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THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD SUBCOMMITTEE REPAIRS AND ALTERATIONS

MINUTES

Meeting of January 10th, 2018
New Orleans, LA

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

The National Board of Boiler & Pressure Vessel Inspectors
1055 Crupper Avenue
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1. **Call to Order**
   Chairman George Galanes called the meeting to order at 8:00 a.m.

2. **Introduction of Members and Visitors**

The members and visitors in the meeting room introduced themselves. An attendance sheet, was passed around for members and visitors to sign and complete their contact information. **(Attachment Page 1)**
A head count of voting members was taken - 15 SC Members were present.

3. **Announcements**

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

- Publication schedule was reviewed for 2019 Edition.
  July 20th – deadline for NBIC Committee Approval of items to be included in 2019 Edition
  Mid-August – Submit Public Review Doc to ANSI
  Early Sept. – Public Review period begins
  Late Sept. – Practice WebEx sessions
  Late Oct – Public review period ends
  Late Oct – Public Review WebEx session
  Early Dec – Main Committee Final Approval Web Ex session
  Jan 2019 = Approval doc submitted to internal publishing dept.
  Ma 2019 – Finished doc submitted to printers
  July 1 – 2019 NBIC Available.

4. **Adoption of the Agenda**
   A motion was made and unanimously approved to adopt the agenda as amended with 6 items added, 17-181, 18-11, 18-12, 18-13, 18-14, & 18-28.

5. **Approval of the Minutes of July 19th, 2017 Meeting**
   A motion was made and unanimously approved the minutes of July 19th, 2017 meeting.

6. **Review of Rosters**
   a. **Membership Nominations**
      - A motion was made and unanimously approved to appoint Frank Johnson to SG Repairs and Alterations.
      - A motion was made and unanimously approved to appoint Frank Johnson and Rob Troutt to SG Historical.
      - A motion was made and unanimously approved to appoint Matthew Sanstone to become a member of SG Historical.
      - A motion was made and unanimously approved to appoint Alan Beckwith to become a member of SG FRP.

Final approval for these memberships will be given by the NBIC Committee, subject to the acceptance of the Chairman of the Board of Trustees.

b. Membership Reappointments

- A motion was made and unanimously approved to endorse reappointment of Joel Amato, Wayne Jones, and Kathy Moore to the SC Repairs and Alterations.

- A motion was made and unanimously approved to reappoint Joel Amato, Kathy Moore, Brian Morelock, and Tom White to SG Repairs and Alterations.

- A motion was made and unanimously approved to reappoint Jess Richter and Norm Newhouse to SG FRP.

- A motion was made and unanimously approved to reappoint Mike Wahl, Dennis Rupert, and Jim Getter to SG Historical.
  Final approval for these memberships will be given by the NBIC Committee, subject to the acceptance of the Chairman of the Board of Trustees.

- Larry McManamon was not considered for reappointment due to lack of attendance.

***NOTE*: Attachments are those Items approved and closed for consideration at the NBIC Main Committee.**

7. Interpretations

Item Number: 17-143	**NBIC Location: Part 3**	**No Attachment**
General Description: Can an "R" stamp certified shop manufacture and use parts for use on the pressure boundary to complete the repair of a boiler? **Subgroup:** Locomotive **Task Group:** L. Moedinger (PM) **January 2018 Meeting Action** A progress report was given by Mr. Moedinger.		

Item Number: 17-173	**NBIC Location: Part 3**	**Attachment Page 3**
General Description: Is adding an elliptical handhole ring on the pressure side considered a routine repair? **Subgroup:** Repairs and Alterations **Task Group:** None Assigned. **January 2018 Meeting Action** Jim Pillow presented the proposed committee question and reply. A motion was made and unanimously approved to move this to the NBIC Main Committee for consideration.		

Item Number: 17-175	NBIC Location: Part 3, 3.4.4	Attachment Page 4-5

General Description: Weld metal buildup classification

Subgroup: Repairs and Alterations

Task Group: Jamie Walker (PM), Eric Cutlip, & Dave Martinez

January 2018 Meeting Action
A motion was made and unanimously approved to move the committee question and reply onto the NBIC Main Committee for consideration.
This item was split into a second Interpretation *Item 18-28* to be discussed pending the proposed committee question and reply.

Item Number: 17-176	NBIC Location: Part 3, Section 1	Attachment Page 6

General Description: NBIC repair/replacement activities for parts

Subgroup: Repairs and Alterations

Task Group: Ray Miletti (PM), Rick Valdez, & Monte Bost

January 2018 Meeting Action
Sub Group Repairs and Alterations approved the attached committee question and reply. A motion was made and unanimously approved to move to the NBIC Main Committee for consideration.

Item Number: 17-177	NBIC Location: Part 3, 2.5.3.6	Attachment Page 7

General Description: Tube to header weld requirements

Subgroup: Repairs and Alterations

Task Group: George Galanes (PM)

January 2018 Meeting Action
Vice Chair, Mr. Pillow took over the meeting from Chairman Galanes. Mr. Galanes presented the proposed committee question and reply. A motion was made and unanimously approved to move the proposed committee question and reply to the NBIC Main Committee for consideration. Chairmanship was returned to Chairman Galanes.

Item Number: 17-178	NBIC Location: Part 3, Section 3	Attachment Page 8

General Description: Omission of service related PWHT alteration classification

Subgroup: SG Repairs and Alterations

Task Group: Monte Bost (PM), Rob Troutt

January 2018 Meeting Action:
Monte Bost presented the proposed committee question and reply. A motion was made and

unanimously approved to move this to the NBIC Main Committee for consideration.

Item Number: 17-181	NBIC Location: Part 3	Attachment Page 9

General Description: Owner User inspection inquiry

Subgroup: Repairs and Alterations

Task Group: Bill Vallance PM

January 2018 Meeting Action
Secretary Bill Vallance presented a proposed committee question and reply. After his presentation discussion was held concerning this being possible consulting. A motion was made and unanimously approved to **close** this item and send the submitter a letter indicating this is consulting.

