:</b> Paragraph to subparagraphs - 3.3.4.8		
<b>Subgroup:</b> Repairs and Alterations		
<b>Task Group:</b> B. Boseo (PM)		
<b>Explanation of Need:</b> Moving 3.3.4.8 c) 5) and 3.3.4.8 c) 6) to 3.3.4.8 c) 4)- a) & b) respectively		
<b>Jan. SG R&amp;A 2023 Meeting Action:</b> B. Boseo presented a revision (editorial) and was UA		
<b>SC R&amp;A Jan. 2023 Meeting Action:</b> B. Boseo presented a revision (editorial) and was UA		

## 11. Future Meetings

- July 2023 – St. Louis, MO (7/10-13/2023)
- January 2024 – Charlotte, NC

## 12. Adjournment @ 12:09 PM

Chair Moore adjourned the meeting at 12:09 PM.

Respectfully submitted,

*Terrence Hellman*

Terrence Hellman

SC R&A Secretary

Full Name	Email Address	Company Name	Title	Registration Type	ATTENDANCE	
Beauregard, Joseph	joeducati@hotmail.com	Los Alamos National Laboratory	Pressure Safety Manager	In-person		In-Person Members: 15
Becker, Pat	pbecker3135@gmail.com	EPRI	Sr. Technical Leader	In-person	1	In-Person Visitors: 25
Black, Kim	rkcblack@aol.com	American Boiler Manufacturers Association	Technology Consultant	In-person		Remote Members: 6
Boseo, Brian	bmboseo@burnsmcd.com	Burns & McDonnell	Department Manager	In-person	1	Remote Visitors: 10
Carlson, Mike	camx235@lni.wa.gov	State of Washington	Chief Boiler/Pressure Vessel Inspector	In-person	1	56
Collins, Riley	rileycollins@eastman.com	Eastman Chemical Company		In-person	1	20 Members = 11 Quorum
Davis, Paul	paul.davis22@woodplc.com	Wood Group USA, Inc.	Director QA/QC	In-person	1	
Derby, Robert	rderby@uagnet.org	United Association ITF	Administrator of Welder Certification Program	In-person	1	
Dutra, Louis	ldutra@baycityboiler.com	Bay City Boiler	QA/QC Manager	In-person	1	
Ferreira, Jon	jonathan_ferreira@hsb.com	The Hartford Steam Boiler Inspection and Insurance Company	Technical Service Manager	In-person	1	
Fumey, Devin	devin.fumey@fulton-pacific.com	Fulton Equipment Pacific		In-person	1	
Galanes, George	ggalanes@diamondtechnicalservices.com	DTS, Inc.	Consulting Engineer	In-person	1	
Gilston, Philip	philip_gilston@hsb.com	The Hartford Steam Boiler and Inspection Co.	Principal Engineer	In-person	1	
Goossens, Greg	ggoossens@nationalboard.org	NBBI	Director of Jurisdictional Affairs	In-person		
Hellman, Terry	thellman@nationalboard.org	National Board	Senior Staff Engineer	In-person	1	
Henry, Harrington	harrington.henry@tuvsud.com	ARISE Inc.	Senior Boiler and Machinery Consultant	In-person		
Hopkins, Craig	CHOPKINS@SEATTLEBOILER.COM	Seattle Boiler Works, Inc.	President	In-person	1	
Kinney, Don	don.kinney@labor.nc.gov	North Carolina Boiler Safety Bureau	Bureau Chief	In-person		
Melli, Teresa	teresa_melli@lincolnelectric.com	Lincoln Electric	Technical Fellow	In-person	1	
Miletti, Ray	rmiletti@babcock.com	Babcock & Wilcox	Global Quality Director	In-person	1	
Misiewicz, Ken	kmisiewicz@pleuneservice.com	Pleune Service Company		In-person		
Moore, Kathy	kathymoore@jeomooorecompany.com	Joe Moore & Company		In-person	1	
Morelock, Brian	morelock@eastman.com	Eastman Chemical Company, TNO	Senior Engineering Associate	In-person	1	
Ponce, Luis	lponce@nbbi.org	NBBI	Manager of Technical Services	In-person		
Schaefer, Ben	bschaefer@aep.com	American Electric Power	Quality Control Manager	In-person	1	
Schaser, Matt	mschaser@e2g.com	The Equity Engineering Group, Inc.	Senior Engineer	In-person	1	
Scribner, Gary	gscribner@nationalboard.org	National Board	Assistant Executive Director, Technical	In-person		
Seime, Trevor	tsseime@nd.gov	State of North Dakota	Chief Boiler Inspector	In-person	1	
Siefert, John	jsiefert@epri.com	EPRI	Program Manager	In-person	1	
Smith, Robert	robert.c.smith@navy.mil	Naval Facilities Engineering Systems Command	Hyperbaric Facilities Program Manager	In-person		
Sowinski, James	jsowinski@e2g.com	The Equity Engineering Group, Inc.	Principal Engineer	In-person	1	
Sperko, Walter	sperkow@bellsouth.net	Sperko Engineering Services, Inc	President	In-person	1	
Spuhl, Raymond	RAYMOND_SPUHL@HSB.COM	The Hartford Steam Boiler Inspection and Insurance Company	Manager Code Services	In-person	1	
Toth, Marty	mtoth@boiscotraininggroup.com	ECS Consulting, LLC	Principal	In-person	1	
Underwood, Bob	robert_underwood@hsb.com	Hartford Steam Boiler	Quality Engineer	In-person		John Ferreira, as alternate
Valdez, Rick	rvaldez@prim.com	Rick Valdez	Quality Director	In-person	1	
Vogt, Mark	mark.vogt@vistracorp.com	Luminant	Principal Engineer - Boiler SME	In-person	1	
Wadkinson, Melissa	melissa.wadkinson@fulton.com	Fulton Thermal Corp	Chief Engineer	In-person		
Walker, Jamie	jwalker@hayesmechanical.com	Hayes Services	Quality Control Consultant	In-person	1	
White, Tom	thomas.white@nrg.com	NRG Energy	Inspection Specialist IV	In-person	1	
AHMED, S M FAYSAI	smfaysal.ahmed@rsc-bd.org	RMG SUSTAINABILITY COUNCIL	BOILER SAFETY ENGINEER	Remote		
Frazier, Steve	steve.frazier@seattle.gov	City of Seattle	Chief Boiler Inspector	Remote	1	
Galal, Mahmoud	Mah.g.e1981@gmail.com	Bureau Veritas	Suez Office Manager	Remote		
Khssassi, Aziz	aziz.khssassi@rbq.gouv.qc.ca	Province of Québec - Régie du bâtiment du Québec	Engineer - AIA Program Coordinator	Remote	1	
Lower, Mark	mlower1@vols.utk.edu	Oak Ridge National Laboratory	Senior Consulting Engineer	In person	1	
Marks, Stacey	stacey.marks@bureauveritas.com	Bureau Veritas	Director of Training & Development	Remote	1	
McBee, Timothy	timothy.mcbec@tuvsud.com	ARISE	Manager of Codes and Standards	Remote	1	
Moedinger, Linn	linnwm@supernet.com	Strasburg Rail Road	Retired	Remote	1	
Patel, Tusharkumar	tusharpatel0914@gmail.com	TUV Nord Group	Inspection Engineer	Remote		
Quisenberry, Michael	michael@spartan-mech.com	Spartan Boiler & Mechanical	President	Remote	1	
Sekely, Jim	jsekely@comcast.net	Welding Services, Inc.	President	Remote	1	
SHAH, M. A.	abmindustrialervices@gmail.com	ABM Industrial Services Inc.	Technical Manager	Remote		
Shanks, Paul	paul.shanks@onecis.com	BVI&I	Inspection Coordinator	Remote	1	
Shear, Emily	Emily@stateboilerinspectors.com	Arizona Boiler Inspectors	GM	Remote		
Simmons, Douglas	Heatsolutionsllc@aol.com	1st Heating Solutions llc	ceo	Remote		
Triplet, Andrew	triplett@ornl.gov	UT-Battelle, LLC	Boiler and Pressure Vessel Program Lead	Remote	1	
Paul Lentzer				In person	1	
Randy Kennedy				In person	1	
Todd, Colvin				Remote	1	
Charles McDaris				Remote	1	
Phil Miller				Remote	1	
Bob McGuire				Remote	1	#NAME?



### PROPOSED INTERPRETATION

<b>Item No.</b> 21-79
<b>Subject/Title</b> Mechanical Replacement of Shell or Head
<b>Project Manager and Task Group</b>
<b>Source (Name/Email)</b> Robert Underwood / robert_underwood@hsb.com
<b>Statement of Need</b> This interpretation and corresponding Code revision would provide clarity to NBIC users and address whether mechanical replacement of these components is considered a repair.
<b>Background Information</b> There are two conflicting NBIC interpretations relating to mechanical replacement of parts. Interpretation 01-29 states that NBIC neither requires nor prohibits documenting mechanical repair installation on a Form R-1. Recently passed interpretation 19-11 states that mechanical replacement of pressure retaining components in ASME Section VIII, Div. 3 vessels are considered a repair activity. 19-11 cites paragraph 3.3.3 which provides examples of repairs. Paragraph 3.3.3(h)(2) specifically states that replacement of head or shell in accordance with the original design. It does not specify whether head was replaced by welding or mechanical attachment.
<b>Proposed Question</b> Is mechanical replacement of a shell or head of a pressure retaining item considered a repair activity?
<b>Proposed Reply</b> Yes, see Part 3, 3.3.3(h).
<b>Committee's Question 1</b> Q1: Is mechanical replacement of a shell or head of a pressure retaining item considered a repair? Q2: Is this repair required to be documented on Form R-1?
<b>Committee's Reply 1</b> A1: Yes A2: No
<b>Rationale</b> TG INTERP considers this a Mechanical Repair. This is not a welded repair requiring documentation on a Form R-1.
<b>Committee's Question 2</b>
<b>Committee's Reply 2</b>
<b>Rationale</b>



