Date Distributed:

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD INSPECTION CODE COMMITTEE

MAIN SESSION AGENDA

Meeting of January 16, 2025
Charleston, SC

The National Board of Boiler & Pressure Vessel Inspectors
1055 Crupper Avenue
Columbus, Ohio 43229-1183
Phone: (614)888-8320
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1. **Call to Order**
   The Chair will call the meeting to order at 9:00 a.m. Eastern Time.

2. **Introduction of Members and Visitors**

3. **Check for a Quorum**

4. **Awards/Special Recognition**
   - George Galanes – 25 years on Main Committee
   - Venus Newton – 10 years on Main Committee
   - Brian Morelock – 10 years on Main Committee
   - Marty Toth – 5 years on Main Committee

5. **Announcements**
   - This meeting marks the end of Cycle A for the 2027 NBIC edition.
   - The National Board will be hosting lunch on Thursday for those attending the Main Committee meeting. Lunch will be served from 11:30 a.m. to 12:30 p.m. in Sterling Hall Foyer.
   - As a reminder, anyone who would like to become a member of a group or committee:
     - Should attend at least two meetings prior to being put on the agenda for membership consideration. The nominee will be on the agenda for voting during their third meeting.
     - The nominee must submit the formal request along with their resume to the NBIC Secretary **PRIOR TO** the meeting. *nbicsecretary@nbbi.org*
     - If needed, we can also create a ballot for voting on a new member between meetings.
   - Thank you to everyone who registered online for this meeting. The online registration is very helpful for planning our reception, meals, room setup, etc. It is also a good way to make sure we have the most up-to-date contact information. Please continue to use the online registration for each meeting.

6. **Adoption of the Agenda**
   Updates to Subcommittee R&A's report:
   - Add Item 24-82 to the list of TG Locomotive items.

7. **Approval of the Minutes of the July 2024 Meeting**
   The minutes are available for review online at https://www.nationalboard.org/Index.aspx?pageID=13&ID=18.

8. **Items Approved for the 2027 NBIC**
   There are currently two items that have been approved for the 2027 NBIC Edition so far:
   - Item NB15-0307 – Create guidelines for repair of pin devices (Part 4 item)
   - Item 22-32 – High pressure limit control requirements for fired jacketed steam kettles (Part 1 item)

9. Report of Subcommittees

a. Subcommittee Pressure Relief Devices

i. Interpretations

Item Number: 24-38	NBIC Location: Part 4, 2.5.4.2 & Part 1, 3.9.1.6 c)	Attachment Page 1

General Description: T&P relief device installation on modular HWH supply header

Task Group: None assigned.

Explanation of Need: The NBIC does not address the installation or location of a common T&P valve for modular HWH's. Clarification is needed on whether the common supply header can be considered part of the HWH, and whether T&P valves can be installed in the horizontal position with the outlet pointed down, if installed directly to the header with no more than 4 in. maximum interconnecting piping.

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

Item Number: 24-46	NBIC Location: Part 4, 4.3.1 a)	Attachment Page 2

General Description: Replacement of Bodies and Transfer of Nameplates During Repair

Task Group: None assigned.

Explanation of Need: Clarity on what defines "the valve". Is "the valve" the nameplate solely or the nameplate and serialized base; and subsequent ability to divorce the nameplate and base during repair when the base requires replacement.

July 2024 Meeting Action: Mr. Renaldo presented the proposal for this item. A motion was made and seconded to approve the proposal. A question was asked about concurrence from the original manufacturer to perform this nameplate transfer. Further discussion on this topic led to the decision to rescind the motion and wait for an action item to accompany this interpretation.

New Interpretation Requests:

Item Number: 24-87	NBIC Location: Part 4, 4.7.3 a) and b)	Attachment Page 3

General Description: Changes to the original pressure relief device nameplate.

Task Group: None assigned.

Explanation of Need: Clarification is needed on the correct way to communicate changes to a relief device through nameplate stamping.

January 2025 Meeting Action:

ii. Action Items – Old Business

Item Number: NB15-0305	NBIC Location: Part 4	No Attachment
General Description: Create Guidelines to address Overpressure Protection by System Design. **Task Group:** B. Nutter, A. Renaldo, D. Marek (PM), D. DeMichael, J. Wolf, D. Schirmer **July 2024 Meeting Action:** Mr. Renaldo gave a progress report for this item.		

Item Number: NB15-0315	NBIC Location: Part 4, 2.5.6 and 2.6.6 and Part 1, 4.5.6 and 5.3.6	No Attachment
General Description: Review isolation Valve Requirements, and reword to allow installation of pressure relief devices in upstream piping. **Task Group:** D. DeMichael (PM), B. Nutter, A. Renaldo, D. Marek **July 2024 Meeting Action:** Mr. Renaldo gave a progress report for this item.		

Item Number: 19-83	NBIC Location: Part 4, 4.7.5	No Attachment
General Description: Address Alternate Pressure Relief Valve Mounting Permitted by ASME CC2887-1 **Task Group:** D. Marek (PM), T. Patel, J. Ball **Explanation of Need:** ASME Code Case 2887-1 permits the installation of pressure relief valves below a low mass water tube boiler or water heater under certain conditions. This set of conditions and alternate location should be addressed in the NBIC as the use of low mass water tube boilers and water heaters becomes more widespread. **July 2024 Meeting Action:** Mr. Renaldo gave a progress report for this item.		

Item Number: 21-08	NBIC Location: Part 4, S4.4	No Attachment
General Description: Additional guidance for tank vent repairs **Subgroup:** PRD **Task Group:** D. DeMichael (PM), B. Donalson, B. Nutter, K. Beise, J. Grace **Explanation of Need:** The recently approved S4.4, "Weight Loaded Vents," provided new guidance for tank vent repairs. Several additional topics need to be addressed to enhance the guidance. These topics include: 1) Suggested test equipment and configuration for the prescribed tank vent testing. 2) Minimum requirements for replacement parts, 3) Guidance for painting tank vent components. **July 2024 Meeting Action:** Mr. Renaldo gave a progress report for this item.		

Item Number: 22-09	NBIC Location: Part 4, 4.6.1	No Attachment

General Description: Add language to NBIC Part for valves manufactured to Code Case 2787

Subgroup: PRD

Task Group: A. Donaldson (PM), H. Cornett, B. Nutter, T. Tarbay, J. Simms

Explanation of Need: There are no requirements to address valve repairs that were manufactured or assembled to Code Case 2787 (use of more than one certified capacity on the pressure relief valve or the nameplate).

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

Item Number: 22-20	NBIC Location: Part 4, 4.7.4	No Attachment

General Description: Inspection and testing of PRV's located above isolation valves.

Subgroup: PRD

Task Group: D. Marek (PM), K. Beise, J. Ball, E. Creaser, H. Cornett, A. Renaldo

Explanation of Need: Add requirement to make sure the internals of a PRV inlet and outlet are inspected when it is tested, and require tests to be done with a pressure vessel with volume.

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

Item Number: 23-32	NBIC Location: Part 4, 3.3 and Supp. 6	No Attachment

General Description: Rules for T/O activities related to Nuclear Class Valves

Subgroup: PRD

Task Group: E. Creaser (PM), P. Dhobi, D. McHugh, J. Simms

Explanation of Need: Nuclear facilities that perform repair and T/O activities would by allowing them to use T/O for nuclear class valves that were serviced but not in need of repair but need to be set and sealed again.

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

Item Number: 24-35	NBIC Location: Part 4, 4.6.2	Attachment Page 4

General Description: Update Testing of UV-Designated Steam valves on Air to match ASME XIII

Subgroup: PRD

Task Group: T. Beirne (PM)

Explanation of Need: ASME Section XIII Table 3.6.3.1-1 Note 3 permits UV-designated steam valves to be tested using air when the valve is beyond the testing capabilities due to set pressure or capacity. The NBIC only permits steam valves to be tested on air by the owner/user. This should be permitted by any VR shop that has steam test equipment since it is permitted under the rules for new construction.

July 2024 Meeting Action: Mr. Renaldo gave a progress report for this item.

iii. New Items:

Item Number: 24-72	NBIC Location: Part 4, 4.3.1	No Attachment

General Description: Add Language to Address Replacement of Valve Bodies and Bases

Subgroup: PRD

Task Group: None assigned.

Explanation of Need: Under the current text of 4.3.1 there are no guidelines for the replacement of valve components to which the original nameplate is attached.

January 2025 Meeting Action:

Item Number: 24-91	NBIC Location: Part 4, 3.2.3	Attachment Page 5

General Description: Require means to prevent safety valve discharge piping blockage for LCDSV (Part 4)

Subgroup: PRD

Task Group: None assigned.

Explanation of Need: Adding verbiage to the NBIC Part 1, Part 2 and Part 4 to require a means to prevent foreign material introduction to the safety valve discharge pipe.

January 2025 Meeting Action:

Item Number: 24-101	NBIC Location: Part 4, Sections 3 and 4	Attachment Page 6

General Description: Revise NBIC to expand VR and T/O programs beyond ASME Certified Valves

Subgroup: PRD

Task Group: None assigned.

Explanation of Need: The National Board upper management and Board of Trustees have decided to expand the VR and T/O programs to valves that are constructed to standards other than ASME. The proposal file contains changes that would accomplish this goal. Changes to NB-514 and NB-528 will follow.

January 2025 Meeting Action:

Item Number: 24-103	NBIC Location: Part 4, S4.3 f) and S7.2 a) 2)	Attachment Page 25

General Description: Sealing and Tagging of Pilot operated relief valve under VR Program

Subgroup: PRD

Task Group: None assigned.

Explanation of Need: The need for the above change is to have a way to ensure that both the pilot and main valve have been repaired to the requirements of NBIC during the same repair. Currently it is difficult to identify if both components have been repaired during the same repair. This makes it challenging under the T/O program to verify this required information. Additionally, under the current code there is the possibility for a non-accredited repair organization to change the pilot with a set and tested pilot which would have seals and repair the main without disturbing the seals. The previous VR tag would be intact as well as the seals upon completion.

January 2025 Meeting Action:

b. Subcommittee Installation

i. Interpretations

There are no interpretation items open for Part 1.

ii. Action Items – Old Business

Item Number: 20-86	NBIC Location: Part 1, 2.10.1 a)	No Attachment

General Description: Testing and Acceptance: Boiling-out Procedure

Subgroup: SG Installation

Task Group: E. Wiggins (PM), D. Patten, S. Konopacki, and R. Spiker.

July 2024 Meeting Action: Mr. Konopacki provided a progress report for this item.

Item Number: 22-28	NBIC Location: Part 1	No Attachment

General Description: Pool Heater definition and requirements

Subgroup: SG Installation

Task Group: J. Kleiss (PM), R. Spiker, T. Creacy, and M. Byrum

Explanation of Need: The NBIC Installation and Inspection Codes do not have a definition for pool heaters. There is potential for confusion regarding which NBIC requirements, if any, should apply to pool heaters.

July 2024 Meeting Action: Mr. Konopacki provided a progress report for this item.

Item Number: 23-52	NBIC Location: Part 1, 2.5.3.2 and 3.5.3	Attachment Page 26

General Description: Harmonize electrical requirements for all types of boilers/water heaters

Subgroup: SG Installation

Task Group: T. Clark (PM), S. Konopacki, J. Kleiss, R. Spiker, and John Choitz

Explanation of Need: Electrical requirements for power boilers, heating boilers, and water heaters are inconsistent, particularly regarding remote emergency shutdown switches. In some cases the requirements are the same, but worded or ordered differently. In order to promote better understanding of code requirements and consistency in their application, I propose making sections 2.5.3 and 3.5.5 as uniform as possible.

July 2024 Meeting Action: Mr. Konopacki shared that work is still being done on this item.

Item Number: 24-05	NBIC Location: Part 1, New Supplement	No Attachment

General Description: Add heat pump water heater & heat pump hydronic heater requirements

Subgroup: SG Installation

Task Group: J. Kleiss (PM), B. Ahee

Explanation of Need: Heat pump water heating and hydronic heating are growing in prevalence. Guidance for installation and inspection of these products is needed.

July 2024 Meeting Action: Mr. Konopacki provided a progress report for the item.

Item Number: 24-26	NBIC Location: Part 1, 3.7.8	No Attachment

General Description: NBIC Requirements for ASME Modular Water Heaters

Subgroup: SG Installation

Task Group: R. Spiker (PM), M. Byrum, J. Kleiss

Explanation of Need: ASME Section IV added requirements in the 2023 Edition for modular water heaters. The NBIC currently includes requirements for modular steam heating and hot-water heating boilers, but not for modular water heaters.

July 2024 Meeting Action: Mr. Konopacki provided a progress report for the item.

Item Number: 24-56	NBIC Location: Part 1, S3.6.1	Attachment Page 29
General Description: LCDSV Systems: Add Table and Figure **Subgroup:** SG Installation **Task Group:** M. Byrum (PM), R. Black **Explanation of Need:** In accordance with the NBIC Policy For Metrication, metric units need to be shown alongside US customary units. Table S3.6.1 and Figure S3.6.1-b both show only US customary units. I recommend adding a Table S3.6.1M and Figure S3.6.1-bM to show metric units. I've also included some additional editorial recommendations.		
July 2024 Meeting Action: Mr. Konopacki presented the proposal for this item. A motion was made and seconded to approve the proposal. Some discussion was held, and the Committee decided to hold this item back until a similar Part 2 section can be amended.		

iii. Action Items – New Business

Item Number: 24-89	NBIC Location: Part 1, S3.6 d)	Attachment Page 32
General Description: Require means to prevent safety valve discharge piping blockage for LCDSV (Part 1) **Subgroup:** SG Installation **Task Group:** None assigned. **Explanation of Need:** Adding verbiage to the NBIC Part 1, Part 2 and Part 4 to require a means to prevent foreign material introduction to the safety valve discharge pipe.		
January 2025 Meeting Action:		

Item Number: 24-97	NBIC Location: Part 1, 2.7.5	Attachment Page 33
General Description: Anchoring of Threaded Blowdown Piping **Subgroup:** SG Installation **Task Group:** None assigned. **Explanation of Need:** An operator opened a blowdown valve located between a 90-degree elbow and the floor drain. The pressure released caused the piping to rotate at the elbow striking the operator and pressing him to the ground which resulted in his death. This could have been avoided if the piping was anchored at a point between the elbow and the discharge.		
January 2025 Meeting Action:		

Item Number: 24-102	NBIC Location: Part 1, 1.6.9	Attachment Page 34

General Description: Strengthen requirements for Carbon monoxide monitoring

Subgroup: SG Installation

Task Group: None assigned.

Explanation of Need: Approximately 50 to 75 percent of the Chief Boiler Inspectors have requested some version of the proposed text above to be included in the NBIC Part 1. Since this has not happened, in many jurisdictions the Chief Inspector has had to include requirements for interlocking Carbon Monoxide detectors with boilers to secure the burners when the detector senses CO. The NBIC is a Health and Safety Code and therefore should provide requirements that prevent the many injuries and deaths the Chief Boiler Inspectors across the U.S. have had to investigate.

January 2025 Meeting Action:

c. Subcommittee Inspection

i. Interpretations

There are no open interpretation items for Part 2.

ii. Action Items – Old Business

TG FRP Items:

Item Number: NB16-1402	NBIC Location: Part 2, New Supplement	No Attachment

General Description: Life extension for high pressure FRP vessels above 20 years

Subgroup: FRP
Task Group: M. Gorman (PM)

Background:
In 2016, when this item was first opened, it was assigned as an item for Part 3. Recent discussions with SC R&A and the FRP Task Group have revealed that this item is better suited for Part 2. This item has been approved by the FRP Task Group.

Scope: The goal of this proposal is to provide a method to evaluate whether the service life of high-pressure fiber reinforced plastic pressure vessels can be extended for an additional lifetime.

July 2024 Meeting Action: Mr. Getter announced that the FRP Task Group is close to having a proposal ready for this item.

TG Historical Items:

Item Number: 23-85	NBIC Location: Part 2, S2.14.7	No Attachment
General Description: Review paragraphs to replace with proper verbiage **Subgroup:** SG Historical **Task Group:** M. Wahl (PM), K. Anderson **Explanation of Need:** There is some slang and second person (POV) verbiage throughout these paragraphs. Recommend rewording with proper terminology (such that it could be understood internationally) and changing point of view (e.g., changing "you're pulling water" to "water is being pulled"). Since I don't have the technical knowledge to know what is slang and what isn't, what I have proposed will still need to be reworded.		
July 2024 Meeting Action: Mr. Seime provided a progress report for this item.		

TG Locomotive Items:

Item Number: 24-78	NBIC Location: Part 2, S1.2.4.22	No Attachment
General Description: Minimum Washout Plug Thread Engagement **Subgroup:** Locomotive **Task Group:** B. Zeigler (PM), E. Armpriester, D. Domitrovich **Explanation of Need:** Text should be changed to clarify how minimum thread engagement is quantified.		
January 2025 Meeting Action: Note that this is a new item that was opened at TG Locomotive's July 2024 meeting.		

SG Inspection Items:

Item Number: 21-47	NBIC Location: Part 2, 2.2.4 & 2.2.5	Attachment Page 36
General Description: To provide better guidance as it relates to carbon monoxide **Subgroup:** Inspection **Task Group:** W. Hackworth (PM), J. Smith, D. Buechel, T. Barker, T. Bolden, M. Sansone, H. Henry, J. Castle, J. Morgan, J. Clark **Explanation of Need:** Need to provide more comprehensive items to be reviewed to guide the inspector on carbon monoxide and combustion air. **July 2024 Meeting Action:** Mr. Galanes began this item's presentation with a discussion on letter ballot responses. He felt that the feedback from the task group on the Main Committee ballot for this item did not address comments adequately. Several suggestions were made from Committee members on how some concerns could be addressed. Mr. Getter stated that the proposal will go back to the task group for further work.		

Item Number: 22-26	NBIC Location: Part 2, 2.3.6.8	No Attachment

General Description: Addition of cast acrylic as a pressure vessel material

Subgroup: Inspection
Task Group: J. Calvert (PM), V. Newton, D. Buechel, D. Rose
Submitted by: J. Calvert

Explanation of Need: Provide inspectors with the criteria necessary to competently inspect vessels like acrylic chromatography columns.

July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 23-27	NBIC Location: Part 2, 1.5.1	No Attachment

General Description: Addition of requirement for Inspector to be present for inspections.

Subgroup: Inspection
Task Group: V. Newton (PM), V. Scarcella, T. Bolden, J. Morgan, J. Smith, T. Barker, C. Becker, C. Hartford
Submitted by: D. Kinney

Explanation of Need: While it has always been standard industry practice for inspections to be performed in-person, and there are requirements for remote inspection, currently there is no language in Part 2 or RCI-1 requiring the Inspector to be present at the location of installation while performing an inspection. This requirement is implied, but not stated.

July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 23-81	NBIC Location: Part 2, 4.4.3 b)	No Attachment

General Description: Evaluate Inspector responsibilities relating to 4.4.3 FFS

Subgroup: Inspection
Task Group: M. Horbaczewski (PM), J. Clark, & B. Ray
Submitted by: R. Underwood

Explanation of Need: Currently, 4.4.3-b states the Inspector shall review the condition assessment methodology and ensure the inspection data and documentation are in accordance with Section 4. This proposal would redefine the role and responsibility of the Inspector.

July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 24-03	NBIC Location: Part 2, S6	No Attachment

General Description: Wording Updates for Clarity

Subgroup: Inspection
Task Group: B. Wilson (PM), R. Kennedy, and J. Smith
Submitted by: L. Ponce

Explanation of Need: Part 2 Supplement 6 should be revised to align with Part 3, Suppl 6 and the DOT. A few references are S6.4.2 a), S6.4.2 c), S6.4.4, S6.4.5, S6.4.6, and S6.4.6.1. However, this may not be an all-inclusive list.

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July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 24-37	NBIC Location: Part 2, 2.2.10	Attachment Page 37

General Description: Add language in the event boiler can't be secured at the time of inspection

Subgroup: Inspection
Task Group: None assigned.
Submitted by: V. Scarcella

Explanation of Need: In some circumstances boilers cannot be shut down and a dead man switch is not allowed.

July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 24-42	NBIC Location: Part 2, 2.4.1 and 2.4.4	No Attachment

General Description: Add language to NBIC Part 2 in regards to piping inspections

Subgroup: Inspection
Task Group: None assigned.
Submitted by: V. Scarcella

Explanation of Need: Two fatal incidents resultant from radiator failure prompted an ask for these changes.

July 2024 Meeting Action: Mr. Getter provided a progress report for this item.

Item Number: 24-62	NBIC Location: Part 2, Section 2	No Attachment
General Description: Temporary Boiler Inspection **Subgroup:** Inspection **Task Group:** None assigned. **Submitted by:** V. Scarcella **Explanation of Need:** No guidance for inspectors for temporary boiler inspections.		
July 2024 Meeting Action: Mr. Getter provided a progress report for this item.		

iii. New Items:

Item Number: 24-75	NBIC Location: Part 2, Table 2.5.8	No Attachment
General Description: NBIC Part II Review table 2.5.8, suggest changes to align with NBIC Part 4 **Subgroup:** Inspection **Task Group:** None assigned. **Submitted by:** V. Scarcella **Explanation of Need:** Tim Baker and Tim Bolden raised needed changes to NBIC Part II in table 2.5.8, the table needs review and alignment with the table in Part 4 3.2.6		
January 2025 Meeting Action:		

Item Number: 24-76	NBIC Location: Part 2, S7.9	Attachment Page 41
General Description: Revision to Part 2, S7.9 **Subgroup:** Inspection **Task Group:** None assigned. **Submitted by:** James Roberts **Explanation of Need:** Currently commercially refurbishers can inspect pressure vessels per NBIC S7.8.1 through S7.8.5 and place back into service without any statement this inspection was completed and by who.		
January 2025 Meeting Action:		

Item Number: 24-84	NBIC Location: Part 2, 2.3.6.10 and 2.3.6.11	Attachment Page 42

General Description: Vessels above 10,000 psi reevaluation of remaining life

Subgroup: Inspection
Task Group: None assigned.
Submitted by: Craig Bierl

Explanation of Need: Inspectors need to be able to have a paper trail of the code integrity of these vessels. Changing the original data (in this case, designed cycle life) should ONLY be completed with the involvement of an authorized inspector and MUST be documented on a National Board form in order to be audited by the inservice inspector.

January 2025 Meeting Action:

Item Number: 24-90	NBIC Location: Part 2, S12.7 d)	Attachment Page 44

General Description: Require means to prevent safety valve discharge piping blockage for LCDSV (Part 2)

Subgroup: Inspection
Task Group: None assigned.
Submitted by: Mark Edwards

Explanation of Need: Adding verbiage to the NBIC Part 1, Part 2 and Part 4 to require a means to prevent foreign material introduction to the safety valve discharge pipe.

January 2025 Meeting Action:

Item Number: 24-94	NBIC Location: Part 2, 2.3.6.8	Attachment Page 45

General Description: Part 2, 2.3.6.8 ASME PVHO Forms call out the 2016 Edition.

Subgroup: Inspection
Task Group: None assigned.
Submitted by: Luis Ponce

Explanation of Need: It is counterproductive to limit another standard to a specific Edition because revision will be required whenever a new one is issued.

January 2025 Meeting Action:

Item Number: 24-100	NBIC Location: Part 2, Section 5	Attachment Page 47

General Description: Add field to NB 6 & NB 7 from JRS Team

Subgroup: Inspection
Task Group: None assigned.
Submitted by: V. Scarcella

Explanation of Need: Repeatedly came up in investigations and in discussions that after reviewing an inspection form the reader has no idea if the object was operating.

January 2025 Meeting Action:

Item Number: 24-104	NBIC Location: Part 2, 2.1	Attachment Page 48

General Description: Add language clarifying the limitation of inspections presented by design.

Subgroup: Inspection
Task Group: None assigned.
Submitted by: V. Scarcella

Explanation of Need: Currently an inspector could be held responsible for conditions they could not reasonably access.

January 2025 Meeting Action:

Item Number: 24-105	NBIC Location: Part 2, 1.5.1	Attachment Page 49

General Description: Need to restrict signatures to inspections for which the inspector was present

Subgroup: Inspection
Task Group: None assigned.
Submitted by: V. Scarcella

Explanation of Need: It has become practice in one jurisdiction for inspectors to sign inspection reports for apprentices.

January 2025 Meeting Action:

d. Subcommittee Repairs & Alterations

i. Old Interpretation Requests:

Item Number: I24-16	**NBIC Location: Part 3, 2.5.3 e)**	**Attachment Page 50**

General Description: Volumetric Examination when using alternative welding methods without PWHT

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), T. McBee

Explanation of Need: The existing language, in its current form, does not make it clear whether volumetric examination is required when using alternative welding methods. The last phrase in the sentence sends the user to paragraph 4.2 which in turn sends the user back to the original code of construction. If a weld greater than 3/8 in. did not require volumetric examination at construction, then what purpose does the last sentence serve? The phrase on the other side of "or" where volumetric examination was required at construction is self-explanatory, but 4.2 permits using alternative NDE methods, suggesting MT or PT. These two methods are currently mandated "shall be" requirements in the first sentence of 2.5.3 e). If the intent is to require volumetric examination for welds greater than 3/8 in., and welds that required volumetric examination at construction, then there should be a firm statement to this effect.

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-19	**NBIC Location: Part 3, 4.2**	**No Attachment**

General Description: NB-23 2023 Part 3, section 4, article 4.2 - Volumetric NDE on weld

Subgroup: Repairs and Alterations

Task Group: L. Dutra (PM), M. Quisenberry

Explanation of Need: The inquirer has a corroded zone of about 3 feet by 6 feet on a shell and head, and the depth does not exceed the corrosion allowance. The corrosion zone included a weld that was 100% RT. Is it ok with just MT NDE or need also Volumetric NDE of all the buildup area include base metal?

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-25	NBIC Location: Part 3, 4.4.1 e) and 4.4.2 c)	Attachment Page 52

General Description: 4.4.1 (e) and 4.4.2 (c) NDE Methods

Subgroup: Repairs and Alterations

Task Group: R. Derby (PM), P. Gilston, J. Ferreira

Explanation of Need: 4.4.1 (e) and 4.4.2 (c) permit the use of NDE to verify the integrity of the repair of alteration. NDE methods other than what is listed in the original code of construction are being used for repair and alterations in some locations throughout the US. For example, Acoustic Emission Testing (AE) in accordance with ASME Section V Article 12 has been used on power boiler (HRSG) repairs. Acoustic Emission Testing is not an NDE method that is addressed in ASME Section I or Section VIII Div.1, but it is an NDE method in the reference code ASME Section V. Some inspectors are questioning this as AE is not an NDE method used in the original code of construction.

July 2024 Meeting Action: Ms. Moore stated that a Review & Comment letter ballot will be sent to the Interpretations Task Group to gather additional feedback.

Item Number: I24-34	NBIC Location: Part 3, 3.4.1	No Attachment

General Description: Rerating using OEM's design data to waive proof testing

Subgroup: Repairs and Alterations

Task Group: K. Moore (PM), B. Hrubala

Explanation of Need: A PV built in 1990 contains heads made of Class 40 cast iron. The heads were proof tested by the OEM and determined to be suitable for 160 psi MAWP. However, the OEM certified the vessel for only 125 psi due to customer requirements. Fast forward to present day, and the vessel owner now wants to Rerate the vessel to a higher pressure. The OEM is no longer in business, but the 'R' Holder is able to obtain a copy of the original proof test report by the OEM. Can it be acceptable for the 'R' Holder to Rerate the head above 125 psi, based on OEM records stating the design is good for higher pressure, without the 'R' Holder having to perform their own separate proof test?

The 'R' Holder would not be using the OEM proof test record for any new manufacturing, only for the purposes of altering an existing vessel or part within the confines of the original design.

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-36 **NBIC Location: Part 3, 3.4** **No Attachment**

General Description: Alteration of Plate Heat Exchanger

Subgroup: Repairs and Alterations

Task Group: T. Seime (PM)

Explanation of Need: This question is asked frequently by Repair firms that want to increase the number of heat transfer plates.

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-40 **NBIC Location: Part 3, 3.3.2 e)** **Attachment Page 54**

General Description: Routine repair vs Alteration

Subgroup: Repairs and Alterations

Task Group: M. Carlson (PM), D. Kinney

Explanation of Need: Some people use rules of thumb outside of the NBIC definition to make decision, these rules of thumb do not align with the written rules and cause project delays and extended outages.

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-44 **NBIC Location: Part 3, 2.5.3** **No Attachment**

General Description: Alternative weld methods and special services

Subgroup: Repairs and Alterations

Task Group: R. Derby (PM), P. Gilston

Explanation of Need: In section VIII Div.1 construction some special service conditions as described in UW-2 make mandatory PWHT when it is not otherwise required for the actual thickness of material and P-number. This subtlety leads some to believe that the use of the Alternative weld methods is either not allowed or that they can only be conducted as an alteration.

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

Item Number: I24-50	NBIC Location: Part 3, 2.2.1 and 2.2.3	No Attachment

General Description: Post Qualification of Welders and WPS/PQR

Subgroup: Repairs and Alterations

Task Group: K. Moore (PM), B. Hrubala

Explanation of Need: There are numerous instances in our organization where welders and WPS/PQR are being qualified after repairs have been done and the equipment were put back into service. The argument they give is that if the results pass then it's acceptable.

July 2024 Meeting Action: Ms. Moore announced that the task group is still working on this item.

ii. New Interpretation Requests:

Item Number: I24-27	NBIC Location: Part 3 (formerly Part 2, 5.2.1)	Attachment Page 55

General Description: Replacement of Repair Nameplate

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need: There is a lack of clarity for replacing an Repair Nameplate that has become lost , illegible, or detached, and the stamping/markings required.

July 2024 Meeting Action: From Subcommittee Inspection's July 2024 meeting → The SG reviewed this Interpretation, and after a lot of discussion they believe this interpretation should be moved to be a Repairs & Alterations item. The information being questioned is not addressed in Part 2. After discussion, the SC agreed with the SG's decision to move this item to R&A.

January 2025 Meeting Action:

Item Number: I24-99	NBIC Location: Part 3, 5.2.2 c)	Attachment Page 56

General Description: Preparation of Form R-2 Construction Scope

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), J. Ferreira

Explanation of Need: Disposition if NDE and pressure testing is considered construction activity and R-2 fields "7-b", Construction Certification, and Certificate for Inspection are required.

January 2025 Meeting Action:

Item Number: I24-107 **NBIC Location: Part 3, 3.3.3 j)** **Attachment Page 57**

General Description: Addition of a nozzle details

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need: As this sort of configuration is compliant with the original Code Of Construction and guidance is supplied by an industry-recognized document on repair of pressure equipment, it isn't clear why it would be prohibited. When properly engineered and correctly installed, this sort of alteration could extend the life of damaged vessels.

January 2025 Meeting Action:

iii. Action Items

TG Graphite Items:

Item Number: A24-67 **NBIC Location: Part 3, S3.3** **Attachment Page 58**

General Description: Requirement for G-mark when replacing~~Graphite plate replacement as Routine repair~~

Subgroup: Graphite

Task Group: A Viet, J. Wince, S. Mehrez

Explanation of Need: Clarifying requirements for use of graphite pressure vessel replacement parts for repairs or alterations.

July 2024 Meeting Action: Mr. Viet stated that the proposal is going back to the Graphite Task Group for additional work.

Item Number: A24-86 **NBIC Location: Part 3, S3.3** **Attachment Page 59**

General Description: Increase routine repair limit for graphite nozzles

Subgroup: Graphite

Task Group: A. Stupica (PM)

Explanation of Need: Nozzles of a 10-inch diameter or less are commonly used and easy to handle. There are no major differences in handling/installing nozzles of this sized compared to a 6-inch nozzle.

January 2025 Meeting Action:

TG FRP Items:
There are currently no FRP items open for Part 3.

TG Historical Items:

Item Number: 20-25	NBIC Location: Part 3, S2.13	No Attachment
General Description: Repair Procedure for Fire Boxes **Subgroup:** SG Historical **Task Group:** M. Wahl (PM), R. Forbes, T. Dillon, L. Moedinger, C. Jowett, F. Johnson **Explanation of Need:** In NBIC Part 3, S2.13.10.3, S2.13.11 do not define what to do at a riveted joint. On the tubesheet, or firedoor sheet, where it is flanged to rivet to the firebox, the repairs are silent on what to do at the riveted joint. **July 2024 Meeting Action:** Mr. Seime stated that work is still being done on this item.		

TG Locomotive Items:

Item Number: A24-82	NBIC Location: Part 3, Part 3, S1.1.4	No Attachment
General Description: Rewrite Part 3, S1.1.4 **Subgroup:** TG Locomotive **Task Group:** L. Moedinger (PM) **Explanation of Need:** ASME Section I, Part PL superseded previous calculations such as the Calculation Compendium referenced in the current wording. **January 2025 Meeting Action:**		

NR Task Group Items:

Item Number: A23-60	NBIC Location: Part 3, 1.6	Attachment Page 60
General Description: Endorsements required for Nuclear Inspectors based on Category of work **Subgroup:** NR TG **Task Group:** C. Dinic (PM) **Explanation of Need:** Endorsements required for Nuclear Inspectors based on Category of work (1, 2, or 3) **July 2024 Meeting Action:** Ms. Moore stated that the proposal is still in development for this item.		

Item Number: A24-09	NBIC Location: Part 3, 1.6.1 – 1.6.5	No Attachment

General Description: Update and revise NR Scope in 1.6.1 - 1.6.5

Subgroup: NR TG

Task Group: R. Spuhl (PM)

Explanation of Need: Scope and update and revision to 1.6.1 - 1.6.5.

July 2024 Meeting Action: Ms. Moore reported that work is still being done on this item.

Item Number: A24-83	NBIC Location: Part 3, 1.6.4 d)	Attachment Page 159

General Description: Change Part 3, 1.6.4 d) (or elsewhere) to require audits to be performed by Supervisor

Subgroup: NR TG

Task Group: None assigned.

Explanation of Need: Requiring audits to be performed by a supervisor.

January 2025 Meeting Action:

Item Number: A24-92	NBIC Location: Part 3, 1.3	Attachment Page 160

General Description: NR Inspector and Agency Qualification Reqs in 1.3 - TIED TO A23-60

Subgroup: NR TG

Task Group: R. Spuhl (PM)

Explanation of Need: The NR Program is being revised per A23-60, and this addition will clarify Inspector/Supervisor and Agency requirements for NR activities.

January 2025 Meeting Action:

Item Number: A24-95	NBIC Location: Part 3, 5.5 a)	Attachment Page 162

General Description: Registration of NR Forms within 30 Days

Subgroup: Repairs and Alterations

Task Group: R. Spuhl (PM)

Explanation of Need: 5.5 a) states repairs and alterations requiring registration must be submitted within 30 days of certification. It is unclear if this requirement applies to repair/replacement activities under the "NR" or "NVR" programs.

January 2025 Meeting Action:

SG Repairs & Alterations Items:

Item Number: 21-45	NBIC Location: Part 3, Supplements	No Attachment

General Description: Add a supplement for engineered repairs and alterations

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), B. Boseo, B. Ray, D. Marek, R. Underwood, J. Siefert, P. Becker

Explanation of Need: 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.

July 2024 Meeting Action: Ms. Moore gave a progress report for this item.

Item Number: 21-53	NBIC Location: Part 3, S8.5 a)	No Attachment

General Description: Post Repair Inspection of weld repairs to CSEF steels

Subgroup: Repairs and Alterations

Task Group: P. Gilston (PM), E. Cutlip, A. Triplett

Explanation of Need: 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.

July 2024 Meeting Action: Ms. Moore stated that work is still being done on this item.

Item Number: 22-18	NBIC Location: Part 3, 9.1 (and all other Parts)	No Attachment

General Description: Definition of blowdown and blowoff

Subgroup: Repairs and Alterations

Task Group: K. Moore (PM), M. Quisenberry, G. Scribner, M. Wadkinson

Explanation of Need: 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.

July 2024 Meeting Action: Ms. Moore stated that the task group is still working on a proposal for this item.

Item Number: 23-09	NBIC Location: Part 3, New Supplement	Attachment Page 163

General Description: Scope and Rules for use of Additive Manufacturing Pressure Parts

Subgroup: Repairs and Alterations

Task Group: G. Galanes (PM), J. Siefert, B. Schaefer, W. Sperko, J. Ferreira, J. Getter, T. Seime, M. Wadkinson

Explanation of Need: Developing rules for the use of additive manufacturing pressure parts in alterations.

July 2024 Meeting Action: Ms. Moore announced that work is still being done on the item.

Item Number: A23-21	NBIC Location: Part 3, 3.3.4.9	No Attachment

General Description: Boiler tube plug guidelines and inclusion or watertube boilers

Subgroup: Repairs and Alterations

Task Group: E. Cutlip (PM), P. Gilston, K. Moore, A. Triplett, J. Ferreira

Explanation of Need: Currently both firetube and watertube boilers require a boiler tube be plugged when replacement of a tube is not practicable at the time the defective tube is detected.

July 2024 Meeting Action: Ms. Moore stated that the task group is still working on a proposal for this item.

Item Number: A23-24	NBIC Location: Part 3	No Attachment

General Description: Repairs to quick actuating closures

Subgroup: Repairs and Alterations

Task Group: T. McBee (PM), C. Becker, M. Schaser, A. Khssassi, R. Smith

Explanation of Need: Put safe guidelines for repairs to quick actuating closures.

July 2024 Meeting Action: Ms. Moore stated that the proposal for this item is ready to be letter balloted to the Main Committee.

Item Number: A23-35	NBIC Location: All Parts, 9.1	No Attachment

General Description: Definition of "non-load bearing attachment" (All Parts)

Subgroup: Repairs and Alterations

Task Group: T. White (PM), A. Khssassi, J. Walker, P. Lentzer

Explanation of Need: The term "nonload bearing attachment" is used as a basis for determining a routine repair but is not defined in the NBIC.

July 2024 Meeting Action: Ms. Moore stated that the task group is still working on a proposal for this item.

Item Number: A23-39	NBIC Location: Part 3, 3.3.1	No Attachment

General Description: Strengthening Prevention of Defect Recurrence

Subgroup: Repairs and Alterations

Task Group: J. Ferreira (PM), J. Walker, F. Johnson, P. Gilston, A. Henson, G. Galanes, B. Hrubala

Explanation of Need: The existing text recommends, but does not require an investigation of the cause, extent, and likelihood of recurrence of defects. The existing text also has no requirement for anyone to act to prevent the recurrence of defects. Where root and/or proximate causes of defects are known, or could be determined, someone needs to act to prevent catastrophic failure of equipment.

July 2024 Meeting Action: Mr. Underwood presented the proposal for this item. A motion was made and seconded to approve the proposal as presented. Discussion was held around when this guidance is applicable. Mr. Galanes asked how this will be enforced. Ms. Moore stated that she feels the proposed changes should be in Part 2. Additional concern was voiced because putting responsibility on the owner could cause confusion because they may not know who to contact. Mr. Adam Henson stated that this change was suggested to give repair firms a leg to stand on if owners don't take care of their equipment. Members supported the concept, but not the proposed wording. The motion to approve the proposal failed due to the concerns mentioned above. The item will go back to the subgroup and subcommittee for further work.

Item Number: A23-40 **NBIC Location: Part 3, 3.3.4.1** **No Attachment**

General Description: Strengthening Requirements to Ensure Defect Removal

Subgroup: Repairs and Alterations

Task Group: L. Dutra (PM), E. Cutlip, A. Renaldo, R. Valdez, T. McBee, A. Henson

Explanation of Need: The existing text alludes to the potential need for nondestructive examination (NDE) to ensure complete removal of defects but does not require it. The means to ensure defects have been removed must be understood by all to ensure safety. There is an interpretation of the 2021 NBIC that compounds this issue permitting repair organizations to not follow the requirements of NBIC Part 3, 3.3.4.8 even when the characteristics of the defect cannot be fully established.