Item Number: 18-11	NBIC Location: Part 3	Attachment Page 10

General Description: NBIC Part 3, 3.3.5.2.a and 3.4.5.1.a, 2017 Edition - Repair/Alteration Plans for ASME VIII, Division 2, Class 1 Pressure Vessels

Subgroup: Repairs and Alterations

Task Group: NRTG (Paul Edwards PM, Ben Schaefer)

January 2018 Meeting Action
Paul Edwards presented the proposed committee question and reply. A motion was made and unanimously approved to move this to the NBIC Main Committee for consideration.

Item Number: 18-28	NBIC Location: Part 3, 3.4.4	No Attachment

General Description: Weld metal buildup classification

Subgroup: Repairs and Alterations

Task Group: Jamie Walker PM, Ben Schaefer

January 2018 Meeting Action
This Item was originally split off from Interpretation Item 17-175. This new interpretation Item will be presented for discussion pending approval of item 17-178.

8. Action Items

Item Number: NB13-1401	NBIC Location: Part 3, S1.9.2	No Attachment

General Description: Add wording in this section regarding boiler tube welding

Subgroup: Locomotive

Task Group: R. Stone (PM), L. Moedinger

January 2018 Meeting Action
A progress report was given by Mr. Moedinger that this item failed to pass ballot in September 2017,

and SG Locomotive will continue to work on this for July 2018 meeting.

Item Number: NB13-1406	**NBIC Location: *Part 2, S1***	**No Attachment**

General Description: Add requirements for repair of superheater units

Subgroup: *(Back to Locomotive)* ~~Repairs and Alterations~~

Task Group: Lynn Moedinger PM

January 2018 Meeting Action
A progress report was given by Mr. Moedinger that the recommendation from SG/SC Repairs and Alterations was to close this item for work to be done at this committee with no action. A motion was made and unanimously approved to *move this item back* to the SG Locomotive with the SG and SC Repair and Alteration recommendation to close this item because existing rules for repairs should be considered adequate.

Item Number: NB13-1407	**NBIC Location: Part 2, S1**	**No Attachment**

General Description: Add requirements for repair and alteration of bolts, nuts, and studs in locomotive boilers

Subgroup: Locomotive

Task Group: R. Stone (PM), L. Moedinger

History: At the time of agenda publication, this item was being balloted to SG Locomotive.

January 2018 Meeting Action
A progress report was given by Mr. Moedinger that this item failed to pass SC ballot in September 2017, and SG Locomotive will continue to work on this for July 2018 meeting.

Item Number: NB13-1408	**NBIC Location: Part 3, S1**	**Attachment Pages 11-15**

General Description: Add requirements for repair and alteration of locomotive boilers with threaded boiler studs of the taper thread and straight thread varieties

Subgroup: Locomotive

Task Group: : R. Stone (PM), L. Moedinger

January 2018 Meeting Action
Mr. Moedinger presented that this item failed to pass SC ballot in September 2017 due to lack of votes. Editorial changes ("no less than 1/8 inch") were made to the attachment and a motion was made and unanimously approved to move the attached document to the NBIC Main Committee for consideration.

Item Number: NB14-1801	**NBIC Location: Part 3**	**No Attachment**

General Description: Ferrules

Subgroup: Locomotive

Task Group: P. Welch (PM), R. Stone

January 2018 Meeting Action
A progress report was given by Mr. Moedinger that no action has been taken.

Item Number: NB14-1802	NBIC Location: Part 3	No Attachment

General Description: Riveted staybolt head dimensions and Figure S1.2.2-c

Subgroup: Locomotive

Task Group: P. Welch (PM), R. Stone

January 2018 Meeting Action
A progress report was given by Mr. Moedinger that no action has been taken.

Item Number: NB15-1602	NBIC Location: Part 3, S2.7.1	No Attachment

General Description: Revise material list for historical boiler reports to include bolts, studs, nuts and formed pressure parts

Subgroup: Historical

Task Group: T. Dillon (PM), M. Wahl, G. Galanes

January 2018 Meeting Action
A progress report was given by Mr. Bill Vallance.

Item Number: NB15-2208	NBIC Location: Part 3, S3	No Attachment

General Description: Investigate repair options for graphite block heat exchangers

Subgroup: Graphite

Task Group: Greg Becherer (PM)

History: The task group is working to develop a proposal.

January 2018 Meeting Action
A progress report was given by Mr. Bill Vallance

Item Number: NB15-2210	NBIC Location: Part 3	Attachment Page 16-17

General Description: Reduce cementing requirements for plugging of tubes

Subgroup: Graphite

Task Group: C. Cary (PM)

January 2018 Meeting Action
Prior to the January 2018 meeting, the proposal was approved by SC Repairs and Alterations via letter

ballot. No action taken at the July 2017 meeting. Item moved for consideration by the NBIC Main Committee.

Item Number: NB16-0303 **NBIC Location: Part 3** **No Attachment**

General Description: Fillet welded patches

Subgroup: SG Repairs and Alterations

Task Group: B. Boseo (PM), B. Morelock, R Underwood, J. Walker

January 2018 Meeting Action
A progress report was presented by Mr. Boseo. General discussion and comments from SG Repairs and Alterations will be addressed in a future proposal.

Item Number: NB16-0503 **NBIC Location: Part 3, S2.13.13.4** **No Attachment**

General Description: Add types of rivet heads

Subgroup: Historical

Task Group: None Assigned.

January 2018 Meeting Action
A progress report was given by Mr. Bill Vallance.

Item Number: NB16-0608 **NBIC Location: Part 3, 1.8.2** **No Attachment**

General Description: Address Nuclear QA program requirements for owner and certificate holder

Subgroup: Repairs and Alterations

Task Group: NR Task Group

History: The NR Task Group is working to develop a proposal.

January 2018 Meeting Action
A progress report was given by Mr. Paul Edwards.