PROPOSED INTERPRETATION

<b>Item No.</b> 22-14
<b>Subject/Title</b> Overlaid Replacement Parts
<b>Project Manager and Task Group</b> Tim McBee – PM, Mike Carlson, Don Kinney, Michael Quisenberry, Phil Gilston, Jon Ferreira.
<b>Source (Name/Email)</b> Harold Greer / Harold.greer32@yahoo.com
<b>Statement of Need</b> Replacement parts that are documented using a Manufacturer's Partial Data report that have been inspected by an Authorized Inspector may still be supplied as a replacement part under paragraph 3.2.2 b) and therefore not require a Hydro test per Paragraph 3.2.2 e). Panels made from Overlaid tubes and for single overlaid tube Dutchman that contain only weld overlay, where the overlay is not considered to be pressure retaining when the overlay is not considered part of the strength of the boiler tube per ASME Section I PW-44. May be supplied as replacement parts under paragraph 3.2.2 b). The purpose of the overlay is to extend the life of boiler tubes in the waste to energy corrosive environment from external wear.
<b>Background Information</b> ASME Section I PG-112.6 states that a P-4 is neither required nor prohibited for pressure parts that do not contain pressure-retaining welds. NBIC Part 3 section 3 paragraph 3.2.2 c) .....replacement parts subject to internal or external pressure fabricated by welding, "which require inspection by an Authorized Inspector"..... An inspector could interpret this as, any replacement part that is certified with a form P-4 would therefore require inspection by an Authorized Inspector and would then require a Hydro test by paragraph 3.2.2 e) prior to installation in the boiler. It is the opinion of this manufacturer that Overlaid boiler tubes where the overlay is not considered as part of the strength of the boiler tube per PW-44 of ASME Section I, is not pressure retaining. Hydro testing of Weld Overlay would not provide meaningful data and would require excessive costs for no benefit. Such as performance of 200 hydro tests at 1.5 x MAWP for section I, for 200 Overlaid tube Dutchmen, where each tube must be witnessed by the Inspector prior to installation in a boiler. Whereas, after installation there are 400 actual pressure retaining welds in a single test at a pressure that need only verify leak tightness and the acceptance of the inspector.
<b>Proposed Question</b> Q1) May a boiler furnace wall panel that contains no pressure retaining welds and has been documented on a P-4 Manufacturer's Partial Data Report in accordance with PG-112.6 of ASME Section I, be provided as a replacement part in accordance with NBIC Part 3, 3.2.2 b)? Q2) The same panel referred to in Q1 is manufactured with a weld overlay that is not part of the strength of the boiler tube (corrosion resistance, hard facing, etc...) and documented on a P4 Manufacturer's Partial Data Report in accordance with PG-112.6 of ASME Section I. May this wall panel be provided as a replacement part in accordance with NBIC Part 3, 3.2.2 b)? Q3) May overlaid boiler tubes, where the overlay is not pressure retaining and is not considered part of the strength of the boiler tube per ASME Section I , PW-44, supplied individually, may these overlaid tubes be provided as a replacement part in accordance with Paragraph 3.2.2 b)?
<b>Proposed Reply</b> Q1) YES Q2) YES Q3) YES
<b>Committee's Question 1</b> 1. May boiler tubes or boiler tube panel assemblies with <u>hard-facing or corrosion resistance overlay</u> that contain no pressure retaining welds be supplied as a replacement part?
<b>Committee's Reply 1</b> 1. Yes.
<b>Rationale</b> NBIC Part 3, paragraph 3.2.2 b).



**Committee's Question 2**

2. Are boiler tubes or boiler tube panel assemblies with hard-facing or corrosion resistance overlay that contain no pressure retaining welds required to be pressure tested?

**Committee's Reply 2**

2. No.

**Rationale**

NBIC Part 3, paragraph 3.2.2 e).

**Committee's Question 3**

3. Are boiler tubes or boiler tube panel assemblies with hard-facing or corrosion resistance overlay that contain no pressure retaining welds required to be provided with a partial data report?

Attachment 3 - I22-14 -McBee -20220819 - Page 3 of 4

**Committee's Reply 3**

3. No, partial data reports are neither required nor prohibited.

**Rationale**

NBIC Part 3, paragraph 3.2.2 c) and ASME Section I, PG-112.6.



### PROPOSED INTERPRETATION

<b>Item No.</b> 22-24
<b>Subject/Title</b> Repair of pressure ret'ing items without complete removal of defect
<b>Project Manager and Task Group</b> M. Quisenberry (PM), L. Dutra
<b>Source (Name/Email)</b> Fazlollah (Fred) Afshar / fredafshar@bandmriskadvice.com
<b>Statement of Need</b> 3.3.4.8 does imply that the defect should be known in regards to characteristics such as orientation, nature, depth, configuration but does not fully state this.
<b>Background Information</b> On a 1 1/2" thick 304 H reactor operating normally in vacuum and around 1200 degrees F, cracking is found on the lower head to shell joint. Grinding to 1 1/4" thick has eliminated more than 60% of the cracks but still in areas not accessible, the cracks do exist. Detection requires special phased array sensor that is being built but not yet available. Client is citing NB 3.3.4.8 for the cracks left in place and planning to return to operation. Question is submitted to seek the Committee's view.
<b>Proposed Question</b> Q: If the size, orientation and/ or the contour of the defect may not be fully established, would the provisions of 3.3.4.8 be applicable? 3.3.4.8 Repair of pressure retaining items without complete removal of defects does not address the situation where the defect (i.e. cracks) characteristics are not fully established due to geometrical configuration of internals or other physical obstacles not allowing use of available NDE techniques to fully study the size, orientation and configuration of cracks.
<b>Proposed Reply</b> No. The defect shall be characterized in full per the requirements of NBIC 3.3.4.8 Part A
<b>Committee's Question 1</b> If the characteristics of the defect cannot be fully established, would the provisions of 3.3.4.8 be applicable?
<b>Committee's Reply 1</b> No.
<b>Rationale</b>
<b>Committee's Question 2</b>
<b>Committee's Reply 2</b>
<b>Rationale</b>

**PROPOSED INTERPRETATION**

**THE NATIONAL BOARD  
OF BOILER AND PRESSURE VESSEL INSPECTORS**

<b>Item No.</b> 22-25
<b>Subject/Title</b> ASME Section I Watertube Boilers – Plugging Tubes
<b>Project Manager and Task Group</b> Don Kinney (PM), Bob Derby
<b>Source (Name/Email)</b> Luis Ponce / lponce@nationalboard.org
<b>Statement of Need</b> The last item in paragraph 3.3.2 e) reads, “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 PWHT.” A repair organization used this paragraph as justification to document a seal welded tube plug on a watertube boiler as routine.
<b>Background Information</b> In at least one jurisdiction, a repair organization submitted a completed and certified R-1 Report of Repair Form as a “Routine Repair” to the Chief Inspector with the scenario in the statement of need. Neither the Repair firm nor the Inspector contacted the Jurisdiction prior to designating the plugging of the watertube as a “Routine Repair.”
<b>Proposed Question</b> Question 1 - A leaking tube is removed on a watertube boiler, and the repair organization installs and seal welds a plug into the tube opening in the shell drum. May this work be considered a routine repair as specified in NBIC, Part 3, 3.3.2e) 5)? Question 2 - A leaking tube is not removed on a watertube boiler, and the repair organization installs and seal welds a plug into the tube material that remains in the shell drum. May this work be considered a routine repair as specified in NBIC, Part 3, 3.3.2e) 5)?
<b>Proposed Reply</b> Reply 1 - No. Tube plugging is not considered a permanent repair, therefore it shall not be considered routine. Competent technical advice from the boiler manufacturer or from another qualified source shall be obtained prior to seal welding tube plugs on watertube boilers. Reply 2 - No, tube plugging is not considered a permanent repair, therefore it shall not be considered routine. Competent technical advice from the boiler manufacturer or from another qualified source shall be obtained prior to seal welding tube plugs.
<b>Committee's Question 1</b> When a boiler or heat exchanger tube plug is installed by a mechanical repair method, may the seal welding of the plug to the tube be considered a routine repair?
<b>Committee's Reply 1</b> Yes, when the requirements of NBIC Part 3, 3.3.2 e)1) and 3.3.2 e)5) are met.
<b>Rationale</b> NBIC Part 3, 3.3.2 e)1) & 5).
<b>Committee's Question 2</b> May the plugging of a boiler or heat exchanger tube hole, when the tube has been removed, be considered a routine repair?
<b>Committee's Reply 2</b> No.
<b>Rationale</b> Plugging of openings in a tubesheet, head or shell is not included in the categories for routine repairs in NBIC Part 3, 3.3.2 e).



### PROPOSED INTERPRETATION

<b>Item No.</b> 22-33
<b>Subject/Title</b> Encapsulation of Shells and Heads
<b>Project Manager and Task Group</b>
<b>Source (Name/Email)</b> Robert Underwood / robert_underwood@hsb.com
<b>Statement of Need</b> To clarify that encapsulation cannot be used to maintain the pressure retaining capability of shells and heads of pressure retaining items.
<b>Background Information</b> A pressure vessel owner believes PCC-2 allows encapsulation of components other than what's listed in 3.4.3 of Part 3 (such as heads) and therefore it should be acceptable per the NBIC. Paragraph 3.4.3 clearly indicates that the encapsulation method only applies to pipe, nozzles, fittings, and valves. This proposal would reinforce existing wording in Part 3.
<b>Proposed Question</b> Does the NBIC Part 3, paragraph 3.4.3, allow for the encapsulation of components other than pipe, nozzles, fittings, and valves?
<b>Proposed Reply</b> No.
<b>Committee's Question 1</b> Does the NBIC Part 3, paragraph 3.4.3, allow for the encapsulation of components other than pipe, nozzles, fittings, and valves?
<b>Committee's Reply 1</b> No.
<b>Rationale</b>
<b>Committee's Question 2</b>
<b>Committee's Reply 2</b>
<b>Rationale</b>



### PROPOSED INTERPRETATION

<b>Item No.</b> 23-01
<b>Subject/Title</b> Stamping Requirements for Repairs and Alterations
<b>Project Manager and Task Group</b>
<b>Source (Name/Email)</b> Luis Ponce / lponce@nationalboard.org
<b>Statement of Need</b> There is at least one instance where a nameplate has not been attached to a PRI and the R Form has already been signed. When questioned, the Inspector aptly stated there is no "shall be" requirement in the NBIC for the nameplate to be attached prior signing the R Form. What happens if that Inspector is reassigned or resigns? The stamping/nameplate may never be completed.
<b>Background Information</b> A discussion a a recent NBIC activity brought this topic to light about at least one repair/alteration where the R Form was signed but the stamping/nameplate has not been completed/attached. The NBIC Part 3, 5.2, 5.7.1 nor the RCI-1, 5-3.12 do not make this a "shall be" requirement.
<b>Proposed Question</b> For NBIC Part 3 repairs and alterations, is it the intent for stamping or attaching a nameplate in 5.7.1 to be completed prior to signing the R Form by the "R" Certificate Holder and the Inspector?
<b>Proposed Reply</b> Yes
<b>Committee's Question 1</b> For NBIC Part 3 repairs and alterations, is it the intent for stamping or attaching a nameplate in 5.7.1 to be completed prior to signing the R Form by the Inspector?
<b>Committee's Reply 1</b> Yes
<b>Rationale</b>
<b>Committee's Question 2</b>
<b>Committee's Reply 2</b>
<b>Rationale</b>