July 2024 Meeting Action: Ms. Moore shared that the task group is working on a proposal for this item.

Item Number: A23-61 **NBIC Location: Part 3, S9.3** **No Attachment**

General Description: Revise NBIC R-2 Report and guide

Subgroup: Repairs and Alterations

Task Group: B. Schaefer (PM), T. LeBeau

Explanation of Need: Updates to the R-2 Report and the guide for completing R Report.

July 2024 Meeting Action: Ms. Moore stated that the task group is still working on this item.

Item Number: A23-68 **NBIC Location: Part 3, 3.4.4 c) and d)** **No Attachment**

General Description: Changes to Examples of Alterations

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), T. McBee, P. Becker, L. Baker

Explanation of Need: The current wording of 3.4.4.d (2023) is open ended and may result in allowing significant design changes to a pressure vessel under the guise of a repair when an alteration is a more appropriate classification. Rewording is required to limit the scope of potential design changes.

July 2024 Meeting Action: Ms. Moore informed the Committee that the task group is still working on this item.

Item Number: A23-77	NBIC Location: Part 3, 4.2 a)	No Attachment

General Description: Performance of Original NDE During Repairs and Alterations

Subgroup: Repairs and Alterations

Task Group: A. Triplett (PM), S. Frazier, J. Walker, R. Collins, P. Becker

Explanation of Need: The existing language in Part 3, Section 4, Paragraph 4.2.a does not provide enough guidance or flexibility for Repair Organizations and owners to prescribe appropriate NDE for repairs/alterations to existing welds. Based on the limited, often non-specific documentation typically available to these entities during NBIC repairs and alterations, additional allowances and direction should be provided.

July 2024 Meeting Action: Ms. Moore informed the Committee that the task group is still working on this item.

Item Number: A24-11	NBIC Location: Part 3, S9	No Attachment

General Description: Addition of a section on the R-1 Form for "Unresolved Issues"

Subgroup: Repairs and Alterations

Task Group: M. Quisenberry (PM), T. Seime, T. McBee

Explanation of Need: There have been multiple instances discussed during NBIC meetings of Certificate Holders having to leave known defects unrepaired because of the owner/user not wanting to make the repair. This field would allow AIA and Jurisdictional Authorities to be made aware of known and identified issues with a pressure retaining item that were not corrected. Additionally, this provides cover for the Certificate Holder that they identified the defect, brought it to everyone's attention, and the owner/user decided to leave it.

July 2024 Meeting Action: No action was taken on this item, as it was in Subgroup Rvw & Comment LB from 6/27/24 – 7/18/24.

Item Number: A24-17	NBIC Location: Part 3, 5.7.5 b)	No Attachment

General Description: Specific Requirements For Stamping And Nameplates

Subgroup: Repairs and Alterations

Task Group: E. Cutlip (PM), B. Schaefer, A. Khssassi

Explanation of Need: 2023 ASME Section VIII-Div 1 UG-119(c)(5) has been revised to allow for the use of mechanical etching or laser annealing on nameplates.

July 2024 Meeting Action: Ms. Moore stated that work is still being done on this item.

Item Number: A24-18	NBIC Location: Part 3, 9.1	Attachment Page 173

General Description: Definition of Controlled Fill

Subgroup: Repairs and Alterations

Task Group: P. Gilston (PM), A. Triplett, R. Collins, F. Johnson

Explanation of Need: Interpretation item I 23-79 addresses the use of the term 'controlled fill' in relation to welding method 6. The term is used in 2.5.3 d in relation to welding method 6 and more specifically in Supplement 8. Supplement 8 gives a lot of detail in schematics about a controlled fill in terms of weld bead placement, its use in controlling heat input etc., but in Welding Method 6 the term is not specifically used, but direction for welding is given, typically preheats are specified, electrode size for SMAW, and the use of stringer beads only.

July 2024 Meeting Action: Ms. Moore announced that a proposal for this item will be balloted to the subgroups between meetings.

Item Number: A24-20	NBIC Location: Part 3, 9.1	No Attachment

General Description: Define "Engineered Repairs" and "Engineered Alterations"

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), B. Ray, R. Underwood, B. Boseo, D. Marek, J. Siefert, P. Becker

Explanation of Need: The new supplement dealing with "Engineered Repairs and Alterations" (A21-45) will impact Part 3 Section 1, the NB-415, QRRs, the application process for Certificate Holders, and other documents to be determined. Defining "Engineered Repairs" and "Engineered Alterations" clarify the intent for these new scopes.

July 2024 Meeting Action: Ms. Moore gave a progress report for this item.

Item Number: A24-21	NBIC Location: Part 3, 9.1	No Attachment

General Description: Engineered Repairs and Alterations - Section 1 Scope and Manual reqs

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), B. Ray, R. Underwood, B. Boseo, D. Marek, J. Siefert, P. Becker

Explanation of Need: The scope of "Engineered Repairs and Alterations" (A21-45)needs to be clarified in 1.4.1 d) and reflected in the scope statement requirements for manuals in 1.5.1 a).

July 2024 Meeting Action: Ms. Moore stated that the task group is still working on a proposal for this item.

Item Number: A24-60	NBIC Location: Part 3, 3.3.5.2 a) and 3.4.5.1	No Attachment

General Description: Revise the repair and alteration Sect VIII Div 2 and 3 paragraphs

Subgroup: Repairs and Alterations

Task Group: R. Collins (PM), T. LeBeau, A. Triplett

Explanation of Need: A revision of Part 3, 3.3.5.2 a) and 3.4.5.1 a), b), and c) are needed to reconcile the NBIC to Divisions 2 and 3 of ASME Section VIII. The attached proposal includes the complete revision draft.

July 2024 Meeting Action: Ms. Moore provide a progress report for this item.

Item Number: A24-61	NBIC Location: Part 3, 2.5.3 e) and 4.2	No Attachment

General Description: Relocate Volumetric NDE requirement for Weld Repair Greater than 3/8-inch

Subgroup: Repairs and Alterations

Task Group: M. Schaser (PM), M. Quisenberry, K. Derrick, B. Schaefer

Explanation of Need: Relocate the volumetric NDE requirement for weld repairs of 3/8-inch depth or greater from paragraph 2.5.3.e to paragraph 4.2.

July 2024 Meeting Action: Ms. Moore shared a progress report for this item.

iv. New Items:

Item Number: A24-85	NBIC Location: Part 3, 3.4.4 m)	Attachment Page 174

General Description: Example of alterations to include requalification of cycle life

Subgroup: Repairs and Alterations

Task Group: None assigned.

Explanation of Need: Currently vessels above 10,000 psi are being "requalified" without any code documentation. This puts a conflict between the ASME data report limitations and the actual installation. This practice is being completed without inspector involvement.

January 2025 Meeting Action:

Item Number: A24-93 **NBIC Location: Part 3, Supplement 8** **Attachment Page 175**

General Description: Changing Part 3 supplement 8's title for clarity

Subgroup: Repairs and Alterations

Task Group: P. Shanks (PM)

Explanation of Need: Use of pressure equipment is unusual within NB-23 and has cause confusion within the industry as to the applicability for Supplement 8.

January 2025 Meeting Action:

Item Number: A24-96 **NBIC Location: Part 3, 5.5 a)** **Attachment Page 176**

General Description: Add examples of repairs and alterations specific to Electrochemical Stacks

Subgroup: Repairs and Alterations

Task Group: A. Triplett (PM)

Explanation of Need: With inclusion and initial deployments of electrochemical stacks as U Stamped pressure vessels under ASME BPVC Section VIII Division 1 and Code Case 3078, these stacks are starting to be shipped and registered with the National Board. Some basic examples of allowed repairs are needed to help guide an understanding of limitations for electrochemical stacks.

January 2025 Meeting Action:

Item Number: A24-98 **NBIC Location: Part 3, 2.5.2** **Attachment Page 178**

General Description: Review and revise the PWHT Requirements in 2.5.2

Subgroup: Repairs and Alterations

Task Group: P. Gilston (PM)

Explanation of Need: Simplify PWHT requirements in 2.5.2.

January 2025 Meeting Action:

10. Liaison Activities

i. **American Society of Mechanical Engineers BPV Code (ASME BPV)**

a. Mr. Gary Scribner and Mr. Brent Ray to provide updates on ASME and PCC-2 activities.

ii. **American Welding Society (AWS)**

a. Mr. Jim Sekely to provide a report on recent AWS activities.

iii. **American Petroleum Institute (API)**

a. Mr. Brent Ray to provide an update on recent API activities.

11. Future Meetings

i. July 7-10, 2025 – Cincinnati, OH

ii. January 12-15, 2026 – New Orleans, LA

12. Adjournment

Respectfully submitted,

Jonathan Ellis

Jonathan Ellis
NBIC Secretary

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD INSPECTION CODE COMMITTEE

ATTACHMENTS

PROPOSED INTERPRETATION

Item No.

24-38

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject/Title

T&P relief device installation on modular HWH supply header

Project Manager and Task Group

Source (Name/Email)

Terrence Hellman / thellman@nationalboard.org

Statement of Need

The NBIC does not address the installation or location of a common T&P valve for modular HWH's. Clarification is needed on whether the common supply header can be considered part of the HWH, and whether T&P valves can be installed in the horizontal position with the outlet pointed down, if installed directly to the header with no more than 4 in. maximum interconnecting piping.

Background Information

ASME Section IV, Article 9 addresses Modular Water Heater Requirements, and allows for multiple units to be certified as a single water heater with a single pressure relief valve on the supply header per HLW-903(g)(1). NBIC does not address the installation or location of a common T&P valve for modular HWH's.

Proposed Question

For an assembled modular water heater certified as a single water heater, with the temperature and pressure relief device located on the supply header as permitted in ASME Sect. IV, para. HLW-903(g)(1), may it be installed in the horizontal position with the outlet pointed down as allowed in NBIC Part 1, 3.9.1.6 c), 3.9.4.2, and Part 4, 2.5.4.2?

Proposed Reply

Yes.

Committee's Question 1

For an assembled modular water heater certified as a single water heater, with the temperature and pressure relief device located on the supply (i.e. distribution) header, may it be installed in the horizontal position with the outlet pointed down as allowed in NBIC Part 1, 3.9.1.6 c), 3.9.4.2, and Part 4, 2.5.1.6 c).~~4.2~~?

Committee's Reply 1

Yes.

Rationale

Part 1, 3.9.1, 3.9.4.2, and Part 4 2.5.1 do not exclude modular design. The term supply header is defined as distribution from the heater in ASME Sec IV. It is not intended to refer to the cold water inlet supply.

Committee's Question 2

Committee's Reply 2

Rationale

PROPOSED INTERPRETATION

Item No.

24-46

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject/Title

Replacement of Bodies and Transfer of Nameplates During Repair

Project Manager and Task Group

Source (Name/Email)

Benjamin Atwell / Ben.Atwell@puffer.com

Statement of Need

Clarity on what defines "the valve". Is "the valve" the nameplate solely or the nameplate and serialized base; and subsequent ability to divorce the nameplate and base during repair when the base requires replacement.

Background Information

We on occasion run into issues where a body needs replaced and lead time on a new valve drives necessity. Since the body carries the manufacturer/assembler nameplate with the Code stamp and is the serialized part of the valve it could be viewed as "the valve". Replacing the base would require transferring the original nameplates to the new body, grinding off any serial numbers on the new body, and restamping/etching the new body with the original serial number. Driving factor for this question is the discussion around what distinguish "the valve". If replacement of bodies and transfer of nameplates is acceptable it leads to the hypothetical situation where all or nearly all parts in a valve could be replaced with new components. Effectively replacing a valve with a "new valve" and circumventing the assembler requirements per ASME as the original nameplate carries a valid code stamp and now lives on the "new valve".

Proposed Question

Is it permissible to replace the body of a valve during a repair and transfer the nameplate from the original body to the new body?

Proposed Reply

Yes or no on ability to transfer a nameplate to a new base and adopt all markings/code stamps onto the new base.

Committee's Question 1

Is it permissible to replace the body of a valve during a repair and transfer the nameplate from the original body to the new body?

Committee's Reply 1

Yes

Rationale

Under the current text of Part 4, 4.3.1, this activity is not prohibited.

Committee's Question 2

Committee's Reply 2

Rationale

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Changes to the original pressure relief device nameplate.
NBIC Location:	2023 NBIC Part 4, 4.7.3 a) and b)
Statement of Need:	Clarification is needed on the correct way to communicate changes to a relief device through nameplate stamping.
Background Information:	A VR certificate holder has been audited and has received corrective actions for only stamping out the items of a relief device's part number that have been changed. The shop was given guidance to update their quality control manual to stamp out the entire part number even when not all components have been changed.
Proposed Question:	Part 4, paragraph 4.7.3 (a) second sentence states "For these repairs, the invalidated information on the original nameplate or stamping shall be marked out but left legible." Is the invalidated information considered the to be the entire field (for example entire model number or only a portion of model number)?
Proposed Reply:	No. Only the portion that is invalidated shall be marked out but left legible. However, the entire new model number shall be marked on the VR nameplate.
Committee's Question:	<Question(s) the committee will interpret. Can be the same wording as the proposed question>
Committee's Reply:	<Yes or no response>
Rationale:	<Additional clarification for response>

ITEM 24-35 Proposal 3/25/24 based on previously approved changes

4.6.2 ~~OWNER-USER~~ TESTING OF ASME "UV" DESIGNATED STEAM SERVICE VALVES USING AIR

~~When~~ ASME "UV" designated steam valves may be tested with air by the VR Certificate Holder provided either, the valve to be tested is beyond the capabilities of the qualified steam test equipment due to size or set pressure, or the valve to be tested is repaired by the owner for the owner's own use and the following conditions are met:
~~are repaired by the owner for the owner's own use, valves for steam service may be tested on air for set pressure and, if possible, blowdown adjustment, provided the valve manufacturer's corrections for differential in set pressure between steam and air are applied to determine the test pressure as follows:~~

a) The test pressure using air as the test medium shall be the product of the Manufacturer's correction factor for the differential between steam and air multiplied by the set pressure. If a cold differential test pressure is applicable due to superimposed back pressure and/or service temperature, then the manufacturer's correction factor shall be applied to the cold differential test pressure. The test pressure shall be recorded on the valve repair document described in 4.8.5.4 i).

b) The correction factor between steam and air shall not be included in the cold differential test pressure marked on the valve repair nameplate per 4.7.2 b) 8).

For reference only below are changes that were approved by voice vote at MC at the January 2023 meeting.

ITEM 22-35 1/10/23

4.6.2 OWNER-USER ~~ASME CODE SECTION VIII STEAM~~ TESTING OF ASME "UV" DESIGNATED STEAM SERVICE VALVES

When ASME ~~Code Section VIII~~ "UV" designated valves are repaired by the owner for the owner's own use, valves for steam service may be tested on air for set pressure and, if possible, blowdown adjustment, provided the valve manufacturer's corrections for differential in set pressure between steam and air are applied to determine the test pressure as follows:

Staff editorial note: Table of Contents will need to be updated

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Require means to prevent safety valve discharge piping blockage for LCDSV (Part 4)
NBIC Location:	2023 NBIC, Part 4, 3.2.3
Statement of Need:	Adding verbiage to the NBIC Part 1, Part 2 and Part 4 to require a means to prevent foreign material introduction to the safety valve discharge pipe.
Background Information:	Inspection of CO2 tanks (bulk liquid carbon dioxide storage vessels LCDSV) has shown some areas of the country where insects have built nests in the discharge piping of the safety valve. Once the vessel reaches 300 psi and the safety valve should begin venting, product flow is fully blocked and cannot vent the vessel pressure. In some instances, the pressure has been found to be as high as 350 psi while safety valve outlet discharge is fully restricted. (The vessel MAWP in this example was 300 psi.) An example is dirt dobber bees can block the discharge line and pushing an ink pen through the dirt will allow for sudden venting of the vessel's built-up pressure. The sudden burst of flow from the discharge does present a potential hazard.

Proposed Text:

3.2.3 INSPECTION REQUIREMENTS FOR INSTALLATION CONDITION

k) All safety relief/vent line discharge shall be protected to prevent stoppage of the lines by foreign material, moisture, or insects.

3.2.5.1 TESTING AND OPERATIONAL INSPECTION OF PRESSURE RELIEF VALVES (23)

In addition to the requirements of 3.2.5, the following apply to testing and operational inspection of pressure relief valves.

a) Pressure relief valves shall be tested periodically to ensure that they are free to operate and will operate in accordance with the requirements of the original code of construction. Testing should include device set or opening pressure, reclosing pressure (where applicable), and seat leakage evaluation. Tolerances for these operating requirements specified in the original code of construction shall be used to determine the acceptability of test results.

b) Valves may be tested using lift assist devices when testing at full pressure may cause damage to the valve being tested or when it is impractical to test at full pressure due to system design considerations. Lift assist devices apply an auxiliary load to the valve spindle or stem, and using the measured inlet pressure, applied load and other valve data allow the set pressure to be calculated. If a lift assist device is used to determine valve set pressure, the conditions of 4.6.3 shall be met. It should be noted that false set pressure readings may be obtained for valves which are leaking excessively or otherwise damaged.

c) If valves are not tested on the system using the system fluid, the test media specified in the original code of construction shall be used. ~~following test mediums shall be used:~~

   ~~1) High pressure boiler pressure relief valves, high temperature hot-water boiler pressure relief valves, low pressure steam heating boilers: steam;~~

   ~~2) Hot-water heating boiler pressure relief valves: steam, air, or water;~~

   ~~3) Hot water heater temperature and pressure relief valves: air or water;~~

   ~~4) Air and gas service process pressure relief valves: air, nitrogen, or other suitable gas;~~

   ~~5) Liquid service process pressure relief valves: water or other suitable fluid; and~~

   ~~6) Process steam service pressure relief valves: steam or air with manufacturer's steam to air correction factor.~~

   Note: Valves being tested after a repair must be tested on steam except as permitted by 4.6.2.

d) As an alternative to a pressure test, the owner may check the valve for freedom of operation by activating the test or "try" lever (i.e., manual check). For high pressure boiler and process valves, this test should be performed only at a pressure greater than 75% of the stamped set pressure of the valve or the lifting device may be damaged. This test will only indicate that the valve is free to operate and does not provide any information on the actual set pressure. All manual checks should be performed with some pressure under the valve in order to flush out from the seat debris that could cause leakage.

   Note: The manual check at 75% or higher is based on lift lever design requirements for ASME Section I and VIII valves. Code design requirements for lifting levers for Section IV valves require that the valve is capable of being lifted without pressure. If the valve is constructed using a standard other than ASME then that standard shall be followed.

e) Systems with multiple valves will require the lower set valves to be held closed to permit the higher set valves to be tested. A test clamp or "gag" should be used for this purpose. The spring compression screw shall not be tightened. It is recommended that when the valve is at or near the test temperature, the test clamps are applied in accordance with the valve manufacturer's instructions; application should be hand-tight only to avoid damage to the valve stem or spindle.

f) Upon completion of set pressure testing, all pressure relief valve gags shall be removed. Any stop valves used to isolate lower set pressure relief devices shall be reopened (and locked, if applicable).

3.3 ACCREDITATION OF "T/O" TEST ONLY ORGANIZATIONS

(23) ### 3.3.1 SCOPE

a) This section provides requirements that must be met for an organization to obtain a National Board *Certificate of Authorization* to use the "T/O" Certification Mark for in-service testing and performing minor adjustments of pressure relief valves constructed in accordance with the requirements of the original code of construction ~~ASME Code~~.

b) For administrative requirements to obtain or renew a National Board "T/O" *Certificate of Authorization* and "T/O" Certification Mark, refer to NB-528, Accreditation of "T/O" Test Only Organizations.

c) Authorization to use the official National Board "T/O" Certification Mark as shown in Figure 3.3.6.2-a), will be granted by the National Board provided the requirements of the administrative rules in NB-528 and the NBIC are met.

3.3.2 JURISDICTIONAL PARTICIPATION

The National Board member Jurisdiction in which the "T/O" organization is located is encouraged to participate in the review and demonstration of the applicant's quality system. The Jurisdiction may require participation in the review of the testing organization and the demonstration and acceptance of the repair organization's quality system manual.

3.3.3 QUALITY SYSTEM

3.3.3.1 GENERAL

Each applicant for a new or renewed "T/O" *Certificate of Authorization* shall have and maintain a Quality System which shall establish compliance with all of these rules, administrative procedures, and ~~applicable ASME Code~~ requirements of the applicable code of construction, including testing, inspection, sealing, and application of the "T/O" Certification Mark.

3.3.3.2 WRITTEN DESCRIPTION

A written description, in the English language, of the system the applicant will use shall be available for review and shall contain, as a minimum, the features set forth in 3.3.3.4. This description may be brief or voluminous, depending upon the projected scope of work, and shall be treated confidentially. In general, the quality system shall describe and explain what documents and procedures the testing firm will use to validate a test and/or minor adjustment.

3.3.3.3 MAINTENANCE OF A CONTROLLED COPY

Each applicant to whom a "T/O" *Certificate of Authorization* is issued shall maintain thereafter a controlled copy of the accepted quality system manual with the National Board. Except for changes that do not affect the quality system, revisions to the quality system manual shall not be implemented until such revisions are accepted by the National Board.

(23) #### 3.3.3.4 OUTLINE OF REQUIREMENTS FOR A QUALITY SYSTEM

The following establishes the minimum requirements of the written description of the quality system. It is required that each testing organization develop its own quality system that meets the requirements of its organization. For this reason it is not possible to develop one quality system that could apply to more than one organization. The written description shall include, as a minimum, the following features:

a) Title Page

The title page shall include the name and address of the company to which the National Board *Certificate of Authorization* is to be issued.

b) Revision Log

A revision log is required to ensure revision control of the quality system manual. The log should contain sufficient space for date, description and section of revision, company approval, and National Board acceptance.

c) Contents Page

The contents page should list and reference, by section paragraph or page number, the subjects and exhibits contained therein.

d) Statement of Authority and Responsibility

A statement of authority and responsibility shall be dated and signed by an officer of the company. It shall include:

1) A statement that the "T/O" Certification Mark shall be used only for pressure relief valves that meet the following conditions:

   a) Constructed to a published standard and if applicable, marked accordingly. ~~Are marked with an ASME "V", "UV", or "HV" Code symbol or marked with the ASME Certifica- tion Mark with "V", "UV", or "HV" designator and have been capacity certified by the National Board;~~

   b) Have been visually inspected, and successfully tested in accordance with this program; and

   c) Only external adjustments to restore the nameplate set pressure and/or performance of a pressure relief valve shall be made under the provisions of this program. If disassembly, change
   of set pressure, or additional repairs are necessary, the valve shall be repaired by a National Board "VR" Certificate Holder or replaced.

2) The title of the individual responsible for ensuring that the quality system is followed and who has authority and freedom to affect the responsibility;

3) A statement that if there is a disagreement in the implementation of the written quality system, the matter is to be referred to a higher authority in the company for resolution; and

4) The title of the individual authorized to approve revisions to the written quality system and the method by which such revisions are to be submitted to and accepted by the National Board before implementation.

e) Organization Chart

A chart showing the relationship between management, inspection, testing, and quality control personnel is required and shall reflect the actual organization in place.

f) Scope of Work

1) The scope of work section shall indicate the scope and type of valve testing the organization is capable of and intends to perform. The location of testing (shop, shop and field, or field only), ~~ASME Code Section(s)~~ construction codes or requirements to which the tests apply, and the test medium (air, gas, liquid, or steam, or combi- nations thereof) shall be included.

2) The types and sizes of valves to be tested, pressure ranges and other limitations shall also be addressed.

g) Specification Control

The specification control system shall provide procedures assuring that the latest applicable specifications and instructions required are used for valve inspection and testing.

h) Inspection and Testing Program

The inspection and testing program section shall include reference to a document (such as an inspection and test report, or checklist) that outlines the specific inspection and testing procedures used in the testing of pressure relief valves. Provisions shall be made to retain this document for a period of at least five years.

1) Each valve or group of valves shall be accompanied by the document referred to above for processing through the plant. Each valve shall have a unique identifier assigned by the Test Only organization (e.g., job serial number, shop order number, work order number, etc.) appearing on the test documentation and test only nameplate such that traceability is established.

2) The document referred to above shall describe the original nameplate information, including any marking required by the original code of construction ~~the ASME Code symbol stamping~~ and, if applicable, the repair nameplate information. In addition, it shall include pressure test methods to be used. Application of the "T/O" Certification Mark to the test only nameplate shall be recorded in this document. There shall be a space for "signoffs" at each operation to verify that each step has been properly performed by qualified personnel.

3) The system shall also describe the controls used to ensure that any personnel engaged in the testing of pressure relief valves are trained and qualified in accordance with 3.3.5.

i) Valve Adjustment and Sealing

1) The system shall include provisions that each pressure relief valve requiring adjustment as permitted by 3.2.5.5 shall have existing seal(s) removed only for the required adjustment(s), be tested, set, and external adjustment(s) re-sealed according to the requirements of the applicable ~~ASME Code Section~~ code of construction and the NBIC. The seal shall identify the "T/O" Certificate Holder performing the test or making the adjustment. Abbreviations or initials are permitted, provided such identification is defined in the quality system and acceptable to the National Board.

2) The system shall include provisions that each pressure relief valve requiring the use of a Lift Assist Device for testing as permitted by 3.2.5 c) may have the seal(s) removed for testing. Upon completion of testing, external adjustments shall be re-sealed in accordance with i) 1) above.

j) Test Only Nameplates

The quality system shall include a description of a nameplate or a drawing. An effective valve marking system shall be established to ensure proper marking and nameplate attachment for each valve as required by 3.3.6.2. The manual shall include a description of the nameplate or a drawing.

k) Calibration

1) The quality system shall describe a system for the calibration of examination, measuring, and test equipment used in the performance of testing. Documentation of these calibrations shall include the standard used and the results.

2) All calibration standards shall be calibrated against certified equipment having known valid relationships to nationally recognized standards.

l) Manual Control/Procedures

The quality system manual and referenced procedures shall include:

1) Measures to control the issuance of and revisions to the quality system manual;

2) Provisions for a review of the system in order to maintain the manual current with these rules and the applicable ~~sections of the ASME Code~~code of construction;

3) The title(s) of the individual(s) responsible for preparation, revision distribution, approval, and implementation of the quality system manual;

4) Provision for a controlled copy of the accepted written quality system manual to be submitted to the National Board; and

5) Revisions shall be submitted to and accepted by the National Board prior to being implemented.

m) Nonconformities

The quality system shall establish measures for the identification, documentation, evaluation, segregation, and disposition of nonconformities. A nonconformity is a condition of any material, item, product, or process in which one or more characteristics do not conform to the established requirements. These may include, but are not limited to, data discrepancies, procedural and/or documentation deficiencies, or material defects. Also, the title(s) of the individual(s) involved in this process shall be included.

n) Testing Equipment (See NBIC Part 4, Supplement 5)

The quality system shall include a means to control the development, addition, or modification of testing equipment to ensure the requirements of NBIC Part 4, 4.6.1 b) are met.

o) Field Testing

If field testing is included in the scope of work, the system shall address any differences or additions to the quality system required to properly control this activity, including the following:

1) Provisions for annual audits of field activities shall be included;

2) Provisions for use of owner-user measurement and test equipment, if applicable, shall be addressed.

p) Records Retention

The quality manual shall describe a system for filing, maintaining, and easily retrieving records supporting or substantiating the administration of the Quality System within the scope of the “T/O” *Certificate of Authorization*. The record retention schedule described in the Quality System Manual is to follow the instructions identified in Table 3.3.3.4 p).

q) Exhibits

Forms used in the quality system shall be included in the manual with a written description. Forms exhibited should be marked “SAMPLE” and completed in a manner typical of actual valve testing procedures.

TABLE 3.3.3.4 p)

Reports, Records, or Documents for "T/O" Certificate Holders	Instructions	Minimum Retention Period
a) Record of testing or inspection	The testing and inspection program section shall include reference to a document (such as a report, traveler, or checklist) that outlines the specific testing and inspection procedures used in the testing of pressure relief valves.	5 years
b) Records related to equipment qualification and instrument calibration	Prior to use, all performance testing equipment shall be qualified by the certificate holder to ensure that the equipment and testing procedures will provide accurate results when used within the ranges established for that equipment. This qualification may be accomplished by benchmark testing, comparisons to equipment used for verification testing as specified in the quality system, or comparisons to field performance.	5 years after the subject piece of equipment or instrument is retired.
c) Record of lift assist device qualification	Prior to use, all lift assist devices shall be qualified by the certificate holder to ensure that the equipment and testing procedures will provide accurate results when used within the ranges established for that equipment used for verification testing as specified in the quality system or comparisons to field performance. This qualification shall be documented.	5 years after the lift assist device is retired.
d) Records of employee training and qualification	Each testing organization shall establish minimum qualification requirements for those positions within the organization as they directly relate to pressure relief valve testing. Each testing organization shall document the evaluation and acceptance of an individual's qualification for the applicable position.	5 years after termination of employment.

3.3.4 TESTING & ADJUSTMENT

a) Each Pressure Relief Valve to be tested shall be inspected in accordance with Section 3.2.2.

b) Pressure Relief Valves with missing or illegible nameplates shall not be tested under the T/O program and shall be referred to a "VR" Certificate Holder or replaced.

c) Pressure Relief Valves shall be tested to confirm that the Set Pressure (defined as the average of at least three consecutive tests) is within the allowable tolerance specified by the ~~applicable ASME Code Section~~applicable code of construction and NBIC. Test Results, including Test Gauge Identification, shall be recorded on the document referred to above. Pressure Relief Valve seals shall not be removed unless required for adjustment or testing using a lift assist device.

d) Testing organizations may obtain a “T/O” *Certificate of Authorization* for field testing, either as an extension to their in-shop/plant scope, or as a field-only scope, provided that the Quality System includes the following provisions:

1) Qualified technicians in the employ of the certificate holder perform such testing;

2) An acceptable quality system covering field testing, including field audits is maintained; and

3) Functions affecting the quality of the tested valves are supervised from the address of record where the “T/O” certification is issued.

3.3.4.1 AUDIT REQUIREMENTS

Upon issuance of a *Certificate of Authorization*, provided field tests are performed, annual audits of the work carried out in the field shall be performed to ensure that the requirements of the certificate holder’s quality system are met. The audit shall include, but not be limited to, performance testing, in accordance with paragraph 4.6, of valve(s) that were tested in the field. The audits shall be documented.

3.3.5 COMPETENCY, TRAINING AND QUALIFICATION OF PERSONNEL (23)

3.3.5.1 COMPETENCY OF PERSONNEL (23)

The test organization shall establish the skills, knowledge, competencies, and method to evaluate competencies required for each position within the organization having direct effect on the quality of pressure relief valve testing and adjustment performed in accordance with the Certificate of Authorization.

3.3.5.2 CONTENTS OF TRAINING PROGRAM (23)

The test organization shall establish a documented training program to ensure the defined skills, knowledge and competencies are achieved. As a minimum, training objectives for each position shall include:

a) ~~Applicable ASME Code r~~Requirements of the applicable code of construction;

b) Applicable NBIC requirements;

c) Individual responsibilities of each function described within the organization’s quality system;

d) Technical aspects for the applicable position held; and

e) Mechanical skills for applicable position held.

3.3.5.3 INITIAL EVALUATION AND ACCEPTANCE OF PERSONNEL (23)

The test organization shall complete an initial evaluation and acceptance of each individual’s skills and competency prior to the individual being assigned to work without direct supervision. This evaluation and acceptance shall be documented.

3.3.5.4 ANNUAL EVALUATION AND ACCEPTANCE OF PERSONNEL (23)

The test organization shall complete an annual evaluation and acceptance of each individual’s skills and competency to verify proficiency as well as compliance with the Certificate Holder’s quality system. This evaluation shall include training records, documented evidence of work performed and on-the-job observations to demonstrate competency. The evaluation shall be documented.

3.3.6 MARKING REQUIREMENTS FOR VALVES TESTED UNDER THE T/O PROGRAM

3.3.6.1 NAMEPLATES

Proper marking and identification of tested valves is critical to ensuring acceptance during subsequent inspections, and also provide for traceability and identification to the valve.

(23) 3.3.6.2 TEST ONLY NAMEPLATE & VALVE SEALING

When a pressure relief valve is tested, a metal test only nameplate marked with the information required below shall be securely attached to the valve adjacent to the original manufacturer's stamping or nameplate and/or repair nameplate. If not installed directly on the valve, the nameplate shall be securely attached to the valve independent of the external adjustment seals in a manner that does not interfere with valve operation and sealed in accordance with the quality system.

a) Existing manufacturer/assembler and "VR" nameplates if applicable shall not be removed.

b) Existing manufacturer/assembler, "VR", and/or "TO" seals shall remain in place unless removal is required to perform testing or adjustment. Following testing, the valve shall be resealed by the responsible "T/O" Certificate Holder.

c) Any previous test only nameplates shall be removed.

d) As a minimum, the information on the "T/O" nameplate (see Figure 3.3.6.2-a) shall include:

   1) The name of responsible organization preceded by the words "Tested by" shall be applied.

   2) Date of test shall be applied;

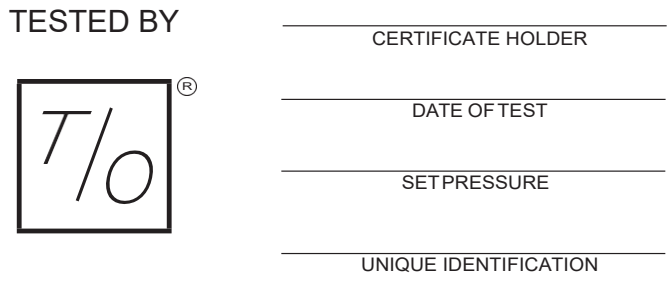
   3) Set pressure shall be applied;

   4) Unique identifier of test shall be applied (e.g., shop order number, work order number, job serial number, etc.);

   5) The "T/O" Certification Mark as provided by the National Board; and

   6) National Board "T/O" certificate number.

FIGURE 3.3.6.2-A REQUIRED MARKINGS FOR TESTING OF ~~ASME/NATIONAL BOARD "V," "UV," AND "HV" STAMPED~~ PRESSURE RELIEF VALVES UNDER THE "T/O" PROGRAM



PART 4, SECTION 4
PRESSURE RELIEF DEVICES — REPAIR OF PRESSURE RELIEF VALVES

4.1 SCOPE

This section provides requirements and guidelines that apply to repairs to pressure relief valves.

a) Repairs may be required because of defects found during periodic inspection, testing, operation, or maintenance. Since pressure relief devices are provided for safety and the protection of personnel and property, repairs are often regulated by the Jurisdiction where the pressure relief device is installed. The Jurisdiction should be contacted for their specific requirements.

b) This section describes some of the administrative requirements for the accreditation of repair organizations. Additional administrative requirements can be found in NB-514, A*ccreditation of "VR" Repair Organizations*. Some Jurisdictions may independently administer a program of authorization for organizations to perform repairs within that Jurisdiction.

c) Requirements for repairs and alterations to pressure-retaining items and repair and replacement activities for nuclear items can be found in NBIC Part 3.

4.2 GENERAL REQUIREMENTS

a) Repair of a pressure relief valve is considered to include the disassembly, replacement, re-machining, or cleaning of any critical part, lapping of a seat and disc, reassembly, adjustment, testing, or any other operation that may affect the flow passage, capacity, function, or pressure-retaining integrity.

b) Conversions, changes, or adjustments (excluding those as defined in 3.2.5.5 a) or Part 2 Paragraph 2.5.7.5.a)) affecting critical parts are also considered repairs. The scope of conversions may include changes in service fluid and changes such as bellows, soft seats, and other changes that may affect Type/Model number provided such changes are recorded on the document as required for a quality system and the repair nameplate. (See 4.7.1)

c) The scope of repair activities shall not include changes in ASME Code status.

4.2.1 "VR" REPAIR

a) When a repair is being performed under the administrative requirements for National Board Accreditation, a repair shall consist of the following operations as a minimum:

1) Complete disassembly, cleaning, and inspection of parts, repair or replacement of parts found to be defective, reassembly, testing as required by 4.6, sealing and application of a repair nameplate. When completed, the valve's condition and performance shall be equivalent to the standards for new valves.

2) The administrative requirements for National Board Accreditation apply only to valves that are constructed to a published standard and if applicable, marked accordingly. ~~marked with the ASME Certification Mark and the "V", "UV", "HV", or "NV" Designator or the sup- planted ASME "V", "UV", "HV" or "NV" Code symbol and have been capacity certified on the applicable fluid by the National Board~~.

4.2.2 CONSTRUCTION STANDARDS FOR PRESSURE RELIEF DEVICES

For pressure relief devices~~, the applicable new construction standard to be used for reference during repairs is the ASME Code.~~ constructed to the ASME Code, ASME Code Cases shall be used for repairs when they were used in the original

construction of the valve. ASME Code Cases may be used when they have been accepted for use by the NBIC Committee and the Jurisdiction where the pressure-retaining item is installed.

a) For pressure relief devices, the Code Case number shall be noted on the repair document and, when required by the code case, stamped on the repair nameplate.

b) The Jurisdiction where the pressure retaining item is installed shall be consulted for any unique requirements it may have established.

4.2.3 INSTALLATION OF PRESSURE RELIEF DEVICES

Installation of a pressure relief device by mechanical methods is not considered to be a repair, as long as no changes or adjustments are made to the device. Seals installed by the device manufacturer or repair organization shall not be removed when the device is installed.

When a pressure relief device is to be installed by welding on an existing pressure retaining item, the requirements of Part 3 of the NBIC for welded repairs shall be followed.

If a pressure relief valve must be disassembled or its adjustments changed as part of the installation process, the reassembly, resetting, retesting or other such activities shall be done by a qualified organization which meets the requirements of NBIC Part 4. For a new pressure relief valve, the original valve manufacturer shall perform this activity as required by the original code of construction.

The installation of a non-reclosing pressure relief device or the replaceable element of a non-reclosing pressure relief device such as a rupture disk is not considered to be a repair. The manufacturer's procedures and instruction shall be followed for the installation of these devices.

4.2.4 INITIAL ADJUSTMENTS TO PRESSURE RELIEF VALVES

The initial installation testing and adjustments of a new pressure relief valve on a boiler or pressure vessel are not considered a repair if made by the manufacturer or assembler of the valve.

4.3 MATERIALS FOR PRESSURE RELIEF VALVE REPAIR

The materials used in making repairs shall conform to the requirements of the original code of construction. The "VR" Certificate Holder is responsible for verifying identification of existing materials from original data, drawings, or unit records and identification of the materials to be installed.

4.3.1 REPLACEMENT PARTS FOR PRESSURE RELIEF DEVICES

a) Critical parts shall be fabricated by the valve manufacturer or to the manufacturer's specifications. Critical parts are those that may affect the valve flow passage, capacity, function, or pressure-retaining integrity.

b) Critical parts not fabricated by the valve manufacturer shall be supplied with material test certification for the material used to fabricate the part.

c) Replacement critical parts receiving records shall be attached or be traceable to the valve repair document (see 4.8.5.4 i)).These records shall conform to at least one of the following.

    1) Receiving records documenting the shipping origin of the part fabricated by the valve manufacturer (such as packing list) from the valve manufacturer or assembler of the valve type.