Item Number: NB16-0609 **NBIC Location: Part 3, 1.8.7 and 1.8.8** **Attachment Pages 18-20**

General Description: Add requirements from 1.8.6 l) 2) for Category 2 and 3 for subcontracting services such as calibration activities

Subgroup: Repairs and Alterations

Task Group: NR Task Group, Paul Edwards (PM)

History: The NR Task Group is working to develop a proposal.

January 2018 Meeting Action
Mr. Paul Edwards presented the attachment adding wording to Part 3, 1.6 for Category 1, 2 and 3 for control of subcontracted calibration services. A motion was made and unanimously approved to move

this to the NBIC Main Committee for consideration.

Item Number: NB16-0810	NBIC Location: Part 3, 3.4.3 e)	Attachment Page 20

General Description: Add additional example of alteration relating to burners

Subgroup: Repairs and Alterations

Task Group: M. Webb(PM), G. Scribner

History: The task group is working to develop a proposal.

January 2018 Meeting Action
Mr. Mike Webb presented revised verbiage that addressed Mr. Paul Edward's letter ballot comments. Editorial change to correct the paragraph reference to 3.4.4 e) was made. A motion was made and unanimously approved to move this item as amended to the NBIC Main Committee for consideration.

Item Number: NB16-1302	NBIC Location: Part 3, S3.2	Attachment Page 21

General Description: Pressure test requirements rewrite for graphite vessels

Subgroup: Graphite

Task Group: None assigned

January 2018 Meeting Action
Prior to the January 2018 meeting, the proposal was approved by SC Repairs and Alterations via letter ballot. A report was given by Mr. Bill Vallance that action is needed by NBIC Committee. A motion was made and unanimously approved to move this to the NBIC Main Committee for consideration.

Item Number: NB16-1303	NBIC Location: Part 3, S3.5.1 f)	Attachment Page 22

General Description: Revise wording mandating examination and evaluation for graphite vessels

Subgroup: Graphite

Task Group: None assigned

January 2018 Meeting Action
Prior to the January 2018 meeting, the proposal was approved by SC Repairs and Alterations via letter ballot. A report was given by Mr. Bill Vallance that this item is awaiting NBIC Committee action. A motion was made and unanimously approved to move this to the NBIC Main Committee for consideration.

Item Number: NB16-1402	NBIC Location: Part 3	No Attachment

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

Subgroup: FRP

Task Group: M. Gorman (PM)

January 2018 Meeting Action
A progress report was given by Mr. Bill Vallance.

Item Number: NB16-1403	NBIC Location: Part 3, S4	No Attachment

General Description: Add information on repair of high pressure vessels

Subgroup: FRP

Task Group: N. Sirosh (PM)

January 2018 Meeting Action
A progress report was given by Mr. Bill Vallance.

Item Number: NB16-1502	NBIC Location: Part 3	No Attachment

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

Subgroup: SG Repairs and Alterations

Task Group: International Repair Supplement Task Group

January 2018 Meeting Action
A progress report was given.

Item Number: NB16-1801	NBIC Location: Part 3, S1	No Attachment

General Description: Review Part 3 S1 for revisions based on the publication of ASME Section 1, Part PL

Subgroup: Locomotive

Task Group: L. Moedinger (PM)

January 2018 Meeting Action
A progress report was given by Mr. Moedinger.

Item Number: NB16-2504	NBIC Location: Part 3, S1	No Attachment

General Description: Evaluate adding SA-234 to the piping reference table S1.1.3.1

Subgroup: Locomotive

Task Group: D. Griner (PM) , M. Janssen

January 2018 Meeting Action
A progress report was given by Mr. Moedinger that this item dealt with materials and SG Locomotive will create a Task Group in combination with SG Historical to continue work on this item.

Item Number: NB16-2602	NBIC Location: Part 3, Section 9	No Attachment

General Description: Add definitions for practicable and impracticable to glossary

Subgroup: Repairs and Alterations

Task Group: R. Underwood (PM), R. Miletti, J. Sekely

January 2018 Meeting Action
A progress report was given by Mr. Miletti.

Item Number: NB17-0301	NBIC Location: Part 3	Attachment Page 23

General Description: Is plugging a leak with a screw an acceptable method of repair?

Subgroup: Repairs and Alterations

Task Group: George Galanes (PM)

History: A task group needs to be assigned.

January 2018 Meeting Action
Chairman Galanes turned the meeting over the Vice Chairman Jim Pillow. George Galanes presented a response to the item. After his presentation a motion was made and unanimously approved to **close** this item and send a letter to the submitter as per the response in the attachment. This item was moved and unanimously approved for consideration by the NBIC Main Committee.
Jim Pillow returned Chairmanship back to George Galanes.

Item Number: NB17-0601	NBIC Location: Part 3	No Attachment

General Description: Single staybolt with threaded and welded connections

Subgroup: Historical

Task Group: M. Wahl (PM), G. Galanes, R. Underwood

January 2018 Meeting Action
Chairman Galanes presented this item with recommendation to close. A motion was made and unanimously approved to close this item with no further action and send to the NBIC Main Committee for consideration.

Item Number: NB17-0602	NBIC Location: Part 3	No Attachment

General Description: Scope of repair/new historical boiler with an R Stamp

Subgroup: Historical

Task Group: R. Underwood (PM), M. Wahl, J. Amato, D. Rose, M. Jordan

January 2018 Meeting Action
A progress report was given by Mr. Bill Vallance.

Item Number: NB17-0701	NBIC Location: Part 3	No Attachment

General Description: Add references to NQA Part 2, 2.1.4 and 2.7 to NR program

Subgroup: Repairs and Alterations

Task Group: NR Task Group

January 2018 Meeting Action
A progress report was given by Mr. Paul Edwards.

Item Number: 17-114	NBIC Location: Part 3, 2.5.3.6	No Attachment

General Description: Controlled fill technique for Grade 91 steel

Subgroup: Repairs and Alterations

Task Group: G. Galanes (PM)

January 2018 Meeting Action
George Galanes indicated after the July 2017 meeting National Board Staff sent a letter to the submitter that his request is located in Supplement-8 and if that would satisfy the action item. Since no response has been received after several attempts a motion was made and unanimously approved to close this item with no further action and to move this recommendation the NBIC Main Committee for consideration.