### PROPOSED INTERPRETATION

<b>Item No.</b> 23-02
<b>Subject/Title</b> Jurisdictional requirements not meeting NBIC requirements
<b>Project Manager and Task Group</b>
<b>Source (Name/Email)</b> Terrence Hellman / thellman@nationalboard.org
<b>Statement of Need</b> This Interpretation will clarify that when a Jurisdictional requirement does not meet an NBIC requirement or an NBIC requirement is diminished, the National Board "R" stamp shall not be applied nor will the R-Form be signed.
<b>Background Information</b> This Interpretation will clarify that when a Jurisdictional requirement does not meet an NBIC requirement or an NBIC requirement is diminished, the National Board "R" stamp shall not be applied nor will the R-Form be signed.
<b>Proposed Question</b> When a Jurisdictional requirement does not meet an NBIC requirement or an NBIC requirement is diminished, shall the National Board "R" stamp be applied and the applicable R-Form(s) be signed?
<b>Proposed Reply</b> No.
<b>Committee's Question 1</b> When a Jurisdictional requirement does not meet the minimum NBIC requirements, may the National Board "R" stamp be applied and the applicable R-Form(s) be signed by both the "R" Certificate Holder and the Inspector?
<b>Committee's Reply 1</b> No.
<b>Rationale</b>
<b>Committee's Question 2</b>
<b>Committee's Reply 2</b>
<b>Rationale</b>

**VOTE:**

COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

## 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 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:

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

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

A request seeking the rationale for code requirements.



Item 21-09 Repair of through stays  
David Rose

Rationale:

ASME PL-27 provides a construction method applicable to through stays that would be useful in repairs. Using PL-27 as a guide we can add these methods in to assist in the replacement of corroded or excessively sagged through stays.

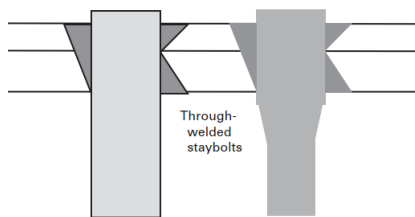
Part 3 – Repair

Suggested addition:

S2.13.4.1 REPLACEMENT OF THROUGH STAYS

- a) Threaded through stays may be replaced in kind in accordance with the original design. The threaded portion of the stay may be upsized to permit new threads to be cut in the shell. The new threads may be Unified National Fine thread.
- b) Threaded through stays may be replaced by welded-in stays provided that, in the judgement of the Inspector ~~and, or~~ if required, the Jurisdiction, the material adjacent to the through stay has not been materially weakened by deterioration or wasting away.
- c) Reduced section through stays shall be replaced with stays of similar design.
- d) Stays shall be removed by threading out or drilling.
- e) Welded stays shall be inserted into countersunk holes through the sheet and attached by full penetration welds to plate of ~~no less than~~ 3/8" (10mm) or greater in thickness.
- f) The ends of the stays shall not be covered by weld metal and the face of the welds shall not be below the outside surface of the plates.
- g) Minimum diameter of the reduced section of the stay shall be no less than the greater of 1" or stay bolt length divided by 120.
- h) Material will be in accordance with Table S2.7.1 for Boiler Braces.
- i) Original nuts and washers may be reinstalled on a welded stay for cosmetic purposes only.

Figure S2.13.4.1



After beveling, and prior to the installation of the stay, the two plates, ~~should be if welded, should be and~~ ground back to match the bevel prep. To facilitate installation, heating the through stay will aid in tensioning the stay and prevent sag. Excessive preload applied to the stay ~~should shall~~ be taken into consideration.

Item No.: 21-02
Subject Title: Define "Fuel Loading" as it pertains to NR activities.
NBIC Location: Part 3 Repairs and Alterations: 1.6.2 a)
Project Manager and Task Group: Raymond Spuhl, NR TG
Source Name and Email: Terrence Hellman, thellman@nationalboard.org
Statement of Need: The NR TG would like to clarify "Fuel Loading" as used to determine Category 1, 2 or 3 NR activities.
Background Information:
Existing Text: 1.6.2 a) 1) Category 1 Any ASME Section III Code certified item or system requiring repair/replacement activities irrespective of physical location and installation status prior to fuel loading. 2) Category 2 After fuel loading, any item or system under the scope of ASME Section XI requiring repair/replacement activities irrespective of physical location. Based on regulatory or jurisdictional acceptance, Category 2 may be used prior to fuel loading. 3) Category 3 Items other than those covered by Category 1 or Category 2, requiring repair/replacement activities irrespective of physical location, installation status and fuel loading.
Proposed Text: 1.6.2 a) 1) Category 1 Any ASME Section III Code certified item or system requiring repair/replacement activities irrespective of physical location and installation status <del>prior to fuel loading</del> <u>not under the scope of ASME Section XI</u> 2) Category 2 <del>After fuel loading, a</del> Any item or system <del>under the scope of ASME Section XI</del> requiring repair/replacement activities irrespective of physical location <u>under the scope of ASME Section XI</u> <del>b</del> Based on regulatory or jurisdictional <u>requirements</u> <del>acceptance, Category 2 may be used prior to fuel loading.</del> 3) Category 3 <u>Any item or system</u> , other than those covered by Category 1 or Category 2, requiring repair/replacement activities irrespective of physical location or installation status.



**PROPOSED REVISION OR ADDITION**

<b>Item No.</b>
<b>21-37</b>
<b>Subject/Title</b>
<b>Parts used in NR activities</b>
<b>NBIC Location</b>
Part: Repairs and Alterations & Repairs and Alterations; Section: 5; Paragraphs: 5.2.5 & 5.2.6
<b>Project Manager and Task Group</b>
Robert Wielgoszinski
<b>Source (Name/Email)</b>
TG NR Committee generated
<b>Statement of Need</b>
Action Item 21-37 is proposing revisions/additions to Part 5 regarding completion of the Forms NR-1 and NVR-1. Particularly including provision to assure that parts or items meeting ASME Code and reported on appropriate ASME Forms are certified by an Inspector holding the proper endorsements. That is the N, I, and/or C endorsements.as appropriate.
<b>Background Information</b>
Current text in the NBIC does not specify any special rules for parts or other items to be used in NR work. This change will assure that any work performed on parts or other items to be used in NR activities is inspected and certified by an appropriate ANI, ANII, or ANI-C
<b>Existing Text</b>
<b>Proposed Text</b>
See attached proposal

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

(MDSC), or BTU/hr (W) heating capacity, the new MRRC shall be documented on Form R-2 and indicated on the appropriate nameplate of NBIC Part 3, Figure 5.7.5-b or NBIC Part 3, Figure 5.7.5-c.

- a) Final preparation of Form R-2, including gathering and attaching supporting reports, shall be the responsibility of the “R” Certificate Holder that performed the construction portion of the alteration. The construction organization shall complete the Form R-2 provided by the design organization, including the “Construction Certification” section of the form. An Inspector shall indicate that the work complies with the applicable requirements of this code by completing and signing the “Certificate of Inspection” section of the form. When no construction work is performed (e.g., a re-rating with no physical changes), the “R” Certificate Holder responsible for the design shall prepare the Form R-2, including gathering and attaching of supporting documentation.
- b) The following shall be attached to and become a part of completed Form R-2:
  - 1) For ASME boilers and pressure vessels, a copy of the original Manufacturer’s Data Report, when available;
  - 2) Form R-3, Report of Parts Fabricated by Welding, Manufacturer’s Partial Data Reports, or Certificates of Compliance, if applicable; and
  - 3) For other than ASME, the manufacturer’s reports (i.e., reports required by the original code of construction, etc.), when available.

(21) **5.1.1 PREPARATION OF FORM R-3 REPORT OF PARTS FABRICATED BY WELDING**

Using the instructions found in Table S9.4 of Supplement 9, preparation of Form R-3 shall be the responsibility of the “R” Certificate Holder responsible for performing the work.

(21) **5.1.2 PREPARATION OF FORM R-4 REPORT SUPPLEMENT SHEET**

Using the instructions found in Table S9.5 of Supplement 9, preparation of Form R-4 shall be the responsibility of the “R” Certificate Holder responsible for performing the work.

(21) **5.1.3 PREPARATION OF FORM NR-1, REPORT OF REPAIR/REPLACEMENT ACTIVITIES FOR NUCLEAR FACILITIES**

Using the instructions found in Table S9.6 of Supplement 9, preparation of Form NR-1 shall be the responsibility of the “NR” Certificate Holder responsible for performing the work.

- (21) a) Preparation of Form NR-1 shall be the responsibility of the “NR” Certificate Holder performing the repair/replacement activity in accordance with the instructions found in Table S9.6 of Supplement 9.
- b) Information describing the scope of work used to repair a pressure-retaining item (PRI) shall be documented on a Form NR-1 and extended to a Form R-4 as needed to fully describe the repair activities completed per the instructions in Table S9.6 of Supplement 9. NOTE: when a Form R-4 is utilized, reference to the “R” Certificate Holder and “R Stamp shall mean the “NR” Certificate Holder and “NR” Stamp.
- c) An Inspector holding appropriate endorsements shall indicate acceptance by signing Form NR-1, and Form R-4, if attached.
- d) The Form R-3, *Report of Parts Fabricated by Welding*, an ASME Manufacturer’s Data Report, or other certifications/documentation as required by the Design Specification shall be a part of the completed Form NR-1 and shall be attached thereto. NOTE: when a Form R-3 is utilized, reference to the “R” Certificate Holder and “R Stamp shall mean the “NR” Certificate Holder and “NR” Stamp.