    2) A document prepared by the "VR" Certificate Holder certifying that the replacement part used in the repair has the manufacturer's identification on the part or is otherwise labeled or tagged by the

manufacturer and meets the manufacturer's acceptance criteria (e.g., critical dimensions found in maintenance manual).

3) Receiving records for replacement critical parts obtained from a source other than the valve manufacturer or assembler of the valve type shall include a document that provides as a minimum:

   a. The part manufacturer and part designation.

   b. A certifying statement that either:

      1. The part was fabricated by the valve manufacturer and meets the manufacturer's acceptance criteria (e.g., critical dimensions found in maintenance manual), or

      2. The part meets the manufacturer's specifications and was fabricated from material as identified by the attached material test report.

   c. The signature of an authorized individual of the part source.

   d. The name and address of the part source for whom the authorized individual is signing.

d) Material for bolting shall meet the manufacturer's specification, but does not require material test certification if marked as required by the material specification.

4.4 WELDING FOR PRESSURE RELIEF VALVES

When welding is used as a repair technique during a pressure relief valve repair, the following requirements shall apply.

a) Welding shall be performed in accordance with the requirements of the original code of construction used for the pressure relief valve.

b) Cast iron and carbon or alloy steel having a carbon content of more than 0.35% shall not be welded.

c) Defects in pressure relief valve parts such as cracks, pits, or corrosion that will be repaired by welding shall be completely removed before the weld repair of the part is performed. Removal of the defect shall be verified by suitable NDE as required.

d) Consideration shall be given to the condition of the existing material, especially in the weld preparation area.

4.4.1 WELDING PROCEDURE SPECIFICATIONS

Welding shall be performed in accordance with Welding Procedure Specifications (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 Section IX of the ASME Code.

4.4.2 STANDARD WELDING PROCEDURE SPECIFICATIONS

A "VR" Certificate Holder may use one or more applicable Standard Welding Procedure Specifications shown in NBIC Part 3, 2.3.

4.4.3 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 Section IX of the ASME Code.

3) PRV part repairs shall be documented on a Form R-1 with a statement under the “Remarks” section “PRV Part Repair.” The owner’s name and location of installation shall be that of the “VR” Certificate Holder. The information received from the “VR” Certificate Holder as required in 4.4.7 a) shall be noted under the “Description of Work” section.

4) Upon completion of the repair, the repaired part and completed Form R-1 shall be returned to the “VR” Certificate Holder responsible for completing the PRV repair.

4.5 HEAT TREATMENT

4.5.1 PREHEATING

Preheating may be employed during welding to assist in completion of the welded joint in accordance with 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. The welding procedure specification for the material being welded shall specify the preheat temperature requirements.

4.5.2 POSTWELD HEAT TREATMENT

Postweld heat treatment shall 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. A time and temperature report or temperature record shall be maintained to document the work performed.

4.6 PRESSURE RELIEF VALVE PERFORMANCE TESTING AND TESTING EQUIPMENT

Each pressure relief valve to which the “VR” repair symbol stamp is to be applied shall be subjected to the following tests by the repair Certificate Holder.

4.6.1 TEST MEDIUM AND TESTING EQUIPMENT

Valves shall be tested using the test media specified in the original code of construction. ~~marked for steam service, or having special internal parts for steam service, shall be tested on steam. Valves marked for air, gas, or vapor service shall be tested with air or gas. Valves marked for liquid service shall be tested with water or other suitable liquid. ASME Code, Section IV hot water valves, shall be tested on water, steam, or air.~~

Each valve shall be tested to demonstrate the following:

1) Set pressure (as defined by the valve manufacturer and as listed in NB-18, *Pressure Relief Device Certifications);*

2) Response to blowdown, when required by the original code of construction;

3) Seat tightness; and

4) For valves designed to discharge to a closed system, the tightness of the secondary pressure zone shall be tested as required by the original code of construction.

b) The equipment used for the performance testing prescribed above shall meet the following requirements:

1) The performance testing equipment shall include a pressure vessel of adequate volume and pressure source capacity to ensure compliance with 4.6.1 a) 1);

2) Prior to use, all performance testing equipment shall be qualified by the Certificate Holder to ensure that the equipment and testing procedures will provide accurate results when used within the ranges established for that equipment. This qualification may be accomplished by benchmark testing, comparisons to equipment used for verification testing as specified in the quality system, or comparisons to field performance. This qualification shall be documented. Documentation of this qualification shall be retained in accordance with Table 4.8.5.4 s). Documentation of this qualification shall include but not be limited to:

   a. Schematic of the performance test equipment;

   b. Size and pressure ranges of valves to be tested and the test fluid to be used;

   c. Dimensions of test vessels;

   d. Accuracy of pressure measuring equipment;

   e. Size and design type of valves used to control flow; and

   f. Method of qualifying.

3) Prior to the implementation of any addition or modification to the testing equipment that would alter the contents of the document required in 4.6.1 b) 2), the Certificate Holder shall re-qualify the performance test equipment in accordance with 4.6.1 b) 2). If the equipment changed was used to satisfy the requirements of verification testing, the Certificate Holder shall notify the National Board and additional verification testing, in accordance with the quality system, may be required.

4.6.2 OWNER-USER TESTING OF ASME "UV" DESIGNATED STEAM SERVICE VALVES

When ASME "UV" designated valves are repaired by the owner for the owner's own use, valves for steam service may be tested on air for set pressure and, if possible, blowdown adjustment, provided the valve manufacturer's corrections for differential in set pressure between steam and air are applied to determine the test pressure as follows:

a) The test pressure using air as the test medium shall be the product of the Manufacturer's correction factor for the differential between steam and air multiplied by the set pressure. If a cold differential test pressure is applicable due to superimposed back pressure and/or service temperature, then the manufacturer's correction factor shall be applied to the cold differential test pressure. The test pressure shall be recorded on the valve repair document described in 4.8.5.4 i).

b) The correction factor between steam and air shall not be included in the cold differential test pressure marked on the valve repair nameplate per 4.7.2 b) 8).

4.6.3 LIFT ASSIST TESTING

a) A device may be used to apply an auxiliary lifting load on the spring of a repaired valve to establish the set pressure in lieu of the tests required in 4.6.1 a) 1) when such testing at full pressure:

   1) May cause damage to the valve being tested; or

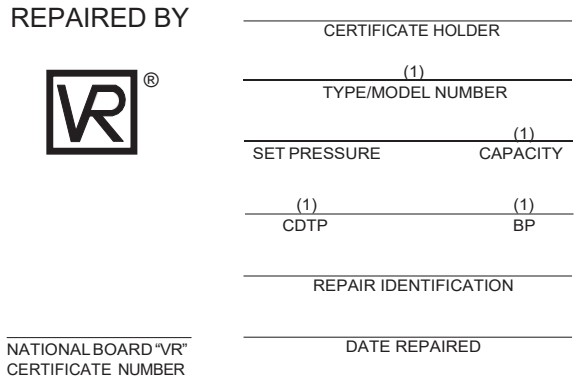
   2) Is impractical when system design considerations preclude testing at full pressure.

b) While actual valve blowdown and valve performance characteristics cannot be verified using this testing technique, valve set pressure may be determined to an acceptable degree of accuracy if, as a minimum:

   1) Equipment utilized is calibrated as required in the quality system; including, but not limited to:

FIGURE 4.7.2-a

EXAMPLE LAYOUT OF REQUIRED MARKINGS FOR REPAIR OF ~~ASME/NATIONAL BOARD "V," "UV," AND "HV" STAMPED~~ PRESSURE RELIEF VALVES



Note:. To be indicated only when changed

4.7.3 CHANGES TO ORIGINAL PRESSURE RELIEF VALVE NAMEPLATE INFORMATION (23)

a) Information on the original nameplate or stamping, such as but not limited to set pressure, capacity, blowdown, or type/model number may no longer be valid following certain repair activities. For these repairs, the invalidated information on the original nameplate or stamping shall be marked out but left legible. Any changes to capacity shall be based on that for which the valve was originally certified, or if a conversion has been made, as described in 4.2, on the capacity certification for the valve as converted.

b) Repair organizations shall verify the Type/Model number, inlet size, set pressure, and capacity on the original nameplate or stamping that is not marked out. Incorrect information on the original manufacturer's nameplate or stamping shall be marked out but left legible. Corrected information shall be indicated on the repair nameplate and noted on the document as required by the quality system.

4.7.4 ILLEGIBLE OR MISSING NAMEPLATES (23)

The VR Certificate Holder shall not perform repairs under the VR Program on any pressure relief valve (PRV) that cannot be positively identified by the manufacturer or through in-house sources. Such identification shall include the verification of the original ASME Stamping or other marking applicable to the original code of construction. Pressure relief valves that have missing or illegible nameplates and can be positively identified shall be equipped with a nameplate marked "DUPLICATE", which contains all original nameplate data. For valves constructed to the ASME Code, t~~T~~he duplicate nameplate shall not bear the "NB" Mark or the ASME Certification Mark. To indicate the original designator or code stamping, the duplicate nameplate shall be stamped with a "V", "HV", or "UV" as applicable. Illegible nameplates, if applicable, shall not be removed.

4.8 ACCREDITATION OF "VR" REPAIR ORGANIZATIONS

4.8.1 SCOPE

a) This section provides requirements that must be met for an organization to obtain a National Board *Certificate of Authorization* to use the "VR" Symbol Stamp for repair activities of pressure relief devices constructed in accordance with ~~the requirements of the ASME Code~~ a published construction standard.

b) For administrative requirements to obtain or renew a National Board "VR" *Certificate of Authorization* and "VR" Symbol Stamp, refer to NB-514, *Accreditation of "VR" Repair Organizations*.

4.8.2 JURISDICTIONAL PARTICIPATION

The National Board member Jurisdiction in which the "VR" organization is located is encouraged to participate in the review and demonstration of the applicant's quality system. The Jurisdiction may require participation in the review of the repair organization and the demonstration and acceptance of the repair organization's quality system manual.

4.8.3 ISSUANCE AND RENEWAL OF THE "VR" *CERTIFICATE OF AUTHORIZATION*

4.8.3.1 GENERAL

Authorization to use the stamp bearing the official National Board "VR" symbol as shown in Figure 4.7.2-a, will be granted by the National Board pursuant to the provisions of the following administrative rules and procedures.

4.8.3.2 ISSUANCE OF CERTIFICATE

Repair organizations, manufacturers, assemblers, or users that make repairs to ~~the ASME Code symbol stamped or marked pressure relief valves and National Board capacity certified~~ pressure relief valves may apply to the National Board for a *Certificate of Authorization* to use the "VR" symbol.

4.8.4 USE OF THE "VR" *CERTIFICATE OF AUTHORIZATION*

4.8.4.1 TECHNICAL REQUIREMENTS

The administrative requirements of 4.8 for use of the "VR" stamp shall be used in conjunction with the technical requirements for valve repair as described in sections 4.1 through 4.7. Those requirements shall be mandatory when a "VR" repair is performed.

4.8.4.2 STAMP USE

Each "VR" symbol stamp shall be used only by the repair firm within the scope, limitations, and restrictions under which it was issued.

4.8.5 QUALITY SYSTEM

4.8.5.1 GENERAL

Each applicant for a new or renewed "VR" *Certificate of Authorization* shall have and maintain a quality system which shall establish that all of these rules and administrative procedures and ~~applicable ASME Code~~ requirements of the applicable code of construction, including material control, fabrication, machining, welding, examination, setting, testing, inspection, sealing, and stamping will be met.

4.8.5.2 WRITTEN DESCRIPTION

A written description, in the English language, of the system the applicant will use shall be available for review and shall contain, as a minimum, the features set forth in 4.8.5.4. This description may be brief or voluminous, depending upon the projected scope of work, and shall be treated confidentially. In general, the

quality system shall describe and explain what documents and procedures the repair firm will use to validate a valve repair.

4.8.5.3 MAINTENANCE OF CONTROLLED COPY

Each applicant to whom a "VR" *Certificate of Authorization* is issued shall maintain thereafter a controlled copy of the accepted quality system manual with the National Board. Except for changes that do not affect the quality system, revisions to the quality system manual shall not be implemented until such revisions are accepted by the National Board.

4.8.5.4 OUTLINE OF REQUIREMENTS FOR A QUALITY SYSTEM (23)

The following establishes the minimum requirements of the written description of the quality system. It is required that each valve repair organization develop its own quality system that meets the requirements of its organization. For this reason it is not possible to develop one quality system that could apply to more than one organization. The written description shall include, as a minimum, the following features:

a) Title Page

The title page shall include the name and address of the company to which the National Board *Certificate of Authorization* is to be issued.

b) Revision Log

A revision log shall be included to ensure revision control of the quality system manual. The log should contain sufficient space for date, description and section of revision, company approval, and National Board acceptance.

c) Contents Page

The contents page shall list and reference, by paragraph and page number, the subjects and exhibits contained therein.

d) Statement of Authority and Responsibility

A statement of authority and responsibility shall be dated and signed by an officer of the company. It shall include:

1) A statement that the "VR" stamp shall be applied only to pressure relief valves that meet both of the following conditions:

a. Constructed to a published standard and if applicable, marked accordingly.~~Are marked with the ASME Certification Mark and the "V", "UV", "HV", or "NV" Designator or the supplanted ASME "V", "UV", "HV" or "NV" Code symbol and have been capacity certified by the National Board; and~~

b. Have been disassembled, inspected, and repaired by the Certificate Holder such that the valves' condition and performance are equivalent to the standards for new valves.

2) The title of the individual responsible to ensure that the quality system is followed and who has authority and freedom to effect the responsibility;

3) A statement that if there is a disagreement in the implementation of the written quality system, the matter is to be referred to a higher authority in the company for resolution; and

4) The title of the individual authorized to approve revisions to the written quality system and the method by which such revisions are to be submitted to and accepted by the National Board before implementation.

e) Organization Chart

A chart showing the relationship between management, purchasing, repairing, inspection, and quality control personnel shall be included and shall reflect the actual organization in place.

f) Scope of Work

1) The scope of work section shall indicate the scope and type of valve repairs, including conversions the organization is capable of and intends to perform. The location of repairs (shop, shop and field, or field only), ~~ASME Code Section(s)~~ construction codes or requirements to which the repairs apply, the test medium (air, gas, liquid, or steam, or combinations thereof), and special processes (machining, welding, postweld heat treatment, or nondestructive examination, or combinations thereof) shall be specifically addressed.

2) The types and sizes of valves to be repaired, pressure ranges and other limitations, such as engineering and test facilities, should also be addressed.

g) Drawings and Specification Control

The drawings and specification control system shall provide procedures assuring that the latest applicable drawings, specifications, and instructions required are used for valve repair, including conversions, inspection, and testing.

h) Material and Part Control

The material and part control section shall describe purchasing, receiving, storage, and issuing of parts.

1) The title of the individual responsible for the purchasing of all material shall be stated.

2) The title of the individual responsible for certification and other records as required shall be stated.

3) All incoming material and parts shall be checked for conformance with the purchase order and, where applicable, the material specifications or drawings. Indicate how material or part is identified and how identity is maintained by the quality system.

i) Repair and Inspection Program

The repair and inspection program section shall include reference to a document (such as a report, traveler, or checklist) that outlines the specific repair and inspection procedures used in the repair of pressure relief valves. Repair procedures shall require verification that the critical parts meet the valve manufacturer's specification. Supplement 4 outlines recommended procedures covering some specific items. This document shall be retained in accordance with Table 4.8.5.4 s).

1) Each valve or group of valves shall be accompanied by the document referred to above for processing through the plant. Each valve shall have a unique identifier (i.e., repair serial number, shop order number, etc.) appearing on the repair documentation and repair nameplate such that trace- ability is established.

2) The document referred to above shall describe the original nameplate information, including any marking required by the original code of construction ~~the ASME Code symbol stamping~~ and the repair nameplate information, if applicable. For pilot operated valves, the manufacturer's unique identifier on the pilot and main valve shall also be recorded. In addition, the document shall include material checks, replacement parts, conversion parts (or both), reference to items such as the welding procedure specifications (WPS), fitup, NDE technique, heat treatment, and pressure test methods to be used. Application of the "VR" stamp to the repair name- plate shall be recorded in this document. Specific conversions performed with the new Type/Model number shall be recorded on the document. There shall be a space for "signoffs" at each operation to verify that each step has been properly performed.

3) The system shall include a method of controlling the repair or replacement of critical valve parts. The method of identifying each spring shall be indicated on the repair document described in

4.8.5.4 i). Such identification shall be based on the Manufacturer's spring chart current at the time of the repair, except that the spring removed from the valve during the repair bearing different identification may be reinstalled provided the "VR" Certificate Holder has verified the spring is acceptable to the Manufacturer. Such verification shall be documented on the repair document described in 4.8.5.4 i).

4) The system shall also describe the controls used to ensure that any personnel engaged in the repair of pressure relief valves are trained and qualified in accordance with this section.

j) Welding, NDE, and Heat Treatment (when applicable)

The quality system manual shall indicate the title of the person(s) responsible for and describe the system used in the selection, development, approval, and qualification of welding procedure specifications, and the qualification of welders and welding operators in accordance with the provisions of 4.4.

1) The quality system manual may include controls for the "VR" Certificate Holder to have the pressure relief valve part repaired by a National Board "R" Certificate Holder, per 4.4.7.

2) The completed Form R-1 shall be noted on and attached to the "VR" Certificate Holder's document required in 4.8.5.4 i). Similarly, NDE and heat treatment techniques must be covered in the quality system manual. When outside services are used for NDE and heat treatment, the quality system manual shall describe the system whereby the use of such services meet the requirements of the applicable code of construction ~~section of the ASME Code~~.

k) Valve Testing, Setting, and Sealing

The system shall include provisions that each valve shall be tested, set, and all external adjustments sealed according to the requirements of the applicable ~~ASME Code Section~~ code of construction and the National Board. The seal shall identify the "VR" Certificate Holder making the repair. Abbreviations or initials shall be permitted, provided such identification is acceptable to the National Board.

l) Valve Repair Nameplates

An effective valve stamping system shall be established to ensure proper stamping of each valve as required by 4.7.2. The manual shall include a description of the nameplate or a drawing.

m) Calibration

1) The manual shall describe a system for the calibration of examination, measuring, and test equipment used in the performance of repairs. Documentation of these calibrations shall include the standard used and the results. Calibration records shall be retained in accordance with Table 4.8.5.4 s).

2) All calibration standards shall be calibrated against certified equipment having known valid relationships to nationally recognized standards.

n) Manual Control

The quality system shall include:

1) Measures to control the issuance of and revisions to the quality system manual;

2) Provisions for a review of the system in order to maintain the manual current with these rules and the applicable code of construction ~~sections of the ASME Code~~;

3) The title(s) of the individual(s) responsible for control, revisions, and review of the manual;

4) Provision of a controlled copy of the accepted written quality system manual to be submitted to the National Board; and

Records of personnel not in the Certificates Holder's employ training and qualification.	The repair organization may use the services of personnel not in their employ to assist the Certificate Holder in the performance of repairs provided they meet the requirements of Section 4.10. Each repair organization shall document the evaluation and acceptance of an individual's qualification for the applicable position.	5 years after completion of work performed by individual not in the Certificate Holder's employee.
Records of audits of the Quality Program.	The repair organization shall audit the Quality System on an annual basis. Audit results shall be documented, and any exclusions shall be noted.	5 Years

(23) 4.8.6 FIELD REPAIR

Repair organizations may obtain a "VR" *Certificate of Authorization* for field repair, either as an extension to their in-shop/plant scope, or as a field-only scope, provided that:

a) Technicians qualified by the Certificate Holder in accordance with Part 4, 4.9.2 perform such repairs;

b) An acceptable quality system covering field repairs is maintained; and

c) Functions affecting the quality of the repaired valves are supervised from the address of record where the "VR" certification is issued.

(23) 4.9 COMPETENCY, TRAINING AND QUALIFICATION OF PERSONNEL

(23) 4.9.1 COMPETENCY OF PERSONNEL

The repair organization shall establish the skills, knowledge, competencies, and method to evaluate competencies required for each position within the organization having direct effect on the quality of pressure relief repair performed in accordance with the Certificate of Authorization.

(23) 4.9.2 CONTENTS OF TRAINING PROGRAM

The repair organization shall establish a documented training program to ensure the defined skills, knowledge and competencies are achieved. As a minimum, training objectives for each position shall include:

a) ~~Applicable ASME Code r~~Requirements of the applicable code of construction;

b) Applicable NBIC requirements;

c) Individual responsibilities of each function described within the organization's quality system;

d) Technical aspects for the applicable position held;

e) Mechanical skills for the applicable position held;

f) Special processes as applicable listed on the Certificate of Authorization.

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Sealing and Tagging of Pilot operated relief valve under VR Program
NBIC Location:	2023 NBIC, Part 4, S4.3 f) and S7.2 a) 2)
Statement of Need:	The need for the change is to have a way to ensure that both the pilot and main valve have been repaired to the requirements of NBIC during the same repair. Currently it is difficult to identify if both components have been repaired during the same repair. This makes it challenging under the T/O program to verify this required information. Additionally, under the current code there is the possibility for a non-accredited repair organization to change the pilot with a set and tested pilot which would have seals and repair the main without disturbing the seals. The previous VR tag would be intact as well as the seals upon completion.
Background Information:	The discussion around the code allowing the repair of the pilot or main has led to the answer being no, with that said the current code does have measures in place under tagging and sealing to eliminate the possibility of repairing one component.

Proposed Text:

S4.3 PILOT OPERATED PRESSURE RELIEF VALVES

f) Sealing

After final adjustment and acceptance by quality control, all external adjustments shall be sealed by means assuring positive identification of the organization performing the repair. The tagging process for pilot operated pressure relief valves shall include installing the repair tag on the main valve and pilot valve.

2.5.3 ELECTRICAL

A disconnecting means capable of being locked in the open position shall be installed at an accessible location at the boiler so that the boiler can be disconnected from all sources of potential energy. This disconnecting means shall be an integral part of the boiler or adjacent to it.

2.5.3.1 WIRING

All wiring for controls, heat generating apparatus, and other appurtenances necessary for the operation of the boiler or boilers should be installed in accordance with the provisions of national or international standards and comply with the applicable local electrical codes.

2.5.3.2 REMOTE EMERGENCY SHUTDOWN SWITCHES

~~a)~~ A manually operated remote emergency shutdown switch~~(es)~~ or circuit breaker shall be ~~located just outside the equipment room door~~ provided and marked for easy identification. ~~Consideration should also be given to the type and location of the switch(es) in order to safeguard against tampering. Where approved by the Jurisdiction, alternate locations of remote emergency switch(es) may be provided.~~

a) The default location for the switch or circuit breaker should be just outside the boiler room door, though the following factors must be considered when determining the appropriate location and number of switches to be installed:

1) If the equipment room door is on the building exterior, the switch should be located just inside the door.

2) ~~b)~~ For equipment rooms exceeding 500 ft.$_2$ (46 m$_2$) floor area or containing one or more boilers having a combined fuel capacity of 1,000,000 Btu/hr. (293 kW) or more, additional manually operated remote emergency shutdown switches shall be located at suitably identified points of egress acceptable to the Jurisdiction.

3) ~~c)~~ Where a boiler is located indoors in a facility and not in an equipment room, a remote emergency shutdown switch shall be located within 50 ft. (15 m) of the boiler along the primary egress route from the boiler area.

4) For utility boilers or other large scale units operated from a control room, the switch should be installed in a location immediately accessible to the operator.

~~d)~~ b)For atmospheric-gas burners and for oil burners where a fan is on the common shaft with the oil pump, the emergency remote shutdown switch(es) or circuit breaker(s) must disconnect all power to the burner controls.

~~e)~~ c)For power burners with detached auxiliaries, the emergency remote shutdown switch(es) or circuit breaker(s) need only shut off the fuel input to the burner.

~~f) When existing boiler installations do not include remote emergency shutdown switches, it is not required that these switches be retroactively installed unless required by the Jurisdiction.~~

3.5.3 ELECTRICAL

A disconnecting means capable of being locked in the open position shall be installed at an accessible location at the boiler or water heater so that the boiler or water heater can be disconnected from all sources of potential energy. This disconnecting means shall be an integral part of the boiler or water heater or adjacent to it.

3.5.3.1 WIRING

All wiring for controls, heat generating apparatus, and other appurtenances necessary for the operation of the boiler(s) or water heater(s) should be installed in accordance with the provisions of national or international standards and comply with the applicable local electrical codes.

3.5.3.2 REMOTE EMERGENCY SHUTDOWN SWITCHES~~3.5.3.1 STEAM HEATING, HOT WATER HEATING, AND HOT WATER SUPPLY BOILERS~~

~~a) All wiring for controls, heat generating apparatus, and other appurtenances necessary for the operation of the boiler or boilers shall be installed in accordance with the provisions of national or international standards and comply with the applicable local electrical codes.~~

~~b) A disconnecting means capable of being locked in the open position shall be installed at an accessible location at the boiler so that the boiler can be disconnected from all sources of potential. This disconnecting means shall be an integral part of the boiler or adjacent to it.~~

~~c)~~ A manually operated remote shutdown switch or circuit breaker shall be located just outside the equipment room door and marked for easy identification. ~~Consideration should also be given to the type and location of the switch to safeguard against tampering.~~

a) The default location for the switch or circuit breaker should be just outside the boiler room door, though the following factors must be considered when determining the appropriate location and number of switches to be installed:

1) ~~d)~~ If the equipment room door is on the building exterior, the switch should be located just inside the door. ~~If there is more than one door to the equipment room, there should be a switch located at each door of egress.~~

2) For equipment rooms exceeding 500 $ft.^2$ (46 m^2) floor area or containing one or more boilers and/or water heaters having a combined fuel capacity greater than or equal to 1,000,000 Btu/hr. (293 kW), additional manually operated remote emergency shutdown switches shall be located at suitably identified points of egress acceptable to the Jurisdiction.

3) Where a boiler or water heater is located indoors in a facility and not in an equipment room, a remote emergency shutdown switch shall be located within 50 ft. (15 m) of the boiler along the primary egress route from the equipment area.

4) Additional consideration should be given to the type and location of the switch(es) in order to facilitate proper operation and safeguard against tampering. Where approved by the Jurisdiction, alternate locations of remote emergency switch(es) may be provided.

~~1)~~ b)For atmospheric-gas burners, and oil burners where a fan is on a common shaft with the oil pump, the complete burner and controls should be shut off.

~~2)~~ c)For power burners with detached auxiliaries, only the fuel input supply to the firebox need to be shut off.

~~3.5.3.2 POTABLE WATER HEATERS~~

~~a) All wiring for controls, heat generating apparatus, and other appurtenances necessary for the operation of the potable water heaters shall be installed in accordance with the provisions of national or international standards and comply with the applicable local electrical codes.~~

~~b) A manually operated remote shutdown switch or circuit breaker shall be located just outside the equipment room door and marked for easy identification. Consideration should also be given to the type and location of the switch to safeguard against tampering.~~
~~c) A disconnecting means capable of being locked in the open position shall be installed at an accessible location at the heater so that the heater can be disconnected from all sources of potential. This disconnecting means shall be an integral part of the heater or adjacent to it.~~

~~d) If the equipment room door is on the building exterior, the switch should be located just inside the door. If there is more than one door to the equipment room, there should be a switch located at each door of egress.~~

~~1) For atmospheric-gas burners, and oil burners where a fan is on a common shaft with the oil pump, the complete burner and controls should be shut off.~~

~~2) For power burners with detached auxiliaries, only the fuel input supply needs be shut off.~~

Part 1

S3.6.1 SYSTEM DESCRIPTION

The ~~Liquid~~ liquid ~~Carbon~~ carbon ~~Dioxide~~ dioxide ~~Beverage~~ beverage systems include the ~~Liquid Carbon Dioxide Storage Vessel~~LCDSV ~~or LCDSV (tank)~~ and associated sub-system circuits;~~ –~~ a ~~Liquid~~ liquid carbon dioxide ~~CO^2~~ (CO_2) fill circuit, ~~and~~ associated sub-system circuits, and a pressure relief / vent line circuit. The LCDSVs are vacuum~~-~~ insulated pressure vessels, constructed of stainless steel, with ~~Super Insulation~~superinsulation wrapping between the inner pressure vessel and the outer vacuum jacket. (See Figure S3.6.1-a.) These pressure vessels are typically designed for a maximum allowable working pressure (MAWP) of either 300 psi~~g~~ (2,068 kPa) or 283 psi~~g~~ (1,951 kPa). The LCDSV come~~s~~ equipped with an ASME/NB certified "UV" ~~Primary~~ primary ~~Relief~~ relief ~~V~~valve ~~(PRV)~~ set at or below the MAWP of the vessel. Additionally, as recommended by the Compressed Gas Association pamphlet CGA S-1.3, ~~(~~*Pressure Relief Device Standards Part 3 – Stationary Storage Containers ~~For~~for Compressed Gas~~s~~es*~~)~~, a secondary pressure relief valve may be installed. This secondary pressure relief valve is beyond the scope of ASME Section VIII, Division 1 and is not required to be ASME/ NB stamped and certified. This additional ~~PRV~~ pressure relief valve is typically rated no higher than 1.5 times the vessel MAWP.

Operating conditions of the system, components, and inner pressure vessel can vary, causing temperatures and pressures to range from 90 psi~~g~~ (-56°F) to 300 psi~~g~~ (~~±~~2°F) {620 kPa (-49°C) to 2,068 kPa (-16°C)}. Below about 60 psi~~g~~ (413 kPa) in the tank, liquid CO_2 begins ~~changing to~~transitioning into a solid phase (dry ice). If the tank becomes completely depressurized to 0 psi~~g~~, temperatures inside the tank could reach -109°F (-78°C), and thus create ~~(~~solid dry ice~~)~~. When liquid CO_2 turns to solid dry ice in a completely depressurized tank, all CO_2 gas flow in the system ceases and the tank becomes nonfunctional.

See ~~the attached~~ Figure S3.6.1-b for a CO_2 phase diagram ~~CO_2 Phase Diagram NBIC Part 1; Figure S3.6.1-b,~~ showing the typical operating range of these systems. Components external to the LCDSV inner tank pressure vessel may encounter pressures and temperatures between 90 psi~~g~~, and -56°F, to 300 psi~~g~~ and ~~±~~2°F, respectively {between 620 kPa~~,~~ and -49°C, to 2,068 kPa and -16°C, respectively}. Typical operating pressures and temperatures vary in each of the associated sub-system circuits. (See NBIC Part 1, Table S3.6.1.)

TABLE S3.6.1
TYPICAL OPERATING PRESSURES ~~&~~ AND TEMPERATURES OF LCDSV SYSTEMS

System Component	Operating Pressure	Operating Temperature
Storage Vessel (tank internal conditions)	90 – 300 psi~~g~~/ 620 – 2,068 kPa	-56°F to ~~±~~2°F/ -49°C to -16°C
Liquid ~~CO_2~~ CO_2 Fill Line	150 – 300 psi~~g~~/ 1,034 – 2,068 kPa	-34°F to ~~±~~2°F/ -36°C to -16°C
Pressure Relief Gas Vent Line	0 – 120 psi~~g~~/ 0 – 827 kPa	Ambient to -50°F/ Ambient to -45°C

SUPPL. 3

FIGURE S3.6.1-a

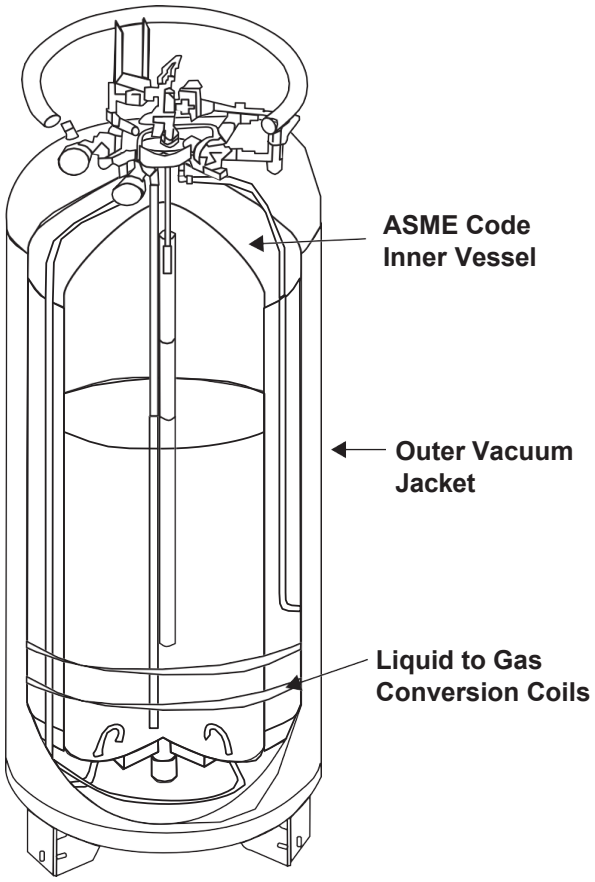
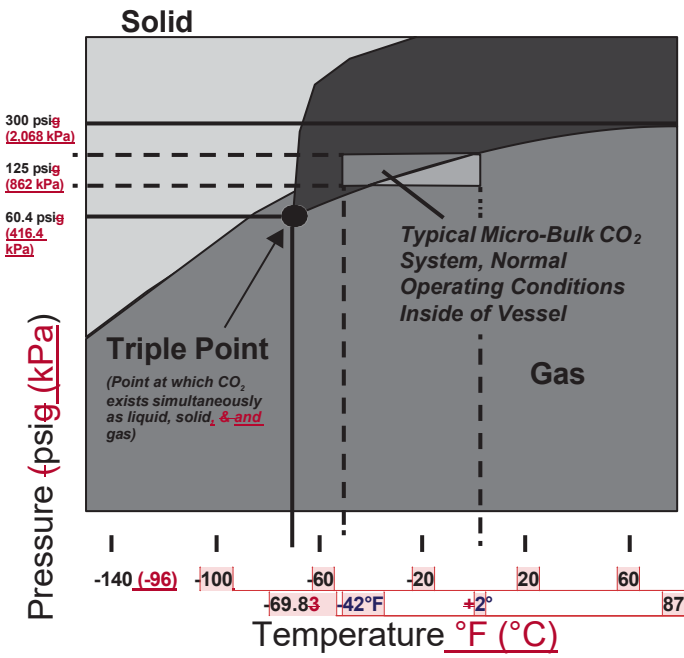


FIGURE S3.6.1-b

CO_2 PHASE DIAGRAM



Commented [MV1]: Note: the comments below are the equivalent Celsius temperatures to add next to or below the Fahrenheit temps

SUPPL. 3

Commented [MV2]: Add -(73) to this

Commented [MV3]: -51

Commented [MV4]: -29

Commented [MV5]: -7

Commented [MV6]: 16

Commented [MV7]: 56.6

Commented [MV8]: -41

Commented [MV9]: 7

Commented [MV10]: 30

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Require means to prevent safety valve discharge piping blockage for LCDSV (Part 1)
NBIC Location:	2023 NBIC, Part 1, S3.6 d)
Statement of Need:	Adding verbiage to the NBIC Part 1, Part 2 and Part 4 to require a means to prevent foreign material introduction to the safety valve discharge pipe.
Background Information:	Inspection of CO2 tanks (bulk liquid carbon dioxide storage vessels LCDSV) has shown some areas of the country where insects have built nests in the discharge piping of the safety valve. Once the vessel reaches 300 psi and the safety valve should begin venting, product flow is fully blocked and cannot vent the vessel pressure. In some instances, the pressure has been found to be as high as 350 psi while safety valve outlet discharge is fully restricted. (The vessel MAWP in this example was 300 psi.) An example is dirt dobber bees can block the discharge line and pushing an ink pen through the dirt will allow for sudden venting of the vessel's built-up pressure. The sudden burst of flow from the discharge does present a potential hazard.

Proposed Text:

S3.6 VALVES, PIPING, TUBING, AND FITTINGS

d) Safety Relief/Vent Lines – Safety relief/vent lines shall be as short and straight as possible with a continuous routing to an unenclosed area outside the building and installed in accordance with the manufacturer's instructions. The vent line(s) shall be a continuous run from the vessel pressure relief device vent piping to the outside vent line discharge fitting. Mechanical joints in metallic piping and tubing shall be visible and inspectable. Any splices in plastic or polymeric tubing shall be done within three feet of the vessel and must be visible and inspectable. These lines shall be free of physical defects such as cracking or kinking and all connections shall be securely fastened to the LCDSV and the fill box. All safety relief/vent lines shall be protected to prevent penetration by nail, projectile, or other foreign object when routed through a wall, floor, or ceiling. Additionally, all safety relief/vent line discharge shall be protected to prevent stoppage of the lines by foreign material, moisture, or insects. The minimum size and length of the lines shall be in accordance with NBIC Part 1, Tables S3.6-a and S3.6-b. Fittings or other connections may result in a localized reduction.

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Anchoring of Threaded Blowdown Piping
NBIC Location:	2023 NBIC, Part 1, 2.7.5
Statement of Need:	An operator opened a blowdown valve located between a 90-degree elbow and the floor drain. The pressure released caused the piping to rotate at the elbow striking the operator and pressing him to the ground which resulted in his death. This could have been avoided if the piping was anchored at a point between the elbow and the discharge.
Background Information:	Boiler recently installed, operating less than a week.

Proposed Text:

2.7.5 BLOWOFF

s) All threaded blowdown piping discharging into a floor drain shall be anchored to the floor or other structural element.

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Strengthen requirements for Carbon monoxide monitoring
NBIC Location:	2023 NBIC, Part 1, 1.6.9
Statement of Need:	Approximately 50 to 75 percent of the Chief Boiler Inspectors have requested some version of the proposed text above to be included in the NBIC Part 1. Since this has not happened, in many jurisdictions the Chief Inspector has had to include requirements for interlocking Carbon Monoxide detectors with boilers to secure the burners when the detector senses CO. The NBIC is a Health and Safety Code and therefore should provide requirements that prevent the many injuries and deaths the Chief Boiler Inspectors across the U.S. have had to investigate.
Background Information:	As the Chief Inspector of Texas, this is not the first time I have made this request. In the past I was told the biggest concern is that of a nuance trip during the winter. I have had this requirement in place in Texas since Sept. 2020, to date I have not received any reports of a nuance trip of the boiler due to CO. In fact, I have received many notifications of where this requirement has saved lives due to tripping the boiler when there was a CO leak in the boiler room. Furthermore, this item was brought up at the NB Oct. Chief Meeting in Columbus when the Chair and Vice Chair of the Main Committee were present to see the desires of the Chief Inspectors.

Proposed Text:

1.6.9 CARBON MONOXIDE (CO) DETECTOR/ALARM

Each boiler room containing one or more boilers from which carbon monoxide (CO) can be produced shall be equipped with a CO detector with a manual reset.

a) The CO detector shall have a display that indicates the current level of CO in parts per million (ppm) that is present in the boiler room.

b) The CO detector and boiler(s) shall be interlocked to disable the burners when the measured level of CO rises above 50 ppm.

c) The owner or operator may choose to use a remote monitoring system. When the CO detector is remotely monitored:

1) it must be set to alarm personnel at the boiler location and at the remote location at a measured level of 50 ppm of CO;

2) the alarm at the boiler location must not be capable of being disabled until the measured level of CO falls below 50 ppm; and

3) the detector must be interlocked to disable the burners when the CO level in the boiler room reaches a measured level of 200 ppm.

d) The CO detector shall disable the burners upon loss of power to the detector.

e) The CO detector shall be calibrated in accordance with the manufacturer's recommendations or every eighteen months after installation of the detector, whichever is less. A record of calibration shall be posted at or near the boiler, or be readily accessible to an inspector.~~The owner or user shall install a carbon monoxide (CO) detector/alarm in equipment rooms where fuel fired boilers and/or fuel fired pressure vessels are located in accordance with the authority having Jurisdiction.~~

PART 2, SUPPLEMENT 15
Concerns Regarding Carbon Monoxide During Boiler Inspections

S15.1 SCOPE

a) This supplement provides a guideline for evaluating potential carbon monoxide concerns.

b) It is well documented and internationally recognized that carbon monoxide is a serious health concern. Annually, there are over 40,000 cases of Carbon Monoxide (CO) poisoning in North America. Boiler and fired pressure vessel inspections involve equipment that is an exposure to the inspector and occupants of buildings. National Board Inspection Code Part 1 calls for carbon monoxide detectors (NBIC Part 1, 1.6.9) where required.

c) A review of service and maintenance records (NBIC Part 2, 2.2.11), verification that combustion air is supplied to the boiler room (NBIC Part 2, 2.2.20.6 c and NBIC Part 1, 1.6.6) and inspecting for combustion air leaks (NBIC Part 2, 2.2.5 d) are important parts of the inspection that help prevent carbon monoxide from becoming a problem. Installers and service technicians must follow the manufacturers' and jurisdiction's requirements during the installation and servicing of the equipment.