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

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

Subgroup: Repairs and Alterations

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

January 2018 Meeting Action
A progress report was given.

Item Number: 17-137	NBIC Location: Part 3, S4.18.2	No Attachment

General Description: Remove "sand" blasting and replace with "abrasive" in Part 3, S4.18.2

Subgroup: FRP

Task Group: Terry Cowley

January 2018 Meeting Action
A progress report was given.

Item Number: 17-139	NBIC Location: Part 3, 2.2.3	No Attachment

General Description: Performance qualification by independent qualifier

Subgroup: Repairs and Alterations

Task Group: Jim Pillow

January 2018 Meeting Action
This item was put on hold awaiting the results of a similar item being considered by ASME Section IX.

A progress report was given by Mr. Jim Pillow.

Item Number: 17-145	NBIC Location: Part 3, S1.2.2-S1.25	No Attachment

General Description: Clarify repair vs. alteration for locomotive boilers

Subgroup: Locomotive

Task Group: L. Moedinger (PM)

January 2018 Meeting Action
A progress report was given by Mr. Moedinger.

Item Number: 17-152	NBIC Location: Part 3, 2.5.3	Attachment Pages 24-26

General Description: Revise WM2 and WM6 to allow fill thickness weld repairs to HRSG tube to header welds in steam service

Subgroup: Repairs and Alterations

Task Group: G. Galanes (PM)

January 2018 Meeting Action
During the July 2017 meeting the NBIC Committee elected to split this into two action items 17-152 and 17-170 and letter ballot them and the NBIC Committee, The results are both items passed and 17-170 is address later in these minutes. No action needed because this item should not have been placed on the Agenda.

Item Number: 17-155	NBIC Location: Part 3, S1	No Attachment

General Description: Throttle pipes, dry pipes, superheater headers, and front end steam pipes requirements

Subgroup: SG Locomotive

Task Group: None Assigned.

January 2018 Meeting Action
A progress report was given by Mr. Moedinger.

Item Number: 17-156	NBIC Location: Part 3, S1	No Attachment

General Description: Welding/brazing activities for Locomotive Boilers

Subgroup: SG Locomotive

Task Group: None Assigned.

January 2018 Meeting Action
A progress report was given by Mr. Moedinger.

Item Number: 17-157	NBIC Location: Part 3, S1	No Attachment

General Description: Bolts, nuts, and washers

Subgroup: SG Locomotive

Task Group: None Assigned.

January 2018 Meeting Action
A progress report was given by Mr. Moedinger.

Item Number: 17-160	NBIC Location: Part 3, S1	No Attachment

General Description: Partial knuckle replacement

Subgroup: SG Locomotive

Task Group: None Assigned.

January 2018 Meeting Action
A progress report was given by Mr. Moedinger.

Item Number: 17-161	NBIC Location: Part 3, 3.3.2	Attachment Page 27

General Description: Routine repair of corrugating rolls

Subgroup: SG Repairs and Alterations

Task Group: G. Galanes (PM)

January 2018 Meeting Action
Vice Chair, Mr. Pillow took over the meeting from Chairman Galanes. Mr. Galanes presented the recommendation to close this item, and send correspondence that states the NBIC considered the request and at this time believes weld repair of corrugated roles should not be considered as routine repair. A motion was made and unanimously approved to **close** this item with a letter stating the reasons for a routine repair and move to the NBIC Main Committee for consideration. Chairmanship was returned to Chairman Galanes.

Item Number: 17-165	NBIC Location: Part 3, S3	No Attachment

General Description: Change reimpregnation of graphite to routine repair

Subgroup: SG Graphite

Task Group: None Assigned.

January 2018 Meeting Action
A progress report was given by Mr. Bill Vallance.

Item Number: 17-166	NBIC Location: Part 3, S3	No Attachment

General Description: Remove nozzle replacement and tube replacement from graphite routine repair list

Subgroup: SG Graphite

Task Group: None Assigned.

January 2018 Meeting Action
A progress report was given by Mr. Bill Vallance.

Item Number: 17-167	NBIC Location: Part 3, S3	No Attachment

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

Subgroup: SG Graphite

Task Group: None Assigned.

January 2018 Meeting Action
A progress report was given by Mr. Bill Vallance.

Item Number: 17-168	NBIC Location: Part 3, 1.6	Attachment Pages 28-50

General Description: General revision of NR quality program requirements

Subgroup: SG Repairs and Alterations

Task Group: NR Task Group

January 2018 Meeting Action
Mr. Paul Edwards presented revisions to Part 3, 1.6 primarily related to NR requirements. A motion was made and unanimously approved to have a letter ballet go out to both, the Sub Group and Subcommittee Repairs and Alterations. Mr. Galanes commented that a ballot to the NBIC Main Committee may also be needed to make the timeline for the 2019 Code edition timeline.

Item Number: 17-170	NBIC Location: Part 3, 2.5.3.6	Attachment Pages 51-52

General Description: Revise WM6 to allow fill thickness weld repairs to HRSG tube to header welds in steam service

Subgroup: SG Repairs and Alterations

Task Group: None assigned.

History: A proposal was prepared and approved by SG and SC Repairs and Alterations at the July 2017 meeting. The NBIC Committee elected to letter ballot the item in two parts under item numbers 17-152 and 17-170. At the time of agenda publication both items were still open for ballot.

January 2018 Meeting Action
This item was balloted through the NBIC Main Committee and it was passed. A motion was made and unanimously approved to **close** this item since it passed the NBIC Committee ballot. This item required no action because it should not have been placed on the Agenda.

Item Number: 17-179	NBIC Location: Part 3, Section 5	No Attachment

General Description: R Form Guides

Subgroup: SG Repairs and Alterations

Task Group: Tom White PM, Bill Vallance.