**5.2.6 PREPARATION OF REPORT OF REPAIR/REPLACEMENT  
ACTIVITIES FOR NUCLEAR PRESSURE RELIEF DEVICES**

~~Using the instructions found in Table S9.7 of Supplement 9, preparation of Form NVR-1 shall be the responsibility of the "NR" Certificate Holder, possessing the "VR" Certificate denoting the repair of nuclear pressure relief valves, responsible for performing the work.~~

- a) Preparation of Form NVR-1 shall be the responsibility of the "NR" Certificate Holder, who possesses a "VR" Certificate in accordance with the instructions found in Table S9.7 of Supplement 9. The "NR" Certificate scope shall include the repair/replacement of nuclear pressure relief devices.
- b) Information describing the scope of work used to repair pressure relief devices shall be documented on a Form NVR-1 and extended to a Form R-4 as needed to fully describe the repair activities completed per the instructions in Table S9.7 of Supplement 9. NOTE: when a Form R-4 is utilized, reference to the "R" Certificate Holder and "R Stamp shall mean the "NR" Certificate Holder and "NR" Stamp.
- c) An Inspector holding appropriate endorsements shall indicate acceptance by signing Form NVR-1, and Form R-4, if attached.
- d) The Form R-3, Report of Parts Fabricated by Welding, an ASME Manufacturer's Data Report, or other certifications/documentation as required by the Design Specification shall be a part of the completed Form NVR-1 and shall be attached thereto. NOTE: when a Form R-3 is utilized, reference to the "R" Certificate Holder and "R Stamp shall mean the "NR" Certificate Holder and "NR" Stamp.

## Item A22-29 – Schaefer – 01-09-2023 - NBIC NR Revisions

General Description: Removal of the requirements of AIA audits for the certificate holders QA Manual. This requirement cannot be enforced and is not defined by the NR Certificate Holder and therefore must be removed.

NBIC Location: Part 3, 1.6.6.2 s) 6), 1.6.7.2 s) 6) and 1.6.8.2 s) 6).

All three sections are identical. Text to be removed is struck through and red and applies to all three sections noted.

**Existing Text for section 1.6.6.2 s) 6)** – For Category 1

**Existing Text for section 1.6.7.2 s) 6)** – For Category 2

**Existing Text for section 1.6.8.2 s) 6)** – For Category 3

- 6) Audit records shall include as a minimum;
- a. written procedures;
  - b. checklists;
  - c. reports;
  - d. written replies; and
  - e. Completion of corrective actions.

~~Performance of Authorized Inspection Agency audits required by ASME QAI-1 and NB-263, RCI-1 shall be addressed in the Quality Assurance Manual.~~

## **SUPPLEMENT 6**

### **REPAIR, ALTERATION, AND MODIFICATION OF DOT TRANSPORT (TRANSPORT (CARGO)) TANKS**

#### **S6.1 SCOPE**

This supplement provides requirements and guidelines for repairs, alterations, or modifications to DOT Transport Tanks used for the transportation of dangerous goods via highway, rail, air, or water.

#### **S6.2 DEFINITIONS**

The definitions specified in NBIC Part 3, Section 9, *Glossary*, shall be used in conjunction with those specified in NBIC Part 2, S6.17. Where conflicts between definitions exist, those identified in NBIC Part 2, S6.17 shall take precedence.

#### **S6.3 CONSTRUCTION STANDARDS**

When the standard governing the original construction is the ASME Code or other regulations of the Competent Authority, repairs, alterations, or modifications shall conform, insofar as possible, to the edition of the construction standard or specification most applicable to the work. Where this is not possible or practical practicable, it is permissible to use other codes, standards or specifications, including the ASME Code provided the "R" Certificate Holder has the concurrence of the Inspector and, if required, the Competent Authority.

#### **S6.4 ACCREDITATION AND REGISTRATION**

Organizations performing repairs, alterations, or modifications shall be accredited in accordance with the National Board "R" Accreditation Program. In addition repair organizations performing repairs, alterations, or modifications to transport transport tanks shall be registered with DOT as required by 49 CFR Part 180.

#### **S6.5 AUTHORIZATION**

The Inspector's authorization to perform a repair, alteration, or modification shall be obtained prior to initiation of the work to be performed on a transport transport tank. Additional requirements are specified in NBIC Part 3, 1.3.1 and 1.3.2.

#### **S6.6 INSPECTION**

Inspection and certification shall be made by an Inspector holding an appropriate National Board Commission as required by NBIC Part 3, 1.3.

#### **S6.7 MODIFICATIONS**

All modifications, as defined in NBIC Part 2, Supplement 6, to the pressure-retaining item shall meet the requirements of NBIC Part 3 for alterations.

#### **S6.8 DRAWINGS AND CALCULATIONS**

a) Design requirements for repairs, alterations and modifications shall comply with the requirements of NBIC Part 3, 3.2.4.

- b) As appropriate, drawings or instructions shall be prepared to describe the repair, alteration, or modification. Drawings shall include sufficient information to satisfactorily perform the activity.
- c) The design of alterations and modifications shall be completed by an organization experienced in the design portion of the standard used for the construction of the item and certified by a Design Certifying Engineer as defined in NBIC Part 2, S6.17. Design documents shall be completed prior to the start of any physical work and be available for review by the Inspector accepting the design.

## **S6.95 MATERIALS**

The materials used in making repairs, alterations, or modifications shall conform to the original code of construction including the material specification requirements. Carbon or alloy steel having a carbon ~~con-~~content of more than 0.35% (0.30% for ton tanks) shall not be welded unless permitted by the original code of construction. The "R" Certificate Holder is responsible for verifying the identification of existing materials from original data, drawings, or unit records and identification of the material to be installed. Materials that have previously been in service, as described in Part 3, 3.2.1 c), are not permitted for alterations or modifications of DOT ~~Transport~~Transport Tanks per 49 CFR Part 180. Additional material requirements are provided in NBIC Part 3, Section 3.

## **S6.6-10 REPLACEMENT PARTS**

Replacement parts to be used in repairs, alterations, and modifications of DOT ~~Transport~~Transport Tanks shall comply with the requirements provided in NBIC Part 3, 3.2.2.

- a) ~~Replacement parts that will be subject to internal or external pressure that consist of new material which may be formed to the required shape by spinning, forging, die forming, and on which no fabrication welding is performed shall be supplied as material. Such parts shall be marked with the material and part identification and the name or trademark of the parts manufacturer. In lieu of full identification marking on the material or part, the part manufacturer may use a coded marking system traceable to the original marking. Such markings shall be considered as the part manufacturer's certification that the part complies with the original code of construction. Examples include seamless or welded tube or pipe, forged nozzles, heads or subassemblies attached mechanically.~~
- b) ~~Replacement parts that will be subject to internal or external pressure, that are preassembled by attachment welds, shall have the welding performed in accordance with the original code of construction. This certificate shall be supplied in the form of a bill of material or drawings with statement of certification.~~
- c) ~~Replacement parts subject to internal or external pressure fabricated by welding that require shop inspection by an Authorized Inspector shall be fabricated by an organization having an appropriate ASME *Certificate of Authorization*. The item shall be inspected and stamped as required by the applicable section of the ASME Code and DOT specification requirements. A completed ASME *Manufacturer's Partial Data Report* shall be supplied by the manufacturer.~~
- d) ~~When the original code of construction is other than ASME, replacement parts subject to internal or external pressure fabricated by welding shall be manufactured by an organization certified as required by the original code of construction. The item shall be inspected and stamped as required by the original code of construction. Certification as required by the original code of construction shall be supplied with the item. When this is not possible or practicable the organization fabricating the part may have a National Board *Certificate of Authorization*. Replacement parts fabricated by an "R" stamp holder shall be documented on Form R-3 and the "R" Stamp applied as described in NBIC Part 3, S6.15.~~



**S6.7 — AUTHORIZATION**

The Inspector's written authorization to perform a repair, alteration, or modification shall be obtained prior to initiation of the work to be performed on a transport tank. Additional requirements are specified in NBIC Part 3, 1.3.1 and 1.3.2.

**S6.8 — INSPECTION**

Inspection and certification shall be made by an Inspector holding an appropriate National Board Commission as required by NBIC Part 3, 1.3 and shall be a Registered Inspector meeting the requirements of the Competent Authority.

**S6.8.1 — INSPECTOR DUTIES FOR REPAIRS, ALTERATIONS, AND MODIFICATIONS**

- a) Inspectors performing repair, alteration, or modification inspections under the requirements of this supplement shall satisfy the requirements of S6.8.1 to be authorized to sign the Form R-1, *Repairs* and Form R-2, *Alterations*.
- b) For repairs, alterations, and modifications of transport tanks, the duties of the Registered Inspector performing inspections are detailed in Part 2, S6.10 through S6.15, as required by the Competent Authority.
- c) The Registered Inspector shall meet the rules of NB-263, RCI-1, Rules for Commissioned Inspectors. Additional duties are summarized below:
  - 1) Verify the organization performing the repair, alteration or modification activity is properly accredited and in possession of a current valid *Certificate of Authorization* to apply the "R" Stamp issued by the National Board and is working to an accepted Quality Control System;
  - 2) Verify that the design, if required, for the modification of the vessel is approved by a Design Certifying Engineer, or Designated Approval Agency or other applicable individual;
  - 3) Verify the materials to be used to make the repair, alteration, or modification are approved for use and comply with applicable code requirements;
  - 4) Verify the welding procedures and welders or welding operators are properly qualified;
  - 5) Verify that all heat treatments, if required, including PWHT have been performed in accordance with the applicable standards and that the results are acceptable;
  - 6) Verify that all NDE, impact tests, and other tests have been performed when required, and that they are acceptable;
  - 7) Make a visual inspection of the work performed to confirm there are no visible defects or deviations from code requirements;
  - 8) Perform external and internal visual inspections, if the vessel is equipped with a manway, and witness the hydrostatic or pneumatic pressure test and/or leak tightness test when they are required;
  - 9) Verify the correct nameplate is properly attached to the vessel and that the current test and inspection markings are properly attached and displayed on the proper vessel;
  - 10) Sign the Form R-1 and, as appropriate, form R-2 when work is completed.