S15.2 Inspection points that should be included in the inspection of the object.

a) Assessment of conditions that may indicate a carbon monoxide condition exists outside of the combustion chamber include:

1) Unstable pilot or main flame
2) Yellow flame
3) Smoke from stack
4) Discoloration around burner or casing
5) The presence of soot on any surface
6) Any flue leakage or blockage
7) Fresh air intake blocked
8) Negative pressure in boiler room, resistance when you go to open door, air rushes in when you open door
9) Lack of maintenance on burner/boiler
10) Condensation in boiler room

b) If any condition is observed which indicates a lack of combustion air, further investigation by a boiler service technician is required.

S15.3 Equipment recommended to inspect the objects safely.

a) It is highly recommended that inspectors carry a carbon monoxide detector. They are inexpensive and easy to use.

2.2.5 EXTERNAL INSPECTION

The external -inspection of a boiler is made while in operation to determine if it is in a safe operating condition ~~to operate safely~~. Some items to consider are:

a) The boiler fittings, valves, and piping should be checked for compliance with ASME Code or other standards or equivalent requirements. Particular attention should be paid to pressure relief devices and other safety controls;

b) Firing equipment controls;

c) Adequacy of structure, boiler supports, and any associated support steel;

d) Boiler casing should be free from cracks, combustion gas or fluid leaks, excessive corrosion or other degradation that could interfere with proper operation;

e) Soot blowers, valves, and actuating mechanisms;

f) Gaskets on observation doors, access doors, drums, handhole and manhole covers and caps;

g) Valves and actuators, either chains, motors, and/or handwheels; and

h) Leakage of fluids or combustion gases.

Commented [TB1]: I think we need to differentiate between the internal in-service inspection and the external operating inspection as they are both in-service inspections. Good key word might be "Operating"

Commented [TB2R1]:

2.2.10.6 CONTROLS

Establishing proper operation and maintenance of controls and safety devices is essential to safe boiler operation. Owners or users are responsible for establishing and implementing management programs which will ensure such action is taken. In addition, any repairs to controls and safety devices must only be made by qualified individuals or organizations. Documentation of compliance with these management systems and repairs is an essential element of demonstrating the effectiveness of such systems.

When required by the Jurisdiction, the following guidelines are provided to aid the Inspector in the evaluation of installed operating control devices:

a) Verify that the burner is labeled and listed by a recognized testing agency, that piping and wiring diagrams exist, that commissioning tests have been conducted and that a contractor/manufacturer's installation report has been completed and is available for review.

b) Verify that the owner or user has established function tests, inspection requirements, maintenance and testing of all controls and safety devices in accordance with manufacturer's recommendations. Verify that these activities are conducted at assigned intervals in accordance with a written procedure, that non-conformances which impact continued safe operation of the boiler are corrected, and that the results are properly documented. These activities shall be conducted at a frequency recommended by the manufacturer or the frequency required by the jurisdiction. Where no frequencies are recommended or prescribed, the activity should be conducted at least annually.

Where allowed by the jurisdiction, Performance Evaluation may be used to increase or decrease the frequencies based on document review and approval by an appropriate engineer.

c) Verify that combustion air is supplied to the boiler room as required by the jurisdiction or if no jurisdictional requirements exist see NBIC, Part 1, ~~2.5.4~~ 1.6.6 ~~and 3.5.4~~ for additional guidance.

d) Verify that a manually operated remote boiler emergency stop button exists at each boiler room exit door, when required by the jurisdiction.

e) Verify operation of low water protection devices by either record review if the boiler cannot be taken out of service or by observing the blowdown of these controls or the actual lowering of boiler water level under carefully controlled conditions with the burner operating. This test should shut off the heat source to the boiler. The return to normal condition such as the restart of the burner, the silencing of an alarm, or stopping of a feed pump should be noted. A sluggish response of the water level after blowdown could indicate an obstruction in the connections to the boiler.

f) The operation of a submerged low-water fuel cutoff mounted directly in a steam boiler shell ~~should~~ shall be verified to be operational either by record review if the boiler cannot be taken out of service or by observing the ~~be~~ testing of this control ~~ed~~ by lowering the boiler water level carefully. This shall~~ould~~ be done only after being assured that the water level gage glass is indicating correctly and there is no sluggish response after column blowdown..

g) On a ~~high temperature water boiler~~ hot water heating boilers, it is often not possible to test the control by cutoff indication, but where the control is of the float type, externally mounted, the float chamber ~~should~~ shall be drained to check for the accumulation of sediment.

h) On forced circulation boilers, the flow sensing device shall be verified to be operational either by record review if the boiler cannot be taken out of service or by actual observing the testing of the control ~~ed~~ to verify that the burner will shut down the boiler on a loss of flow.

i) On electric boilers, it ~~should~~ shall be verified that the boiler is protected from a low water condition either by construction or a low water cutoff or a low flow sensing device.

j) In the event controls are inoperative or the correct water level is not indicated, the boiler shall be taken out of service until the unsafe condition has been corrected.

k) All automatic low-water fuel cutoff and water-feeding devices ~~should~~ shall ~~be~~ examined by the Inspector to ensure that they are properly installed. The Inspector shall ~~should~~ have the float chamber types of control devices disassembled and the float linkage and connections examined for wear. The float chamber shall ~~should~~ be examined to ensure that it is free of sludge or other accumulation. Any necessary corrective action shall be taken before the device is placed back into service. The Inspector shall ~~should~~ check that the operating instructions for the devices are readily available.

l) Check that the following controls/devices are ~~provided~~ properly installed, maintained, and tested in accordance with the Manufacturer's recommendations or an industry standard :

1) Each automatically fired steam boiler is protected from overpressure by not less than two pressure operated controls, one of which may be an operating control.

Commented [B3]: Part 1 2.5.4 states See NBIC Part 1, Section 1.6.6, Ventilation and Combustion Air as does 3.5.4

Commented [TB4R3]: Makes sense. More direct

Commented [TB5]: This applies to all water boilers doesn't it? I am also not sure how one visually checks for the accumulation of sediment.

Commented [B6R5]: Change High temperature water boilers to hot water heating boilers to match CSD-1, consider deleting this entire sentence.

Commented [TB7]: Regarding "construction" are we talking about electrode type boilers?

Commented [TB8R7]: Yes per NBIC Part 1 2.8.5 e

Commented [TB9]: This is now talking about the internal inspection

Commented [TB10]: Delete provided and replaced with installed properly

When required by the code of construction or the jurisdiction, the high pressure limit control shall be of the manual reset type.

2) Each automatically fired hot-water boiler or hot-water boiler system is protected from over-temperature by not less than two temperature operating controls, one of which may be an operating control.

When required by the code of construction or the jurisdiction, the high temperature limit control shall be of the manual reset type.

3) Each hot-water boiler is fitted with a thermometer that will at all times, indicate the water temperature at or near the boiler outlet.

m) Verify that any repair, alteration, or replacement of a control or safety device complies with the following:

1) The requirements of the original installation code or jurisdiction, as appropriate.

2) The work is conducted by trained and qualified individuals, with any additional certification as required by the jurisdiction.

3) The work is documented.

Commented [B11]: Trained and qualified individual is not defined

Commented [TB12R11]: CM-120 in CSD-1

Commented [TB13R11]: Luis is looking into making a task group to address this.

~~3)~~4)

S7.9 ASME LPG PRESSURE VESSELS LESS THAN 2000 GALLONS BEING REFURBISHED BY A COMMERCIAL SOURCE

Commercially refurbished pressure vessels are used pressure vessels that are temporarily taken out of service for repair and or renewal and sent to a company which specializes in this type of work. Because the history of some of these pressure vessels is unknown, special attention shall be given to inspection and repair before returning any of these pressure vessels back to service. ASME LPG pressure vessels less than 2,000 gal. (7,570 l) may be refurbished subject to the following conditions:

a) A complete external inspection shall be completed under the guidelines of this supplement. If any defects are found, as defined in S7.8.1 through S7.8.5, the defect shall be repaired under NBIC Part 3, Repairs and Alterations, by qualified personnel or permanently removed from service;

b) Pressure vessels of this size that have been previously used in anhydrous ammonia service shall not be converted to LPG service. See NBIC Part 2, S7.8.6;

c) The coating on the outside of the pressure vessel shall be removed down to bare metal so that an inspection can be performed under the guidelines of this supplement; and

d) Verify that there is no internal corrosion if the pressure vessel has had its valves removed or is known to have been out of service for an extended period.

e) Removal and re-attachment of the original manufacturer's nameplate shall only be done in accordance with NBIC Part 2, 5.2.4.

f) The refurbished commercial source shall apply a tag or label to the vessel with the following information:

A. Name of commercial source
B. Address of commercial source
C. Year of the tank was refurbished.
D. This pressure vessel was refurbished per NBIC S7.9

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Vessels above 10,000 psi reevaluation of remaining life
NBIC Location:	2023 NBIC, Part 2, 2.3.6.10 c) 1), and 2.3.6.11 c) and d)
Statement of Need:	Inspectors need to be able to have a paper trail of the code integrity of these vessels. Changing the original data (in this case, designed cycle life) should ONLY be completed with the involvement of an authorized inspector and MUST be documented on a National Board form in order to be audited by the inservice inspector.
Background Information:	Currently owner/users of these vessels are conducting requalification of the vessels with no inspector involvement. In most cases, they are only requalifying the vessel and putting it into an existing yoke and frame that has not been evaluated. In addition, all of the "requalification" is done without inspector involvement, essentially, changing the data report "life cycles" with no code accountability.

Proposed Text:

2.3.6.10 INSPECTION OF WIRE WOUND PRESSURE VESSELS

c) Record keeping

1) Since these vessels have a finite fatigue life, a record shall be maintained of each operating cycle, recording both temperature and pressure. Deviation beyond design limits is cause for suspending operation and reevaluation of remaining fatigue life which must be documented using the National Board Alteration process, including sign off by an authorized inspector. Vessels having no operating record should be inspected and a fracture mechanics evaluation with a fatigue analysis test be performed to establish remaining life before resuming operation. Vessels having no operating record shall not be used for service until such time as previous operating history can be determined.

2.3.6.11 INSPECTION OF VESSELS FOR PRESSURES AT AND ABOVE 10,000 PSI

c) Vessels constructed for a set number of cycles, as defined by the code of construction, which have reached the end of those cycles, must be removed from service or requalified for continued use. Any requalification for continued service must be completed and documented in accordance with the National Board Alteration process. ~~in accordance with the requirements of the jurisdiction where applicable.~~ The Inspector shall verify that documentation of any requalification is retained and complies with the National Board Alteration process.

d) Requalification of any vessel shall either be completed by the original manufacturer or a manufacturer familiar with the construction of pressure vessels at and above 10,000 PSI (68.95 MPa). Guidance for completing requalification can be found in ASME PCC-3, *Inspection Planning and Using Risk-Based Methods*. The requalification of a vessel must be documented using the National Board Alteration process, including sign off by an authorized inspector.

e) Vessel requalification must also include an evaluation and examination of the Yoke, Frame and vessel closures

Subject:	Require means to prevent safety valve discharge piping blockage for LCDSV (Part 2)
NBIC Location:	2023 NBIC, Part 2, S12.7 d)
Statement of Need:	Adding verbiage to the NBIC Part 1, Part 2 and Part 4 to require a means to prevent foreign material introduction to the safety valve discharge pipe.
Background Information:	Inspection of CO2 tanks (bulk liquid carbon dioxide storage vessels LCDSV) has shown some areas of the country where insects have built nests in the discharge piping of the safety valve. Once the vessel reaches 300 psi and the safety valve should begin venting, product flow is fully blocked and cannot vent the vessel pressure. In some instances, the pressure has been found to be as high as 350 psi while safety valve outlet discharge is fully restricted. (The vessel MAWP in this example was 300 psi.) An example is dirt dobber bees can block the discharge line and pushing an ink pen through the dirt will allow for sudden venting of the vessel's built-up pressure. The sudden burst of flow from the discharge does present a potential hazard.

Proposed Text:

S12.7 VALVES, PIPING, TUBING AND FITTINGS

d) Safety Relief/Vent Lines – The inspection, where possible, should verify the integrity of the pressure relief/vent line from the pressure relief valve to outside vent line discharge fitting. Additionally, all safety relief/vent line discharge shall be protected to prevent stoppage of the lines by foreign material, moisture, or insects. All connections shall be securely fastened to the LCDSV. The minimum size and length of the lines shall be in accordance with NBIC Part 2, Tables S12.7-a and S12.7-b. Fittings or other connections may result in a localized reduction in diameter have been factored into the lengths given by the NBIC Part 2, Tables S12.7-a and S12.7-b.

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Part 2, 2.3.6.8 ASME PVHO Forms call out the 2016 Edition
NBIC Location:	2023 NBIC, Part 2, 2.3.6.8 e) and g)
Statement of Need:	It is counterproductive to limit another standard to a specific Edition because revision will be required whenever a new one is issued.
Background Information:	An Inservice student at the National Board asked the question, "Why is the NBIC limiting the ASME PVHO standard in the affected paragraphs to the 2016 Edition when Part 2, 1.3 g) does not?" The forms available should reflet the year the PVHO was manufactured, not necessarily the latest version of the form.

Proposed Text:

2.3.6.8 INSPECTION OF PRESSURE VESSELS FOR HUMAN OCCUPANCY (PVHO's)

e) Inspection of view ports/windows

1) Each window should be individually identified and be marked in accordance with ASME PVHO-1.

2) If there are any penetrations through windows, they must be circular in accordance with ASME PVHO-1 requirements.

3) Windows must be free of crazing, cracks and scratches that exceed "superficial" defects as defined by ASME PVHO-2.

4) Windows and viewports have a maximum interval for seat/seal inspection and refurbishment. Documentation should be checked to ensure compliance with ASME PVHO-2, Section 2-4.4.

5) Windows have a maximum service life ranging from 10 to 20 years depending on the type of window and service conditions.

6) Documentation should be checked to ensure compliance with ASME PVHO-2 inspection and refurbishment requirements (ASME PVHO-2~~-2016~~, Tables 2-4.3-1 and 2-4.3-2) and service life limitations (ASME PVHO-2~~-2016~~, Section 2-4.4).

g) Acceptance criteria
The following forms are required to be available for review:

1) ASME BPV Forms U-1, U-1A or U-2 as appropriate for vessels built to ASME B&PV Code Section VIII. For vessels built to other rule sets, the equivalent forms shall be available;

2) ASME PVHO-1~~–2016~~ Form GR-1 Manufacturer's Data Report for Pressure Vessels for Human Occupancy;

3) ASME PVHO-1~~–2016~~ Form VP-1 Fabrication Certification for Acrylic Windows (one for each window);

4) ASME PVHO-1~~–2016~~ Form VP-2 Design Certification for Acrylic Windows (one for each window);

5) ASME PVHO-2~~–2016~~ Form VM-1 Viewport Inspection (one for each window, current within ASME PVHO-2 inspection interval requirements); and

6) For any repaired windows, ASME PVHO-2~~–2016~~ Form VM-2 Acrylic Window Repair Certificate for Windows. Repaired by the User (or his Authorized Agent) or ASME PVHO-2~~–2016~~ Form VM-3 Acrylic Window Repair Certificate for Severely Damaged Windows.

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Add field to NB 6 & NB 7 from JRS Team
NBIC Location:	2023 NBIC, Part 2, 5.3.2 c) and d)
Statement of Need:	Repeatedly came up in investigations and in discussions that after reviewing an inspection form the reader has no idea if the object was operating.
Background Information:	See statement of need.

Proposed Text:

Add to the NB 6 & 7 "Equipment Operating at the time of inspection with yes no box.

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Add language clarifying the limitation of inspections presented by design.
NBIC Location:	2023 NBIC, Part 2, 2.1
Statement of Need:	Currently an inspector could be held responsible for conditions they could not reasonably access.
Background Information:	Without a statement explaining the limitations persons not familiar with code construction may erroneously believe and inspector can access all surfaces of a boiler.

Proposed Text:

2.1 SCOPE

This section provides general and detailed inspection requirements and guidelines for pressure-retaining items to determine corrosion deterioration and possible prevention of failures for boilers, pressure vessels, piping, and pressure relief devices.

Materials to be inspected shall be suitably prepared so that surface irregularities will not be confused with or mask any defects. Material conditioning such as cleaning, buffing, wire brushing, or grinding may be required by procedure or, if requested, by the Inspector. The Inspector may require insulation or component parts to be removed.

Inspectors are not always able to see all parts of the boiler during an inspection. The construction of the boiler can limit the scope of inspection. Boilers without handholes and manholes limit visual access to water and steam side surfaces.

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Need to restrict signatures to inspections for which the inspector was present
NBIC Location:	2023 NBIC, Part 2, 1.5.1
Statement of Need:	It has become practice in one jurisdiction for inspectors to sign inspection reports for apprentices.
Background Information:	See statement of need.

Proposed Text:

1.5.1 INSERVICE INSPECTION ACTIVITIES

Any defect or deficiency in the condition, operating, and maintenance practices of a boiler, pressure vessel, piping system, and pressure relief devices noted by the Inspector shall be discussed with the owner or user at the time of inspection and recommendations made for the correction of such defect or deficiency shall be documented. Use of a checklist to perform inservice inspections is recommended. The inspector is required to be present during the inspection and should only sign documents pertaining to inspections at which they were in attendance.

Item I24-16

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Volumetric Examination when using alternative welding methods without PWHT
NBIC Location:	2023 NBIC Part 3, 2.5.3 e)
Statement of Need:	The existing language, in its current form, does not make it clear whether volumetric examination is required when using alternative welding methods. The last phrase in the sentence sends the user to paragraph 4.2 which in turn sends the user back to the original code of construction. If a weld greater than 3/8 in. did not require volumetric examination at construction, then what purpose does the last sentence serve? The phrase on the other side of "or" where volumetric examination was required at construction is self-explanatory, but 4.2 permits using alternative NDE methods, suggesting MT or PT. These two methods are currently mandated "shall be" requirements in the first sentence of 2.5.3 e). If the intent is to require volumetric examination for welds greater than 3/8 in., and welds that required volumetric examination at construction, then there should be a firm statement to this effect.
Background Information:	A discussion arose during an NBBI examination question review, specifically whether welds greater than 3/8 in. (10 mm) deep or other welds in a pressure retaining item that were originally required to be volumetrically examined by the rules of the original code of construction are required to be volumetrically examined.
Proposed Question:	Is volumetric examination required when using Alternative Weld Methods for welds greater than 3/8 in. or welds that required volumetric examination at construction?
Proposed Reply:	Yes.
Committee's Question:	Are the requirements for volumetric examination of weld repairs/alterations of cavities with depths 3/8-inch or greater, associated with alternative weld methods without PWHT as described in Part 3 paragraph 2.5.3.e, limited to those listed in Part 3 paragraph 4.2?
Committee's Reply:	Yes.

Rationale:	Paragraph 2.5.3.e indicates that weld repairs of cavities 3/8-inch or greater require additional examination in accordance with paragraph 4.2. No additional volumetric NDE requirements are listed in 2.5.3.e based on the current edition of NBIC (2025).

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

PROPOSED INTERPRETATION

Item No.

I24-25

Subject/Title

4.4.1 (e) and 4.4.2 (c) NDE Methods

Project Manager and Task GroupTBD

Source (Name/email)

Jon Ferreira / jonathan_ferreira@hsb.com

Statement of Need

There seems to be some confusion by inspectors and R certificate holders of what NDE methods are acceptable when NDE is used in lieu of a pressure test. The proposed questions will provide clarity on this matter.

Background Information

4.4.1 (e) and 4.4.2 (c) permit the use of NDE to verify the integrity of the repair of alteration. NDE methods other than what is listed in the original code of construction are being used for repair and alterations in some locations throughout the US. For example, Acoustic Emission Testing (AE) in accordance with ASME Section V Article 12 has been used on power boiler (HRSG) repairs. Acoustic Emission Testing is not an NDE method that is addressed in ASME Section I or Section VIII Div.1, but it is an NDE method in the reference code ASME Section V. Some inspectors are questioning this as AE is not an NDE method used in the original code of construction.

Proposed Question 1

May NDE methods not addressed in the original code of construction be used to verify the integrity of the repair of alteration?

Proposed Reply

Yes, provided the NDE method selected can provide meaningful results

Proposed Question 2

If the answer to question 1 is yes, is it required for the NDE method that is selected to have a written procedure following ASME Section V or another recognized national or international standard for the NDE method in question?

Proposed Reply

Yes

Proposed Question 3

If an NDE method that is not addressed in the original code of construction is used, do the NDE personnel performing the NDE method need to be certified to a written practice?

Proposed Reply

Yes

Committee's Question 1

May NDE methods not addressed in the original code of construction be used to verify the integrity of the repair of alteration?

Committee's Reply 1

Yes, with acceptance of the Inspector and the jurisdiction, if applicable, provided the NDE method selected can provide meaningful results

Rationale

4.4.2 a)

Committee's Question 2

If the answer to question 1 is yes, is it required for the NDE method that is selected to have a written procedure following ASME Section V or another recognized national or international standard for the NDE method in question?

Committee's Reply 2

Yes.

Committee's Question 3

If an NDE method that is not addressed in the original code of construction is used, do the NDE personnel performing the NDE method need to be certified to a written practice?

Committee's Reply 3

Yes

PROPOSED INTERPRETATION

Item No.

24-40

Subject/Title

Routine repair vs Alteration

Project Manager and Task Group

Michael Carlson, Don Kinney, Craig Hopkins

Source (Name/Email)

Paul Shanks / paul.shanks@bureauveritas.com

Statement of Need

Some people use rules of thumb outside of the NBIC definition to make decision, these rules of thumb do not align with the written rules and cause project delays and extended outages

Background Information

Interpretation 19-25 clarifies that the examples of repairs and alteration are not exhaustive, Section 9 of NBIC part 3 provides for definitions of terms- those used for alteration and repair do not always and obviously match the examples.

Proposed Question

When replacing 2" tubes in boiler that are attached by welding, provided that the MAWP, Heating surface area and steaming capacity do not change may this activity be considered a routine repair?

Proposed Reply

Yes

Committee's Question 1

When the replacement of a tube is not considered to be an alteration by definition or when referencing NBIC Part 3, 3.4, may this activity be considered a Routine Repair?

Committee's Reply 1

Yes, when the applicable requirements in NBIC Part 3, 3.3.2 are met.

Rationale

Committee's Question 2

Committee's Reply 2

Rationale

Item I24-27

Subject: Replacement of Repair Nameplate

Location: Part: Inspection; Section: 5; Paragraph: 5.2.1

Statement of Need:
There is a lack of clarity for replacing a Repair Nameplate that has become lost, illegible, or detached, and the stamping/markings required.

Background:
There is a lack of clarity for replacing a Repair Nameplate that has become lost, illegible, or detached, and the stamping/markings required.

Proposed Question:
1. Q1- Does the replacement of a Repair Nameplate require the manufacturer of the pressure-retaining item be contacted per 5.2.1 a)?
2. Q2 - Is the "R" Stamp required to be on a "Replacement" Repair Nameplate?
3. Q3 - May an "R" Cert. Holder other than the original company whose repair nameplate is being replaced, stamp their own "R" Stamp on a "Replacement" repair nameplate?

Proposed Reply:
1. A1-No. The original manufacturer has no bearing on the repair nameplate.
2. A2-No. Only the original organization that made the "R" Stamp repair on the date indicated on the original repair nameplate may stamp the "R" Certificate symbol for a repair in accordance with the NBIC.
3. A3-No.

Committee's Question:

Committee's Reply:

Rationale: Replacement of repair nameplates are not addressed in Part 2.

Item I24-99

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Preparation of Form R-2 Construction Scope
NBIC Location:	2023 NBIC Part 3, 5.2.2 c)
Statement of Need:	Disposition if NDE and pressure testing is considered construction activity and R-2 fields "7-b", Construction Certification, and Certificate for Inspection are required.
Background Information:	Re-rate performed on ASME Section VIII Division 1 pressure vessel where NDE (Ultrasonic and liquid penetrant) along with a liquid pressure test were performed. R certificate holder only performed design and no construction activities. Design Certification and Certification of Design Change Review sections are completed leaving the remaining sections blank.
Proposed Question:	When the same R certificate holder performs a re-rate utilizing form R-2 and no physical changes are made only performing NDE and pressure testing, must the Construction Certification and Certificate for Inspection sections of form R-2 be completed when the Design Certification and Certification of Design Change Review sections are completed?
Proposed Reply:	Yes, fields 7b, Construction Certification, and Certificate for Inspection are required. or No, only Design Certification and Certification of Design Change Review sections are required.
Committee's Question:	<Question(s) the committee will interpret. Can be the same wording as the proposed question>
Committee's Reply:	<Yes or no response>
Rationale:	<Additional clarification for response>

Item I24-107

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Addition of a nozzle details
NBIC Location:	2023 NBIC Part 3, 3.3.3 j)
Statement of Need:	Further guidance on this section.
Background Information:	Certificate holder would like to install a new nozzle into vessel head. Vessel has many different nozzle designs into top head, bottom head, and shell. Nozzles are installed with reinforcement, without reinforcement, set-on, set-in, and at different angles from the vessel. Seeking more definition on NBIC "located in a similar part of vessel" and "identical" to one of original design. Certificate holder would like to utilize a nozzle design on vessel head at a different arc on the head where the nozzle's axis will be different from the head. Vessel is vertically oriented and current nozzle is connected to head on a horizontal axis. New nozzle would be installed vertically.
Proposed Question:	When installing a new nozzle when reinforcement is a consideration, 1) does the statement "located in a similar part of the vessel" mean it must be from the head or shell and utilized on the head or shell? If yes, must the design for the nozzle on the head be located on a similar arc of the head? 2) does the statement "identical" mean every aspect of the nozzle design must be copied? Would a current nozzle without reinforcement be utilized for installation with reinforcement? 3) does the orientation or angle of the nozzle from its axis limit its use for this intention?
Proposed Reply:	Further guidance is requested on the above three items. Yes or no responses with some guidance would be expected proposed reply.
Committee's Question:	<Question(s) the committee will interpret. Can be the same wording as the proposed question>
Committee's Reply:	<Yes or no response>
Rationale:	<Additional clarification for response>

S3.2 REPAIRS

c) The material used in making repairs or alterations shall conform to the requirements of the original code of construction except as provided in NBIC Part 3, S3.2 j). The "R" Certificate Holder is responsible for verifying identification of existing materials from original data, drawings, or unit records and identification of the materials to be installed. Where material properties are used in supporting calculations, replacement parts shall meet or exceed the original material strength values; otherwise, recalculation and alteration is required.

S3.4 ALTERATIONS

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

b) All re-ratings shall be pressure tested in accordance with the original code of construction. 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, but not less than 30 minutes.

~~b~~c) Alteration of the spring design (e.g., change in stiffness or the initial compression) of a graphite shell-and-tube heat exchanger shall be done only after revised calculations have been prepared in accordance with the "R" Certificate Holder's Quality ~~Control~~ System and accepted by the Inspector.

S3.3 ROUTINE REPAIRS

a) The following repairs shall be considered routine, and shall comply with NBIC Part 3, 3.3.2 a), b), and c).

1) Machining — routine repair shall not include the machining of pressure-retaining parts with the exception of minor machining for cleaning and joint preparation not to exceed 1/32 in. (0.8 mm) of material thickness.

2) Repair of Gasket Surfaces — re-machining of gasket surfaces, re-serrating, or flattening is permitted if the design thickness is maintained.

3) Replacing Individual Tubes — drilling out and replacing tubes with new tubes or repaired tubes. Only certified materials shall be used for this repair.

4) Nozzle Replacement — complete or partial replacement of nozzles by removing all or a length of the existing nozzle and cementing a new piece in place. This is applicable for nozzles with inside diameters not exceeding ~~6~~ 10 inches (254~~152~~ mm).

5) Plugging Tubes — plugging individual tubes using accepted procedures.

6) Surface Repair — surface repair by installation of plugs or inlay material shall not exceed 1 $in.^3$ (16 cm^3) of total volume.

7) Replacement or Addition of Non-Load Bearing Attachments to Pressure-Retaining Item — For attachment of non-load bearing attachments to pressure-retaining items, the cementing procedure specification need only be qualified for the pressure part and cement to be used.

Item A23-60

CHANGES TO BE ADDED BASED ON 9/25/24 Meeting:

- **Change Authorized Nuclear Inspector to Inspector through out 1.6**
- **Remove Inspector endorsement requirements from 1.6.6.2 t), 1.6.7.2 t), 1.6.8.2 t).**
- **Remove statement regarding signing NR-1 without satified all work iaw NBIC.**
- **S9.6 and S9.7 change to Inspector.**
- **MOVE ALL OF 1.6 TO NEW SUPPLEMENT**

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.2.1 DEFINITIONS The NBIC terms and definitions shall be supplemented, as applicable, by the terms and definitions of ASME Section III, Section XI Division I, NQA-1, or other standards specified by the Regulatory Authority. The following terms are as defined in the NBIC Glossary of Terms Section 9: a) Authorized Inspection Agency b) Authorized Nuclear Inspection Agency c) Jurisdiction d) "NR" Certificate Holder	**1.6.2.1 DEFINITIONS** The NBIC terms and definitions shall be supplemented, as applicable, by the terms and definitions of ASME Section III, Section XI Division I, NQA-1, or other standards specified by the Regulatory Authority. The following terms are as defined in the NBIC Glossary of Terms Section 9: a) Authorized Inspection Agency ~~b) Authorized Nuclear Inspection Agency~~ ~~c)~~ b) Jurisdiction ~~d)~~ c) "NR" Certificate Holder
1.6.3 PREREQUISITES FOR ISSUING A NATIONAL BOARD "NR" CERTIFICATE OF AUTHORIZATION Before an organization can obtain a National Board "NR" Certificate of Authorization, the organization shall: a) Have and maintain an inspection agreement with an Authorized Nuclear Inspection Agency accepted in accordance with NB-360, National Board Acceptance of Authorized Inspection Agencies (AIA) Accredited by the American Society of Mechanical Engineers (ASME), with accreditation to perform repair and alteration acceptance inspections. b) Have a written Quality Assurance Program which includes the quality assurance manual and any supporting procedures, instructions and specifications required to comply with this section. The Quality Assurance Program shall address all controls for the intended category and scope of activities requested.	**1.6.3 PREREQUISITES FOR ISSUING A NATIONAL BOARD "NR" CERTIFICATE OF AUTHORIZATION** Before an organization can obtain a National Board "NR" Certificate of Authorization, the organization shall: a) Have and maintain an inspection agreement with an Authorized ~~Nuclear~~ Inspection Agency meeting requirements identified in NBIC Part 3, 1.6.5.4 ~~accepted in accordance with NB-360, National Board Acceptance of Authorized Inspection Agencies (AIA) Accredited by the American Society of Mechanical Engineers (ASME), with accreditation to perform repair and alteration acceptance inspections.~~ b) Have a written Quality Assurance Program which includes the quality assurance manual and any supporting procedures, instructions and specifications required to comply with this section. The Quality Assurance Program shall address all

c) Have a current edition of the NBIC. d) Have available ASME Section XI Division I, the code of construction and referenced code sections and standards appropriate for the scope of work to be performed. ASME Section XI Division I and codes of construction (Editions/Addenda) shall meet the requirements of the Regulatory Authority and the owner.	controls for the intended category and scope of activities requested. c) Have a current edition of the NBIC. d) Have available ASME Section XI Division I, the code of construction and referenced code sections and standards appropriate for the scope of work to be performed. ASME Section XI Division I and codes of construction (Editions/Addenda) shall meet the requirements of the Regulatory Authority and the owner.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.4 OBTAINING OR RENEWING A NATIONAL BOARD "NR" CERTIFICATE OF AUTHORIZATION a) Before an "NR" Certificate of Authorization will be issued or renewed, the applicant must have the Quality Assurance Program and the implementation of the program reviewed and found acceptable by representatives of the National Board, the Jurisdiction, and the Authorized Nuclear Inspection Agency. The Jurisdiction will be the National Board Member Jurisdiction in which the applicant is located or the location where the Quality Assurance Program is demonstrated/implemented. At the request of the Jurisdiction, or where there is no National Board Member Jurisdiction, the National Board representative shall act on behalf of the Jurisdiction. The implementation of the Quality Assurance Program shall be satisfactorily demonstrated by the organization. Demonstration of implementation shall meet the most stringent (classification) code requirements for the scope and category of work to be specified on the Certificate of Authorization or as requested by the applicant. b) If the applicant is an ASME "N" type Certificate of Authorization holder, has satisfactorily demonstrated within the last twelve (12) months the implementation of their Quality Assurance Program and can provide documentation that the organization is capable of implementing its Quality Assurance Program as being in compliance with this section, a further hardware verification implementation may not be necessary. c) The Regulatory Authority or Jurisdiction, upon request to the National Board, may attend the survey process for an "NR" Certificate of Authorization to be issued or renewed. d) The "NR" Certificate of Authorization holder shall be subject to an audit annually by the Authorized Nuclear Inspection Agency to ensure compliance with the Quality Assurance Program.	**1.6.4 OBTAINING OR RENEWING A NATIONAL BOARD "NR" CERTIFICATE OF AUTHORIZATION** a) Before an "NR" Certificate of Authorization will be issued or renewed, the applicant must have the Quality Assurance Program and the implementation of the program reviewed and found acceptable by representatives of the National Board, the Jurisdiction, and the Authorized ~~Nuclear~~ Inspection Agency. The Jurisdiction will be the National Board Member Jurisdiction in which the applicant is located or the location where the Quality Assurance Program is demonstrated/implemented. At the request of the Jurisdiction, or where there is no National Board Member Jurisdiction, the National Board representative shall act on behalf of the Jurisdiction. The implementation of the Quality Assurance Program shall be satisfactorily demonstrated by the organization. Demonstration of implementation shall meet the most stringent (classification) code requirements for the scope and category of work to be specified on the Certificate of Authorization or as requested by the applicant. b) If the applicant is an ASME "N" type Certificate of Authorization holder, has satisfactorily demonstrated within the last twelve (12) months the implementation of their Quality Assurance Program and can provide documentation that the organization is capable of implementing its Quality Assurance Program as being in compliance with this section, a further hardware verification implementation may not be necessary. c) The Regulatory Authority or Jurisdiction, upon request to the National Board, may attend the survey process for an "NR" Certificate of Authorization to be issued or renewed. d) The "NR" Certificate of Authorization holder shall be subject to an audit annually by the Authorized ~~Nuclear~~ Inspection Agency to ensure compliance with the Quality Assurance Program.