January 2018 Meeting Action
A progress report was given by Mr. Tom White.

Item Number: 17-180	NBIC Location: Part 3, 2.5.3.6	Attachment Page 53

General Description: Remove "impracticable" from WM6

Subgroup: SG Repairs and Alterations

Task Group: John Siefert.

January 2018 Meeting Action
J. Siefert presented the attached item. After his presentation a motion was made and unanimously approved to send the proposed revision to the NBIC Main Committee for consideration.

Item Number: 18-12	NBIC Location: Part 3,	No Attachment

General Description: Adding Weld Buildup to WM #6

Subgroup: SG Repairs and Alterations

Task Group: John Siefert PM, George Galanes

January 2018 Meeting Action
This new Item was opened this meeting and no action was taken. John Siefert conducted an informational presentation at the SG Repairs and Alterations for this action item and 18-13.

Item Number: 18-13	NBIC Location: Part 3,	No Attachment

General Description: Weld Methods 7 addition for dissimilar weld metal-Gr. 91.

Subgroup: SG Repairs and Alterations

Task Group: John Siefert PM, George Galanes

January 2018 Meeting Action
This New Item was opened this meeting and no action was taken. John Siefert conducted an informational presentation at the SG Repairs and Alterations for this action item and 18-12.

Item Number: 18-14	NBIC Location: Part 3,	No Attachment

General Description: SWPS Revisions

Subgroup: SG Repairs and Alterations

Task Group: Jim Sekely (PM).

January 2018 Meeting Action
A progress report was given by Mr. Sekely.

Item Number: 18-15	NBIC Location: Part 3, 1.5.1	Attachment Page 54
General Description: Statement of Authority verbiage update **Subgroup:** SG Repairs and Alterations **Task Group:** Paul Edwards (PM) **January 2018 Meeting Action** Mr. Paul Edwards (PM) revised verbiage in Part 3, 1.5.1 to address requirements for the Statement of Authority content for R stamp quality programs. A motion was made and unanimously approved to move this item to the NBIC Main Committee for consideration		

9. Future Meetings

- July 16th-19th, 2018 – Columbus, Ohio
- January 14th-17th – General location to be determined at the NBIC Committee

10. Adjournment

Chairman George Galanes adjourned the meeting at 12:23 PM.

Respectfully submitted,

William Vallance, Secretary
Subcommittee Repairs and Alterations

January 2018 SC R & A Attachments

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SC Repairs and Alterations Attendance Sheet - 1/10/18

Name	Company	Phone Number	Email	Signature
George Galanes	Diamond Technical Services	(815) 634-2727	ggalanes@diamondtechnicalservices.com	
James Pillow	Common Arc	(860) 688-2531	jpillow@commonarc.com	
William Vallance	National Board	(614) 888-8320	bvallance@nationalboard.org	
Joel Amato	State of Minnesota	(651) 284-5137	joel.amato@state.mn.us	
Brian Boseo	Graycor ~~Industrial Constructors~~ Services LLC	(630) 684-7300	brian_boseo@graycor.com	
Paul Edwards	~~CBI~~ STONE & WEBSTER	781-298-3526 ~~(617) 589-5677~~	~~paul.edwards@cbi.com~~ EDWARDSP4@ASME.ORG	Paul D. Edwards
Craig Hopkins	Seattle Boiler Works	(206) 762-0737	chopkins@seattleboiler.com	
Wayne Jones	Arise	(251) 895-8826	wayne.jones@ariseinc.com	
Larry McManamon	Boilermakers National Apprenticeship Program	(708) 636-6656	lmac@glabap.com	
Ray Milletti	Babcock & Wilcox	(330) 860-2589	rlmiletti@babcock.com	
Linn Moedinger	Strasburg Railroad	(717) 687-8421	linnwm@supernet.com	
Kathy Moore	Joe Moore & Company	(919) 832-1665	kathymoore@joemoorecompany.com	
Brian Morelock	Eastman Chemical Company	(423) 229-1205	morelock@eastman.com	
Benjamin Schaefer	AEP	614-716-1893	bschaefer@aep.com	
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SIEFERT	EPRI	7045952886	jsiefert@epri.com	

Name	Company	Phone Number	Email	Signature
Ray Reamey	Turner Ind. Grp.	225-214 2898	RReamey@Turner-industries.com	
Paul Shanks	oneCIS	832 716 4249	Paul.Shanks@oneCIS.com	
MONTE BOST	HSB	937-620 3676	Montebost@hsb.com	

PROPOSED INTERPRETATION

Inquiry No.	17-173				
Source	Paul Welch - Arise, Inc.				
Subject	Routine Repair, Part 3, Section 3, 3.3.2(e)(5) and Figure 3.3.4.3-b Adding Handhole Ring on Pressure Side of Pressure Retaining Item				
Edition	2017				
Question	Can this be considered a Routine Repair? The scope of repair will be as described in 2017 NBIC Figure 3.3.4.3-b. Adding an elliptical handhole ring on the pressure side. The shell and ring material is SA-285 Gr. C, will be installed after removal of wasted area around handhole and deposit about 3/8" fillet weld.				
Reply	TBD				
Committee's Question	If acceptable to the Jurisdiction and considered appropriate by the Inspector, may adding a handhole ring as described in Part 3, Section 3, Figure 3.3.4.3-b and meeting the requirements of Part 3, Section 3, 3.3.2(e)(5) be considered a routine repair?				
Committee's Reply	No.				
Rationale					
SC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
NBIC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
Negative Vote Comments					