**S6.9-11 WELDING**

a) Welding, including procedure specification qualification, performance qualification, qualification records, qualified personnel identification, continuity of qualified personnel, and process continuity records shall be performed in accordance with the requirements of the original code of construction used for the fabrication of the pressure vessel retaining item and Part 3, Section 2.

a)b) For hydrogen control when low alloy steel filler metals are used, the filler metal classification shall include an H4 supplemental diffusible hydrogen designator (maximum 4 ml [H<sub>2</sub>]/100 g deposited metal) for each of the following welding processes:

- 1) electrodes for shielded metal arc welding (SMAW) conforming to SFA-5.5;
- 2) electrodes and fluxes for submerged arc welding (SAW) conforming to SFA-5.26;
- 3) electrodes and rods for gas shielded metal arc welding (GMAW) conforming to SFA-5.28;
- 4) electrodes for flux-cored arc welding (FCAW) conforming to SFA 5.29.

c) Practices used for controlling storage and exposure of filler metals shall be those developed by the "R" Certificate Holder or those recommended by the filler metal manufacturer.

b)

**S6.9.1 WELDING PROCEDURE SPECIFICATION**

~~Welding shall be performed in accordance with a Welding Procedure Specification (WPS) qualified in accordance with the original code of construction. When this is not possible or practicable, the WPS may be qualified in accordance with ASME Section IX.~~

**S6.9.2 STANDARD WELDING PROCEDURE SPECIFICATIONS**

~~A "R" Certificate Holder may use one or more applicable Standard Welding Procedure Specifications shown in NBIC Part 3, 2.3 without supporting Procedure Qualification Records (PQRs) since SWPS are pre-qualified and the PQR will not be supplied.~~

**S6.9.3 PERFORMANCE QUALIFICATION**

~~Welders or welding operators shall be qualified for the welding processes that are used. Such qualification shall be in accordance with the requirements of the original code of construction or ASME Section IX. Use of Standard Welding Procedure Specification shown in NBIC Part 3.2.3 is permitted for performance qualification testing.~~

**S6.9.4 WELDING RECORDS**

~~The "R" Certificate Holder shall maintain a record of the results obtained in welding procedure qualification, except for those qualifications for which the provisions of NBIC Part 3, S6.8.2 are used and of the results obtained in welding performance qualifications. These records shall be certified by the "R" Certificate Holder and shall be available to the inspector.~~

**S6.9.5 WELDERS' IDENTIFICATION**

~~— The "R" Certificate Holder shall establish a system for the assignment of a unique identification mark to each welder/welding operator qualified in accordance with the requirements of the NBIC. The "R" Certificate Holder shall also establish a written procedure whereby all welded joints can be identified as to the welder or welding operator who made them. This procedure shall use one or more of the~~

~~following methods and be acceptable to the Inspector. The welder's or welding operator's identification mark may be stamped (low stress stamp) adjacent to all welded joints made by the individual or, in lieu of stamping, the "R" Certificate Holder may keep a record of the welded joints and the welders or welding operators used in making the joint.~~

### ~~S6.9.6~~ **WELDERS' CONTINUITY**

~~The performance qualification of a welder or welding operator shall be affected when one of the following conditions occurs:~~

- ~~a) When the welder or welding operator has not welded using a specific process during a period of six months or more, their qualifications for that process shall expire;~~
- ~~b) When there is specific reason to question their ability to make welds that meet the specification, the qualification which supports the welding that is being performed shall be revoked. All other qualifications not questioned remain in effect.~~

## **S6.10-12 HEAT TREATMENT**

### **S6.1012.1 PREHEATING**

~~Preheating may be employed during welding use of a process to assist in completion of the welded joint. Preheating shall comply with the requirements in NBIC Part 3, 2.5.1. (see NBIC Part 3, 2.5.1). The need for and the temperature of preheat are dependent on a number of factors such as chemical analysis, degree of restraint of the items being joined, material thickness, and mechanical properties of the base metals being joined. The Welding Procedure Specification for the material being welded shall specify the preheat temperature requirements.~~

### **S6.1012.2 POSTWELD HEAT TREATMENT (PWHT)**

~~Postweld heat treatment may used in repairs, alterations, and modifications of DOT TransportTransport Tanks shall comply with the requirements provided in NBIC Part 3, 2.5.2. be performed as required by the original code of construction in accordance with a written procedure. The procedure shall contain the parameters for postweld heat treatment. Local PWHT that is not specified by the original code of construction may be performed in accordance with an Alternative Postweld Heat Treatment Method described in NBIC Part 3, 2.5.2 with acceptance by the Inspector and required by the Competent Authority.~~

### **S6.1012.3 ALTERNATIVES TO POSTWELD HEAT TREATMENT**

- a) Under certain conditions, postweld heat treatment in accordance with the original code of construction may be inadvisable or impractical. In such instances, alternative methods of postweld heat treatment or special welding methods in accordance with NBIC Part 3, 2.5.3, and acceptable to the Inspector and Competent Authority may be used.
- b) When the standard governing the original construction is the Code of Federal regulation for DOT/MC 331 cargotransport tanks for propane, butane, anhydrous ammonia, and other DOT permitted commodities, and the tanks are made to the ASME Code, Section VIII, Division 1, Part UHT, repairs, alterations, or modifications shall conform insofar as possible, to the edition of the construction standard or specification most applicable to the work. Where this is not possible or practicable, it is permissible to use other codes, standards, or specifications provided the "R" Certificate Holder has the concurrence of the DOT. Shells and heads of MC 331 cargotransport tanks were made from quenched and tempered

alloy steel plate, SA517, Grade E (originally Code Case 1298) and Grade F (originally Code Case 1204) prior to 1994.

- c) The 1994 ASME Code Addenda revised UHT-5(b) to permit the joining of UHT materials to UCS or UHA materials in head and shell sections. Propane, butane, and anhydrous ammonia are the most common transported commodities and the shipper is required by DOT to comply with certain composition limitations. Propane and butane transported must have sufficiently low hydrogen sulfide content so as not to exceed the limitations for Classification One of the ASTM D1838-74 copper strip test, and the anhydrous ammonia transported must be inhibited with a minimum water content of 0.2% by weight. In addition, such ~~target~~transport tanks made for propane, butane, and anhydrous ammonia service must be postweld heat treated, unless specifically exempted by a DOT special permit that exempts PWHT.

### **S6.13 REPAIRS OF DEFECTS**

- a) Before a repair is made to a defect in a welded joint or base metal, care should be taken to investigate its cause and to determine its extent and likelihood of recurrence. This information shall be made available to the Inspector.
- b) For MC 330 and MC 331 transporttransport tanks, when a repair is made to defects revealed by the wet fluorescent magnetic particle examination, including those repaired by grinding, the affected area of the targettransport tank must again be examined by the wet fluorescent magnetic particle method after hydrostatic testing to assure that all defects have been removed.

### **S6.14-14 NONDESTRUCTIVE EXAMINATION**

- a) ~~The nondestructive examination (NDE) requirements, including qualification of NDE personnel shall comply with the requirements in NBIC Part 3, 4.2., including technique, extent of coverage, procedures, personnel qualification, and acceptance criteria, shall be in accordance with the original code of construction used for the pressure vessel, and repairs, alterations, and modifications 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 Competent Authority may be used on a case-by-case basis.~~
- b) ~~NOE personnel shall be qualified and certified in accordance with the requirements of the original code of construction. When this is not possible or practicable, NDE personnel may be qualified and certified in accordance with their employer's written practice. ASNT SNT-TC-1A, *Recommended Practice for Nondestructive Testing Personnel Qualification and Certification (2006 Edition)*, or ANSI/ASNT CP-189, *Standard for Qualification and Certification of Nondestructive Testing Personnel (2006 Edition)*, shall be used as a guideline for employers to establish their written practice. The ASNT Central Certification Program (ACCP) may be used to fulfill the examination and demonstration requirements of the employer's written practice. Provisions for training, experience, qualification and certification of NDE personnel shall be described in the "R" Certificate Holder's written quality system.~~

### **S6.12 COATINGS AND LININGS**

~~When coatings or linings are to be inspected, such inspections shall be done in accordance with the Structural Steel Painting Council, SSPC publication, No. 91-12, *Coating and Lining Inspection Manual*.~~

### **S6.153 MEASUREMENT, EXAMINATION, AND TEST EQUIPMENT**

The calibration of pressure gages, measurement, examination, and test equipment, and documentation of calibration shall be performed, as required, by the applicable standard used for construction. This system shall be documented.

**S6.16 PRESSURE TESTS FOR REPAIRS AND ALTERATIONS**

The following requirements shall apply to all repairs, alterations, or modifications to DOT Transport Tank pressure-retaining items:

- a) The integrity of repairs alterations, modifications, and replacement parts used in repairs, alterations, or modifications shall be verified by- a pressure test;
- b) Pressure testing shall be conducted in accordance with the original code of construction and the regulations of the Competent Authority.
- c) The “R” Certificate Holder is responsible for all activities relating to the pressure test of repairs, alterations, or modifications;

**S6.16.1 PRESSURE TEST METHODS APPLICABLE TO REPAIRS PRESSURE TEST METHODS**

The integrity of repairs, alterations and modifications of DOT Transport Tanks shall be verified by a pressure test as described below. The test method used shall be subject to acceptance of the Inspector and the Competent Authority, when required.

a) Liquid Pressure Test

Liquid pPressure testing of repairs to, alterations, and modifications of DOT TransportTransport Tanks shall comply with -NBIC Part 3, 4.4.12(a) and the following requirements:

- 1) Liquid pressure tests shall be conducted in accordance with the requirements of the original code of construction and the regulations of the Competent Authority at pressures established in Table S6.16-a. When original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance;

**TABLE S6.16-a**  
**PRESSURE TESTTEST PRESSURE REQUIREMENTS FOR REPAIRS**

<u>CargoTransport Tank Specification</u>	<u>Test Pressure</u>
<u>MC 300, MC-301, MC-302, MC 303, MC 305, and MC-306</u>	<u>The test pressure on the name plate or specification plate, 20.7 kPa (3 psig) or design pressure, whichever is greater.</u>
<u>MC 304, and MC-307</u>	<u>The test pressure on the name plate or specification plate, 275.8 kPa (40 psig) or 1.5 times design pressure, whichever is greater.</u>
<u>MC 310, MC-3311, and MC 312</u>	<u>The test pressure on the name plate or specification plate, 20.7 kPa (3 psig) or 1.5 times design pressure, whichever is greater.</u>
<u>MC 330 and MC, -331</u>	<u>The test pressure on the name plate or specification plate, 1.5 times either MAWP or the re-rated pressure, whichever is applicable.</u>
<u>MC 338</u>	<u>The test pressure on the name plate or specification plate, 1.25 times either MAWP or the re-rated pressure, whichever is applicable.</u>

<u>DOT 406</u>	<u>The test pressure on the name plate or specification plate, 34.5 kPa (5 psig) or 1.5 times the MAWP, whichever is greater.</u>
<u>DOT 407</u>	<u>The test pressure on the name plate or specification plate, 275.8 kPa (40 psig) or 1.5 times the MAWP, whichever is greater.</u>
<u>DOT 412</u>	<u>The test pressure on the name plate or specification plate, 1.5 times the MAWP, whichever is greater.</u>

Note: DOT Transport Tanks constructed in accordance with Part UHT in Section VIII, Division I of the ASME Code shall be tested at a pressure at least twice the transport tank design pressure.