Existing text – NBIC Part 3 – 2023	New proposed text
Note to editor: **Insert new 1.6.5, 1.6.5.1, 1.6.5.2, 1.6.5.3 and 1.6.5.4. Renumber existing 1.6.5 to 1.6.9**	**1.6.5 INSPECTOR** **a) Inspection and certification shall be made by an Inspector holding a valid National Board commission with the "R" endorsement issued by the National Board.** **b) The Inspector shall additionally:** **1) For Category 1, Hold a "N" endorsement and be employed by an Authorized Inspection Agency in accordance with NB-263, Rules for Commissioned Inspectors (RCI-1) (see NBIC Part 3, Section 9, Glossary of Terms for definition of Authorized Inspection Agency) or be employed or appointed or accepted by the Regulatory Authority ~~in the country or region~~ having jurisdiction over the designated plant.** **2) For Category 2, Hold a "I" endorsement and be employed by an Authorized Inspection Agency in accordance with NB-263, Rules for Commissioned Inspectors (RCI-1) (see NBIC Part 3, Section 9, Glossary of Terms for definition of Authorized Inspection Agency) or be employed or appointed or accepted by the Regulatory Authority ~~in the country or region~~ having jurisdiction over the designated plant.** **3) For Category 3, Hold qualifications required by the Regulatory Authority and be employed by an Authorized Inspection Agency in accordance with NB-263, Rules for Commissioned Inspectors (RCI-1) or be employed or appointed or accepted by the Regulatory Authority ~~in the country or region~~ having jurisdiction over the designated plant. ~~In case that~~ When the Regulatory Authority does not specify Inspector qualifications, NBIC Part 3, 1.6.5 a) and b)2) shall apply.**

Existing text – NBIC Part 3 – 2023	New proposed text
	1.6.5.1 SUPERVISOR **a) Supervisors of Inspectors shall hold a qualifications for Inspector as required in NBIC Part 3, 1.6.5.** **b) The Supervisor shall additionally:** **1) For Category 1 - Hold a "NS" endorsement and be employed by an Authorized Inspection Agency in accordance with NB-263, *Rules for Commissioned Inspectors* (RCI-1) or/and be employed or appointed or accepted by theRegulatory Authority ~~in the country or region~~ having jurisdiction over the designated plant.** **2) For Category 2 - Hold a "NSI" endorsement and be employed by an Authorized Inspection Agency in accordance with NB-263, *Rules for Commissioned Inspectors* (RCI-1) or/and be employed or appointed or accepted by the Regulatory Authority ~~in the country or region~~ having jurisdiction over the designated plant.** **3) For Category 3 - Hold qualifications required by the Regulatory Authority and be employed by an Authorized Inspection Agency in accordance with NB-263, *Rules for Commissioned Inspectors* (RCI-1) or be employed or appointed or accepted by the Regulatory Authority ~~in the country or region~~ having jurisdiction over the designated plant. ~~In case that~~When the Regulatory Authority does not specify Supervisor qualifications, NBIC Part 3, 1.6.5.1a) and b)2) shall apply.**

Existing text – NBIC Part 3 – 2023	New proposed text
	1.6.5.2 AUTHORIZATION **The Inspector's authorization to perform a repair or alteration shall be obtained by the "NR" Certificate Holder prior to initiation of a repair or alteration to a pressure-retaining item. The Inspector shall determine that the repair or alteration methods are acceptable.**

Existing text – NBIC Part 3 – 2023	New proposed text
	1.6.5.3 INSPECTIONS AND CERTIFICATIONS **a) Inspections and certification of NBIC FORM NR-1, REPORT OF REPAIR/REPLACEMENT ACTIVITIES FOR NUCLEAR FACILITIES shall be performed by the same Inspector who authorized the repair or alteration activity. Where this is not possible or practicable, another Inspector may perform these duties; however, in all cases, duties associated within the same scope of work shall be performed by Inspectors employed by the same Authorized Inspection Agency.** **b) Before signing the NBIC FORM NR-1, REPORT OF REPAIR/REPLACEMENT ACTIVITIES FOR NUCLEAR FACILITIES, the Inspector shall verify all applicable Inspector duties have been performed as required in NB-263, RCI-1.**

Existing text – NBIC Part 3 – 2023	New proposed text
	1.6.5.4 Authorized Inspection Agency **Inspector performing inspection for "NR" Certificate Holder and Supervisor shall be employed by the Authorized Inspection Agency (see NBIC Part 3, Section 9, Glossary of Terms for definition of Authorized Inspection Agency) .** **The Authorized Inspection Agency additionally shall be either** **a) meet~~ing~~ the qualification and duties of NB-360, National Board Acceptance of Authorized Inspection Agencies (AIA) Accredited by the American Society of Mechanical Engineers (ASME) and intending to perform nuclear inspection activities and employing Authorized Nuclear Inspectors / Supervisors. The Certificate of Accreditation from ASME must include the performance of inspection activities covering:** **1) For Category 1 - Section III** **2) For Category 2 – Section III and XI Division 1** **b) Alternately to requirements 1.6.5.4 a) the Authorized Inspection Agency may be the Regulatory Authority or be appointed or accepted by the Regulatory Authority ~~in the country or region~~ having jurisdiction over the designated plant.**

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.5 QUALITY ASSURANCE PROGRAM a) An applicant or a holder of a National Board "NR" *Certificate of Authorization* ("NR" Certificate Holder) shall have and maintain a written Quality Assurance Program. The Quality Assurance Program shall satisfactorily meet the requirements of this section, and Jurisdictional and Regulatory requirements as applicable. The Quality Assurance Program may be brief or voluminous, depending on the circumstances. It shall be treated confidentially by the National Board and available for review by the Survey Team. b) Each applicant or "NR" Certificate Holder is responsible for establishing and executing a Quality Assurance Program. The applicant or "NR" Certificate Holder may subcontract activities needed to implement the Quality Assurance Program, as limited by ASME Section III and XI Division I, but responsibility for adherence to the Quality Assurance Program remains with the Applicant or "NR" Certificate Holder. c) These rules set forth the requirements for planning, managing, and implementing the organization's Quality Assurance Program to control and ensure quality is performed and maintained during repair/replacement activities of components, items, parts, and systems for nuclear facilities. These rules are to be the basis for evaluating such programs prior to the issuance or renewal of the National Board "NR" *Certificate of Authorization*. Rules identified in subsections 1.6.6, 1.6.7 and 1.6.8 of this section detail the Quality Assurance Program requirements for each category of activity. These rules are established to meet and follow the requirements specified in NBIC Part 3, Table 1.6.2 of this section.	**1.6.~~5~~6 QUALITY ASSURANCE PROGRAM** a) An applicant or a holder of a National Board "NR" *Certificate of Authorization* ("NR" Certificate Holder) shall have and maintain a written Quality Assurance Program. The Quality Assurance Program shall satisfactorily meet the requirements of this section, and Jurisdictional and Regulatory requirements as applicable. The Quality Assurance Program may be brief or voluminous, depending on the circumstances. It shall be treated confidentially by the National Board and available for review by the Survey Team. b) Each applicant or "NR" Certificate Holder is responsible for establishing and executing a Quality Assurance Program. The applicant or "NR" Certificate Holder may subcontract activities needed to implement the Quality Assurance Program, as limited by ASME Section III and XI Division I, but responsibility for adherence to the Quality Assurance Program remains with the Applicant or "NR" Certificate Holder. c) These rules set forth the requirements for planning, managing, and implementing the organization's Quality Assurance Program to control and ensure quality is performed and maintained during repair/replacement activities of components, items, parts, and systems for nuclear facilities. These rules are to be the basis for evaluating such programs prior to the issuance or renewal of the National Board "NR" *Certificate of Authorization*. Rules identified in subsections 1.6.~~6~~7, 1.6.~~7~~8 and 1.6.~~8~~9 of this section detail the Quality Assurance Program requirements for each category of activity. These rules are established to meet and follow the requirements specified in NBIC Part 3, Table 1.6.2 of this section.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6 QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR CATEGORY 1 ACTIVITIES **1.6.6.1 SCOPE** Owners or organizations other than owners shall have a written Quality Assurance Program meeting the criteria specified in NBIC Part 3, Table 1.6.2 for Category 1 activities. The following quality elements shall be specified and described within the QAM.	**1.6.~~6~~7 QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR CATEGORY 1 ACTIVITIES** **1.6.~~6~~7.1 SCOPE** Owners or organizations other than owners shall have a written Quality Assurance Program meeting the criteria specified in NBIC Part 3, Table 1.6.2 for Category 1 activities. The following quality elements shall be specified and described within the QAM.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS a) Organization The provisions identified in ASME NQA-1, Part 1, Requirement 1, shall apply in its entirety. The authority and responsibility for individuals involved in activities affecting quality shall be clearly established and documented throughout the Quality Assurance Program and identified on a functional organizational chart contained within the QA Manual.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** a) Organization The provisions identified in ASME NQA-1, Part 1, Requirement 1, shall apply in its entirety. The authority and responsibility for individuals involved in activities affecting quality shall be clearly established and documented throughout the Quality Assurance Program and identified on a functional organizational chart contained within the QA Manual.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS b) Statement of Policy and Authority shall: 1) identify the titles of individuals who have the authority and responsibility charged with ensuring the quality program is implemented as described; 2) confirm their freedom in the organization to identify quality problems and to initiate, recommend and provide solutions; 3) include a statement that if there is a disagreement in the implementation of the quality assurance program, the matter is to be referred for resolution to a higher authority and shall be resolved in a manner that will not conflict with code, jurisdiction/regulatory authority or quality program requirements; 4) include a statement of the full support of management; and 5) be dated and signed by a senior management official within the organization.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** b) Statement of Policy and Authority shall: 1) identify the titles of individuals who have the authority and responsibility charged with ensuring the quality program is implemented as described; 2) confirm their freedom in the organization to identify quality problems and to initiate, recommend and provide solutions; 3) include a statement that if there is a disagreement in the implementation of the quality assurance program, the matter is to be referred for resolution to a higher authority and shall be resolved in a manner that will not conflict with code, jurisdiction/regulatory authority or quality program requirements; 4) include a statement of the full support of management; and 5) be dated and signed by a senior management official within the organization.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS c) Quality Assurance Program (QAP) The provisions identified in ASME NQA-1, Part 1, Requirement 2, shall apply, except paragraph 301. Additionally, the following criteria shall be used when developing and maintaining the QAP. 1) The Quality Assurance Program as used in this section shall include a written Quality Assurance Manual, with supporting procedures and instructions used to meet all the requirements of this Section. 2) Qualification of non-destructive examination personnel shall be as required by the code of construction or as specified in the owner's Quality Assurance Program. 3) The "NR" Certificate Holder shall be responsible for advising the Authorized Nuclear Inspection Agency of proposed changes to the Quality Assurance Manual to obtain acceptance of the Authorized Nuclear Inspector Supervisor before putting such changes into effect. The "NR" Certificate Holder shall make a current controlled copy of the Quality Assurance Manual available to the Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor. The Certificate Holder shall be responsible for notifying the Authorized Nuclear Inspector of QAM changes, including evidence of acceptance by the Authorized Nuclear Inspector Supervisor. 4) The Quality Assurance Manual need not be in the same format or sequential arrangement as the requirements in these rules as long as all applicable requirements have been covered. 5) The "NR" Certificate Holder shall implement and maintain a program for qualification, indoctrination, training and maintaining proficiency of personnel involved with quality functions, including personnel of subcontracted services. 6) The "NR" Certificate Holder shall address in their QAM the requirements for interfacing with the owner specified in NBIC Part 3, 1.6.9. 7) Specified controls including responsibilities for personnel shall be described in the quality assurance program.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** c) Quality Assurance Program (QAP) The provisions identified in ASME NQA-1, Part 1, Requirement 2, shall apply, except paragraph 301. Additionally, the following criteria shall be used when developing and maintaining the QAP. 1) The Quality Assurance Program as used in this section shall include a written Quality Assurance Manual, with supporting procedures and instructions used to meet all the requirements of this Section. 2) Qualification of non-destructive examination personnel shall be as required by the code of construction or as specified in the owner's Quality Assurance Program. 3) The "NR" Certificate Holder shall be responsible for advising the Authorized ~~Nuclear~~ Inspection Agency of proposed changes to the Quality Assurance Manual to obtain acceptance of the ~~Authorized Nuclear Inspector~~ Supervisor before putting such changes into effect. The "NR" Certificate Holder shall make a current controlled copy of the Quality Assurance Manual available to the ~~Authorized Nuclear~~ Inspector and ~~Authorized Nuclear Inspector~~ Supervisor. The Certificate Holder shall be responsible for notifying the ~~Authorized Nuclear~~ Inspector of QAM changes, including evidence of acceptance by the ~~Authorized Nuclear Inspector~~ Supervisor. 4) The Quality Assurance Manual need not be in the same format or sequential arrangement as the requirements in these rules as long as all applicable requirements have been covered. 5) The "NR" Certificate Holder shall implement and maintain a program for qualification, indoctrination, training and maintaining proficiency of personnel involved with quality functions, including personnel of subcontracted services. 6) The "NR" Certificate Holder shall address in their QAM the requirements for interfacing with the owner specified in NBIC Part 3, 1.6.~~9~~10. 7) Specified controls including responsibilities for personnel shall be described in the quality assurance program.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS d) Design Control The provisions identified in ASME NQA-1, Part 1, Requirement 3, shall apply except Paragraph 601. The following additional requirements shall be considered when applicable: 1) The "NR" Certificate Holder shall establish measures to ensure applicable requirements of the owner's design specifications, owner's requirements, and code of construction requirements are correctly translated into drawings, specifications, procedures and instructions. 2) All design documents, including revisions, shall be verified by the "NR" Certificate Holder to be correct and adequate in accordance with the owners requirements. 3) Repair/replacement plans shall be completed prior to performing any work, inspections, examinations or testing; however repair/replacement plans are not required for the design phase of a repair/replacement activity including activities that require design only (except rerating). 4) The repair/replacement plan (see NBIC Part 3, Table 1.6.9) shall identify any applicable Code Edition/Addenda and Code Cases, owner's requirements and the Construction Code Edition/Addenda utilized to perform the work. 5) The repair/replacement plan shall identify expected life of the item when less than the intended life as specified in the owner's design specification. 6) The "NR" Certificate Holder shall ensure that specifications, drawings, procedures and instructions do not conflict with the owner's design specifications. A system must be described in the Quality Assurance Manual to resolve or eliminate such conflicts. Resolution shall consider the Design Specification Requirements, as well as, the owner requirements, Jurisdictional and Regulatory Authority Requirements as applicable. 7) Computer programs used for design analysis shall meet the requirements of NQA-1, Part II, Subpart 2.7 unless independently verified with the design analysis for each application.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** d) Design Control The provisions identified in ASME NQA-1, Part 1, Requirement 3, shall apply except Paragraph 601. The following additional requirements shall be considered when applicable: 1) The "NR" Certificate Holder shall establish measures to ensure applicable requirements of the owner's design specifications, owner's requirements, and code of construction requirements are correctly translated into drawings, specifications, procedures and instructions. 2) All design documents, including revisions, shall be verified by the "NR" Certificate Holder to be correct and adequate in accordance with the owners requirements. 3) Repair/replacement plans shall be completed prior to performing any work, inspections, examinations or testing; however repair/replacement plans are not required for the design phase of a repair/replacement activity including activities that require design only (except rerating). 4) The repair/replacement plan (see NBIC Part 3, Table 1.6.~~9~~10) shall identify any applicable Code Edition/Addenda and Code Cases, owner's requirements and the Construction Code Edition/Addenda utilized to perform the work. 5) The repair/replacement plan shall identify expected life of the item when less than the intended life as specified in the owner's design specification. 6) The "NR" Certificate Holder shall ensure that specifications, drawings, procedures and instructions do not conflict with the owner's design specifications. A system must be described in the Quality Assurance Manual to resolve or eliminate such conflicts. Resolution shall consider the Design Specification Requirements, as well as, the owner requirements, Jurisdictional and Regulatory Authority Requirements as applicable. 7) Computer programs used for design analysis shall meet the requirements of NQA-1, Part II, Subpart 2.7 unless independently verified with the design analysis for each application.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS e) Procurement Document Control The provisions identified in ASME NQA-1, Part 1, Requirement 4, shall apply. Procurement documents shall require suppliers to provide a Quality Assurance Program consistent with the applicable requirements of ASME Section III and this section.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** e) Procurement Document Control The provisions identified in ASME NQA-1, Part 1, Requirement 4, shall apply. Procurement documents shall require suppliers to provide a Quality Assurance Program consistent with the applicable requirements of ASME Section III and this section.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS f) Instructions, Procedures, and Drawings The provisions identified in ASME NQA-1, Part 1, Requirement 5, shall apply. All activities affecting quality shall be prescribed by documented instructions, procedures or drawings appropriate for the scope of work to be performed. Instructions, procedures or drawings shall describe acceptance criteria to ensure quality activities are accomplished.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** f) Instructions, Procedures, and Drawings The provisions identified in ASME NQA-1, Part 1, Requirement 5, shall apply. All activities affecting quality shall be prescribed by documented instructions, procedures or drawings appropriate for the scope of work to be performed. Instructions, procedures or drawings shall describe acceptance criteria to ensure quality activities are accomplished.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS g) Document Control The provisions identified in ASME NQA-1, Part 1, Requirement 6, shall apply. The Quality Assurance Program shall detail measures to control the preparation, review, issuance, use, approval and distribution of all documents related to quality as identified in the applicants Quality Assurance Program. Revisions shall meet the same requirements as the originals unless the applicant specifies other measures within their program. Measures shall ensure the latest approved documents represent the repair/replacement activities performed.	**1.6.6~~6~~7.2 QUALITY PROGRAM ELEMENTS** g) Document Control The provisions identified in ASME NQA-1, Part 1, Requirement 6, shall apply. The Quality Assurance Program shall detail measures to control the preparation, review, issuance, use, approval and distribution of all documents related to quality as identified in the applicants Quality Assurance Program. Revisions shall meet the same requirements as the originals unless the applicant specifies other measures within their program. Measures shall ensure the latest approved documents represent the repair/replacement activities performed.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS h) Control of Purchased Material, Items, and Services The provisions identified in ASME NQA-1, Part 1, Requirement 7 shall apply, except: 1) Procurement of Authorized Inspection Agency services is not applicable as specified in paragraph 507. 2) The decision to perform bid evaluation as described in paragraph 300 is the responsibility of the "NR" Certificate Holder. 3) For Certificates of Conformance specified in paragraph 503 changes, waivers, or deviations including resolution of non-conformances must meet the requirements of ASME Section III and this Section. 4) The provisions identified in ASME NQA-1, Part 1, Requirement 7, paragraph 700 are not applicable to this section. 5) Documentary evidence for items shall conform to the requirements of ASME Section III, NCA and this Section. Materials shall meet the material certification requirements as specified in ASME Section III, NCA-3800 or NCA-4470 as applicable. Documented evidence for ASME stamped items is satisfied by a Manufacturer's Data Report. Utilization of unqualified source material shall meet the requirements of ASME Section III, NCA-4255.5. 6) The "NR" Certificate Holder may obtain items from an owner, provided the owner provides the required documentation and items are identified to meet Code and the Certificate Holders Quality Assurance Program. The "NR" Certificate Holder shall not be required to audit the owner as an approved supplier, provided the items used are exclusively for the owner and the owner procured and controlled the items under the owner's Quality Assurance Program. 7) The Quality Assurance Program shall establish controls to ensure all purchased materials, items, and services conform to the requirements of the owner's design specifications and the code of construction Edition/Addenda used to perform the work. Materials shall meet the requirements specified in ASME Section III, NCA-3800 or NCA-4470 as applicable.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** h) Control of Purchased Material, Items, and Services The provisions identified in ASME NQA-1, Part 1, Requirement 7 shall apply, except: 1) Procurement of Authorized Inspection Agency services is not applicable as specified in paragraph 507. 2) The decision to perform bid evaluation as described in paragraph 300 is the responsibility of the "NR" Certificate Holder. 3) For Certificates of Conformance specified in paragraph 503 changes, waivers, or deviations including resolution of non-conformances must meet the requirements of ASME Section III and this Section. 4) The provisions identified in ASME NQA-1, Part 1, Requirement 7, paragraph 700 are not applicable to this section. 5) Documentary evidence for items shall conform to the requirements of ASME Section III, NCA and this Section. Materials shall meet the material certification requirements as specified in ASME Section III, NCA-3800 or NCA-4470 as applicable. Documented evidence for ASME stamped items is satisfied by a Manufacturer's Data Report. Utilization of unqualified source material shall meet the requirements of ASME Section III, NCA-4255.5. 6) The "NR" Certificate Holder may obtain items from an owner, provided the owner provides the required documentation and items are identified to meet Code and the Certificate Holders Quality Assurance Program. The "NR" Certificate Holder shall not be required to audit the owner as an approved supplier, provided the items used are exclusively for the owner and the owner procured and controlled the items under the owner's Quality Assurance Program. 7) The Quality Assurance Program shall establish controls to ensure all purchased materials, items, and services conform to the requirements of the owner's design specifications and the code of construction Edition/Addenda used to perform the work. Materials shall meet the requirements specified in ASME Section III, NCA-3800 or NCA-4470 as applicable.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS i) Identification and Control of Items The provisions identified in ASME NQA-1, Part 1, Requirement 8, shall apply and include the following additional requirements: 1) Controls shall assure only correct and acceptable items, parts and components are used or installed when performing repair/replacement activities. 2) Welding, brazing and fusing materials shall be identified and controlled. 3) Required Certified Material Test Reports and Certificates of Conformance shall be received, traceable to the items, reviewed to comply with the material specification and found acceptable. 4) The “NR” Certificate Holder shall utilize checklists to identify required characteristics using accepted procedures, compliance with records received, results of examinations and tests performed, range of values when required, and spaces for inclusion of document numbers and revision levels, signatures initials / stamps and dates of examinations or tests performed, verified, and/or witnessed by the “NR” Certificate Holder’s qualified Representative and Authorized Nuclear Inspector.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** i) Identification and Control of Items The provisions identified in ASME NQA-1, Part 1, Requirement 8, shall apply and include the following additional requirements: 1) Controls shall assure only correct and acceptable items, parts and components are used or installed when performing repair/replacement activities. 2) Welding, brazing and fusing materials shall be identified and controlled. 3) Required Certified Material Test Reports and Certificates of Conformance shall be received, traceable to the items, reviewed to comply with the material specification and found acceptable. 4) The “NR” Certificate Holder shall utilize checklists to identify required characteristics using accepted procedures, compliance with records received, results of examinations and tests performed, range of values when required, and spaces for inclusion of document numbers and revision levels, signatures initials / stamps and dates of examinations or tests performed, verified, and/or witnessed by the “NR” Certificate Holder’s qualified Representative and ~~Authorized Nuclear~~ Inspector.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS j) Control of Processes The provisions identified in ASME NQA-1, Part 1, Requirement 9, shall apply. Documents used to control processes shall include spaces for signatures, initials, stamps and dates that activities were performed by the Certificate Holder's representative and the Authorized Nuclear Inspector when the processes conforms to the specified acceptance criteria as listed on drawings, procedures, instructions, specifications or other appropriate documents including revisions.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** j) Control of Processes The provisions identified in ASME NQA-1, Part 1, Requirement 9, shall apply. Documents used to control processes shall include spaces for signatures, initials, stamps and dates that activities were performed by the Certificate Holder's representative and the ~~Authorized Nuclear~~ Inspector when the processes conforms to the specified acceptance criteria as listed on drawings, procedures, instructions, specifications or other appropriate documents including revisions.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS k) Examinations, Tests, and Inspections The provisions identified in ASME NQA-1, Part 1, Requirement 10, shall apply, except paragraph 700 for inspections during operations is not required. 1) A repair/replacement plan shall be described in the Quality Assurance Manual that addresses required information to perform the work needed for repair/replacement activities. Spaces shall be included for mandatory hold points where witnessing is required by the "NR" Certificate Holder's Qualified Representative, the Authorized Nuclear Inspector or the owner's representative, if required. Work shall not proceed beyond designated mandatory hold points without documented consent as appropriate. 2) The following guidance is provided for information to be included within the repair/replacement plan: a. A detailed description of repair/replacement activities to be performed; b. Describe any defects and examination methods used to detect the defects; c. Defect removal method and requirements for identifying reference points; d. Any procedures including revisions utilized; (e.g. welding, brazing, heat treat, examination, testing) and material requirements; e. Required documentation and stamping; f. Acceptance criteria used to verify acceptability; and g. Applicable Code editions/addenda and code cases. 3) Repair/Replacement plans and evaluations shall be subject to review by the Jurisdictional and Regulatory Authority when required.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** k) Examinations, Tests, and Inspections The provisions identified in ASME NQA-1, Part 1, Requirement 10, shall apply, except paragraph 700 for inspections during operations is not required. 1) A repair/replacement plan shall be described in the Quality Assurance Manual that addresses required information to perform the work needed for repair/replacement activities. Spaces shall be included for mandatory hold points where witnessing is required by the "NR" Certificate Holder's Qualified Representative, the ~~Authorized Nuclear~~ Inspector or the owner's representative, if required. Work shall not proceed beyond designated mandatory hold points without documented consent as appropriate. 2) The following guidance is provided for information to be included within the repair/replacement plan: a. A detailed description of repair/replacement activities to be performed; b. Describe any defects and examination methods used to detect the defects; c. Defect removal method and requirements for identifying reference points; d. Any procedures including revisions utilized; (e.g. welding, brazing, heat treat, examination, testing) and material requirements; e. Required documentation and stamping; f. Acceptance criteria used to verify acceptability; and g. Applicable Code editions/addenda and code cases. 3) Repair/Replacement plans and evaluations shall be subject to review by the Jurisdictional and Regulatory Authority when required.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS l) Test Control The provisions identified in ASME NQA-1, Part 1, Requirement 11 shall apply. Testing shall be performed in accordance with written test procedures with acceptance criteria clearly defined. Prerequisites for performing each test to include calibration, equipment, trained personnel, environmental conditions and provisions for data acquisition shall be described. Test results shall be documented and evaluated by qualified personnel.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** l) Test Control The provisions identified in ASME NQA-1, Part 1, Requirement 11 shall apply. Testing shall be performed in accordance with written test procedures with acceptance criteria clearly defined. Prerequisites for performing each test to include calibration, equipment, trained personnel, environmental conditions and provisions for data acquisition shall be described. Test results shall be documented and evaluated by qualified personnel

1.6.6.2 QUALITY PROGRAM ELEMENTS	1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS
m) Control of Measuring and Test Equipment The “NR” Certificate Holder may utilize calibration and test activities performed by subcontractors when surveys and audits are performed. As an alternative to performing a survey and audit for procuring Laboratory Calibration and Test Services, the “NR” Certificate Holder as documented in their Quality Program may accept accreditation of an International Calibration and Test Laboratory Services by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) provided this alternative method is described in the “NR” Certificate Holder’s Quality Program and the following requirements are met: 1) The “NR” Certificate Holder shall review and document verification that the supplier of calibration or test services was accredited by an accredited body recognized by the ILAC MRA encompassing ISO/IEC-17025:2005 or 2017, “General Requirements for the Competence of Testing and Calibration Laboratories”. 2) For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges and uncertainties. 3) For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty. 4) The “NR” Certificate Holder’s purchase documents shall include: a. Service provided shall be in accordance with their accredited ISO/IEC-17025:2005 or 2017 program and scope of accreditation; b. As-found calibration data shall be reported in the certificate of calibration when items are found to be out-of-calibration; c. Standards used to perform calibration shall be identified in the certificate of calibration; d. Notification of any condition that adversely impacts the laboratories ability to maintain the scope of accreditation; e. Any additional technical and/or quality requirements, as necessary, which may include	m) Control of Measuring and Test Equipment The “NR” Certificate Holder may utilize calibration and test activities performed by subcontractors when surveys and audits are performed. As an alternative to performing a survey and audit for procuring Laboratory Calibration and Test Services, the “NR” Certificate Holder as documented in their Quality Program may accept accreditation of an International Calibration and Test Laboratory Services by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) provided this alternative method is described in the “NR” Certificate Holder’s Quality Program and the following requirements are met: 1) The “NR” Certificate Holder shall review and document verification that the supplier of calibration or test services was accredited by an accredited body recognized by the ILAC MRA encompassing ISO/IEC-17025:2005 or 2017, “General Requirements for the Competence of Testing and Calibration Laboratories“NR”. 2) For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges and uncertainties. 3) For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty. 4) The “NR” Certificate Holder’s purchase documents shall include: a. Service provided shall be in accordance with their accredited ISO/IEC-17025:2005 or 2017 program and scope of accreditation; b. As-found calibration data shall be reported in the certificate of calibration when items are found to be out-of-calibration; c. Standards used to perform calibration shall be identified in the certificate of calibration; d. Notification of any condition that adversely impacts the laboratories ability to maintain the scope of accreditation; e. Any additional technical and/or quality requirements, as necessary, which may include

tolerances, accuracies, ranges, and standards; and f. Service suppliers shall not subcontract services to any other supplier. 5) The “NR” Certificate Holder shall upon receipt inspection, validate that the laboratory documentation certifies that: a. Services provided by the laboratory has been performed in accordance with their ISO/IEC-17025:2005 or 2017 program and performed within their scope; and b. Purchase order requirements have been met.	tolerances, accuracies, ranges, and standards; and f. Service suppliers shall not subcontract services to any other supplier. 5) The “NR” Certificate Holder shall upon receipt inspection, validate that the laboratory documentation certifies that: a. Services provided by the laboratory has been performed in accordance with their ISO/IEC-17025:2005 or 2017 program and performed within their scope; and b. Purchase order requirements have been met.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS n) Handling, Storage, and Shipping The provisions of ASME NQA-1, Part 1, and Requirement 13 shall apply.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** n) Handling, Storage, and Shipping The provisions of ASME NQA-1, Part 1, and Requirement 13 shall apply.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS o) Quality Assurance Records The provisions identified in ASME NQA-1, Part 1, Requirement 17, shall apply, except Paragraphs 400, 500, and 600 are not applicable. The following requirements shall be followed: 1) Records shall be identifiable and retrievable; 2) Records shall be retained consistent with the owners requirements for duration, location and assigned responsibility; 3) Forms NR-1 and NVR-1 as applicable shall be completed by the "NR" Certificate Holder upon completion of all repair/replacement activities. Completion of forms, registrations and stamping of the "NR" symbol stamp shall meet the requirements of NBIC Part 3, Section 5. A log shall be maintained in accordance with NBIC Part 3, 5.6; 4) Lifetime and non-permanent records shall be as specified in ASME Section III, NCA-4134, Tables NCA-4134.17-1, and 4134.17-2; 5) Radiographs (digital images or film) may be reproduced provided that: a. The process shall be subject to owner's approval; b. The "NR" Certificate Holder is responsible for the process used and shall include a system for controlling and monitoring the accuracy so that the image will provide the same information as the original; and c. Procedures shall contain requirements for exposure scanning, focusing, contrast, resolution and distinguishing film artifacts as applicable for reproduced images. 6) Records shall be classified, maintained and indexed and shall be accessible to the owner, owner's designee, and the Authorized Nuclear Inspector; and 7) When the "NR" Certificate Holder is the owner, designated records and reports received by the owner, shall be filed and maintained in a manner to allow access by the Authorized Nuclear Inservice Inspector. Suitable protection from deterioration and damage shall be provided by the owner. All records and reports shall be retained as specified in the owners QAP for the lifetime of the component or system.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** o) Quality Assurance Records The provisions identified in ASME NQA-1, Part 1, Requirement 17, shall apply, except Paragraphs 400, 500, and 600 are not applicable. The following requirements shall be followed: 1) Records shall be identifiable and retrievable; 2) Records shall be retained consistent with the owners requirements for duration, location and assigned responsibility; 3) Forms NR-1 and NVR-1 as applicable shall be completed by the "NR" Certificate Holder upon completion of all repair/replacement activities. Completion of forms, registrations and stamping of the "NR" symbol stamp shall meet the requirements of NBIC Part 3, Section 5. A log shall be maintained in accordance with NBIC Part 3, 5.6; 4) Lifetime and non-permanent records shall be as specified in ASME Section III, NCA-4134, Tables NCA-4134.17-1, and 4134.17-2; 5) Radiographs (digital images or film) may be reproduced provided that: a. The process shall be subject to owner's approval; b. The "NR" Certificate Holder is responsible for the process used and shall include a system for controlling and monitoring the accuracy so that the image will provide the same information as the original; and c. Procedures shall contain requirements for exposure scanning, focusing, contrast, resolution and distinguishing film artifacts as applicable for reproduced images. 6) Records shall be classified, maintained and indexed and shall be accessible to the owner, owner's designee, and the ~~Authorized Nuclear~~ Inspector; and 7) When the "NR" Certificate Holder is the owner, designated records and reports received by the owner, shall be filed and maintained in a manner to allow access by the ~~Authorized Nuclear Inservice~~ Inspector. Suitable protection from deterioration and damage shall be provided by the owner. All records and reports shall be retained as specified in the owners QAP for the lifetime of the component or system.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS p) Corrective Action The provisions identified in ASME NQA-1, Part 1, Requirement 16 shall apply. 1) Measures shall be established to ensure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and other non-conformances are promptly identified and corrected. 2) In the case of significant conditions adverse to quality, the measures shall also ensure that the cause of these conditions be determined and corrected to preclude repetition. The identification of significant conditions adverse to quality, the cause, condition, and the corrective action taken shall be documented and reported to the appropriate levels of management. 3) These requirements shall also extend to the performance of subcontractors's corrective action measures.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** p) Corrective Action The provisions identified in ASME NQA-1, Part 1, Requirement 16 shall apply. 1) Measures shall be established to ensure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and other non-conformances are promptly identified and corrected. 2) In the case of significant conditions adverse to quality, the measures shall also ensure that the cause of these conditions be determined and corrected to preclude repetition. The identification of significant conditions adverse to quality, the cause, condition, and the corrective action taken shall be documented and reported to the appropriate levels of management. 3) These requirements shall also extend to the performance of subcontractors's corrective action measures.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS q) Inspection or Test Status (not to include operating status) The provisions identified in ASME NQA-1, Part 1, Requirement 14 shall apply. Measures shall be established to indicate inspection and test status of parts, items, or components during the repair/replacement activity. The system used shall provide positive identification of the part, item, or component by means of stamps, labels, routing cards, or other acceptable methods. The system shall include any procedures or instructions necessary to achieve compliance. Procedures shall be provided for the identification of acceptable and unacceptable items and for the control of status indicators. The authority for application and removal of status indicators shall also be specified.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** q) Inspection or Test Status (not to include operating status) The provisions identified in ASME NQA-1, Part 1, Requirement 14 shall apply. Measures shall be established to indicate inspection and test status of parts, items, or components during the repair/replacement activity. The system used shall provide positive identification of the part, item, or component by means of stamps, labels, routing cards, or other acceptable methods. The system shall include any procedures or instructions necessary to achieve compliance. Procedures shall be provided for the identification of acceptable and unacceptable items and for the control of status indicators. The authority for application and removal of status indicators shall also be specified.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS r) Nonconforming Materials or Items The provisions identified in ASME NQA-1, Part 1, Requirement 15 shall apply. Measures shall be established to control materials or items that do not conform to requirements to prevent their inadvertent use, including measures to identify and control the proper installation of items and to preclude nonconformance with the requirements of these rules These measures shall include procedures for identification, documentation, segregation when practical, and disposition. Nonconforming items shall be reviewed for acceptance, rejection, or repair in accordance with documented procedures. The responsibility and authority for the disposition of nonconforming items shall be defined. Repaired or replaced items shall be re-examined in accordance with the applicable procedures. Measures that control further processing of a nonconforming or defective item, pending a decision on its disposition, shall be established and maintained. Ultimate disposition of nonconforming items shall be documented.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** r) Nonconforming Materials or Items The provisions identified in ASME NQA-1, Part 1, Requirement 15 shall apply. Measures shall be established to control materials or items that do not conform to requirements to prevent their inadvertent use, including measures to identify and control the proper installation of items and to preclude nonconformance with the requirements of these rules These measures shall include procedures for identification, documentation, segregation when practical, and disposition. Nonconforming items shall be reviewed for acceptance, rejection, or repair in accordance with documented procedures. The responsibility and authority for the disposition of nonconforming items shall be defined. Repaired or replaced items shall be re-examined in accordance with the applicable procedures. Measures that control further processing of a nonconforming or defective item, pending a decision on its disposition, shall be established and maintained. Ultimate disposition of nonconforming items shall be documented.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS s) Audits The provisions identified in ASME NQA-1, Part 1, Requirement 18 shall apply and shall include the following: A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Internal and Supplier Audit frequencies shall be specified in the organization's Quality Assurance Manual. Internal Audits shall be conducted at least annually (within 12 months) for any ongoing code activity to verify compliance with Quality Assurance Program requirements and/or performance criteria, and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the internal audit need only include those areas of responsibility required to be continually maintained, such as training, audits, organizational structure, and Quality Assurance Program revisions, etc. External audits (e.g., Supplier audits) of organizations with certification/accreditation permitted by ASME may not be required if acceptable to the Regulatory Authority. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with the current requirements of ASME NQA-1; 3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program; 4) Requirements for follow-up actions shall be specified for any deficiencies noted during the audit; 5) Audit records and applicable documentation shall be made available to the Authorized Nuclear Inspection Agency for review; and 6) Audit records shall include as a minimum; a. Written procedures;	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** s) Audits The provisions identified in ASME NQA-1, Part 1, Requirement 18 shall apply and shall include the following: A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Internal and Supplier Audit frequencies shall be specified in the organization's Quality Assurance Manual. Internal Audits shall be conducted at least annually (within 12 months) for any ongoing code activity to verify compliance with Quality Assurance Program requirements and/or performance criteria, and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the internal audit need only include those areas of responsibility required to be continually maintained, such as training, audits, organizational structure, and Quality Assurance Program revisions, etc. External audits (e.g., Supplier audits) of organizations with certification/accreditation permitted by ASME may not be required if acceptable to the Regulatory Authority. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with the current requirements of ASME NQA-1; 3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program; 4) Requirements for follow-up actions shall be specified for any deficiencies noted during the audit; 5) Audit records and applicable documentation shall be made available to the Authorized ~~Nuclear~~ Inspection Agency for review; and 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.	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.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS t) Authorized Nuclear Inspector Measures shall be taken to reference the commissioned rules for the National Board Authorized Nuclear Inspector, in accordance with NB-263, RCI-1 Rules for Commissioned Inspectors. The Authorized Nuclear Inspector shall hold the “N”, “I”, and “R” endorsements on his/her Commission. The “NR” Certificate Holder shall ensure that the latest documents, including the Quality Assurance Manual, procedures, and instructions, are made available to the Authorized Nuclear Inspector. The Authorized Nuclear Inspector shall be consulted prior to the issuance of a repair/replacement plan by the “NR” Certificate Holder in order that the Authorized Nuclear Inspector may select any in-process inspection or hold points when performing repair/replacement activities. The “NR” Certificate Holder shall keep the Authorized Nuclear Inspector informed of progress of the repair/replacement activity so that inspections may be performed. The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless satisfied that all work carried out is in accordance with this section. The Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor shall have access to areas where work is being performed, including subcontractors facilities, in order to perform their required duties. The ANI shall be involved in dispositions and verification for non-conformances and corrective actions involving quality or code requirements. Additional requirements regarding Owner Interface are specified in 1.6.9.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** t) ~~Authorized Nuclear~~ Inspector Measures shall be taken to reference the commissioned rules for the National Board ~~Authorized Nuclear~~ Inspector, in accordance with NB-263, RCI-1 Rules for Commissioned Inspectors. ~~The Authorized Nuclear Inspector shall hold the “N”, “I”, and “R” endorsements on his/her Commission.~~ The “NR” Certificate Holder shall ensure that the latest documents, including the Quality Assurance Manual, procedures, and instructions, are made available to the ~~Authorized Nuclear~~ Inspector. The ~~Authorized Nuclear~~ Inspector shall be consulted prior to the issuance of a repair/replacement plan by the “NR” Certificate Holder in order that the ~~Authorized Nuclear~~ Inspector may select any in-process inspection or hold points when performing repair/replacement activities. The “NR” Certificate Holder shall keep the ~~Authorized Nuclear~~ Inspector informed of progress of the repair/replacement activity so that inspections may be performed. ~~The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless satisfied that all work carried out is in accordance with this section.~~ The ~~Authorized Nuclear~~ Inspector and ~~Authorized Nuclear Inspector~~ Supervisor shall have access to areas where work is being performed, including subcontractors facilities, in order to perform their required duties. The ~~ANI~~ Inspector shall be involved in dispositions and verification for non-conformances and corrective actions involving quality or code requirements. Additional requirements regarding Owner Interface are specified in 1.6.~~9~~10.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.6.2 QUALITY PROGRAM ELEMENTS u) Exhibits Forms and exhibits referenced in the Quality Assurance Manual shall be explained in the text and included as part of the referencing document or as an appendix to the Quality Assurance Manual. Forms shall be controlled and identified to show the latest approved revision, name, and other corresponding references as stated in the Quality Assurance Manual.	**1.6.~~6~~7.2 QUALITY PROGRAM ELEMENTS** u) Exhibits Forms and exhibits referenced in the Quality Assurance Manual shall be explained in the text and included as part of the referencing document or as an appendix to the Quality Assurance Manual. Forms shall be controlled and identified to show the latest approved revision, name, and other corresponding references as stated in the Quality Assurance Manual.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7 QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR CATEGORY 2 ACTIVITIES **1.6.7.1 SCOPE** Owners or organizations other than owners shall have a written Quality Assurance Program meeting one of the criteria specified in Table 1.6.2 of this section. Organizations applying for a Category 2 "NR" Certificate of Authorization shall specify in their written Quality Assurance Program which program criteria their Quality Assurance Program follows. Owners shall have a Quality Assurance Program meeting the requirements of either 10 CFR 50, Appendix B or NQA-1 Part 1 and shall include the additional requirements specified in ASME Section XI Division I, IWA-4142 when applicable. Organizations other than the owner shall comply with requirements specified in either 10 CFR 50, Appendix B supplemented as needed with the owner's QAP; NQA-1 Part 1; or NCA-4000. Organizations may elect to choose to follow all the rules specified in one of the allowed QAP criteria specified in Table 1.6.2 or they may elect to combine or supplement requirements from other specified QAP's. When organizations elect to combine QAP requirements, it shall be clearly specified and understood in the QAM which QAP requirement is being followed for each activity specified in their QAM. The following quality elements shall be specified and described within the QAM.	**1.6.~~7~~8. QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR CATEGORY 2 ACTIVITIES** **1.6.~~7~~8.1 SCOPE** Owners or organizations other than owners shall have a written Quality Assurance Program meeting one of the criteria specified in Table 1.6.2 of this section. Organizations applying for a Category 2 "NR" Certificate of Authorization shall specify in their written Quality Assurance Program which program criteria their Quality Assurance Program follows. Owners shall have a Quality Assurance Program meeting the requirements of either 10 CFR 50, Appendix B or NQA-1 Part 1 and shall include the additional requirements specified in ASME Section XI Division I, IWA-4142 when applicable. Organizations other than the owner shall comply with requirements specified in either 10 CFR 50, Appendix B supplemented as needed with the owner's QAP; NQA-1 Part 1; or NCA-4000. Organizations may elect to choose to follow all the rules specified in one of the allowed QAP criteria specified in Table 1.6.2 or they may elect to combine or supplement requirements from other specified QAP's. When organizations elect to combine QAP requirements, it shall be clearly specified and understood in the QAM which QAP requirement is being followed for each activity specified in their QAM. The following quality elements shall be specified and described within the QAM.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS a) Organization The authority and responsibility for individuals involved in activities affecting quality shall be clearly established and documented throughout the Quality Assurance Program and identified on a functional organizational chart contained within the QA Manual.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** a) Organization The authority and responsibility for individuals involved in activities affecting quality shall be clearly established and documented throughout the Quality Assurance Program and identified on a functional organizational chart contained within the QA Manual.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS b) Statement of Policy and Authority shall: 1) identify the titles of individuals who have the authority and responsibility charged with ensuring the quality program is implemented as described; 2) confirm their freedom in the organization to identify quality problems and to initiate, recommend and provide solutions; 3) include a statement that if there is a disagreement in the implementation of the quality assurance program, the matter is to be referred for resolution to a higher authority and shall be resolved in a manner that will not conflict with code, jurisdiction/regulatory authority or quality program requirements; 4) include a statement of the full support of management; and 5) be dated and signed by a senior management official within the organization.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** b) Statement of Policy and Authority shall: 1) identify the titles of individuals who have the authority and responsibility charged with ensuring the quality program is implemented as described; 2) confirm their freedom in the organization to identify quality problems and to initiate, recommend and provide solutions; 3) include a statement that if there is a disagreement in the implementation of the quality assurance program, the matter is to be referred for resolution to a higher authority and shall be resolved in a manner that will not conflict with code, jurisdiction/regulatory authority or quality program requirements; 4) include a statement of the full support of management; and 5) be dated and signed by a senior management official within the organization.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS c) Quality Assurance Program (QAP) 1) Qualification of non-destructive examination personnel shall be as required by the code or as specified in the owner's Quality Assurance Program. 2) Prior to returning an item to service, the owner shall evaluate the suitability of the item subjected to the repair/replacement activity. Corrective actions shall be taken when an item is determined to be deficient or does not satisfy the requirements of this section. 3) The "NR" Certificate Holder shall provide a copy of the Quality Assurance Manual to the owner for review and acceptance. The "NR" Certificate Holder shall make a current controlled copy of the Quality Assurance Manual available to the Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor. When a repair/replacement activity is split between the owner and an "NR" Certificate Holder, each Quality Assurance Program shall comply with this section for their respective activities. The owner shall establish interfaces for assuring this section is met for the two Quality Assurance Programs. 4) The "NR" Certificate Holder shall be responsible for advising the Authorized Nuclear Inspection Agency of proposed changes to the Quality Assurance Manual to obtain acceptance of the Authorized Nuclear Inspector Supervisor before putting such changes into effect. The Certificate Holder shall be responsible for notifying the Authorized Nuclear Inspector of QAM changes, including evidence of acceptance by the Authorized Nuclear Inspector Supervisor. 5) The Quality Assurance Manual need not be in the same format or sequential arrangement as the requirements in these rules as long as all applicable requirements have been covered. 6) The "NR" Certificate Holder shall implement and maintain a program for qualification, indoctrination, training and maintaining proficiency of personnel involved with quality functions, including personnel of subcontracted services.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** c) Quality Assurance Program (QAP) 1) Qualification of non-destructive examination personnel shall be as required by the code or as specified in the owner's Quality Assurance Program. 2) Prior to returning an item to service, the owner shall evaluate the suitability of the item subjected to the repair/replacement activity. Corrective actions shall be taken when an item is determined to be deficient or does not satisfy the requirements of this section. 3) The "NR" Certificate Holder shall provide a copy of the Quality Assurance Manual to the owner for review and acceptance. The "NR" Certificate Holder shall make a current controlled copy of the Quality Assurance Manual available to the ~~Authorized Nuclear~~ Inspector and ~~Authorized Nuclear Inspector~~ Supervisor. When a repair/replacement activity is split between the owner and an "NR" Certificate Holder, each Quality Assurance Program shall comply with this section for their respective activities. The owner shall establish interfaces for assuring this section is met for the two Quality Assurance Programs. 4) The "NR" Certificate Holder shall be responsible for advising the Authorized ~~Nuclear~~ Inspection Agency of proposed changes to the Quality Assurance Manual to obtain acceptance of the ~~Authorized Nuclear Inspector~~ Supervisor before putting such changes into effect. The Certificate Holder shall be responsible for notifying the ~~Authorized Nuclear~~ Inspector of QAM changes, including evidence of acceptance by the ~~Authorized Nuclear Inspector~~ Supervisor. 5) The Quality Assurance Manual need not be in the same format or sequential arrangement as the requirements in these rules as long as all applicable requirements have been covered. 6) The "NR" Certificate Holder shall implement and maintain a program for qualification, indoctrination, training and maintaining proficiency of personnel involved with quality functions, including personnel of subcontracted services.