PROPOSED INTERPRETATION

Inquiry No.	**17-175**
Source	**Murugappan (?)**
Subject	Part 3, Section 3, Paragraph 3.3.3.d, Weld Metal Build-up, and Section 2, paragraph 2.5.3.1, Welding Method 1
Edition	2017
Question	**1)** A Pressure vessel constructed of P Number 1 Group 1&2 materials to ASME Section VIII Division 1 was Post weld heat treated as nominal thickness was 60mm. Impact testing is not required. When this pressure vessel is repaired for 40mm surface weld metal build-up during service under NBIC and post weld heat treated, can it be considered ~~as~~ a Repair and reported ~~in~~ on Form R-1? **2)** When this pressure vessel is repaired for 20mm surface weld metal build-up during service under NBIC and not post weld heat treated as thickness of weld repair is less than 39mm, can it be considered ~~as~~ a Repair and reported ~~in~~ on Form R-1? **3**) When this pressure vessel is repaired for 40mm surface weld metal build-up during service under NBIC using Paragraph 2.5.3.1 " Welding method-1", can it still be considered ~~as~~ a Repair and reported ~~in~~ on Form R-1? **4)** A Pressure vessel constructed of P Number 1 Group 1&2 materials to ASME Section VIII Division 1 was Post weld heat treated due to client/service requirements(Not a Code requirement). Impact testing is not required. When this pressure vessel is repaired for 20mm surface weld metal build-up during service under NBIC using Paragraph 2.5.3.1 " Welding method-1", can it still be considered ~~as~~ a Repair and reported ~~in~~ on Form R-1? **5)** If the answer to the above question-4 is "No", Shall design Section be signed by Repair organization for alteration?
Reply	1) Yes 2) Yes 3) Yes. Requirements of Paragraph 2.5.3 b) is to be followed. 4) No. It is an alteration and to be reported in Form R-2. 5) No. Design part need not be certified by Repair Organization. Column 7a of Form R-2 can be marked as N/A. A note on Form R-2 shall be made to indicate that it was considered as alteration as original vessel was Post weld heat treated whereas this repair was not post weld heat treated. Attachment Page 5 Attachment
Committee's Questions and Replies	Background A: A pressure vessel **that is in-service** is constructed of P-No.1 Group 1&2 materials in accordance with ASME Section VIII Div. 1 rules. Toughness testing is not required. The nominal thickness of the welded joints is 2-23/64 in. (60 mm). The postweld heat treatment (PWHT) of the pressure vessel was in accordance with the Section VIII Div. 1 requirements. QA1: Is the application of a 1-37/64in. (40mm) thick weld on the pressure vessel with PWHT in accordance with ASME Section VIII Div. 1 rules considered a repair?

	RA1: Yes. QA2: Is the application of a 25/32in. (20mm) thick weld on the pressure vessel without PWHT as permitted by **a later edition of** ASME Section VIII Div. 1 rules, **when selected for the work planned in accordance with Part 3, 1.2 a),** considered a repair? RA2: Yes. QA3: Is the application of a 1-37/64 in.(40mm) **thick** weld using an alternative welding method as described in Part 3, 2.5.3 on the pressure vessel a repair? RA3: Yes Background B ***(New Action Item 18-28):*** A pressure vessel is constructed of P-No. 1 Group 1 & 2 materials in accordance with ASME Section VIII Div. 1 rules. Toughness testing is not required. Postweld heat treatment (PWHT) is not required by Section VIII Div. 1 rules, but the pressure vessel is PWHT to meet contractual requirements. QB1: Is the application **of PWHT for repairs required?** RB1. **Contractual requirements are not addressed by the NBIC.**
Rationale	The repairs described in QA1 and 2 meet the requirements of the original Code of construction. The repair described in QA3 is an acceptable alternative to the PWHT requirements of the original Code of construction. The use of Welding Method 1 described in QB1 is an acceptable alternative to PWHT of the pressure vessel weld and is considered a repair.

SC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
NBIC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
Negative Vote Comments					

PROPOSED INTERPRETATION

Inquiry No.	**17-176**				
Source	**Not known**				
Subject	Part 3, Section 3, Repairs to a Pressure Retaining Part				
Edition	2017				
Question	Background: There is a boiler shell which requires repair to be performed. Owner wants repair to be performed under NBIC. However, the boiler shell is certified as S- PART and complete boiler is not certified. In this case, is it permitted to perform the repair under NBIC if all requirement of NBIC are met. Question: Is it permitted to perform repair / alteration activities under NBIC on an item which is certified as PART and not complete vessel or Boiler?				
Reply	TBD				
Committee's Question	Is it permitted to perform a repair in accordance with the NBIC of a Part that has not yet been installed in a pressure vessel or boiler that has not been completed in accordance with the code of construction?				
Committee's Reply	No. The NBIC rules for repairs do not apply to items not yet completed in accordance with the code of construction.				
Rationale	**INTERPRETATION 95-05** **Subject:** Purpose and Scope of the NBIC 1992 Edition with the 1993 Addendum **Question:** At what point following the completion of a new power boiler, heating boiler or pressure vessel may the NBIC be used? **Reply:** When all requirements of the construction code have been met.				
SC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
NBIC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
Negative Vote Comments					

PROPOSED INTERPRETATION

Inquiry No.	**17-177 Use of Welding Method 6 for Tube-To-Header Welds**				
Source	**Not known**				
Subject	Part 3, Section 2, 2.5.3.6, Welding Method 6				
Edition	2017				
Question	Question: Does tube to header weld as shown in ASME B&PVC Sec. I, 2015 ed. Figure PW16.1(a) for P15E materials meet the requirements of 2.5.3.6 for Welding Method 6 for no post weld heat treatment?				
Reply	TBD				
Committee's Question	When it is impracticable to perform postweld heat treatment, may a tube-to-header weld be made using Welding Method 6 in accordance with Part3, Section 2, 2.5.3.6?				
Committee's Reply	No.				
Rationale	As explained in Part 3, Section 2, 2.5.3.6, use of Welding Method 6 is limited, among other things, to butt welds in tubing. The method has not been approved for use on tube-to-header welds.				
SC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
NBIC Vote	Unanimous	No. Affirmative	No. Negative	No. Abstain	No. Not Voting
Negative Vote Comments					

17-178 Allen 12-4-17

Purpose: Code Interpretation of NBIC Part 3 (2017 Edition)

Question 1:
An R-Certificate holder omits post weld heat treatment (PWHT) of a vessel at the request of a client, where PWHT was performed in the original construction for service related reasons only. Is the omission of service related PWHT of the vessel considered an alteration and subject to documentation using a Form R2?