#### b) Pneumatic Test

A pneumatic test may be conducted in accordance with the requirements of the original code of construction and the regulations of the Competent Authority at pressures established in Table 6.16-a8. Concurrence of the owner shall be obtained in addition to that of the Inspector and the Competent Authority, where required. Precautionary requirements of the original code of construction and NBIC Part 2, S6.13.6.1(c) shall be followed.

### S6.16.2 PRESSURE TEST METHODS APPLICABLE TO ALTERATIONS AND MODIFICATIONS

#### a) Liquid Pressure Test

Liquid pressure testing of alterations and modifications to DOT Transport Tanks shall comply with NBIC Part 3, 4.4.2(a) and the following requirements:

- 1) Liquid pressure tests shall be conducted in accordance with the requirements of the original code of construction and the regulations of the Competent Authority at pressures established in Table S6.16-b. When original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance;

**TABLE S6.16-b**  
**TEST PRESSURE REQUIREMENTS FOR ALTERATIONS AND MODIFICATIONS**

<u>Transport Tank Specification</u>	<u>Test Pressure</u>
<u>MC 300, 301, 302, 303, 305, 306</u>	<u>The test pressure on the name plate or specification plate, 20.7 kPa (3 psig) or design pressure, whichever is greater.</u>
<u>MC 304, 307</u>	<u>The test pressure on the name plate or specification plate, 275.8 kPa (40 psig) or 1.5 times design pressure, whichever is greater.</u>
<u>MC 310, 311, 312</u>	<u>The test pressure on the name plate or specification plate, 20.7 kPa (3 psig) or 1.5 times design pressure, whichever is greater.</u>
<u>MC 330, 331</u>	<u>The test pressure on the name plate or specification plate, 1.5 times either MAWP or the re-rated pressure, whichever is applicable. DOT Transport Tanks constructed in accordance with Part UHT in Section VIII, Division I of the ASME Code shall be tested at a pressure at least twice the design pressure.</u>
<u>MC 338</u>	<u>The test pressure on the name plate or specification plate or 1.5 times the design pressure, plus static head of lading, plus 101.3 kPa (14.7 psi) if subjected</u>

	<u>to external vacuum. DOT Transport Tanks constructed in accordance with Part UHT in Section VIII, Division I of the ASME Code shall be tested at a pressure at least twice the design pressure.</u>
<u>DOT 406</u>	<u>The test pressure on the name plate or specification plate, 34.5 kPa (5 psig) or 1.5 times the MAWP, whichever is greater.</u>
<u>DOT 407</u>	<u>The test pressure on the name plate or specification plate, 275.8 kPa (40 psig) or 1.5 times the MAWP, whichever is greater.</u>
<u>DOT 412</u>	<u>The test pressure on the name plate or specification plate, 1.5 times the MAWP, whichever is greater.</u>

### c) Pneumatic Test

A pneumatic test may be conducted in accordance with the requirements of the original code of construction and the regulations of the Competent Authority at pressures established in Table 6.16-b. Concurrence of the owner shall be obtained in addition to that of the Inspector and the Competent Authority, where required. Precautionary requirements of the original code of construction and NBIC Part 2, S6.13.6.1(c) shall be followed.

## **S6.174 ACCEPTANCE INSPECTION**

The Inspector making the acceptance inspection shall be the same Inspector who authorized the repairs, alterations, or modifications. Where this is not possible or ~~practical~~ practicable, another Inspector may perform the acceptance inspection; however, in all cases, the Inspector who performs the acceptance inspection shall be an employee of the same organization as the Inspector who authorized the repairs, alterations, or modifications.

## **S6.185 GENERAL STAMPING REQUIREMENTS**

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

### **S6.185.1 SPECIFIC "R" STAMPING AND NAMEPLATE REQUIREMENTS**

The holder of a "R" *Certificate of Authorization* is required to affix a stamping or nameplate on the ~~Trans-~~ Transport Tank that indicates, the repair, alteration, or modification has been performed in accordance with the requirements of NBIC Part 3, Supplement 6 and the additional requirements of the code of construction. All repairs, alterations, and modifications, after acceptance by the ~~Registered~~ Inspector, shall have the "R" Symbol affixed to the stamping or the nameplate. The stamping or nameplate information shall satisfy the requirements of ~~a) thru g) below~~ NBIC Part 3, 5.7.:

- ~~a) The required data shall be in characters at least 4 mm (5/32 in.) high;~~
- ~~b) The markings may be produced by casting, etching, embossing, debossing, stamping, or engraving;~~
- ~~c) The selected method shall not result in any harmful contamination or sharp discontinuities to the pressure-retaining boundary of the Transport Tank;~~

- d) ~~Stamping directly on the Transport Tank, when used, shall be done with blunt nose continuous or blunt nose interrupted dot die stamps. If direct stamping would be detrimental to the item, required markings and the embossed Code Symbol stamping may appear on a nameplate affixed to the Transport Tank;~~
- e) ~~The "R" Certificate Holder shall use its full name as shown on the *Certificate of Authorization* or use an approved abbreviation acceptable to the National Board;~~
- f) ~~The non-embossed Code Symbol stamping, when directly applied on the item or when a nameplate is used shall be applied adjacent to the original manufacturer's stamping or nameplate. A single repair stamping or nameplate may be used for additional activities performed, provided the repair activity is carried out by the same "R" Certificate Holder;~~
- g) ~~The date of each repair, alteration, or modification corresponding with the date on the applicable "R" form shall be applied to the existing stamping or nameplate.~~

### **S6.185.2 REMOVAL OF ORIGINAL STAMPING OR NAMEPLATE**

~~Removal of the original stamping or nameplate shall comply with the requirements of NBIC Part 3, 5.11. If it becomes necessary to remove the original stamping, the Inspector shall, subject to the approval of the Competent Authority, witness the making of a facsimile of the stamping, the obliteration of the old stamping, and the transfer of the stamping. When the stamping is on a nameplate, the Inspector shall witness the transfer of the nameplate to the new location. Any relocation shall be described on the applicable NBIC "R" Form. The restamping or replacement of a code symbol stamp shall be performed only as permitted by the governing code of construction.~~

### **S6.18.3 REPLACEMENT OF STAMPING OR NAMEPLATE**

~~Replacement of indistinct stamping or lost, illegible, or detached nameplates shall comply with the requirements provided in NBIC Part 2, 5.2.~~

### **S6.196 FORM "R" REPORTS "R" FORMS**

#### **S6.196.1 DOCUMENTATION OF FORM "R" REPORTS**

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

#### **S6.196.2 PREPARATION OF FORM "R" FORMSREPORTS**

Preparation of "R" Forms shall be the responsibility of the "R" Certificate Holder performing the repairs, alterations, or modifications and shall comply with the requirements provided in NBIC Part 3, 5.2.1, 5.2.2 and 5.2.4. An Inspector shall indicate acceptance by signing the appropriate "R" form.

#### **S6.1946.3 DISTRIBUTION OF FORM "R" REPORTS**

Distribution of Form "R" Reports shall comply with the requirements provided in NBIC Part 3, 5.3 and 5.4



- a) ~~Legible copies of the completed "R" forms together with attachments shall be distributed to the owner or user, the Inspector, the Competent Authority as required, the Authorized Inspection Agency responsible for the inspection, and the National Board for registration.~~
- b) ~~Distribution of the "R" forms and attachments shall be the responsibility of the "R" Certificate Holder performing the work.~~

### **S6.1946.4 REGISTRATION OF FORM ~~R-1 AND FORM R-2~~"R" REPORTS**

- a) ~~Organizations~~ Repair organizations performing repairs, alterations, or modifications required by this supplement shall ~~register such repairs, alterations, or modifications with the National Board. submit the completed "R" Form, meeting the requirements of the NBIC, to the National Board.~~
- b) The repair organization shall maintain a sequential Form "R"Registration Log Log that shall identify the following: as described in Part 3, 5.6.
- 1) ~~Form number assigned for Form R-1;~~
  - 2) ~~Identify if the activity was a repair, alteration, or modification;~~
  - 3) ~~When the repair, alteration, or modification was completed, and~~
  - 4) ~~Date sent to the National Board.~~

## **S6.17 ~~ADDITIONAL REQUIREMENTS FOR REPAIRS, ALTERATIONS, OR MODIFICATIONS~~**

### **S6.17.1 ~~SCOPE~~**

~~This section provides additional requirements for repairs, alterations, or modifications to DOT Transport Tank pressure retaining items and shall be used in conjunction with NBIC Part 3.~~

### **S6.17.2 ~~REPAIRS OF DEFECTS~~**

~~Before a repair is made to a defect in a welded joint or base metal, care should be taken to investigate its cause and to determine its extent and likelihood of recurrence. This information shall be made available to the Inspector.~~

### **S6.17.3 ~~MODIFICATIONS~~**

~~All modifications to the pressure retaining item shall meet the requirements of NBIC Part 3 for alterations.~~

### **S6.17.4 ~~DRAWINGS~~**

~~Drawings or instructions shall be prepared to describe the repair, alterations, or modification. Drawings shall include sufficient information to satisfactorily perform the activity.~~

### **S6.17.5 ~~AUTHORIZATION~~**

~~Repairs, alterations, or modifications to a pressure retaining item shall not be initiated without the authorization of the Inspector, who shall determine that the methods are acceptable.~~

**S6.18 — EXAMINATION AND TEST**

The following requirements shall apply to all repairs, alterations, or modifications to DOT Transport Tank pressure-retaining items:

- a) The integrity of repairs and replacement parts used in repairs, alterations, or modifications shall be verified by examination and test;
- b) The "R" Certificate Holder is responsible for all activities relating to examination and test of repair, alterations, or modifications;
- c) Examination and tests to be used shall be subject to acceptance of the Inspector and the Competent Authority when required.

**S6.18.1 — METHODS**

One, or a combination of the following examination methods, shall be applied to DOT Transport Tank pressure-retaining items with the concurrence of the Inspector and the Competent Authority when required.

## a) Liquid Pressure Test

Pressure testing of repairs shall meet the following requirements:

- 1) Pressure tests shall be conducted using water or other suitable liquid. The test pressure shall be the minimum required to verify the leak tightness integrity of the repair, but not more than 150% of the maximum allowable working pressure (MAWP) stamped on the pressure-retaining item, as adjusted for temperature. When original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance;
- 2) During a pressure test where the test pressure will exceed 90% of the set pressure of the pressure relief device, the device shall be removed whenever possible. If not possible, a test gag should be used using the valve manufacturer's instructions and recommendations; and
- 3) Hold time for the pressure test shall be a minimum of 10 minutes prior to examination by the Inspector. Where the test pressure exceeds the MAWP of the item, the test pressure shall be reduced to the MAWP for close examination by the Inspector. Hold time for close examination shall be as necessary for the Inspector to conduct the examination.