7) The “NR” Certificate Holder shall address in their QAM the requirements for interfacing with the owner specified in 1.6.9 of this section. 8) Specified controls including responsibilities for personnel shall be described in the quality assurance program.	7) The “NR” Certificate Holder shall address in their QAM the requirements for interfacing with the owner specified in 1.6.~~9~~10 of this section. 8) Specified controls including responsibilities for personnel shall be described in the quality assurance program.

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Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS d) Design Control 1) Repair/replacement activities, code edition and addenda used shall correspond with the owner's Inservice Inspection Program unless later code editions and addenda have been accepted by the owner, the Enforcement and/or the Regulatory authority having jurisdiction at the plant site. 2) The repair/replacement plan (see NBIC Part 3, 1.6.7.2 j)) shall identify expected life of the item when less than the intended life as specified in the owner's requirements and the owner shall be advised of the condition. 3) The "NR" Certificate Holder shall assure that specifications, drawings, procedures and instructions do not conflict with the owner's requirements. A system must be described in the Quality Assurance Manual to resolve or eliminate such conflicts. Resolution shall consider the design specification requirements, as well as, the owner Requirements, Jurisdictional and Regulatory requirements as applicable. 4) ASME Section XI Division I establishes that the owner is responsible for design in connection with repair/replacement activities. The "NR" Certificate Holder must ensure that the design specification, drawings, or other specifications or instructions furnished by the owner satisfy the code edition and addenda of the owner's requirements. To satisfy this requirement, the "NR" Certificate Holder shall establish requirements that correctly incorporate the owner's requirements into their specifications, drawings, procedures, and instructions, which may be necessary to carry out the work. The "NR" Certificate Holder's system shall include provisions to ensure that the appropriate quality standards are specified and included in all quality records. These records shall be reviewed for compliance with the owner's requirements and the requirements of ASME Section XI Division I.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** d) Design Control 1) Repair/replacement activities, code edition and addenda used shall correspond with the owner's Inservice Inspection Program unless later code editions and addenda have been accepted by the owner, the Enforcement and/or the Regulatory authority having jurisdiction at the plant site. 2) The repair/replacement plan (see NBIC Part 3, 1.6.~~7~~8.2 j)) shall identify expected life of the item when less than the intended life as specified in the owner's requirements and the owner shall be advised of the condition. 3) The "NR" Certificate Holder shall assure that specifications, drawings, procedures and instructions do not conflict with the owner's requirements. A system must be described in the Quality Assurance Manual to resolve or eliminate such conflicts. Resolution shall consider the design specification requirements, as well as, the owner Requirements, Jurisdictional and Regulatory requirements as applicable. 4) ASME Section XI Division I establishes that the owner is responsible for design in connection with repair/replacement activities. The "NR" Certificate Holder must ensure that the design specification, drawings, or other specifications or instructions furnished by the owner satisfy the code edition and addenda of the owner's requirements. To satisfy this requirement, the "NR" Certificate Holder shall establish requirements that correctly incorporate the owner's requirements into their specifications, drawings, procedures, and instructions, which may be necessary to carry out the work. The "NR" Certificate Holder's system shall include provisions to ensure that the appropriate quality standards are specified and included in all quality records. These records shall be reviewed for compliance with the owner's requirements and the requirements of ASME Section XI Division I.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS e) Procurement Document Control Procurement documents shall require suppliers to provide a Quality Assurance Program consistent with the applicable requirements of ASME Section III, NCA and this section. Documents for procurement of materials, items, and subcontracted services shall include requirements to the extent necessary to ensure compliance with the owner's requirements and IWA-4000 of ASME Section XI Division I. To the extent necessary, procurement documents shall require suppliers to maintain a Quality Assurance Program consistent with the applicable requirements of the edition and addenda of the code of construction to which the items are constructed. Measures shall be established to ensure that all purchased material, items, and services conform to these requirements.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** e) Procurement Document Control Procurement documents shall require suppliers to provide a Quality Assurance Program consistent with the applicable requirements of ASME Section III, NCA and this section. Documents for procurement of materials, items, and subcontracted services shall include requirements to the extent necessary to ensure compliance with the owner's requirements and IWA-4000 of ASME Section XI Division I. To the extent necessary, procurement documents shall require suppliers to maintain a Quality Assurance Program consistent with the applicable requirements of the edition and addenda of the code of construction to which the items are constructed. Measures shall be established to ensure that all purchased material, items, and services conform to these requirements.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS f) Instructions, Procedures, and Drawings Repair/replacement plans and any verification of acceptability (evaluations) shall be subject to review by Jurisdiction and Regulatory Authorities having jurisdiction at the plant site. Activities affecting quality shall be prescribed by documented instructions, procedures or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative and qualitative criteria for determining that activities affecting quality have been satisfactorily accomplished. The "NR" Certificate Holder shall maintain a written description of procedures, instructions, or drawings used by the organization for control of quality and examination requirements detailing the implementation of the Quality Assurance Program requirements. Copies of these procedures shall be readily available to the Authorized Nuclear Inspector and Authorized Nuclear Inservice Inspector, as applicable.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** f) Instructions, Procedures, and Drawings Repair/replacement plans and any verification of acceptability (evaluations) shall be subject to review by Jurisdiction and Regulatory Authorities having jurisdiction at the plant site. Activities affecting quality shall be prescribed by documented instructions, procedures or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative and qualitative criteria for determining that activities affecting quality have been satisfactorily accomplished. The "NR" Certificate Holder shall maintain a written description of procedures, instructions, or drawings used by the organization for control of quality and examination requirements detailing the implementation of the Quality Assurance Program requirements. Copies of these procedures shall be readily available to the ~~Authorized Nuclear~~ Inspector ~~and Authorized Nuclear Inservice Inspector, as applicable~~.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS g) Document Control The program shall include measures to control the issuance, use, and disposition of documents, such as specifications, instructions, procedures, and drawings, including changes thereto. These measures shall ensure that the latest applicable documents, including changes, are reviewed for adequacy and approved for release by authorized personnel and distributed for use at the location where the prescribed activity is performed.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** g) Document Control The program shall include measures to control the issuance, use, and disposition of documents, such as specifications, instructions, procedures, and drawings, including changes thereto. These measures shall ensure that the latest applicable documents, including changes, are reviewed for adequacy and approved for release by authorized personnel and distributed for use at the location where the prescribed activity is performed.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS h) Control of Purchased Material, Items, and Services Purchase of materials and small products shall meet the requirements specified in ASME Section XI Division I, IWA 4142. Measures shall be established to ensure that purchased material, items, and services conform to the owner's requirements and applicable edition and addenda of the code of construction and ASME Section XI Division I. These measures shall include identification for material traceability. Provisions shall be identified for source evaluation and objective evidence shall be provided evidencing quality standards for material examination upon receipt.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** h) Control of Purchased Material, Items, and Services Purchase of materials and small products shall meet the requirements specified in ASME Section XI Division I, IWA 4142. Measures shall be established to ensure that purchased material, items, and services conform to the owner's requirements and applicable edition and addenda of the code of construction and ASME Section XI Division I. These measures shall include identification for material traceability. Provisions shall be identified for source evaluation and objective evidence shall be provided evidencing quality standards for material examination upon receipt.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS i) Identification and Control of Items 1) Measures shall be established for identification and control of material and items, including partially fabricated assemblies. These measures shall ensure that identification is maintained and traceable, either on the material or component, or on records throughout the repair/replacement activity. These measures shall be designed to prevent the use of incorrect or defective items and those which have not received the required examinations, tests, or inspections. 2) Identification for traceability shall be applied using methods and materials that are legible and not detrimental to the component or system involved. Such identification shall be located in areas that will not interfere with the function or quality aspects of the item. 3) Certified Material Test Reports shall be identified as required by the applicable material specification in ASME Section II and shall satisfy any additional requirements specified in the original code of construction. The Certified Material Test Report or Certificate of Compliance need not be duplicated for submission with compliance documents when a record of compliance and satisfactory reviews of the Certified Material Test Report and Certificate of Compliance is provided. Quality documents shall provide a record that the Certified Material Test Report and Certificate of Compliance have been received, reviewed, and found acceptable. When the “NR” Certificate Holder authorizes a subcontracted organization to perform examinations and tests in accordance with the original code of construction, the “NR” Certificate Holder shall certify compliance either on a Certified Material Test Report or Certificate of Compliance that the material satisfies the original code of construction requirements.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** i) Identification and Control of Items 1) Measures shall be established for identification and control of material and items, including partially fabricated assemblies. These measures shall ensure that identification is maintained and traceable, either on the material or component, or on records throughout the repair/replacement activity. These measures shall be designed to prevent the use of incorrect or defective items and those which have not received the required examinations, tests, or inspections. 2) Identification for traceability shall be applied using methods and materials that are legible and not detrimental to the component or system involved. Such identification shall be located in areas that will not interfere with the function or quality aspects of the item. 3) Certified Material Test Reports shall be identified as required by the applicable material specification in ASME Section II and shall satisfy any additional requirements specified in the original code of construction. The Certified Material Test Report or Certificate of Compliance need not be duplicated for submission with compliance documents when a record of compliance and satisfactory reviews of the Certified Material Test Report and Certificate of Compliance is provided. Quality documents shall provide a record that the Certified Material Test Report and Certificate of Compliance have been received, reviewed, and found acceptable. When the “NR” Certificate Holder authorizes a subcontracted organization to perform examinations and tests in accordance with the original code of construction, the “NR” Certificate Holder shall certify compliance either on a Certified Material Test Report or Certificate of Compliance that the material satisfies the original code of construction requirements.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS j) Control of Processes 1) The "NR" Certificate Holder shall operate under a controlled system such as process sheets, checklists, travelers, plans or equivalent procedures. Measures shall be established to ensure that processes such as welding, nondestructive examination, and heat treating are controlled in accordance with the rules of the applicable section of the ASME Code and are accomplished by qualified personnel using qualified procedures. 2) Process sheets, checklists, travelers, or equivalent documentation shall be prepared, including the document numbers and revisions to which the process conforms with space provided for reporting results of completion of specific operations at checkpoints of repair/replacement activities.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** j) Control of Processes 1) The "NR" Certificate Holder shall operate under a controlled system such as process sheets, checklists, travelers, plans or equivalent procedures. Measures shall be established to ensure that processes such as welding, nondestructive examination, and heat treating are controlled in accordance with the rules of the applicable section of the ASME Code and are accomplished by qualified personnel using qualified procedures. 2) Process sheets, checklists, travelers, or equivalent documentation shall be prepared, including the document numbers and revisions to which the process conforms with space provided for reporting results of completion of specific operations at checkpoints of repair/replacement activities.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS k) Examinations, Tests, and Inspections 1) A repair/replacement plan shall be prepared in accordance with the Quality Assurance Program whenever repair/replacement activities are performed. As a minimum, the repair/replacement plan shall include the requirements specified in ASME Section XI Division I, IWA-4150. 2) In-process and final examinations and tests shall be established to ensure conformance with specifications, drawings, instructions, and procedures which incorporate or reference the requirements and acceptance criteria contained in applicable design documents. Inspection, test and examination activities to verify the quality of work shall be performed by persons other than those who performed the activity being examined. Such persons shall not report directly to the immediate supervisors responsible for the work being examined. 3) Process sheets, travelers, or checklists shall be prepared, including the document numbers and revision to which the examination or test is to be performed, with space provided for recording results. 4) Mandatory hold/inspection points at which witnessing is required by the "NR" Certificate Holder's representative or the Authorized Nuclear Inspector/Authorized Nuclear Inservice Inspector shall be indicated in the controlling documents. Work shall not proceed beyond mandatory hold/inspection points without the consent of the "NR" Certificate Holder's representative or the Authorized Nuclear Inspector/Authorized Nuclear Inservice Inspector, as applicable.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** k) Examinations, Tests, and Inspections 1) A repair/replacement plan shall be prepared in accordance with the Quality Assurance Program whenever repair/replacement activities are performed. As a minimum, the repair/replacement plan shall include the requirements specified in ASME Section XI Division I, IWA-4150. 2) In-process and final examinations and tests shall be established to ensure conformance with specifications, drawings, instructions, and procedures which incorporate or reference the requirements and acceptance criteria contained in applicable design documents. Inspection, test and examination activities to verify the quality of work shall be performed by persons other than those who performed the activity being examined. Such persons shall not report directly to the immediate supervisors responsible for the work being examined. 3) Process sheets, travelers, or checklists shall be prepared, including the document numbers and revision to which the examination or test is to be performed, with space provided for recording results. 4) Mandatory hold/inspection points at which witnessing is required by the "NR" Certificate Holder's representative or the ~~Authorized Nuclear Inspector/Authorized Nuclear Inservice~~ Inspector shall be indicated in the controlling documents. Work shall not proceed beyond mandatory hold/inspection points without the consent of the "NR" Certificate Holder's representative or the ~~Authorized Nuclear Inspector/Authorized Nuclear Inservice~~ Inspector, as applicable.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS l) Test Control 1) Testing shall be performed in accordance with the owner's written test procedures or procedures acceptable to the owner, that incorporate or reference the requirements and acceptance criteria contained in applicable design documents. 2) Test procedures shall include provisions for ensuring that prerequisites for the given test have been met, that adequate instrumentation is available and used, and that necessary monitoring is performed. Prerequisites may include calibrated instrumentation, appropriate equipment, trained personnel, condition of test equipment, the item to be tested, suitable environmental conditions, and provisions for data acquisition. 3) Test results shall be documented and evaluated to ensure that test requirements have been satisfied.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** l) Test Control 1) Testing shall be performed in accordance with the owner's written test procedures or procedures acceptable to the owner, that incorporate or reference the requirements and acceptance criteria contained in applicable design documents. 2) Test procedures shall include provisions for ensuring that prerequisites for the given test have been met, that adequate instrumentation is available and used, and that necessary monitoring is performed. Prerequisites may include calibrated instrumentation, appropriate equipment, trained personnel, condition of test equipment, the item to be tested, suitable environmental conditions, and provisions for data acquisition. 3) Test results shall be documented and evaluated to ensure that test requirements have been satisfied.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS m) Control of Measuring and Test Equipment The "NR" Certificate Holder may utilize calibration and test activities performed by subcontractors when surveys and audits are performed. As an alternative to performing a survey and audit for procuring Laboratory Calibration and Test Services, the "NR" Certificate Holder as documented in their Quality Program may accept accreditation of an International Calibration and Test Laboratory Services by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) provided this alternative method is described in the "NR" Certificate Holder's Quality Program and the following requirements are met: 1) The "NR" Certificate Holder shall review and document verification that the supplier of calibration or test services was accredited by an accredited body recognized by the ILAC MRA encompassing ISO/IEC-17025:2005 or 2017, "General Requirements for the Competence of Testing and Calibration Laboratories"; 2) For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges and uncertainties; 3) For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty; 4) The "NR" Certificate Holder's purchase documents shall include: a. Service provided shall be in accordance with their accredited ISO/IEC-17025:2005 or 2017 program and scope of accreditation; b. As-found calibration data shall be reported in the certificate of calibration when items are found to be out-of-calibration; c. Standards used to perform calibration shall be identified in the certificate of calibration; d. Notification of any condition that adversely impacts the laboratories ability to maintain the scope of accreditation;	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** m) Control of Measuring and Test Equipment The "NR" Certificate Holder may utilize calibration and test activities performed by subcontractors when surveys and audits are performed. As an alternative to performing a survey and audit for procuring Laboratory Calibration and Test Services, the "NR" Certificate Holder as documented in their Quality Program may accept accreditation of an International Calibration and Test Laboratory Services by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) provided this alternative method is described in the "NR" Certificate Holder's Quality Program and the following requirements are met: 1) The "NR" Certificate Holder shall review and document verification that the supplier of calibration or test services was accredited by an accredited body recognized by the ILAC MRA encompassing ISO/IEC-17025:2005 or 2017, "General Requirements for the Competence of Testing and Calibration Laboratories"; 2) For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges and uncertainties; 3) For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty; 4) The "NR" Certificate Holder's purchase documents shall include: a. Service provided shall be in accordance with their accredited ISO/IEC-17025:2005 or 2017 program and scope of accreditation; b. As-found calibration data shall be reported in the certificate of calibration when items are found to be out-of-calibration; c. Standards used to perform calibration shall be identified in the certificate of calibration; d. Notification of any condition that adversely impacts the laboratories ability to maintain the scope of accreditation;

e. Any additional technical and/or quality requirements, as necessary, which may include tolerances, accuracies, ranges, and standards; and f. Service suppliers shall not subcontract services to any other supplier. 5) The “NR” Certificate Holder shall upon receipt inspection, validate that the laboratory documentation certifies that: a. Services provided by the laboratory has been performed in accordance with their ISO/IEC-17025:2005 or 2017 program and performed within their scope; and b. Purchase order requirements have been met.	e. Any additional technical and/or quality requirements, as necessary, which may include tolerances, accuracies, ranges, and standards; and f. Service suppliers shall not subcontract services to any other supplier. 5) The “NR” Certificate Holder shall upon receipt inspection, validate that the laboratory documentation certifies that: a. Services provided by the laboratory has been performed in accordance with their ISO/IEC-17025:2005 or 2017 program and performed within their scope; and b. Purchase order requirements have been met.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS n) Handling, Storage, and Shipping Measures and controls shall be established to maintain quality requirements for handling, storage, and shipping of parts, materials, items, and components.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** n) Handling, Storage, and Shipping Measures and controls shall be established to maintain quality requirements for handling, storage, and shipping of parts, materials, items, and components.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS o) Quality Assurance Records Documentation, reports and records shall be in accordance with ASME Section XI Division I, IWA-6000. 1) The owner is responsible for designating records to be maintained. Measures shall be established for the "NR" Certificate Holder to maintain these records [see NBIC Part 3, 1.6.7.2.o) 2)] required for Quality Assurance of repair/replacement activities. These shall include documents such as records of materials, manufacturing, examination, and test data taken before and during repair/replacement activity. Procedures, specifications, and drawings used shall be fully identified by pertinent material or item identification numbers, revision numbers, and issue dates. The records shall also include related data such as personnel qualification, procedures, equipment, and related repairs. The "NR" Certificate Holder shall take such steps as may be required to provide suitable protection from deterioration and damage for records while in his care. Also, it is required that the "NR" Certificate Holder have a system for correction or amending records that satisfies the owner's requirements. These records may be either the original or a reproduced, legible copy and shall be transferred to the owner upon request. 2) Records to be maintained as required in NBIC Part 3, 1.6.7.2 o) 1) above shall include the following, as applicable: a. An index that details the location and individual responsible for maintaining the records; b. Manufacturer's Data Reports, properly executed, for each replacement component, part, appurtenance, piping system, and piping assembly, when required by the design specification or the owner; c. The required as-constructed drawings certified as to correctness; d. Copies of applicable Certified Material Test Reports and Certificates of Compliance; e. As-built sketch(es) including tabulations of materials repair/replacement procedures, and instructions to achieve compliance with ASME Section XI Division I;	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** o) Quality Assurance Records Documentation, reports and records shall be in accordance with ASME Section XI Division I, IWA-6000. 1) The owner is responsible for designating records to be maintained. Measures shall be established for the "NR" Certificate Holder to maintain these records [see NBIC Part 3, 1.6.~~7~~8.2.o) 2)] required for Quality Assurance of repair/replacement activities. These shall include documents such as records of materials, manufacturing, examination, and test data taken before and during repair/replacement activity. Procedures, specifications, and drawings used shall be fully identified by pertinent material or item identification numbers, revision numbers, and issue dates. The records shall also include related data such as personnel qualification, procedures, equipment, and related repairs. The "NR" Certificate Holder shall take such steps as may be required to provide suitable protection from deterioration and damage for records while in his care. Also, it is required that the "NR" Certificate Holder have a system for correction or amending records that satisfies the owner's requirements. These records may be either the original or a reproduced, legible copy and shall be transferred to the owner upon request. 2) Records to be maintained as required in NBIC Part 3, 1.6.~~7~~8.2 o) 1) above shall include the following, as applicable: a. An index that details the location and individual responsible for maintaining the records; b. Manufacturer's Data Reports, properly executed, for each replacement component, part, appurtenance, piping system, and piping assembly, when required by the design specification or the owner; c. The required as-constructed drawings certified as to correctness; d. Copies of applicable Certified Material Test Reports and Certificates of Compliance; e. As-built sketch(es) including tabulations of materials repair/replacement procedures, and instructions to achieve compliance with ASME Section XI Division I;

f. Nondestructive examination reports, including results of examinations, shall identify the name and certification level of personnel interpreting the examination results. Final radiographs shall be included where radiography has been performed. Radiographs may be microfilmed or digitally reproduced in accordance with the requirements listed in ASME Section V, Article 2, Mandatory Appendix VI. The accuracy of the reproduction process shall be verified and monitored for legibility, storage, retrievability and reproduction quality; g. Records of heat treatments may be either the heat treatment charts or a summary description of heat treatment time and temperature data certified by the "NR" Certificate Holder. Heat treatments performed by the material manufacturer to satisfy requirements of the material specifications may be reported on the Certified Material Test Report; and h. Nonconformance reports shall satisfy IWA-4000 of ASME Section XI Division I and shall be reconciled by the owner prior to certification of the Form NR-1 or NVR-1, as applicable. 3) After a repair/replacement activity, all records including audit reports required to verify compliance with the applicable engineering documents and the "NR" Certificate Holder's Quality Assurance Program, shall be maintained at a place mutually agreed upon by the owner and the "NR" Certificate Holder. The "NR" Certificate Holder shall maintain records and reports for a period of five years after completion of the repair/replacement activity. 4) When the "NR" Certificate Holder is the owner, designated records and reports received by the owner, shall be filed and maintained in a manner to allow access by the Authorized Nuclear Inservice Inspector. Suitable protection from deterioration and damage shall be provided by the owner. These records and reports shall be retained as specified in the owners QAP for the lifetime of the component or system. 5) The original of the completed Form NR-1 or Form NVR-1, as applicable, shall be registered with the National Board and, if required, a copy forwarded to the Jurisdiction where the nuclear	f. Nondestructive examination reports, including results of examinations, shall identify the name and certification level of personnel interpreting the examination results. Final radiographs shall be included where radiography has been performed. Radiographs may be microfilmed or digitally reproduced in accordance with the requirements listed in ASME Section V, Article 2, Mandatory Appendix VI. The accuracy of the reproduction process shall be verified and monitored for legibility, storage, retrievability and reproduction quality; g. Records of heat treatments may be either the heat treatment charts or a summary description of heat treatment time and temperature data certified by the "NR" Certificate Holder. Heat treatments performed by the material manufacturer to satisfy requirements of the material specifications may be reported on the Certified Material Test Report; and h. Nonconformance reports shall satisfy IWA-4000 of ASME Section XI Division I and shall be reconciled by the owner prior to certification of the Form NR-1 or NVR-1, as applicable. 3) After a repair/replacement activity, all records including audit reports required to verify compliance with the applicable engineering documents and the "NR" Certificate Holder's Quality Assurance Program, shall be maintained at a place mutually agreed upon by the owner and the "NR" Certificate Holder. The "NR" Certificate Holder shall maintain records and reports for a period of five years after completion of the repair/replacement activity. 4) When the "NR" Certificate Holder is the owner, designated records and reports received by the owner, shall be filed and maintained in a manner to allow access by the ~~Authorized Nuclear Inservice~~ Inspector. Suitable protection from deterioration and damage shall be provided by the owner. These records and reports shall be retained as specified in the owners QAP for the lifetime of the component or system. 5) The original of the completed Form NR-1 or Form NVR-1, as applicable, shall be registered with the National Board and, if required, a copy forwarded to the Jurisdiction where the nuclear

power plant is located. A log shall be maintained in accordance with NBIC Part 3, 5.6.	power plant is located. A log shall be maintained in accordance with NBIC Part 3, 5.6.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS p) Corrective Action 1) Measures shall be established to ensure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and other nonconformances are promptly identified, controlled and corrected. 2) In the case of significant conditions adverse to quality, the measures shall also ensure that the cause of these conditions be determined and corrected to preclude repetition. The identification of significant conditions adverse to quality, the cause, condition, and the corrective action taken shall be documented and reported to the appropriate levels of management. 3) Corrective action requirements shall also extend to the performance of subcontractors' activities.	**1.6.~~7~~78.2 QUALITY PROGRAM ELEMENTS** p) Corrective Action 1) Measures shall be established to ensure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and other nonconformances are promptly identified, controlled and corrected. 2) In the case of significant conditions adverse to quality, the measures shall also ensure that the cause of these conditions be determined and corrected to preclude repetition. The identification of significant conditions adverse to quality, the cause, condition, and the corrective action taken shall be documented and reported to the appropriate levels of management. 3) Corrective action requirements shall also extend to the performance of subcontractors' activities.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS q) Inspection or Test Status (not to include operating status) Measures shall be established to indicate examination and test status of parts, items, or components during the repair/replacement activity. The system used shall provide positive identification of the part, item, or component by means of stamps, labels, routing cards, or other acceptable methods. The system shall include any procedures or instructions necessary to achieve compliance. Also, measures shall be provided for the identification of acceptable and unacceptable items. They shall also include procedures for control of status indicators, including the authority for application and removal of status indicators.	**1.6.~~7~~78.2 QUALITY PROGRAM ELEMENTS** q) Inspection or Test Status (not to include operating status) Measures shall be established to indicate examination and test status of parts, items, or components during the repair/replacement activity. The system used shall provide positive identification of the part, item, or component by means of stamps, labels, routing cards, or other acceptable methods. The system shall include any procedures or instructions necessary to achieve compliance. Also, measures shall be provided for the identification of acceptable and unacceptable items. They shall also include procedures for control of status indicators, including the authority for application and removal of status indicators.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS r) Nonconforming Materials or Items 1) Measures shall be established to control materials or items that do not conform to specified requirements to prevent their inadvertent use, including measures to identify and control the proper installation of items and to preclude nonconformance with the requirements of these rules. These measures shall include procedures for identification, documentation, segregation, and disposition. Nonconforming items shall be reviewed for acceptance, rejection, or repair in accordance with documented procedures. The responsibility and authority for the disposition of nonconforming items shall be defined. Repaired/replaced or altered items shall be re-examined in accordance with the applicable procedures. 2) Measures that control further processing of a nonconforming or defective item, pending a decision on its disposition, shall be established and maintained. Ultimate disposition of nonconforming items shall be documented.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** r) Nonconforming Materials or Items 1) Measures shall be established to control materials or items that do not conform to specified requirements to prevent their inadvertent use, including measures to identify and control the proper installation of items and to preclude nonconformance with the requirements of these rules. These measures shall include procedures for identification, documentation, segregation, and disposition. Nonconforming items shall be reviewed for acceptance, rejection, or repair in accordance with documented procedures. The responsibility and authority for the disposition of nonconforming items shall be defined. Repaired/replaced or altered items shall be re-examined in accordance with the applicable procedures. 2) Measures that control further processing of a nonconforming or defective item, pending a decision on its disposition, shall be established and maintained. Ultimate disposition of nonconforming items shall be documented.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS s) Audits A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Internal and External Audit frequencies shall be specified in the organization's Quality Assurance Manual. Internal Audits shall be conducted at least annually (within 12 months) to verify compliance with Quality Assurance Program requirements and/or performance criteria, and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the internal audit need only include those areas of responsibility required to be continually maintained, such as training, audits, organizational structure, Quality Assurance Program revisions, etc. External audits (e.g., Supplier audits) shall be performed on a triennial basis and supplemented by annual evaluations of the Supplier's performance to determine if the regular schedule audit frequency shall be maintained or decreased or if other corrective action is required. A continuous or ongoing evaluation of the Supplier's performance may be conducted in lieu of the annual evaluations, provided that the results are reviewed in order to determine if corrective action is required. A grace period of 90 days may be applied to scheduled audits and annual evaluations of supplier performance. When the grace period is used, the next scheduled date for the activity shall be based on the activity schedule date and not on the date the activity was actually performed. If the activity is performed early, the next schedule date shall be based on the date the activity was actually performed. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with the current requirements of NQA-1;	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** s) Audits A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Internal and External Audit frequencies shall be specified in the organization's Quality Assurance Manual. Internal Audits shall be conducted at least annually (within 12 months) to verify compliance with Quality Assurance Program requirements and/or performance criteria, and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the internal audit need only include those areas of responsibility required to be continually maintained, such as training, audits, organizational structure, Quality Assurance Program revisions, etc. External audits (e.g., Supplier audits) shall be performed on a triennial basis and supplemented by annual evaluations of the Supplier's performance to determine if the regular schedule audit frequency shall be maintained or decreased or if other corrective action is required. A continuous or ongoing evaluation of the Supplier's performance may be conducted in lieu of the annual evaluations, provided that the results are reviewed in order to determine if corrective action is required. A grace period of 90 days may be applied to scheduled audits and annual evaluations of supplier performance. When the grace period is used, the next scheduled date for the activity shall be based on the activity schedule date and not on the date the activity was actually performed. If the activity is performed early, the next schedule date shall be based on the date the activity was actually performed. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with the current requirements of NQA-1;