Committee Answer: Yes

Rational: Reference Interpretation 95-21

INTERPRETATION 95-21

Subject: Appendix 4, Definition of Alteration

1995 Edition

Question: May an ASME Section VIII, Division 1 pressure vessel that has postweld heat treatment reported on an ASME Manufacturer's Data Report, be repaired by welding without subsequent postweld heat treatment or postweld heat treatment alternatives?

Reply: No. This is an alteration.

17-181

To,

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

From,

Nishar Yousaf
Plant Inspection Engineer
ADNOC-LNG
Abudhabi, UAE
Phone: +971-26069386
Mob: +971-567032171
E-mail: nishar@adnoc.ae

Subject: Repair inspections by Owner-user inspector

Code: NB-23 Part-3; 2015 Edition and 2017 Edition.

Inquiry:
In Owner-user inspection organization holding "R" certification, is it acceptable to perform repair inspection activities by owner-user inspector directly after the production engineer acceptance.

Reply:
Yes, Owner user inspector can perform repair inspection activities directly after production engineer acceptance. A description of the process for performing these inspections shall be included in the owner-user quality program.

Background information:
A repair activity is being performed by Owner-user inspection organization holding "R" certification. Production Engineer performed initial inspection in every inspection stages. After every inspection stages by Production Engineer, the Owner-User Inspector was informed for the necessary inspection i.e. in-process inspection and acceptance inspection (including signing the NBIC report forms) associated with repair work.

NBIC Interpretation Request *18-11*

Subject: NBIC Part 3, 3.3.5.2.a and 3.4.5.1.a, 2017 Edition - Repair/Alteration Plans for ASME VIII, Division 2, Class 1 Pressure Vessels

Question: Does the NBIC require a Repair / Alteration Plan for an ASME Section VIII, Division 2, Class 1 vessel to be certified by an engineer when the Manufacturer's Design Report was not required to be certified under the original code of construction?

Proposed Reply: No

Discussion: The 2017 Edition of ASME VIII Division 2 introduced provisions for construction of Class 1 pressure vessels. For Class 1 vessels and parts, when design rules are not provided in ASME VIII-2, Part 4, the Manufacturer is required to either perform a stress analysis in accordance with ASME VIII-2, Part 5, or with acceptance by the AI, use a recognized and accepted design-by-rule method that meets the applicable design allowable stress criteria of ASME VIII-2, Section 4.1.6. If the design cannot be performed using Part 5 or a design-by-rule method, a design method consistent with the overall design philosophy of Class 1 and acceptable to the AI is required to be used.

ASME VIII-2, Section 2.3.3.a, further establishes that a Manufacturer's Design Report for Class 1 vessels must be certified by an engineer (i.e. RPE or equivalent) when either a fatigue analysis is performed or when Part 5 is used to determine the thickness of pressure parts (i.e. when design rules are not provided in Part 4). By exclusion, requirements for certification of a Manufacturer's Design Report have been relaxed for Class 1 design conditions not addressed by Section 2.3.3.a.

By the NBIC reference to "certified by an engineer meeting the criteria of ASME Section VIII Division 2" in the subject paragraphs, a proposed Reply of "No" is offered for those ASME VIII-2, Class 1, conditions where certification of the Manufacturer's Design Report is not required under the original code of construction.

NBIC Part 3 S1.2.7.2 Patch Bolts S1.2.7.3 from S1.2.8

Revised title and section: **S1.2.7.2 TAPER THREAD BOILER STUDS (SEE NBIC PART 3, FIGURES S1.2.7.2-a, S1.2.7.2-b & S1.2.7.2-c)**

Taper thread boiler studs are designed to thread directly into the boiler shell and are used to secure locomotive boiler components or related locomotive components such as pipe brackets for boiler piping, dome cover and feed water check valves. The stud end that threads into the boiler shell is machined with a boiler-type taper thread and the mating hole in the boiler shell is tapped with the same boiler-type taper thread. The opposite end of the stud is machined with standard straight machine screw-type threads to permit attachment of the components along with a nut and washer.

Taper thread boiler studs used on locomotive boilers shall be maintained, repaired or replaced in accordance with the directions of the original equipment manufacturer. If this information is not available, the following procedures shall be used.

a) Taper thread boiler studs and the mating tapped holes shall be made to the required size and taper to create a tight and leak free joint upon final tightening. The stud taper threads shall have a good uniform fit along the entire length of the tapped hole threads and not just at the top or bottom edges of either the stud or hole. When the hole threads are to be tapped in new material or re-tapped for repair or cleaning the taper tap shall be run through the entire hole depth in order to form all threads correctly. The length of the taper thread section shall be sized so that upon the stud being tightened at final assembly at least one full thread shall be above the boiler shell exterior surface and no less than flush with the interior surface. (See Fig.S1.2.7.2-c)

b) When taper thread boiler studs are installed into blind holes on the boiler shell or sheet the taper section length shall be confirmed to be shorter than the hole depth in order to prevent the stud from contacting the hole bottom upon being tightened at final assembly.

c) Studs and boiler shell surfaces that are cracked or damaged shall be either repaired or replaced per items "f" and "g" of this section.

d) Changes to the taper, thread pitch or thread form of the taper thread boiler stud or its mating tapped hole in the boiler shall be suitable for the service intended.

e) Replacement taper thread boiler studs of a different strength, grade specification or size than the original shall be suitable for the service intended.

A worn or damaged taper thread stud hole may be repaired by re-tapping it to a larger diameter and installing a taper thread boiler stud that has a corresponding larger diameter boiler thread end than the original stud. The largest portion of the tapered section of the stud shall not exceed the original stud straight section (shank) diameter by 33%. The larger diameter boiler stud shall be made with no less than a 1/8 inch (3mm) radius from the stud body into the larger diameter boiler thread end.