## b) Pneumatic Test

A pneumatic test may be conducted. Concurrence of the owner shall be obtained in addition to that of the Inspector and the Competent Authority where required. The test pressure shall be the minimum required to verify leak tightness integrity of the repair, but shall not exceed the maximum pneumatic test pressure of the original code of construction. Precautionary requirements of the original code of construction shall be followed.

## c) Nondestructive Examination

Nondestructive examination (NDE) may be conducted. NDE methods shall be suitable for providing meaningful results to verify the integrity of the repair.

**S6.19 — REPAIRS, ALTERATIONS, OR MODIFICATION REPORTS**

- a) When repairs, alterations, or modifications are performed on a transport tank, i.e., cargo tank, portable tank, or ton tank, the owner or User shall have the activity performed by a Repair Organization that has a valid "R" *Certificate of Authorization* issued by the National Board. "R" forms shall be completed and certified by the "R" Certificate Holder and received and certified by the Inspector.
- b) For the purposes of documentation and stamping, modification shall be considered an alteration.



**THE NATIONAL BOARD  
OF BOILER AND PRESSURE VESSEL INSPECTORS**

## PROPOSED REVISION OR ADDITION

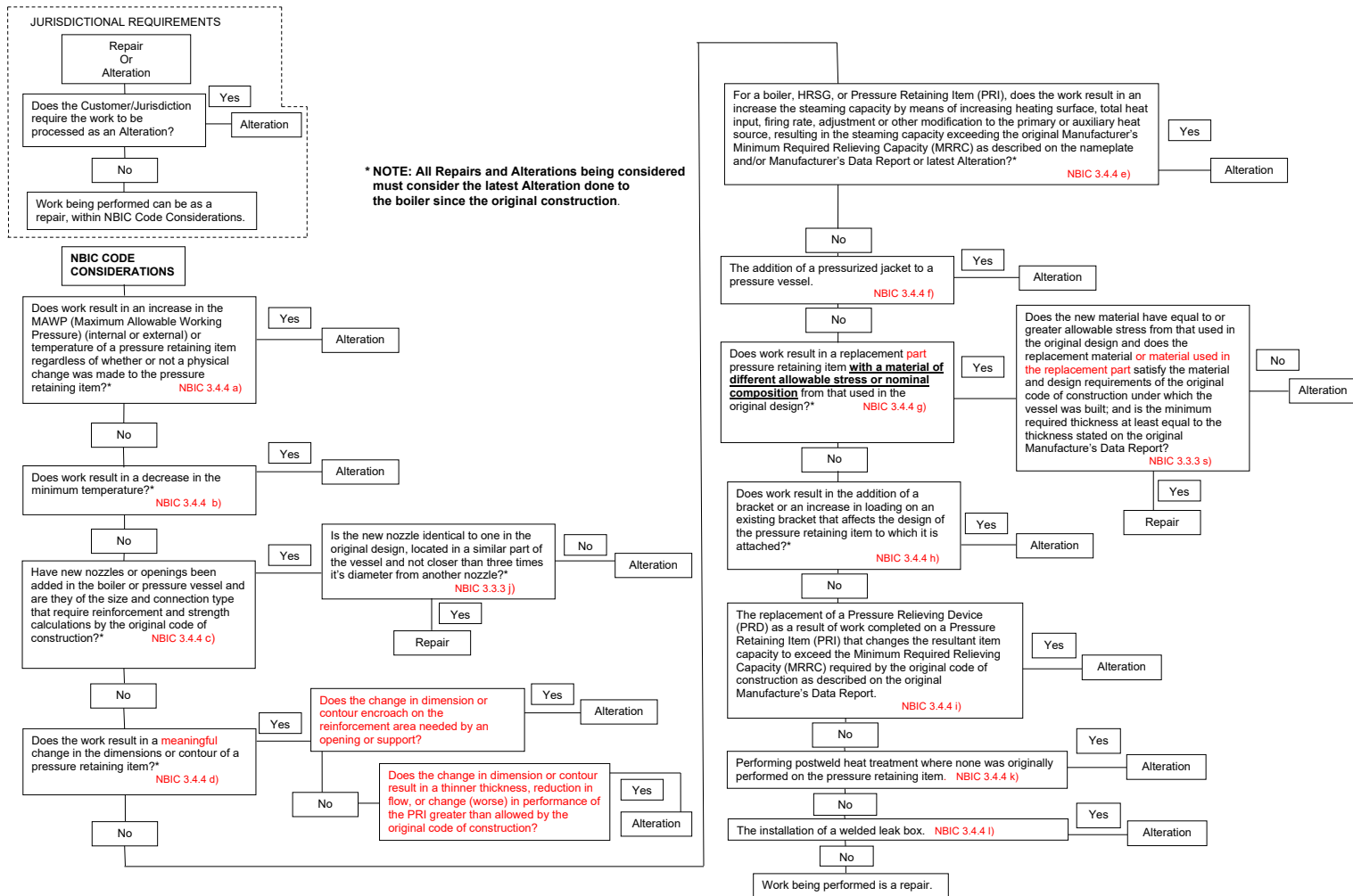
<b>Item No.</b> A 21-12	
<b>Subject/Title</b> Revision to modify Term 'Alteration' and to add Guidance on classifying a Repair vs Alteration	
<b>NBIC Location</b> Part: Repairs and Alterations; Section: Section 3	
<b>Project Manager and Task Group</b> P. Becker (PM), K. Moore, B. Underwood, P. Shanks, S. Chestnut, T. Seime	
<b>Source (Name/Email)</b> Pat Becker, pabecker@babcock.com	
<b>Statement of Need</b> <p>Interpretations continue to be received based on confusion in current guidance given in Section 3, Part 3 of Repairs and Alterations. Of particular issue is the heavily relied upon 'List of Examples' of Repairs and Alterations. The lists are considered a 'shortcut' to understanding which activities should be classified as repairs and which should be alterations. However, the examples are not intended to be used without the understanding of the rest of the subject matter in Part 3, Section 3...nor are they all-inclusive or exclusive.</p> <p>Experience levels can vary widely among all 'stakeholder' categories, i.e. Owner/User, Authorized Inspector, Certificate Holder, In-Service inspector, Jurisdictional Authority etc.</p> <p><i>From the Forward: The general philosophy underlying the NBIC is to parallel those provisions of the original code of construction, as they can be applied to post-construction activities. The NBIC does not contain rules to cover all details of post-construction activities. Where complete details are not given, it is intended that individuals or organizations, subject to the acceptance of the Inspector and Jurisdiction when applicable, provide details for post-construction activities that will be as safe as otherwise provided by the rules in the original code of construction.</i></p> <p>The Intent of any effort is to improve the user experience while being cognizant not to overly restrict. The task group is paying attention to industry concerns and suggestions including the potential impact of any changes to existing equipment and installations. Existing Interpretations are being 'walked thru' the decision tree and otherwise reviewed against the addition of any content. The goal is to provide clearer guidance with less conflicting or overlapping examples or information.</p>	
<b>Background Information</b> Update of Part 3 Section 3 to improve User experience and clarify definition of 'Alteration'. Updated 'problematic' example lists to eliminate 'conflicting examples'.	
<b>Existing Text</b>	<b>Proposed Text</b>
<p style="text-align: center;"><b>PART 3, SECTION 3 REPAIRS AND ALTERATIONS — REQUIREMENTS FOR REPAIRS AND ALTERATIONS</b></p> <p><b>3.1 SCOPE</b></p> <p>This section provides requirements and guidelines for materials, replacement parts, and methods used when performing repairs and alterations to pressure-retaining items. Specific repair or alteration methods for other types of pressure equipment are in NBIC Part 3, Section 6.</p> <p><b>3.2 GENERAL REQUIREMENTS FOR REPAIRS AND ALTERATIONS</b></p> <p><b>(21) 3.2.1 MATERIAL REQUIREMENTS FOR REPAIRS AND ALTERATIONS</b></p>	<p style="text-align: center;"><b>PART 3, SECTION 3 REPAIRS AND ALTERATIONS — REQUIREMENTS FOR REPAIRS AND ALTERATIONS</b></p> <p><b><u>3.0 INTRODUCTION</u></b></p> <p><u>This Section provides information on the requirements for repairs and alterations to pressure retaining items. Information on how to classify, perform, verify, and document acceptable repair and alteration activities may be found throughout Part 3 Sections and Supplements (Refer to the Table of Contents for detail on the location of relevant information). It is the intent that this Section be used in cooperation with local jurisdictional authorities and with an understanding of the applicable pressure vessel code regulations relevant to the scope of repair or alteration activity. Note that the guidance herein and the examples given are not all inclusive and are intended to be representative of cases and activities commonly considered either a repair or alteration.</u></p> <p><b>3.1 SCOPE</b></p> <p>This section provides requirements and guidelines for materials and methods used when performing repairs and alterations to pressure-retaining items. Specific repair or alteration methods for other types of pressure equipment are in NBIC Part 3, Section 6.</p>



**SUPPLEMENT X  
CLASSIFYING REPAIRS AND ALTERATIONS**

**SX.1 SCOPE**

**FIGURE SX.1  
DECISION TREE (LOGIC DIAGRAM) FOR DETERMINING REPAIR OR ALTERATION ACTIVITY CLASSIFICATION**





THE NATIONAL BOARD  
OF BOILER AND PRESSURE VESSEL INSPECTORS

PROPOSED REVISION OR ADDITION

<b>Item No.</b>	
21-82	
<b>Subject/Title</b>	
Examples of Repairs	
<b>NBIC Location</b>	
Part: Repairs and Alterations; Section: 3; Paragraphs: 3.3.3 (r) / (s)	
<b>Project Manager and Task Group</b>	
PM – Paul M. Davis - TG Robert Underwood, Philip Miller	
<b>Source (Name/email)</b>	
Paul Davis; paul.davis22@woodplc.com	
<b>Statement of Need</b>	
Adding "weld repair" to 3.3. r) and adding new sentence (new 3.3.3 s) would address the use of similar or different weld consumables for welded repairs.	
<b>Background Information</b>	
We have had some recent questions from repair firms about using different weld metal when performing repairs of pressure retaining items. The NBIC <b>does not directly address use of weld metal</b> that has a different composition than the original material. Paragraph 3.3.3(r) addresses "repair or replacement of pressure parts" which, if modified to read "weld repair". would cover the weld metal of similar composition and strength equivalent to that used in the original design. This proposal then adds a new sentence that addresses the use of a weld metal of a different composition and equal to or greater in strength. Also, references in the Code to original 3.3.3 s) will need to be updated to 3.3.3 t),	
<b>Existing Text – 3.3.3</b>	<b>Proposed Text – 3.3.3</b>
<p>r) The repair or replacement of a pressure part with a code-accepted material that has a nominal composition and strength that is equivalent to the original material and is suitable for the intended service.</p> <p>s) Replacement of a pressure-retaining part with a material of different nominal composition and, equal to or greater in allowable stress from that used in the original design, provided the replacement material satisfies the material and design requirements of the original code of construction under which the vessel was built. The minimum required thickness shall be at least equal to the thickness stated on the original Manufacturer's Data Report;</p>	<p>r) The repair or replacement of a pressure part with a code-accepted material that has a nominal composition and strength that is equivalent to the original material and is suitable for the intended service.</p> <p>s) <b><u>The repair of a pressure part with a filler metal of a different nominal composition equal to or greater in strength from that used on the original material and is suitable for the intended service.</u></b></p> <p>t) Replacement of a pressure-retaining part with a material of different nominal composition and, equal to or greater in allowable stress from that used in the original design, provided the replacement material satisfies the material and design requirements of the original code of construction under which the vessel was built. The minimum required thickness shall be at least equal to the thickness stated on the original Manufacturer's Data Report;</p> <p>u) The replacement of a pressure relieving device (PRD) attached by welding, provided the replacement device's relieving capacity is equal to or greater than the PRD capacity required by the original code of construction;</p> <p>v) Repairs to plate heat exchangers (PHE) are</p>