3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program; 4) Requirements for follow-up actions for any deficiencies noted during the audit; 5) Audit records and applicable documentation shall be made available to the Authorized Nuclear Inspection Agency for review; and 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.	3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program; 4) Requirements for follow-up actions for any deficiencies noted during the audit; 5) Audit records and applicable documentation shall be made available to the Authorized ~~Nuclear~~ Inspection Agency for review; and 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.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS t) Authorized Nuclear Inspector Measures shall be taken to reference the commissioned rules for the National Board Authorized Nuclear Inspector, in accordance with NB-263, RCI-1 Rules for Commissioned Inspectors. The Authorized Nuclear Inspector shall hold the “N”, “I”, and “R” endorsements on his/her Commission. The “NR” Certificate Holder shall ensure that the latest documents including the Quality Assurance Manual, procedures, and instructions, are made available to the Authorized Nuclear Inspector. The Authorized Nuclear Inspector shall be consulted prior to the issuance of a repair/replacement plan by the “NR” Certificate Holder in order that the Authorized Nuclear Inspector may select any in process inspection or hold points when performing repair/replacement activities. The “NR” Certificate Holder shall keep the Authorized Nuclear Inspector informed of progress of the repair/replacement activity so that inspections may be performed. The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless satisfied that all work carried out is in accordance with this section. The Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor shall have access to areas where work is being performed, including subcontractors facilities, in order to perform their required duties. The ANI shall be involved in dispositions and verification for nonconformances and corrective actions involving quality or code requirements. Additional requirements regarding Owner Interface are specified in 1.6.9.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** t) ~~Authorized Nuclear~~ Inspector Measures shall be taken to reference the commissioned rules for the National Board ~~Authorized Nuclear~~ Inspector, in accordance with NB-263, RCI-1 Rules for Commissioned Inspectors. ~~The Authorized Nuclear Inspector shall hold the “N”, “I”, and “R” endorsements on his/her Commission.~~ The “NR” Certificate Holder shall ensure that the latest documents including the Quality Assurance Manual, procedures, and instructions, are made available to the ~~Authorized Nuclear~~ Inspector. The ~~Authorized Nuclear~~ Inspector shall be consulted prior to the issuance of a repair/replacement plan by the “NR” Certificate Holder in order that the ~~Authorized Nuclear~~ Inspector may select any in process inspection or hold points when performing repair/replacement activities. The “NR” Certificate Holder shall keep the ~~Authorized Nuclear~~ Inspector informed of progress of the repair/replacement activity so that inspections may be performed. ~~The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless satisfied that all work carried out is in accordance with this section.~~ The ~~Authorized Nuclear~~ Inspector and ~~Authorized Nuclear Inspector~~ Supervisor shall have access to areas where work is being performed, including subcontractors facilities, in order to perform their required duties. The ~~ANI~~Inspector shall be involved in dispositions and verification for nonconformances and corrective actions involving quality or code requirements. Additional requirements regarding Owner Interface are specified in 1.6.~~9~~10.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.7.2 QUALITY PROGRAM ELEMENTS u) Exhibits Forms and exhibits referenced in the Quality Assurance Manual shall be explained in the text and included as part of the referencing document or as an appendix to the Quality Assurance Manual. Forms shall be controlled and identified to show the latest approved revision, name, and other corresponding references as stated in the Quality Assurance Manual.	**1.6.~~7~~8.2 QUALITY PROGRAM ELEMENTS** u) Exhibits Forms and exhibits referenced in the Quality Assurance Manual shall be explained in the text and included as part of the referencing document or as an appendix to the Quality Assurance Manual. Forms shall be controlled and identified to show the latest approved revision, name, and other corresponding references as stated in the Quality Assurance Manual.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8 QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR CATEGORY 3 ACTIVITIES **1.6.8.1 SCOPE** Organizations requesting a Category 3 "NR" Certificate of Authorization may elect to follow the requirements specified in ASME NQA-1 Part 1 or follow specific Quality Assurance Program requirements outlined in other specified standards as required by the owner, Regulatory Authority or Jurisdiction. Organizations shall specify in the QAM what QAP requirements are followed. When standards other than ASME NQA-1 are followed, the organization shall have available a copy of that standard for review by the NB Survey Team and the ANIA, as applicable. Each organization shall, as a minimum, include in their written QAM the specified elements listed in Category 1 and/or 2 (1.6.6, 1.6.7) QAP requirements. Additional requirements, as specified within NBIC Part 3, 1.6.8 and 1.6.9 shall be included within the QAP. Also, limitations or additions to ASME NQA-1, as specified for Category 1 or 2 may be incorporated and referenced within the QAM.	**1.6.~~8~~9 QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR CATEGORY 3 ACTIVITIES** **1.6.~~8~~9.1 SCOPE** Organizations requesting a Category 3 "NR" Certificate of Authorization may elect to follow the requirements specified in ASME NQA-1 Part 1 or follow specific Quality Assurance Program requirements outlined in other specified standards as required by the owner, Regulatory Authority or Jurisdiction. Organizations shall specify in the QAM what QAP requirements are followed. When standards other than ASME NQA-1 are followed, the organization shall have available a copy of that standard for review by the NB Survey Team and the ~~ANIA~~ Authorized Inspection Agency, as applicable. Each organization shall, as a minimum, include in their written QAM the specified elements listed in Category 1 and/or 2 (1.6.~~6~~7, 1.6.~~7~~8) QAP requirements. Additional requirements, as specified within NBIC Part 3, 1.6.~~8~~9 and 1.6.~~9~~10 shall be included within the QAP. Also, limitations or additions to ASME NQA-1, as specified for Category 1 or 2 may be incorporated and referenced within the QAM.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS a) Organization The authority and responsibility for individuals involved in activities affecting quality shall be clearly established and documented throughout the Quality Assurance Program and identified on a functional organizational chart contained within the QA Manual.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** a) Organization The authority and responsibility for individuals involved in activities affecting quality shall be clearly established and documented throughout the Quality Assurance Program and identified on a functional organizational chart contained within the QA Manual.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS b) Statement of Policy and Authority shall: 1) identify the titles of individuals who have the authority and responsibility charged with ensuring the quality program is implemented as described; 2) confirm their freedom in the organization to identify quality problems and to initiate, recommend and provide solutions; 3) include a statement that if there is a disagreement in the implementation of the quality assurance program, the matter is to be referred for resolution to a higher authority and shall be resolved in a manner that will not conflict with code, jurisdiction/regulatory authority or quality program requirements; 4) include a statement of the full support of management; and 5) be dated and signed by a senior management official within the organization.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** b) Statement of Policy and Authority shall: 1) identify the titles of individuals who have the authority and responsibility charged with ensuring the quality program is implemented as described; 2) confirm their freedom in the organization to identify quality problems and to initiate, recommend and provide solutions; 3) include a statement that if there is a disagreement in the implementation of the quality assurance program, the matter is to be referred for resolution to a higher authority and shall be resolved in a manner that will not conflict with code, jurisdiction/regulatory authority or quality program requirements; 4) include a statement of the full support of management; and 5) be dated and signed by a senior management official within the organization.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS c) QAP The quality assurance program shall be documented by written policies, procedures and instructions. It shall account for special controls, processes, test equipment, tools and skills to obtain quality and for verification of quality by inspections and tests. Indoctrination, training and maintaining proficiency of personnel effecting quality shall be described. The status, adequacy and effectiveness of the QAP shall be regularly reviewed by management. The scope shall be included within the written QAM. The “NR” Certificate Holder shall make a current controlled copy of the Quality Assurance Manual available to the Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor. The “NR” Certificate Holder shall address in their QAM the requirements for interfacing with the owner specified in 1.6.9 of this section. Specified controls including responsibilities for personnel shall be described in the quality assurance program.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** c) QAP The quality assurance program shall be documented by written policies, procedures and instructions. It shall account for special controls, processes, test equipment, tools and skills to obtain quality and for verification of quality by inspections and tests. Indoctrination, training and maintaining proficiency of personnel effecting quality shall be described. The status, adequacy and effectiveness of the QAP shall be regularly reviewed by management. The scope shall be included within the written QAM. The “NR” Certificate Holder shall make a current controlled copy of the Quality Assurance Manual available to the ~~Authorized Nuclear~~ Inspector and ~~Authorized Nuclear Inspector~~ Supervisor. The “NR” Certificate Holder shall address in their QAM the requirements for interfacing with the owner specified in 1.6.~~9~~10 of this section. Specified controls including responsibilities for personnel shall be described in the quality assurance program.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS d) Design Control Established measures to assure applicable quality standards and regulatory requirements are accurately specified and translated into design documents. Any deviations shall be identified and controlled. Control measures (such as review, approval, release, distribution and revisions) for suitability of materials, parts, equipment, procedures, instructions and processes, shall be performed to ensure adherence to specified design basis requirements. Qualifications, responsibilities and certifications of design personnel shall be clearly defined within the quality assurance program.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** d) Design Control Established measures to assure applicable quality standards and regulatory requirements are accurately specified and translated into design documents. Any deviations shall be identified and controlled. Control measures (such as review, approval, release, distribution and revisions) for suitability of materials, parts, equipment, procedures, instructions and processes, shall be performed to ensure adherence to specified design basis requirements. Qualifications, responsibilities and certifications of design personnel shall be clearly defined within the quality assurance program.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS e) Procurement Document Control Documents for procurement of material, equipment and services shall ensure regulatory requirements, design bases and other quality requirements are included or referenced. Procurement documents shall require contractors or subcontractors provide a Quality Assurance Program consistent with the provisions specified herein. Controls necessary to ensure materials, equipment, and services meet specified design criteria shall be clearly described within the quality assurance program.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** e) Procurement Document Control Documents for procurement of material, equipment and services shall ensure regulatory requirements, design bases and other quality requirements are included or referenced. Procurement documents shall require contractors or subcontractors provide a Quality Assurance Program consistent with the provisions specified herein. Controls necessary to ensure materials, equipment, and services meet specified design criteria shall be clearly described within the quality assurance program.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS f) Instructions, Procedures, and Drawings Activities affecting quality shall be accomplished in accordance with prescribed instructions, procedures or drawings and shall include appropriate quantitative or qualitative acceptance criteria to determine activities are satisfactorily accomplished.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** f) Instructions, Procedures, and Drawings Activities affecting quality shall be accomplished in accordance with prescribed instructions, procedures or drawings and shall include appropriate quantitative or qualitative acceptance criteria to determine activities are satisfactorily accomplished.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS g) Document Control Shall define measures to control the preparation, issuance, use, review approval, revisions and distribution of all documents, including procedures, instructions and drawings related to quality. Responsibilities shall be described within the quality program.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** g) Document Control Shall define measures to control the preparation, issuance, use, review approval, revisions and distribution of all documents, including procedures, instructions and drawings related to quality. Responsibilities shall be described within the quality program.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS h) Control of Purchased, Materials, Items and Services Purchased material, items and services shall conform to the procurement documents. Measures shall be established for source evaluation and selection, objective evidence of quality, inspections at the source and examination of products upon delivery. Effectiveness of quality of suppliers shall be assessed by the applicant or designee at specified intervals. Documented evidence shall be performed and made available to assure materials and services conform to procurement documents, quality procedures and instructions.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** h) Control of Purchased, Materials, Items and Services Purchased material, items and services shall conform to the procurement documents. Measures shall be established for source evaluation and selection, objective evidence of quality, inspections at the source and examination of products upon delivery. Effectiveness of quality of suppliers shall be assessed by the applicant or designee at specified intervals. Documented evidence shall be performed and made available to assure materials and services conform to procurement documents, quality procedures and instructions.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS i) Identification and Control of Items Specified controls shall ensure only correct and acceptable items, parts and components are used and installed and traceable to required documents such as certified material test reports, certificates of conformance, or data reports. These controls shall include traceability on the items or on records traceable to the items during fabrication and final acceptance and test.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** i) Identification and Control of Items Specified controls shall ensure only correct and acceptable items, parts and components are used and installed and traceable to required documents such as certified material test reports, certificates of conformance, or data reports. These controls shall include traceability on the items or on records traceable to the items during fabrication and final acceptance and test.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS j) Control of Processes Documents used to control processes shall be prepared, including the document numbers and revision to which the process conforms and shall include space for providing reporting of results of specific operations at checkpoints of repair/replacement activity, and provide spaces for signatures, initials, stamps and dates for activities performed by the Certificate Holders's representative and the Authorized Nuclear Inspector. Special processes including welding, nondestructive examinations, heat treating, and bending are performed using qualified and approved procedures and qualified personnel in accordance with applicable codes, standards and other specified criteria.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** j) Control of Processes Documents used to control processes shall be prepared, including the document numbers and revision to which the process conforms and shall include space for providing reporting of results of specific operations at checkpoints of repair/replacement activity, and provide spaces for signatures, initials, stamps and dates for activities performed by the Certificate Holders's representative and the ~~Authorized Nuclear~~ Inspector. Special processes including welding, nondestructive examinations, heat treating, and bending are performed using qualified and approved procedures and qualified personnel in accordance with applicable codes, standards and other specified criteria.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS k) Examinations, Tests, and Inspections A repair / replacement plan, developed in accordance with Table 1.6.9, shall address all required information for performing examinations, tests and inspections including but not limited to: 1) Establishing hold points; 2) Identifying procedures, methods, acceptance criteria; 3) Defects identified, removal methods, welding, brazing, fusing, and material requirements, reference points used for identification; and 4) Evaluations of results Examinations, tests and inspections shall be performed using trained and qualified personnel. Personnel records for qualification and training shall be available for review.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** k) Examinations, Tests, and Inspections A repair / replacement plan, developed in accordance with Table 1.6.~~9~~10, shall address all required information for performing examinations, tests and inspections including but not limited to: 1) Establishing hold points; 2) Identifying procedures, methods, acceptance criteria; 3) Defects identified, removal methods, welding, brazing, fusing, and material requirements, reference points used for identification; and 4) Evaluations of results Examinations, tests and inspections shall be performed using trained and qualified personnel. Personnel records for qualification and training shall be available for review.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS l) Test Control Tests shall be performed using written procedures identifying prerequisites, acceptance limits, calibration, equipment, personnel qualifications, environmental conditions, and required documentation. Personnel responsibilities shall be described for performance, acceptance/inspection and documenting results.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** l) Test Control Tests shall be performed using written procedures identifying prerequisites, acceptance limits, calibration, equipment, personnel qualifications, environmental conditions, and required documentation. Personnel responsibilities shall be described for performance, acceptance/inspection and documenting results.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS m) Control of Measuring and Test Equipment The "NR" Certificate Holder may utilize calibration and test activities performed by subcontractors when surveys and audits are performed. As an alternative to performing a survey and audit for procuring Laboratory Calibration and Test Services, the "NR" Certificate Holder as documented in their Quality Program may accept accreditation of an International Calibration and Test Laboratory Services by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) provided this alternative method is described in the "NR" Certificate Holder's Quality Program and the following requirements are met: 1) The "NR" Certificate Holder shall review and document verification that the supplier of calibration or test services was accredited by an accredited body recognized by the ILAC MRA encompassing ISO/IEC-17025:2005 or 2017, "General Requirements for the Competence of Testing and Calibration Laboratories"; 2) For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges and uncertainties; 3) For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty; 4) The "NR" Certificate Holder's purchase documents shall include: a. Service provided shall be in accordance with their accredited ISO/IEC-17025:2005 or 2017 program and scope of accreditation; b. As-found calibration data shall be reported in the certificate of calibration when items are found to be out-of-calibration; c. Standards used to perform calibration shall be identified in the certificate of calibration; d. Notification of any condition that adversely impacts the laboratories ability to maintain the scope of accreditation;	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** m) Control of Measuring and Test Equipment The "NR" Certificate Holder may utilize calibration and test activities performed by subcontractors when surveys and audits are performed. As an alternative to performing a survey and audit for procuring Laboratory Calibration and Test Services, the "NR" Certificate Holder as documented in their Quality Program may accept accreditation of an International Calibration and Test Laboratory Services by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) provided this alternative method is described in the "NR" Certificate Holder's Quality Program and the following requirements are met: 1) The "NR" Certificate Holder shall review and document verification that the supplier of calibration or test services was accredited by an accredited body recognized by the ILAC MRA encompassing ISO/IEC-17025:2005 or 2017, "General Requirements for the Competence of Testing and Calibration Laboratories"; 2) For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges and uncertainties; 3) For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty; 4) The "NR" Certificate Holder's purchase documents shall include: a. Service provided shall be in accordance with their accredited ISO/IEC-17025:2005 or 2017 program and scope of accreditation; b. As-found calibration data shall be reported in the certificate of calibration when items are found to be out-of-calibration; c. Standards used to perform calibration shall be identified in the certificate of calibration; d. Notification of any condition that adversely impacts the laboratories ability to maintain the scope of accreditation;

e. Any additional technical and/or quality requirements, as necessary, which may include tolerances, accuracies, ranges, and standards; and f. Service suppliers shall not subcontract services to any other supplier. 5) The “NR” Certificate Holder shall upon receipt inspection, validate that the laboratory documentation certifies that: a. Services provided by the laboratory has been performed in accordance with their ISO/IEC-17025:2005 or 2017 program and performed within their scope; and b. Purchase order requirements have been met.	e. Any additional technical and/or quality requirements, as necessary, which may include tolerances, accuracies, ranges, and standards; and f. Service suppliers shall not subcontract services to any other supplier. 5) The “NR” Certificate Holder shall upon receipt inspection, validate that the laboratory documentation certifies that: a. Services provided by the laboratory has been performed in accordance with their ISO/IEC-17025:2005 or 2017 program and performed within their scope; and b. Purchase order requirements have been met.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS n) Handling, Storage, and Shipping Processes or procedures shall be established to prevent damage, deterioration or misuse of material, items or components used and stored. Controls for handling, shipping, storage, cleanliness and preservation shall be specified in the quality program.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** n) Handling, Storage, and Shipping Processes or procedures shall be established to prevent damage, deterioration or misuse of material, items or components used and stored. Controls for handling, shipping, storage, cleanliness and preservation shall be specified in the quality program.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS o) Records 1) All quality related records shall be classified, identified, verified, maintained, distributed retrievable, and accessible. When the "NR" Certificate Holder is the owner, designated records and reports received by the owner, shall be filed and maintained in a manner to allow access by the Authorized Nuclear Inservice Inspector (ANII). Suitable protection from deterioration and damage shall be provided by the owner. These records and reports shall be retained as specified in the owner's QAP for the lifetime of the component or system. Records to support evidence of activities affecting quality shall include as applicable: a. Inspections and acceptance criteria/results; b. Tests performed and supporting reports; c. Procedures/instructions; d. Qualification of personnel, procedures, and equipment; e. Types of observations and results; f. Audits; g. Nonconformances; and h. Corrective actions. 2) The original of the completed Form NR-1 or Form NVR-1, as applicable, shall be registered with the National Board and, if required, a copy forwarded to the Jurisdiction where the nuclear power plant is located. A log shall be maintained in accordance with NBIC Part 3, 5.6.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** o) Records 1) All quality related records shall be classified, identified, verified, maintained, distributed retrievable, and accessible. When the "NR" Certificate Holder is the owner, designated records and reports received by the owner, shall be filed and maintained in a manner to allow access by the ~~Authorized Nuclear Inservice~~ Inspector ~~(ANII)~~. Suitable protection from deterioration and damage shall be provided by the owner. These records and reports shall be retained as specified in the owner's QAP for the lifetime of the component or system. Records to support evidence of activities affecting quality shall include as applicable: a. Inspections and acceptance criteria/results; b. Tests performed and supporting reports; c. Procedures/instructions; d. Qualification of personnel, procedures, and equipment; e. Types of observations and results; f. Audits; g. Nonconformances; and h. Corrective actions. 2) The original of the completed Form NR-1 or Form NVR-1, as applicable, shall be registered with the National Board and, if required, a copy forwarded to the Jurisdiction where the nuclear power plant is located. A log shall be maintained in accordance with NBIC Part 3, 5.6.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS p) Corrective Action 1) Measures shall be established to ensure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and other nonconformances are promptly identified and corrected. 2) In the case of significant conditions adverse to quality, the measures shall also ensure that the cause of these conditions be determined and corrected to preclude repetition. The identification of significant conditions adverse to quality, the cause, condition, and the corrective action taken shall be documented and reported to the appropriate levels of management. 3) Corrective action requirements shall also extend to the performance of subcontractors' activities.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** p) Corrective Action 1) Measures shall be established to ensure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and other nonconformances are promptly identified and corrected. 2) In the case of significant conditions adverse to quality, the measures shall also ensure that the cause of these conditions be determined and corrected to preclude repetition. The identification of significant conditions adverse to quality, the cause, condition, and the corrective action taken shall be documented and reported to the appropriate levels of management. 3) Corrective action requirements shall also extend to the performance of subcontractors' activities.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS q) Inspection or Test Status Measures shall be established to indicate inspection and test status of parts, items or components during repair/replacement activity. Measures shall include identification, procedures, control indicators (acceptable, unacceptable) and responsibility of personnel.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** q) Inspection or Test Status Measures shall be established to indicate inspection and test status of parts, items or components during repair/replacement activity. Measures shall include identification, procedures, control indicators (acceptable, unacceptable) and responsibility of personnel.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS r) Nonconforming Material or Items Measures to control material or items, nonconforming to specified criteria shall be established. Measures shall include identifying, controlling, documenting, reviewing, verifying, dispositioning and segregation when practical.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** r) Nonconforming Material or Items Measures to control material or items, nonconforming to specified criteria shall be established. Measures shall include identifying, controlling, documenting, reviewing, verifying, dispositioning and segregation when practical.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS s) Audits A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Audit frequency shall be specified in the organization's Quality Assurance Manual. Audits shall be conducted at least annually (within 12 months) to verify compliance with Quality Assurance Program requirements, performance criteria and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the required annual audit need only include those areas of responsibility required to be continually maintained such as training, audits, organizational structure, Quality Assurance Program revisions, etc. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with recognized standards, such as NQA-1; 3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program; 4) Requirements for follow-up actions for any deficiencies noted during the audit; 5) Audit records and applicable documentation shall be made available to the Authorized Nuclear Inspection Agency for review; 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.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** s) Audits A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Audit frequency shall be specified in the organization's Quality Assurance Manual. Audits shall be conducted at least annually (within 12 months) to verify compliance with Quality Assurance Program requirements, performance criteria and to determine the effectiveness of the Quality Assurance Program. When no code work has been performed, the required annual audit need only include those areas of responsibility required to be continually maintained such as training, audits, organizational structure, Quality Assurance Program revisions, etc. The Quality Assurance Manual shall as a minimum describe the following: 1) Audits shall be performed in accordance with written procedures or checklists by qualified audit personnel not having direct responsibility in areas being audited; 2) Audit personnel shall be qualified in accordance with recognized standards, such as NQA-1; 3) Audit results shall be documented and reviewed by responsible management for adequacy and effectiveness of the quality assurance program; 4) Requirements for follow-up actions for any deficiencies noted during the audit; 5) Audit records and applicable documentation shall be made available to the Authorized ~~Nuclear~~ Inspection Agency for review; 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.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS t) Authorized Nuclear Inspector Measures shall be taken to reference the commissioned rules for the National Board Authorized Nuclear Inspector, in accordance with NB-263, RCI-1 Rules for Commissioned Inspectors. The Authorized Nuclear Inspector shall hold the “N”, “I”, and “R” endorsements on his/her Commission. The “NR” Certificate Holder shall ensure that the latest documents, including the Quality Assurance Manual, procedures, and instructions, are made available to the Authorized Nuclear Inspector. The Authorized Nuclear Inspector shall be consulted prior to the issuance of a repair/replacement plan by the “NR” Certificate Holder in order that the Authorized Nuclear Inspector may select any in process inspection or hold points when performing repair/replacement activities. The “NR” Certificate Holder shall keep the Authorized Nuclear Inspector informed of progress of the repair/replacement activity so that inspections may be performed. The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless satisfied that all work carried out is in accordance with this section. The Authorized Nuclear Inspector and Authorized Nuclear Inspector Supervisor shall have access to areas where work is being performed, including subcontractors, facilities, in order to perform their required duties. The ANI shall be involved in dispositions and verification for non-conformances and corrective actions involving quality or code requirements. Additional requirements regarding Owner Interface are specified in 1.6.9.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** t) ~~Authorized Nuclear~~ Inspector Measures shall be taken to reference the commissioned rules for the National Board ~~Authorized Nuclear~~ Inspector, in accordance with NB-263, RCI-1 Rules for Commissioned Inspectors. ~~The Authorized Nuclear Inspector shall hold the “N”, “I”, and “R” endorsements on his/her Commission.~~ The “NR” Certificate Holder shall ensure that the latest documents, including the Quality Assurance Manual, procedures, and instructions, are made available to the ~~Authorized Nuclear~~ Inspector. The ~~Authorized Nuclear~~ Inspector shall be consulted prior to the issuance of a repair/replacement plan by the “NR” Certificate Holder in order that the ~~Authorized Nuclear~~ Inspector may select any in process inspection or hold points when performing repair/replacement activities. The “NR” Certificate Holder shall keep the ~~Authorized Nuclear~~ Inspector informed of progress of the repair/replacement activity so that inspections may be performed. ~~The Authorized Nuclear Inspector shall not sign Form NR-1 or Form NVR-1, as applicable, unless satisfied that all work carried out is in accordance with this section.~~ The ~~Authorized Nuclear~~ Inspector and ~~Authorized Nuclear Inspector~~ Supervisor shall have access to areas where work is being performed, including subcontractors, facilities, in order to perform their required duties. The ~~ANI~~ Inspector shall be involved in dispositions and verification for non-conformances and corrective actions involving quality or code requirements. Additional requirements regarding Owner Interface are specified in 1.6.~~9~~10.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.8.2 QUALITY PROGRAM ELEMENTS u) Exhibits Quality related forms and exhibits described in the Quality Assurance Program shall be identified, controlled and where applicable included as a reference document within the QAM or referenced procedures.	**1.6.~~8~~9.2 QUALITY PROGRAM ELEMENTS** u) Exhibits Quality related forms and exhibits described in the Quality Assurance Program shall be identified, controlled and where applicable included as a reference document within the QAM or referenced procedures.

Existing text – NBIC Part 3 – 2023	New proposed text
1.6.9 INTERFACE WITH THE OWNER'S REPAIR/REPLACEMENT PROGRAM (FOR CATEGORIES 1, 2, AND 3 AS APPLICABLE) Interface with the owner's repair/replacement program shall meet the following: a) The "NR" Certificate Holder's repair/replacement plan (see Table 1.6.9) shall be subject to the acceptance of the owner and the owner's Authorized Nuclear Inservice Inspector (ANII) and shall be subject to review by the Jurisdiction and Regulatory Authorities having jurisdiction at the plant site. b) Repair/Replacement activities of nuclear components shall meet the requirements of ASME Section III, ASME Section XI Division I, and/or other applicable standard, and the owner's requirements, and shall be subject to verification by the Jurisdiction and Regulatory Authorities having jurisdiction at the plant site. c) Documentation of the repair/replacement activities of nuclear components shall be recorded on the Report of Repair/Replacement Activities of Nuclear Components and Systems for Nuclear Facilities, Form NR-1, or Report of Repair/Replacement Activities for Nuclear Pressure Relief Devices, Form NVR-1, in accordance with the NBIC Part 3, Section 5. The completed forms shall be signed by a representative of the "NR" Certificate Holder and the Authorized Nuclear Inspector when the repair/replacement activity meets the requirements of this section. For repair/replacement activities that involve design changes, Form NR-1, or Form NVR-1, as applicable, shall indicate the organization responsible for the design or design reconciliation in accordance with the owner's requirements. d) The "NR" Certificate Holder shall provide a copy of the signed Form NR-1 or Form NVR-1, as applicable, to the owner, the Enforcement, and the Regulatory Authority if required, and the Authorized Nuclear Inspection Agency. The original Form NR-1 or Form NVR-1, as applicable, shall be registered with the National Board by the "NR" Certificate Holder. A NB registration log shall	**1.6.9 INTERFACE WITH THE OWNER'S REPAIR/REPLACEMENT PROGRAM (FOR CATEGORIES 1, 2, AND 3 AS APPLICABLE)** Interface with the owner's repair/replacement program shall meet the following: a) The "NR" Certificate Holder's repair/replacement plan (see Table 1.6.~~9~~10) shall be subject to the acceptance of the owner and the owner's ~~Authorized Nuclear Inservice~~ Inspector ~~(ANII)~~ and shall be subject to review by the Jurisdiction and Regulatory Authorities having jurisdiction at the plant site. b) Repair/Replacement activities of nuclear components shall meet the requirements of ASME Section III, ASME Section XI Division I, and/or other applicable standard, and the owner's requirements, and shall be subject to verification by the Jurisdiction and Regulatory Authorities having jurisdiction at the plant site. c) Documentation of the repair/replacement activities of nuclear components shall be recorded on the Report of Repair/Replacement Activities of Nuclear Components and Systems for Nuclear Facilities, Form NR-1, or Report of Repair/Replacement Activities for Nuclear Pressure Relief Devices, Form NVR-1, in accordance with the NBIC Part 3, Section 5. The completed forms shall be signed by a representative of the "NR" Certificate Holder and the ~~Authorized Nuclear~~ Inspector when the repair/replacement activity meets the requirements of this section. For repair/replacement activities that involve design changes, Form NR-1, or Form NVR-1, as applicable, shall indicate the organization responsible for the design or design reconciliation in accordance with the owner's requirements. d) The "NR" Certificate Holder shall provide a copy of the signed Form NR-1 or Form NVR-1, as applicable, to the owner, the Enforcement, and the Regulatory Authority if required, and the Authorized ~~Nuclear~~ Inspection Agency. The original Form NR-1 or Form NVR-1, as applicable, shall be registered with the National Board by the "NR" Certificate Holder. A NB registration log shall

be maintained by the “NR” Certificate Holder. See NBIC Part 3, Section 5.5 and 5.6. e) The “NR”Certificate Holder shall provide a nameplate/stamping for repair/replacement activities for each nuclear component unless otherwise specified by the owner’s Quality Assurance Program. The required information and format shall be as shown in NBIC Part 3, Section 5.	be maintained by the “NR” Certificate Holder. See NBIC Part 3, Section 5.5 and 5.6. e) The “NR”Certificate Holder shall provide a nameplate/stamping for repair/replacement activities for each nuclear component unless otherwise specified by the owner’s Quality Assurance Program. The required information and format shall be as shown in NBIC Part 3, Section 5.

TABLE ~~1.6.9~~ 1.6.10
REPAIR/REPLACEMENT PLAN CRITERIA

	Essential Requirements	Instruction
A	Edition and/or addenda of codes	Including codes of construction, code cases, or standards used for the work performed, the NBIC Code edition, and the owner's requirements.
B	Identification of items	Description of items affected by the repair/replacement activity, including serial numbers, vendor identification, and code classes if applicable.
		Location of installation if applicable.
C	Performance of the Repair/Replacement activity	Description of any defects, and nondestructive examination methods used to detect the defects
		Defect removal method, measurement, and area identification/reference points.
		Applicable welding/brazing procedures, heat treatment, nondestructive examination, and tests.
		Final examination criteria to verify acceptability.
		Preservice examination criteria if applicable.
D	Materials	Original specifications, new material specifications, including heat numbers, code edition/class and reconciliation requirements if applicable.
E	Description of Repair/Replacement activity	Include expected life of the item after completion if different from the original intended life as specified by the design specification. Application of the "NR" code symbol stamp if required.
F	Documentation	Generated as required by the quality assurance program and/or the owner's requirements.
		Retention and submittal in accordance with the quality assurance program and/or the owner's requirements.
G	Evaluations/ Acceptance	Evaluations/acceptance by the jurisdictional/regulatory authority as applicable.
H	Testing	Post repair/replacement testing criteria.
		Test acceptance criteria to verify acceptability.
		Types (pneumatic, hydrostatic, system leakage, or other).
I	Design	When applicable, design documents shall be certified by qualified/certified engineer.
J	Authorized Inspection Agency	~~Authorized Nuclear~~ Inspector review/acceptance.
		~~Authorized Nuclear Inservice Inspector review/acceptance.~~
K	Responsibilities for review, verification, and acceptance	Design, quality, work performed, examination/test, and records.
		Owner acceptance of the repair/replacement plan.

S9.6 FORM NR-1, REPORT OF REPAIR/REPLACEMENT ACTIVITIES FOR NUCLEAR FACILITIES, NB-81

No changes to this page.
Page attached for reference only!

FIGURE S9.6.1
FORM NR-1, PAGE 1 OF 3

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NB-81, Rev. 8, (03/04/21)

FORM NR-1, REPORT OF REPAIR/REPLACEMENT ACTIVITIES FOR NUCLEAR FACILITIES

CATEGORY OF ACTIVITY: 1 ☐ 2 ☐ 3 ☐ — (2) (NB Form Registration No.)

☐ REPAIR/REPLACEMENT ☐ RE-RATING — (3) (R/R Plan No., Job No., etc.)

1. WORK PERFORMED BY: (1)
(name of "NR" certificate holder)
(address)

2. OWNER: (4)
(name)
(address)

3. NAME, ADDRESS, AND IDENTIFICATION OF NUCLEAR FACILITY:
(5)
(name)
(address)
(unit identification)

4. SYSTEM/COMPONENT: (6) ORIGINAL DESIGN SPECIFICATION NO./REV.: (7)

5. CONSTRUCTION CODE, SECTION & EDITION/ADDENDA AND APPLICABLE CODE CASES USED FOR THE SYSTEM OR COMPONENT:
(8)

6. NBIC EDITION USED FOR PERFORMING REPAIRS/REPLACEMENT OR RE-RATING ACTIVITY: (9)

7. DESIGN RESPONSIBILITY: (10) CODE and ED/AD: (11)

8. TESTS CONDUCTED: ☐ Hydrostatic ☐ Pneumatic ☐ System Leakage ☐ Pressure _____ psi (MPa)
(12) ☐ Exempt ☐ Other

9. NUMBER OF COMPONENTS REPAIRED/REPLACED AND/OR RE-RATED (refer to page 2): (13)

10. DESCRIPTION OF WORK (use of properly identified additional sheet[s] or sketch[es] is acceptable):
(14)

11. REMARKS: (15)

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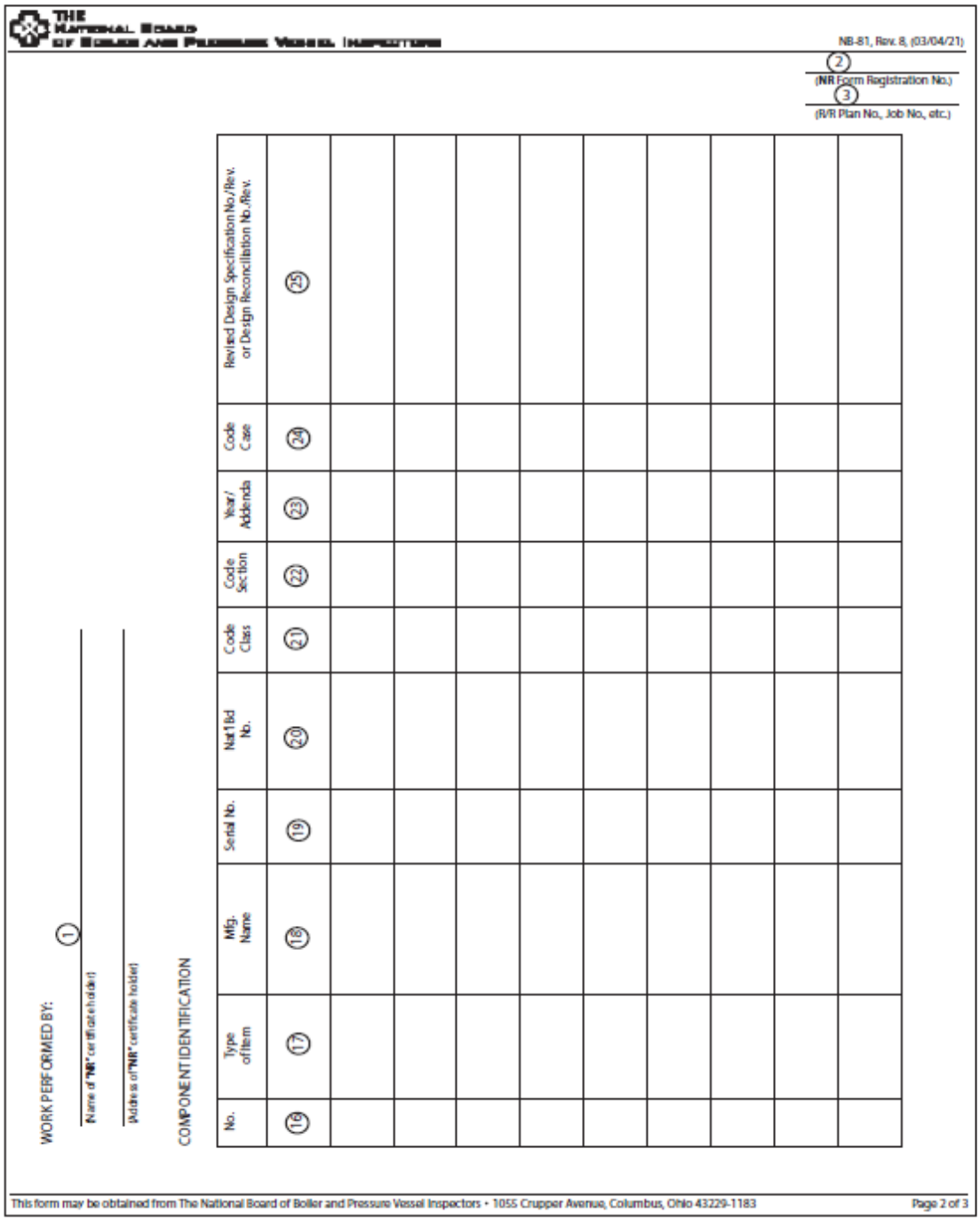
No changes to this page.
Page attached for reference only!

FIGURE S9.6.2
FORM NR-1, PAGE 2 OF 3



THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NB-81, Rev. 8, (03/04/21)

(2) (NR Form Registration No.)

(3) (R/R Plan No., Job No., etc.)

WORK PERFORMED BY: (1)

(Name of "NR" certificate holder)

(Address of "NR" certificate holder)

COMPONENT IDENTIFICATION

No. (16)	Type of Item (17)	Mfg. Name (18)	Serial No. (19)	Nat'l Bd No. (20)	Code Class (21)	Code Section (22)	Year/ Addenda (23)	Code Case (24)	Revised Design Specification No./Rev. or Design Reconciliation No./Rev. (25)

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Page 2 of 3

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FIGURE S9.6.3
FORM NR-1, PAGE 3 OF 3

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NB-81, Rev. 8, (03/04/21)

(NR Form Registration No.)

(R/R Plan No., Job No., etc.)

CERTIFICATE OF COMPLIANCE

I, (26) _____, employed by (27) _____
certify that to the best of my knowledge and belief the statements made in this report are correct and the repair/replacement activities or re-rating described above conform to (28) _____ and the *National Board Inspection Code* "**NR**" rules.

National Board *Certificate of Authorization* No. (29) _____ Expiration date: (30) _____

Signed: (31) _____ Date: (32) _____

Title: (33) _____
(authorized representative)

CERTIFICATE OF INSPECTION

I, (34) _____, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and certificate of competency, where required, issued by the Jurisdiction of (35) _____ and employed by (36) _____ have inspected the repair/replacement and/or re-rating activities described in this report on (37) _____ and state that to the best of my knowledge and belief, these activities have been completed in accordance with the Code specified and the *National Board Inspection Code* "**NR**" rules.

By signing this certificate, neither the undersigned nor my employer makes any warranty, expressed or implied, concerning the work described in this report. Furthermore, neither the undersigned nor my employer shall be liable in any manner for any personal injury, property damage, or loss of any kind arising from or connected with this inspection.

Signed: (38) _____ Date: (39) _____ Commissions (40) _____
(Inspector) (National Board and endorsement)

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TABLE S9.6

GUIDE FOR COMPLETING FORM NR-1, REPORT OF REPAIR/REPLACEMENT ACTIVITIES FOR NUCLEAR FACILITIES, NB-81

Reference to Circled Numbers in the Form	Description
	Title Block: Check type of activity, repair/replacement and/or rerating, as applicable.
	Check category of activity, 1, 2, or 3, as described in Part 3, Paragraph 1.6.2.
(1)	Name and address of the organization, as shown on the National Board "NR" *Certificate of Authorization*, which performed the activity.
(2)	Indicate NR Form Registration Number.
(3)	Indicate the repair/replacement plan, job number, etc., as applicable, assigned by the organization that performed the work for traceability to documentation.
(4)	Name and address of the owner of the nuclear facility.
(5)	Name and address of the nuclear power plant and, if applicable, identification of the unit.
(6)	Identify the system or component (e.g., residual heat removal, reactor coolant) with which the repair/replacement and/or re-rating activity is associated.
(7)	Identify the original design specification number and revision for the system or component listed in line 4.
(8)	Identify the original construction code, section, edition/addenda and applicable code cases used for the system or component identified in line 4.
(9)	NBIC Edition used for performing activities specified on this form.
(10)	Organization having responsibility for design when there is a change from the original design specification.
(11)	Identify code, section, edition/addenda and applicable code cases used for design, when applicable.
(12)	Check the type of test conducted (e.g., hydrostatic, pneumatic, system leakage, exempt, or other) and indicate the pressure applied when applicable.
(13)	Indicate the number of components where work was performed. Each component shall be indicated on page 2 of the form NR-1.
(14)	Provide a detailed summary describing the scope of work completed. Information to be considered should include type of work (welding, brazing, fusing), location, steps taken for removal or acceptance of defects, examinations, testing, heat treat, and other special processes or methods utilized. If Necessary, attach additional data, sketch, drawing, Form R-4, etc. In the remarks section state if additional data is attached.
(15)	Indicate any additional information pertaining to the work, including manufacturer's data reports.

TABLE S9.6 CONT'D

Reference to Circled Numbers in the Form	Description
(16)	Number in sequence beginning with No. 1 to identify each component work was performed. This number may be used to correspond with the detailed description of work performed.
(17)	Identify the type of item. i.e. piping, pump, valve, etc.
(18)	Identify the manufacturer's name of component.
(19)	Identify the manufacturer's serial no. or other assigned number for traceability.
(20)	Identify the National Board registration number, if previously assigned.
(21)	Identify the code class criteria, as assigned for each component.
(22)	Identify the code section used to perform work.
(23)	Identify Code section year and/or addenda used to perform work.
(24)	Identify any code cases used for work performed.
(25)	Identify any revisions to be made to the design specifications or if any design reconciliations were performed.
(26)	Type or print name of authorized representative from the certificate holder.
(27)	Name of the organization that performed the identified work, using the full name as shown on the Certificate of Authorization, or an abbreviation acceptable to the National Board.
(28)	Indicate code section as applicable to the repair/replacement activity and/or re-rating activity performed.
(29)	Indicate National Board Certificate of Authorization number.
(30)	Indicate month, day, and year the certificate expires.
(31)	Signature of authorized representative from the NR certificate holder.
(32)	Indicate month, day and year of signature by the Authorized Representative.
(33)	Title of authorized representative as defined in the Quality Program.
(34)	Type or print name of ~~Authorized~~ **Nuclear** ~~Nuclear~~ Inspector.
(35)	Indicate the Jurisdiction where the activity is performed, when required.
(36)	Indicate ~~Authorized Nuclear~~ Inspector's employer.
(37)	Indicate month, day, and year of inspection by the ~~Authorized Nuclear~~ Inspector.

TABLE S9.6 CONT'D

Reference to Circled Numbers in the Form	Description
(38)	Signature of ~~Authorized Nuclear~~ Inspector.
(39)	Indicate month, day, and year of signature by the ~~Authorized Nuclear~~ Inspector.
(40)	National Board Commission number and required endorsements.

S9.7 FORM NVR-1, REPORT OF REPAIR/REPLACEMENT ACTIVITIES FOR NUCLEAR PRESSURE RELIEF DEVICES, NB-160

FIGURE S9.7.1
FORM NVR-1, PAGE 1 OF 3

No changes to this page.
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THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NB-160, Rev. 8, (03/30/17)

FORM NVR-1, REPORT OF REPAIR/REPLACEMENT ACTIVITIES FOR NUCLEAR PRESSURE RELIEF DEVICES

(2) (NVR Form Registration No.)
(3) (R/R Plan No., Job No., etc.)

CATEGORY OF ACTIVITY: 1 ☐ 2 ☐ 3 ☐

☐ REPAIR/REPLACEMENT ☐ RE-RATING

1. WORK PERFORMED BY: (1) (name of "NVR" authorized organization)
   (address)
2. WORK PERFORMED FOR: (4) (name)
   (address)
3. OWNER: (5) (name)
   (address)
4. NAME, ADDRESS, AND IDENTIFICATION OF NUCLEAR FACILITY: (6) (name)
   (address)/(unit identification)
5. CODE APPLICABLE FOR INSERVICE INSPECTION: (7) (edition) (addenda) (code case(s))
6. CODE USED FOR REPAIR/REPLACEMENT ACTIVITY: (8) (edition) (addenda) (code case(s))
7. NBIC USED FOR REPAIR/REPLACEMENT ACTIVITY: (9) (edition)
8. DESIGN RESPONSIBILITY: (10)
9. **REPAIRED PRESSURE RELIEF DEVICE: SEE PAGE 2**
10. OPENING PRESSURE: (11) BLOWDOWN (if applicable): (12)
11. SET PRESSURE AND BLOWDOWN ADJUSTMENT MADE AT: (13) USING: (14)
12. DESCRIPTION OF WORK: (Include name and identifying number of replacement parts):
    (15)

12. REMARKS: (16)

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FIGURE S9.7.2
FORM NVR-1, PAGE 2 OF 3

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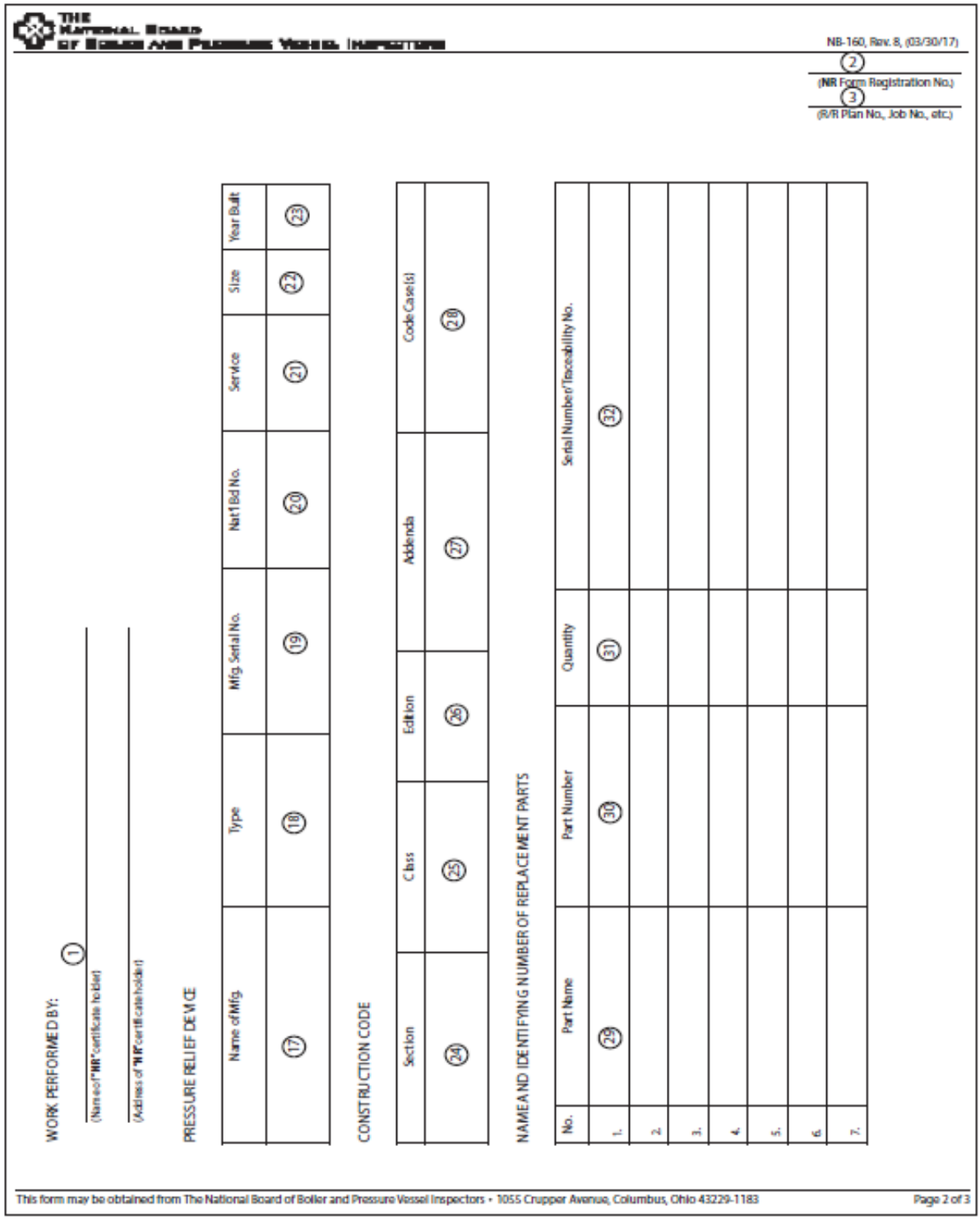

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NB-160, Rev. 8, (03/30/17)

(2) (NR Form Registration No.)

(3) (R/R Plan No., Job No., etc.)

WORK PERFORMED BY: (1)

(Name of "NR" certificate holder)

(Address of "NR" certificate holder)

PRESSURE RELIEF DEVICE

Name of Mfg.	Type	Mfg. Serial No.	Nat'l Bd No.	Service	Size	Year Built
(17)	(18)	(19)	(20)	(21)	(22)	(23)

CONSTRUCTION CODE

Section	Class	Edition	Addenda	Code Case(s)
(24)	(25)	(26)	(27)	(28)

NAME AND IDENTIFYING NUMBER OF REPLACEMENT PARTS

No.	Part Name	Part Number	Quantity	Serial Number/Traceability No.
1.	(29)	(30)	(31)	(32)
2.				
3.				
4.				
5.				
6.				
7.				

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FIGURE S9.7.3
FORM NVR-1, PAGE 3 OF 3

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THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NB-160, Rev. 8, (03/30/17)

(form "NVR" registration no.)

(R/R Plan No., Job No., etc.)

CERTIFICATE OF COMPLIANCE

I, (33) _____, certify that to the best of my knowledge and belief the statements made in this report are correct and the repair/replacement of the pressure relief devices described above conform to (34) _____ and the *National Board Inspection Code* "**VR**" & "**NR**" rules.

National Board *Certificate of Authorization* No. (35) _____ to use the "**VR**" stamp expires (36) _____
National Board *Certificate of Authorization* No. (37) _____ to use the "**NR**" stamp expires (38) _____
Date (39) _____ Signed (40) _____ (41) _____
(authorized representative) (title)

CERTIFICATE OF INSPECTION

I, (42) _____, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and certificate of competency, where required, issued by the Jurisdiction of (43) _____ and employed by (44) _____ of (45) _____ have inspected the repair/replacement described in this report on (46) _____ and state that to the best of my knowledge and belief, this repair/replacement has been completed in accordance with the Code specified and the *National Board Inspection Code* "**VR**" & "**NR**" rules.

By signing this certificate, neither the undersigned nor my employer makes any warranty, expressed or implied, concerning the repair/replacement described in this report. Furthermore, neither the undersigned nor my employer shall be liable in any manner for any personal injury, property damage, or loss of any kind arising from or connected with this inspection.

Signed (47) _____ Date (48) _____ (49) _____
(Inspector) (National Board and endorsement)

This form may be obtained from The National Board of Boiler and Pressure Vessel Inspectors - 1055 Crupper Avenue, Columbus, Ohio 43229-1183 Page 3 of 3

No changes to this page.
Page attached for reference only!

TABLE S9.7

GUIDE FOR COMPLETING FORM NVR-1, REPORT OF REPAIR/REPLACEMENT ACTIVITIES FOR NUCLEAR PRESSURE RELIEF DEVICES, NB-160

Reference to Circled Numbers in the Form	Description
	Title Block: Check type of activity, repair/replacement and/or rerating, as applicable.
	Check category of activity, 1, 2, or 3, as described in Part 3, Paragraph 1.6.2.
(1)	Name and address of the organization, as shown on the National Board "VR" and "NR" Certificates of Authorization, which performed the activity.
(2)	Indicate NVR Form Registration Number.
(3)	Indicate the repair/replacement plan number, job number, etc., as applicable for traceability, assigned by the organization that performed the work.
(4)	Name and address of the organization for which the work was performed.
(5)	Name and address of the owner nuclear facility.
(6)	Name and address of the nuclear facility and, if applicable, identification of the unit.
(7)	Identify the edition, addenda, and as applicable, code cases of the code used for the inservice inspection activity.
(8)	Identify the edition, addenda, and as applicable, code cases of the code used for the repair/replacement activity.
(9)	Identify the NBIC edition used for the repair/replacement activity.
(10)	Identify the organization responsible for design or design reconciliation, if applicable.
(11)	Indicate the set pressure of the valve.
(12)	Indicate the blowdown, if applicable, as a percentage of set pressure.
(13)	Indicate the location of testing.
(14)	Indicate medium (steam, air, etc.) used for the adjustment of the set pressure and, if applicable, blowdown.
(15)	Provide a detailed summary describing the scope of work completed. Information to be considered should include type of work (welding, brazing, fusing), location, steps taken for removal or acceptance of defects, examinations, testing, heat treat, and other special processes or methods utilized. If Necessary, attach additional data, sketch, drawing, Form R-4, etc. If additional data is attached, so state in the remarks section.
(16)	Indicate any additional information pertaining to the work, such as, additional documentation that is attached to this form to further support item 15.
(17)	Manufacturer's name of the affected item.

No changes to this page.
Page attached for reference only!

TABLE S9.7 CONT'D

Reference to Circled Numbers in the Form	Description
(18)	Describe the type of pressure relief device (e.g., safety valve, safety relief valve, pressure relief valve).
(19)	Manufacturer's serial number of the affected item.
(20)	National Board number, if applicable, of the affected item.
(21)	Indicate the service as steam, liquid, air/gas, etc.
(22)	Indicate the pressure relief device by inlet size, in inches.
(23)	Indicate the year the affected item was manufactured.
(24)	Indicate the name, section and division of the original construction code for the affected item.
(25)	Indicate the code class for the affected item as applicable, i.e. Class 1, 2 or 3.
(26)	Indicate the construction code edition for the affected item.
(27)	Indicate the construction code addenda, as applicable, for the affected item.
(28)	Indicate any applicable code cases used for manufacturing of the affected item.
(29)	Name of the replacement part.
(30)	Identifying number of the replacement part.
(31)	Number/quantity of each replacement part used.
(32)	Indicate the Serial number or other traceability used by the manufacturer of the replacement part.
(33)	Type or print name of authorized representative from the certificate holder.
(34)	Indicate code as applicable to the repair/replacement activity performed.
(35)	Indicate National Board Certificate of Authorization number, if applicable for the "VR" Stamp.
(36)	Indicate month, day, and year the certificate expires, if applicable for the "VR" Stamp.
(37)	Indicate National Board Certificate of Authorization number, if applicable for the "NR" Stamp.
(38)	Indicate month, day, and year the certificate expires, if applicable for the "NR" Stamp.
(39)	Signature of authorized representative from the certificate holder defined in item 27 above.

TABLE S9.7 CONT'D

Reference to Circled Numbers in the Form	Description
(40)	Indicate month, day, and year of signature by the authorized representative.
(41)	Title of authorized representative as defined in the Quality Program.
(42)	Type or print name of ~~Authorized Nuclear~~ Inspector.
(43)	Indicate the Jurisdiction where the activity is performed, when required.
(44)	Indicate ~~Authorized Nuclear~~ Inspector's employer.
(45)	Indicate address of ~~Authorized Nuclear~~ Inspector's employer (city and state or province).
(46)	Indicate month, day, and year of inspection by the ~~Authorized Nuclear~~ Inspector.
(47)	Signature of ~~Authorized Nuclear~~ Inspector defined in item 42 above.
(48)	Indicate month, day, and year of signature by the ~~Authorized Nuclear~~ Inspector.
(49)	National Board Commission number and required endorsements.

PART 3, SECTION 9
REPAIRS AND ALTERATIONS — GLOSSARY OF TERMS

9.1 DEFINITIONS

For the purpose of applying the rules of the NBIC, the following terms and definitions shall be used herein as applicable to each part:

Additional terms and definitions specific to DOT Transport Tanks are defined in NBIC Part 2, Supplement 6.

Accumulator — A vessel in which the test medium is stored or accumulated prior to its use for testing.

Alteration — A change in the item described on the original Manufacturer's Data Report which affects the pressure containing capability of the pressure-retaining item. (See NBIC Part 3, 3.4.3, *Examples of Alteration*) Nonphysical changes such as an increase in the maximum allowable working pressure (internal or external), increase in design temperature, or a reduction in minimum temperature of a pressure-retaining item shall be considered an alteration.

ANSI — The American National Standards Institute.

Appliance — A piece of equipment that includes all controls, safety devices, piping, fittings, and vessel(s) within a common frame or enclosure that is listed and labeled by a nationally recognized testing agency for its intended use.

ASME — The American Society of Mechanical Engineers.

ASME Code — The American Society of Mechanical Engineers Boiler and Pressure Vessel Code published by that Society, including addenda and Code Cases, approved by the associated ASME Board.

Assembler — An organization who purchases or receives from a manufacturer the necessary component parts of valves and assembles, adjusts, tests, seals, and ships safety or safety relief valves at a geographical location, and using facilities other than those used by the manufacturer.

Authorized Inspection Agency (AIA)

Inservice: An Authorized Inspection Agency is either:

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

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

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

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

Biomass — Fuels which result from biological sources requiring a relatively short time for replenishment: Wood and bagasse are typical examples.

Biomass Fired Boiler — A boiler which fires biomass as its primary fuel.

Item A24-83

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Change Part 3, 1.6.4 d) (or elsewhere) to require audits to be performed by Supervisor
NBIC Location:	2023 NBIC, Part 3, 1.6.4 d)
Statement of Need:	TBD
Background Information:	TBD

Proposed Text:

1.6.4 OBTAINING OR RENEWING A NATIONAL BOARD "NR" *CERTIFICATE OF AUTHORIZATION*

d) The "NR" *Certificate of Authorization* holder shall be subject to an audit annually by an ANIS employed by the Authorized Nuclear Inspection Agency to ensure compliance with the Quality Assurance Program.

1.3 INSPECTOR

c) Inspection and certification of Repair and Replacement activities for Nuclear Items, the Inspector shall additionally:

1) For Category 1, Hold the "N" endorsement in accordance with NB-263, Rules for Commissioned Inspectors (RCI-1), and be employed by an Authorized Nuclear Inspection Agency.
2) For Category 2, Hold the "I" endorsement in accordance with NB-263, Rules for Commissioned Inspectors (RCI-1), and be employed by an Authorized Nuclear Inspection Agency.

3) **For Category 3, Hold qualifications required by the Regulatory Authority. The Inspector shall be employed by an Authorized Nuclear Inspection Agency or an designated inspection agency appointed or accepted by the Regulatory Authority having jurisdiction over the designated plant.**

1.3.1 SUPERVISOR

a) Inspectors shall be supervised by an individual holding a valid National Board commission with the "R" endorsment as required above.

b) Supervisor of Inspectors performing inspection and certification of Repair and Replacement activities of Nuclear Items shall additionally:

1) For Category 1 and 2 - Hold a "NS" endorsement and be employed by an Authorized Nuclear Inspection Agency in accordance with NB-263, Rules for Commissioned Inspectors (RCI-1).

2) For Category 3 - Hold qualifications required by the Regulatory Authority. The Supervisor shall be employed by an Authorized Nuclear Inspection Agency or a designated inspection agency appointed or accepted by the Regulatory Authority having jurisdiction over the designated plant.

1.3.2 AUTHORIZATION

c) The Inspector's authorization shall be obtained by the "NR" Certificate Holder prior to initiation of a repair and replacement activities to a nuclear items. The Inspector shall determine that the repair and replacement methods are acceptable.

1.3.3 INSPECTIONS AND CERTIFICATIONS

a) Inspections and NBIC Form R Report certifications shall be performed by the same Inspector who authorized the repair or alteration, or repair and replacement activity. Where this is not possible or practicable, another Inspector may perform these duties; however, in all cases, duties

associated within the same scope of work shall be performed by Inspectors employed by the same Authorized Inspection Agency.

Item A24-95

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Registration of NR Forms within 30 Days
NBIC Location:	2023 NBIC, Part 3, 5.5 a)
Statement of Need:	5.5 a) states repairs and alterations requiring registration must be submitted within 30 days of certification. It is unclear if this requirement applies to repair/replacement activities under the “NR” or “NVR” programs.
Background Information:	Removing the words, "performing a repair or alteration" from 5.5 a) would then include registration requirements for repair/replacement activities under the “NR” or “NVR” programs referenced in 5.5.4. 5.5.4 states, "Organizations performing repair/replacement activities under the “NR” or “NVR” stamp program shall register forms with the National Board."

Proposed Text:

5.5 REGISTRATION OF FORMS — GENERAL

a) When registration of the forms is required, the Certificate Holder ~~performing a repair or alteration~~ shall submit the completed form, meeting the requirements of the NBIC, to the National Board no more than 30 days following certification.

b) When registration of the forms is not required, the Certificate Holder may register the completed form, meeting the requirements of the NBIC, with the National Board.

c) The “R” or “NR” Certificate Holder should be aware that some Jurisdictions may require registration of repairs and alterations with the National Board.

Item A23-09

Engineered Alterations

NB23-09 Rev ~~59~~64

Supplement SXX~~??~~

Pressure Retaining Parts fabricated using Additively Manufactured Material

Section XX.1 Scope

Additively Manufactured (AM) pressure retaining ~~containing~~ parts ~~are parts that~~ have been fabricated ~~using material made~~ by the direct energy deposition (DED) process. The method of welding using DED shall be limited to the gas metal arc welding (GMAW) process. ~~and are referred to as AM parts~~. AM parts replicate pressure retaining parts that were previously made using wrought, forged or cast product forms. The requirements listed under Section XX.2 for installation of AM parts are based on references to other known international Codes and Standards (e.g., ASME Boiler and Pressure Vessel Code).

Section XX.2 Installation of AM Pressure Retaining Parts

AM parts ~~manufactured by the DED process~~ that are being installed by a National Board ~~n~~ R-Certificate holder shall be considered an alteration and shall require a Form R-2. AM parts that are installed shall be limited to service temperatures below the creep range (e.g. where time independent properties govern).

In addition to the requirements for an alteration, the following ~~documents shal~~ information~~l~~ shall be provided for the AM part and attached to the NBIC Form R-2;

(a) copy of the Additive Manufacturing Specification (AMS) .

As a minimum the following information shall be included in the AMS:

a 1) The ~~governing~~ original code of construction ~~Construction Code~~ for the AM component.

a2) File names with current revision for all model data describing the geometry and build strategy needed to fabricate ~~build~~ the physical component.

a3) The applicable Material Specification listed in the original code of construction for the pressure retaining item ~~ASME BPVC Section II, Part A or Part B~~.

a4) The applicable Filler Metal Specification and AWS Classification listed in the original code of construction~~ASME BPVC Section II, Part C~~.

a5) Allowable ranges of process variables from the original code of construction ~~ASME BPVC Section IX, Part QW, Article VI,~~ "Material Manufacturing using Wire Additive Welding".

a6) The nondestructive evaluation and testing requirements being applied to the AM Material from the applicable original code of construction~~ASME BPV Construction Code~~.

a7) Supplemental examination requirements identified by the Additive Manufacturer or the User.

a 8) Post-processing requirements identified by the Additive Manufacturer or the User.

a9) Thermal treatment requirements for the AM Material identified by the Additive Manufacturer or the User.

a10) Supplemental requirements identified by the Additive Manufacturer or the User (e.g., corrosion testing).

a(11) Prior to fabrication, t~~T~~he AMS ~~Additive Manufacturing Specification~~ shall be reviewed and accepted by the Inspector, and the Jurisdiction, where ~~applicable~~required.

(b) A copy of the design calculations for the AM pressure part which shall be based on the original code of construction.

(c) A copy of the original code of construction ~~ASME Section IX~~ qualified welding procedure specification(s) that was followed for AM pressure part fabrication and weld/welder qualification record(s).

(d) A copy of the Additive ~~Material~~ Manufacturing Qualification Build Test Report.

As a minimum the following information shall be included in the AM Qualification Build Test Report:

d(1)~~(1)~~ The Additive Manufacturer shall complete qualification builds prior to starting production builds.

d(2) One qualification build is required for each F-Number (e.g., ASME BPVC Section IX, Table QW- 432) that captures the geometric features for the production components.

d(3) The geometry produced for the qualification builds can be either:

d3(a) A specific component geometry being built for production.

d3(b) A generic component geometry containing geometric features that capture the bounding heat inputs and interpass temperature for multiple production components. Examples of geometric features can include but are not limited to thick wall sections, thin wall sections, tilted wall sections, nozzle sections, thickness transitions, and required joints (e.g., tees or cruciform).

d3(c) Additional qualification builds are not required for a F-Number unless the geometric features for the qualification build in d)3 ~~paragraph 7(c)~~ do not bound the heat inputs and interpass temperatures for additional production builds.

d(4) Sufficient AM product ~~Material~~ for qualification testing shall be produced to complete all required material qualification testing.

d(5) Test specimens shall be extracted from the AM product ~~Material~~ produced during the qualification builds at bounding heat inputs and interpass temperatures (e.g., thick wall

sections, thin wall sections, tilted wall sections, thickness transitions, and required joints~~,~~ ~~etc.~~).

d(6) Test specimens shall be extracted from multiple locations as needed to define the bounding value of the material property of interest (i.e., the tensile strength and toughness may not be at a minimum at the same location).

d(7) If the test specimen population is < 15, then a statistical analysis shall be performed in accordance with ASTM E2586 to verify that the material properties of an extrapolated population meet or exceed the minimum specifications of the properties based on a 95% confidence interval. If verified, then the product properties are deemed acceptable.

~~If less than 15 test specimens are produced the Additive Manufacturer shall complete a statistical analysis to support with 95% confidence that 99% of the produced material tensile properties are in accordance with the material specification.~~

~~(8) The statistical analysis shall be in accordance with ASTM E2586.~~

d(8~~9~~) If the test specimen population is ≥ 15, and testing indicates that all the material properties exceed the minimum specifications then no statistical analyses are required and the product properties are deemed acceptable.

~~If 15 or more specimens are produced, and all the tensile properties meet the requirements of the material specification, the material is acceptable, and a statistical analysis is not required.~~

d(9~~10~~) The tensile data generated for the ~~ASME BPVC Section IX, Part QW, Article VI Additive~~ "Material Manufacturing Procedure Qualification Requirements" (Section c~~6~~) may be included in the calculation of the total number of test specimens.

d (10~~1~~) Elemental ~~Chemical~~ composition testing shall be performed and included in the AM Qualification Build Test Report in accordance with the requirements in Section f (~~g~~).

d(11~~2~~) Mechanical property testing shall be performed and included in the AM Qualification Build Test Report in accordance with the requirements of Section (g and h~~g~~).

d(12~~3~~) Metallographic testing shall be performed and included in the AM Qualification Build Test Report in accordance with the requirements of Section ~~(~~k)~~h)~~.

(e) copy of Production (witness specimen) Test Report~~s~~.

The following information shall be provided in the AM Production Test Report:

e(1) AM product witness specimens shall be manufactured and tested from each production build to document material integrity and stability of the manufacturing process.

Commented [MS1]: I think bullet 7 and 8 should be applicable for all mechanical properties, not just tensile. Therefore, I've written this in more general terms.

Commented [MS2]: Is this the best word to use? Are we extracting these from a product or are these manufactured separately? Should we say, "obtained and tested"?

Commented [MS3]: Need to define specifically. Batch, lot, or every product item?

~~AM Material witness specimens shall be manufactured and tested for each production build to measure and verify on-going process stability.~~

e(2) At least one AM product ~~Material~~ witness tension test specimen shall be manufactured and tested from~~or~~ each production build.

e(3) When toughness testing is required by the Construction Code, at least one AM product ~~Material~~ witness toughness test ~~specimen~~ shall be manufactured and tested from~~or~~ each production build.

e(4) The AM product witness toughness test sample shall be of sufficient size to produce the required number of replicate specimens required by the original code of construction.

~~The AM Material witness toughness test specimen shall be of sufficient size to produce the number of toughness test specimens required by the Construction Code.~~

e(5) When a production component requires the use of multiple heats of filler metal AM product ~~Material~~ witness specimens for tension and toughness testing shall be manufactured and tested from each heat of filler metal.

e(6) The witness specimens shall be extracted from the AM product ~~Material~~ manufactured using bounding heat inputs and interpass temperatures that provides limiting values for tensile and toughness properties as determined by the Additive Manufacturer.

e(7) The witness specimens shall be manufactured either immediately before, during, or immediately after each production build.

e(8) All tension and toughness testing shall be performed in accordance with the requirements of Sections g),h), and j) ~~(g)~~.

e(9) Following any production test non-compliance, components fabricated during the build shall be dispositioned using the Additive Manufacturers Quality Control Program.

e(10) The results of the required witness specimen testing shall be documented in a Production Test Report certified by the Additive Manufacturer.

e(11) The Production Test Report shall be included in the Additive Manufacturer's Construction Records.

~~(f)~~ f). Elemental ~~C~~ Composition Testing~~HEMICAL COMPOSITION TESTING~~

(f1~~1~~) One AM product~~Material~~ specimen from the qualification build shall be provided for elemental ~~chemical~~ composition testing at a location determined by the Additive Manufacturer.

(f2~~2~~) The analytical method for elemental ~~chemical~~ composition testing shall be in accordance with the Material Specification.

(f3) The elemental~~chemical~~ composition of the specimens shall conform to the ASME filler metal specification identified in the AM ~~Additive Manufacturing~~ Specification.

~~(g)~~ ~~g).~~ Mechanical Property Test Locations~~MECHANICAL PROPERTY TESTING~~

(g1) The build x, y, and z axes are defined in Figure 1.

(g2) The z axis is defined as normal to deposition layers (Parallel to Build Direction) as shown in Figure 1.

h). Tension Testing Requirements

(h1) All AM product ~~Material~~ testing shall be performed on specimens in the final heat-treated condition identified in the AM ~~Additive Manufacturing~~ Specification.

(h2) Tension test specimens shall be constructed with their long direction parallel to the z-axis as shown in Figure 1.

(h3) All room temperature tension testing shall be in accordance with ASTM E8 (see Appendix A and B)

(h4) All elevated temperature tension testing shall be in accordance with ASTM E21 (see Appendix A and B).

i). Hardness Testing Requirements

(i1) Hardness testing shall be performed on the AM product from the qualification build when required by the Material Specification, the code of construction, or the AMS.

~~Hardness testing shall be performed on AM Material extracted from the qualification build when required by the Material Specification, the Construction Code, or the Additive Manufacturing Specification.~~

(i2) The hardness testing shall be performed on the AM product~~Material~~ specimen in regions of the highest tensile strength.

(i3) Hardness testing shall comply with ASTM E10, ASTM E18 or ASTM E92.

(i4) The hardness values for the AM product ~~material~~ shall comply with the Material Specification.

~~j).~~ Toughness Testing Requirements

(j1) Toughness testing shall be performed when required by the Material Specification, Construction Code or the ~~Additive Manufacturing Specification~~ AMS~~.~~

(j2) When toughness testing is required, toughness testing shall be performed on AM product ~~Material extracted~~ from the qualification build and the witness specimens.

(j3) Toughness testing shall be performed in the AM product ~~Material~~ specimen orientation as shown in Figure 1.

Commented [MS4]: Do you need to extract material to perform the test, or do you perform the test on the finished product?

Commented [GG5R4]: Both can be used. Depends on location and function.

(j44) The acceptance criteria for toughness testing shall be as specified by the ~~applicable~~ original code of construction~~Construction Code~~.

~~(h)~~ k). ~~M~~Metallographic Examination Requirements~~ETALLOGRAPHIC EVALUATIONS~~

(k1~~1~~) Metallographic specimens shall be extracted from the AM product ~~Material~~ produced during the qualification builds at bounding location of heat inputs and interpass temperatures as determined by the Additive Manufacturer.

(k2~~2~~) Metallographic specimens shall be prepared using methods prescribed in ASTM E3, Standard Guide for Preparation of Metallographic Specimens and ASTM E407, Standard Practice for Microetching Metals and Alloys.

(k3~~3~~) The microstructure shall be examined at magnifications ranging from 50X to 200X at locations selected by the AM to ensure the desired microstructure has been achieved.

(k44) The microstructure shall be reasonably uniform and free of cracks and lack of fusion d~~D~~efects at the selected locations in section k) 3.

l). ~~(i)~~ A c~~c~~opy of nondestructive test reports as required by the original code of construction and Owner/User ~~-~~contract specification requirements, if applicable.

m). Test results from sections f),h), i), j) and k) shall be documented in a certified test report.

n). ~~(j)~~ R~~r~~esults of the hydrostatic test as performed in accordance with the rules of the original code of Construction.

o). Certification of AM pressure parts shall be documented on the NBIC Form R-3.

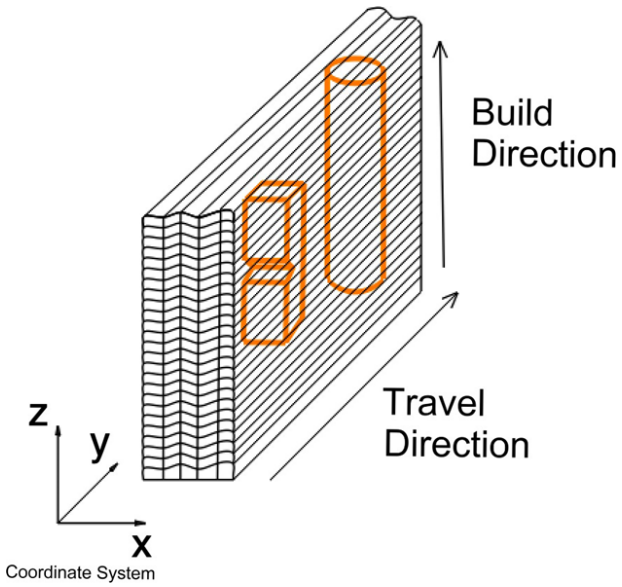

Figure 1 Material Manufacturing Coordinate System and Material Test Specimen Orientation

Appendix A Control Points and Data Point Definitions and Nomenclature

Point	Temperature	Strength	Description	Criteria
C1	Room	TS	Specified Minimum Tensile Strength	Specified Minimum Tensile Strength from the Material Specification
C2	Room	TS	The measured elongation from the tensile specimen is equal to the specified minimum elongation value in the Material Specification.	Specified Minimum Elongation from the Material Specification. Note: If the elongation in all the tensile specimens exceeds the specified minimum elongation it is not required that Control Point C2 be determined.
C3	Design	TS	Value from Table U at Design Temperature	Tensile Strength from ASME BPVC Section II, Part D, Table U at Design Temperature
C4	Design	TS	Minimum Acceptable Value of Tensile Strength for High Temperature Test	Point C3/1.1 (See Paragraph 6(e)(3)) Value from Table U at Design Temperature Divided by 1.1
C5	Room	YS	Specified Minimum Yield Strength	Specified Minimum Yield Strength from the Material Specification
C6	Room	YS	The measured elongation from the tensile specimen is equal to the specified minimum elongation value in the Material Specification.	Specified Minimum Elongation from the Material Specification. Note: If the elongation in all the tensile specimens exceeds the specified minimum elongation it is not required that Control Point C6 be determined.
C7	Design	YS	Minimum Acceptable Value of Yield Strength for High Temperature Test	Yield Strength from ASME BPVC Section II Part D Table Y-1 at Design Temperature
D1	Room	TS	Minimum value of tensile strength from ASME BPVC Section IX, Part QW, Article VI tension test data	Tensile strength and elongation from the ASME BPVC Section IX, Part QW, Article VI tension tests shall equal or exceed the specified minimum values in the Material Specification (Point C1) The elongation from the tension tests shall exceed the specified minimum elongation in the Material Specification
D2	Design	TS	Tensile strength value from elevated temperature tension test.	Tensile strength value from ASME BPVC Section IX, Part QW, Article VI tension test shall equal or exceed value calculated for Point C4
D3	Room	YS	Minimum value of yield strength from ASME BPVC Section IX, Part QW, Article VI tension test data	Yield strength and elongation from the ASME BPVC Section IX, Part QW, Article VI tension tests shall equal or exceed the specified minimum values in the Material Specification (Point C5) The elongation from the tension tests shall exceed the specified minimum elongation in the Material Specification
D4	Design	YS	Yield strength value from high temperature tension test	Yield strength value from ASME BPVC Section IX, Part QW, Article VI tension test shall equal or exceed value for Point C7

Appendix B Example Section IX, Part QW, Article VI Data Analysis
Given the test data shown below determined from a QW -600 bracketed weld qualification testing, calculate the allowable minimum yield and tensile strength values to be used for acceptance of the tensile test specimens for qualification and production witness specimens.

Target Material Specification - ASME SA-403 Grade 316L
Filler Material Specification - ER316LSi

Control Points - Example Data SA 403 Grade 316L (ksi)

C1	C2	C3	C4	C5	C6	C7
70	Elongation Controlled	59.7	59.7/1.1=54.3	25	Elongation Controlled	14.1

Example 1
Data Point D1 = 74 ksi
Data Point D2 = Control Point
C4 = 54.3 ksi
Data Point D3 =
30 ksi
Data Point D4 = Control Point C7= 14.1 ksi

Calculate the Minimum Allowable Tensile Strength and Yield Strength for the Qualification Build Specimen and the Production Witness Specimens Builds Specimen using Equation 1 and 2.

$AMTS_{Minimum}$ = Max [C1, D1 x C4/D2] = Max [70, 74 x 54.3/54.3] = 74 ksi

$AMYS_{Minimum}$= Max [C5, D3 x C7/D4] = Max [25, 30 x 14.1/14.1] = 30 ksi

Example 2
Data Point D1 = 74 ksi
Data Point D2 = Control Point
C3 = 59.7 ksi Data Point D3 =
30 Ksi
Data Point D4 = 17 ksi
Calculate the Minimum Allowable Tensile Strength and Yield Strength for the Qualification Build Specimen and the Production Witness Specimens Builds Specimen using Equation 1 and 2.

$AMTS_{Minimum}$ = Max [C1, D1 x C4/D2] = Max [70, 74 x 54.3/59.7] = 70 ksi

$AMYS_{Minimum}$= Max [C5, D3 x C7/D4] = Max [25, 30 x 14.1/17] = 25 ksi

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

PROPOSED REVISION OR ADDITION

Item No.

A 24-18 Rev 01

Subject/Title

Controlled Fill Definition

NBIC Location

All Parts, Section 9, Glossary of Terms

Project Manager and Task Group

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Source (Name/email)

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Statement of Need

There is no definition of the term 'controlled fill'.

Background Information

Interpretation item I 23-79 addresses the use of the term 'controlled fill' in NBIC Part 3, 2.5.3 d in relation to Welding Method 6 for Grade 91 material.

While the term 'controlled fill' is not specifically used in the text of Welding Method 6 (2.5.3.6), directions are given for such variables as typical preheats, electrode size for SMAW, and the use of stringer beads only. The term is used explicitly in Supplement 8 for CSEF repairs, where S8.3.b says that "To control heat input the weld repair shall be performed using a "controlled fill" technique"; details are also given on such items as preheats, electrode size, required fill pass overlap, etc., and a lot of detail is provided in schematics including specifics on weld bead placement.

Existing Text	Proposed Text	Clean Copy
None	**Changes form Rev 00 shown** **Controlled Fill** – ~~requirements specified~~control of weld technique for a ~~permitted weld~~ repair process ~~in order to manage heat input~~ to ensure satisfactory weld properties by controlling distortion, promoting tempering and minimizing the risk of cracking by addressing variables including but not limited to heat input, ~~such as~~ preheat and interpass temperature, weld consumable type and ~~diameter~~size, weld technique (string or weave~~),~~) and bead placement ~~etc~~.	**Controlled Fill** – control of weld technique for a repair process to ensure satisfactory weld properties by controlling distortion, promoting tempering and minimizing the risk of cracking by addressing variables including but not limited to heat input, preheat and interpass temperature, weld consumable type and size, weld technique (string or weave) and bead placement.

	VOTE						
Committee	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Example of alterations to include requalification of cycle life
NBIC Location:	2023 NBIC, Part 3, 3.4.4
Statement of Need:	Currently vessels above 10,000 psi are being "requalified" without any code documentation. This puts a conflict between the ASME data report limitations and the actual installation. This practice is being completed without inspector involvement.
Background Information:	I have requested a change to the wording in Part 2 in conjunction with this request in order to clarify what the inspector involvement and process should be (conforming to the NB Alteration process).

Proposed Text:

3.4.4 Examples of Alterations

m) Any change in a vessels design cycle life or requalification of a vessel beyond the original designed cycle life.

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Changing Part 3 supplement 8's title for clarity
NBIC Location:	2023 NBIC, Part 3, Supplement 8
Statement of Need:	Use of pressure equipment is unusual within NB-23 and has cause confusion within the industry as to the applicability for supplement 8.
Background Information:	The first sentence of s8.1 a) talks to PRI's and the final sentence talks about situations not covered under weld methods 6 or 7 which are limited to boiler only.

Proposed Text:

SUPPLEMENT 8
WELD AND POST REPAIR INSPECTION OF CREEP STRENGTH ENHANCED FERRITIC STEEL PRESSURE-RETAINING ITEMS ~~EQUIPMENT~~

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Add examples of repairs and alterations specific to Electrochemical Stacks
NBIC Location:	2023 NBIC, Part 3, 3.3.3 and 3.4.4
Statement of Need:	With inclusion and initial deployments of electrochemical stacks as U Stamped pressure vessels under ASME BPVC Section VIII Division 1 and Code Case 3078, these stacks are starting to be shipped and registered with the National Board. Some basic examples of allowed repairs and alterations are needed to help guide an understanding of limitations for electrochemical stacks.
Background Information:	Plug Power has an Authorization to Register from the National Board as well as an issued R stamp for stack repair specific to Electrochemical stacks built per ASME BPVC Section VIII and Code Case 3078 rules. Stacks are being built and registered by Plug Power with the National Board under an issued Authorization to Register. Once deployed, if some stack alteration is required by the end user, having an example list of alterations will help guide decisions by AHJ's, local inspectors and stack producers.

Proposed Text:

3.3.3 EXAMPLES OF REPAIRS

v) Repairs to Electrochemical Stacks are limited to the following:

1) In kind replacement of end plates;

2) Replacement of any failed connection or frame bolting, representing the replacement parts described in part 3, 3.2.2 a) with no change of materials or grade as described on the Manufacturer's Data Report (MDR) or Original Equipment Manufacturers (OEM) drawing;

3) The addition or repair of load bearing attachments (e.g., welded supports, base or lifting lugs) to the end plates;

4) Replacement of parts bearing certification or manufacturer's stamping with no-change in material allowed as described on the MDR or verifiable OEM drawing.

5) Replacement of active cells components (e.g., MEA, cell frames, cell components, separator plates) to address electrical or electrochemical performance issues; and

6) Replacement of electrical interface components (e.g., current collectors, insulator plates, fluid isolators).

3.4.4 EXAMPLES OF ALTERATIONS

m) For Electrochemical stacks, in addition to the applicable examples of alterations above, the following changes from what is listed on the MDR or described on the Original Equipment Manufacturer's (OEM) drawing:

1) Any change in material whether described at 3.3.3 s) or as described at 3.4.4. g);
   a. A change in connection bolt or frame compression bolt diameter or material grade;
   b. A change in material grade or nominal dimensions of any end plates or nozzles;

2) For active cell components
   a. A change in material grade or nominal thickness for separator plates or cell frames;
   b. A reduction in number of cells below any minimum, or when no minimum is specified;
   c. An increase in number of cells above any maximum, or when no maximum is specified;
   d. A change in cathode cell compliant structure thickness or stiffness;
   e. A change in material grade or nominal thickness for current collectors or insulator plates;

THE NATIONAL BOARD
OF BOILER AND PRESSURE VESSEL INSPECTORS

Subject:	Review and revise the PWHT Requirements in 2.5.2
NBIC Location:	2023 NBIC, Part 3, 2.5.2
Statement of Need:	Simplify PWHT requirements in 2.5.2.
Background Information:	Many sub-paragraphs in paragraph 2.5.2 are confusing, specifically the ones relating to measuring the Soak and Heat Bands. The purpose of this proposal is to review the current requirements and simplify where appropriate.

Proposed Text:

To be determined by task group.