	<p>limited to the following:</p> <ol style="list-style-type: none"> <li>1) Welding on any pressure part, i.e. not limited to a flange, nozzle, or endplate;</li> <li>2) In kind replacement of endplates, or welded nozzles;</li> <li>3) Replacement of any failed connection or frame bolting, representing the replacement parts described in Part 3, 3.2.2-a), with no change of material or grade as described on the Manufacturer's Data Report (MDR) or Original Equipment Manufacturer's (OEM) drawing;</li> <li>4) The addition or repair of load bearing attachments (e.g., welded supports or lifting lugs) to the endplates; and</li> <li>5) Replacement of parts bearing certification or manufacturer's stamping with no-change in material allowed as described on the MDR or verifiable OEM drawing.</li> </ol> <p><b>Editor Notes:</b>  <b>1. Make the following reference changes:</b>              <b>A. 3.3.3 g) – change 3.3.3 s) to 3.3.3 t)</b>              <b>B. 3.3.3 j) 2) – change 3.3.3 s) to 3.3.3 t)</b></p>

VOTE							
Committee	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

## Item 22-12: Lost or Destroyed UDS (Part 3, 3.3.5.2 & 3.4.5.1)

**Explanation of Need:** To provide the ability to repair/alter these vessels with a reconstructed UDS.

**Background Information:** This addition is based on the comments received at the task group level for Interpretation 21-60.

### Proposed Changes:

#### 3.3.5.2 REPAIR PLAN

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

##### a) Engineer Review and Certification

The repair plan shall be reviewed and certified by an engineer meeting the criteria of ASME Section VIII, Division 2 or 3, as applicable, for an engineer signing and certifying a Manufacturer's Design Report. The review and certification shall be such as to ensure the work involved in the repair is compatible with the User's Design Specification and the Manufacturer's Design Report. The certifying requirement may be waived for ASME Section VIII, Division 2, Class 1 vessels that did not require the Manufacturer's Design Report to be certified during initial construction.

If the User's Design Specification (UDS) is lost or destroyed, the ASME nameplate, and the applicable ASME Section VIII, Division 2 and 3 forms Manufacturer's Data Reports, and Partial Data Reports, and/or the Manufacturer's Design Report shall be used to reconstruct the User's Design Specification such as Form A-1 Manufacture's Data Report, Form A-2 Manufacturer's Partial Data Report for Section VIII, Division 2 vessels or Manufacturer's Data Reports for Section VIII, Division 3. The reconstructed UDS shall meet the requirements and be certified in accordance with the latest edition of ASME Section VIII, Division 2 or Division 3.

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

##### 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.

#### 3.4.5.1 ALTERATION PLAN

##### a) Engineer Review and Certification



The alteration plan shall be reviewed and certified by an engineer meeting the criteria of ASME Section VIII, Division 2 or 3, as applicable, for an engineer signing and certifying a Manufacturer's Design Report. The review and certification shall be such as to ensure the work involved in the alteration is compatible with the User's Design Specification and the Manufacturer's Design Report.

Provided that the alteration does not introduce a condition that would require an engineer to sign the

Manufacturer's Design Report for ASME Section VIII, Division 2, Class 1 vessels, the certifying requirement may be waived for vessels that did not require the Manufacturer's Design Report to be certified during initial construction.

If the User's Design Specification (UDS) is lost or destroyed, the ASME nameplate, and the applicable ASME Section VIII, Division 2 and 3 forms Manufacturer's Data Report, Partial Data Reports, and/or the Manufacturer's Design Report shall be used to reconstruct the User's Design Specification such as Form A-1 Manufacture's Data Report, Form A-2 Manufacturer's Partial Data Report for Section VIII, Division 2 vessels or Manufacturer's Data Reports for Section VIII, Division 3. The reconstructed UDS shall meet the requirements and be certified in accordance with the latest edition of ASME Section VIII, Division 2 or Division 3.

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

1.3.2

b) Before signing the appropriate NBIC Report Form, the Inspector shall review the drawings, ensure the repair or alteration was performed in accordance with the accepted code of construction or standard, witness any pressure test or any acceptable alternative test method applied, ensure that the required nondestructive examinations have been performed satisfactorily, verify the stamping or nameplate is correct and has been properly attached, and that the other functions necessary to ensure compliance with the requirements of this code have been satisfactorily performed.

~~e) The Inspector shall verify the stamping or nameplate is correct and where applicable, the nameplate has been properly attached.~~

## 5.2 DOCUMENTATION

- a) Repairs that have been performed in accordance with the NBIC shall be documented on a Form R-1, *Report of Repair*, as shown in Supplement S9.2. A Form R-4, *Report Supplement Sheet*, as shown in Supplement S9.5, shall be used as needed to record additional data when the space provided on Form R-1 is not sufficient.
- b) Alterations performed in accordance with the NBIC shall be documented on a Form R-2, *Report of Alteration*, as shown in Supplement S9.3. A Form R-4, *Report Supplement Sheet*, as shown in Supplement S9.5, shall be used as needed to record additional data when the space provided on Form R-2 is not sufficient.
- c) Form R reports shall not be certified until all applicable requirements of the NBIC, including the stamping requirements of 5.7, have been met.
- d) The organization performing repairs and alterations shall retain a copy of the completed Form "R" Report on file and all records and documentation substantiating the summary of work as described throughout Section 5, and as identified in the "R" Certificate Holder's Quality System Manual.

### 3.3.4.8 REPAIR OF PRESSURE-RETAINING ITEMS WITHOUT COMPLETE REMOVAL OF DEFECTS

- a) There may be cases where removal of a defect in a pressure-retaining item is not practical at the time the defect is found. In such cases, with approval of the Inspector and, when required, the Jurisdiction, 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. The engineering evaluation shall be performed by an organization with demonstrated competency in defect (and flaw) characterization of pressure-retaining items. The method of defect evaluation and time interval for returning the pressure-retaining item back to service shall be as agreed upon by the Inspector, and when required, the Jurisdiction. The specified period of time the defect can remain in service after weld repair shall be based on no ~~measurable~~measurable defect growth during subsequent inspections, or a period of time as specified by the Jurisdiction, if applicable. This repair method is not permitted for vessels used in lethal service, vessels designed for high-cycle operation or fatigue service, compressed air storage, and in cases where high stress concentration cannot be reduced by weld repair. This repair method is not permitted for DOT vessels.
- b) One or more fitness-for-service engineering evaluation methods as described in NBIC Part 2, 4.4 shall be used to determine whether the defect may remain, either in part or in whole, in the pressure-retaining item. If it is determined that the defect can remain in the item, a risk-based inspection program shall be developed as described in NBIC Part 2, 4.5 to assure inspection of the defect and monitoring of defect growth over time. This program shall be a controlled and documented inspection program that specifies inspection intervals as agreed upon with the Inspector and, when required, the Jurisdiction, and shall be maintained until the defect can be completely removed and the item repaired.
- c) The following requirements shall apply to the weld repair of pressure-retaining items without complete removal of defects:
- 1) Engineering evaluation of the defect in the pressure-retaining item shall be conducted using one or more fitness-for-service condition assessment method(s) as described in NBIC Part 2, 4.4. Engineering evaluation of the condition assessment results shall be performed by an organization that has demonstrated industry experience in evaluating pressure-retaining items, if the fitness-for-service engineering evaluation requires finite element analysis (FEA), the requirements in NBIC Part 2, 4.6 and NBIC Part 2, Supplement 11 shall be met.
  - 2) If engineering evaluation indicates a defect can remain in the pressure-retaining item, a risk-based inspection program shall be developed and implemented based on review and acceptance by the Inspector and, when required, the Jurisdiction. The risk-based inspection program shall be in accordance with the requirements in NBIC, Part 2 4.4.
  - 3) The fitness-for-service condition assessment and risk-based inspection programs shall remain in effect for the pressure-retaining item until such time that the defect can be completely removed and the item repaired. The fitness-for-service condition assessment method, results of assessment, and method of weld repair, if applicable, shall be documented on a Report of Fitness for Service Assessment (FFSA) Form as described in NBIC Part 2, 4.4.1 and shall be filed with the Jurisdiction, when required.
  - 4) When weld repairs are performed without complete removal of the defect(s), this shall be noted on the Form R-1 in the description of the work. The "R" Stamp Holder performing the weld repairs shall provide detailed information on the Form R-1, describing the method, extent, and include the specific location of the weld repair on the item.
    - 5)j. The interval to re-inspect or remove the item from service or perform weld repair shall be determined based on a risk-based inspection program developed and implemented as required by NBIC Part 2, 4.5. The inspection interval shall not

exceed the remaining life of the item, and shall be documented on the Form NB-403 and in the Remarks section of the Form R-1. The Form NB-403 shall be affixed to the Form R-1. A National Board Commissioned Inspector holding an "R" endorsement as described in NB-263, RCI-1 shall sign both the Form R-1 and the attached Form NB-403.

6)ii. A copy of the completed Form R-1 with the completed Form NB-403 attached may be registered with the National Board, and when required, filed with the Jurisdiction where the item was installed.