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f) Oversize cracked or damaged boiler studs holes in the boiler shell may be repaired by weld build-up or by replacing the damaged plate section using a flush patch. If weld build-up is performed, the existing boiler stud threads shall be removed from the hole by reaming, grinding or machining prior to welding. All welding and welded repairs shall be performed per NBIC Part 3.

1) Taper thread boiler studs, nuts and washers that have wastage, corrosion or mechanical damage, sufficient to impair the holding power or function of the fastener shall be replaced.

2) Taper thread boiler studs and nuts that have damaged threads may be repaired by re-threading.

3) Replacement taper thread boiler studs, nuts and washers shall have the same fitup, alignment and thread engagement length as the original.

4) The use of replacement taper thread boiler studs, nuts and washers of a different strength, grade specification or size than the original shall be suitable for the service intended.

Notes: If a taper thread boiler stud or nut is heated to a metal temperature that exceeds 1100°F (593°C), it will be damaged or suffer a reduction of hardness and should be replaced.

EX MPLES OI' I A PhR
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Figur SI 2.7-n

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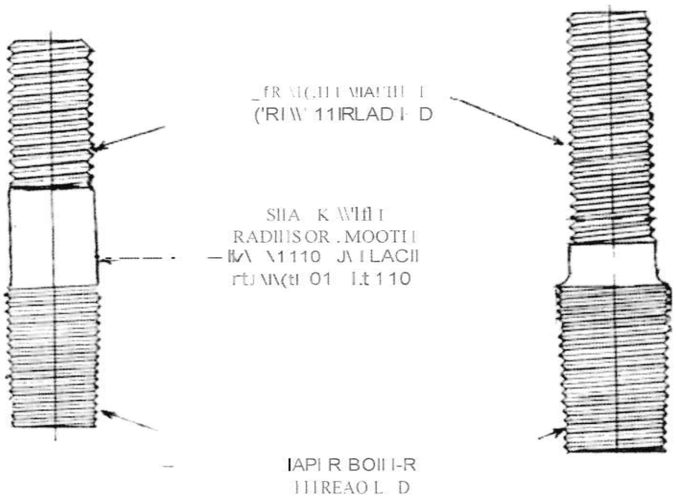
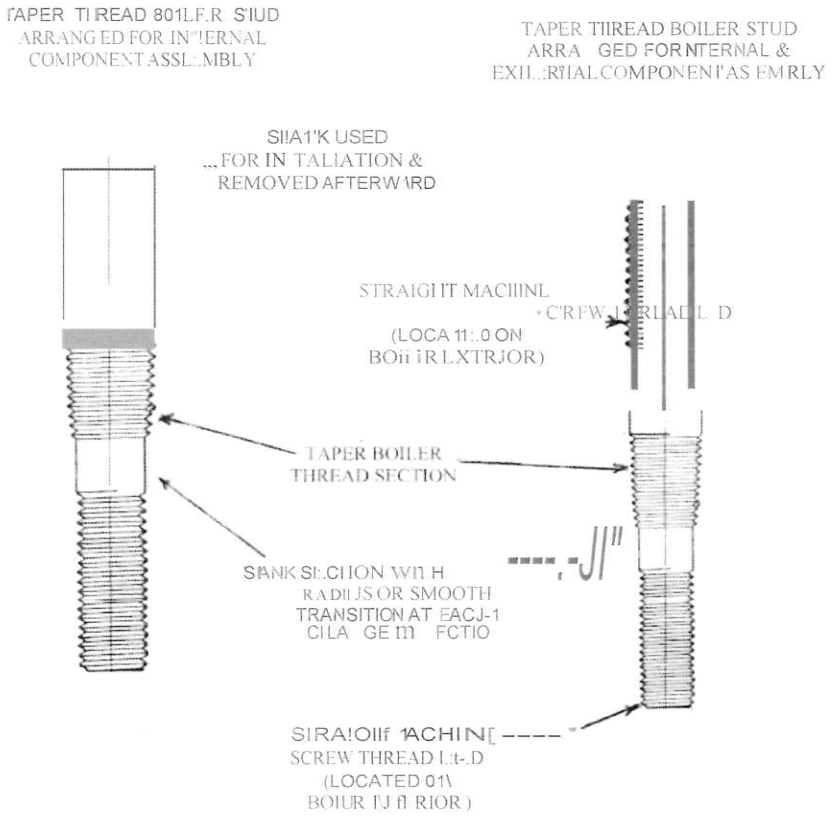


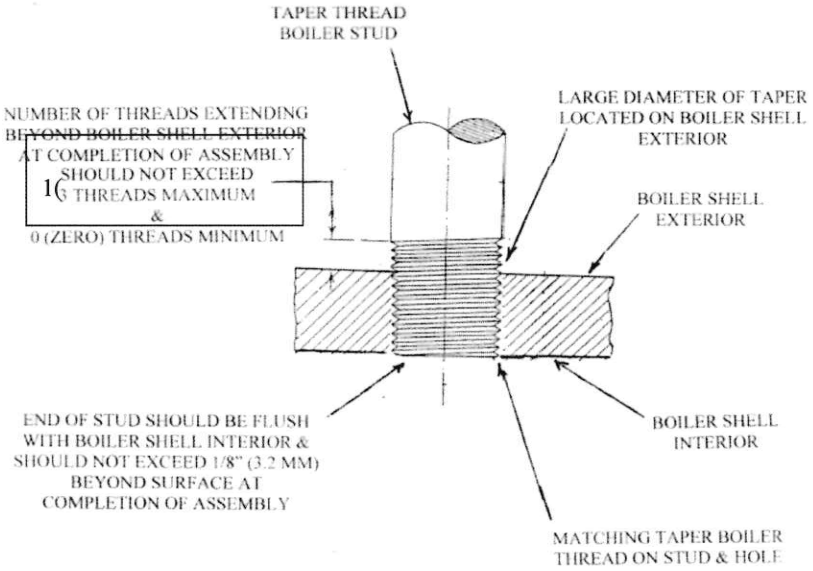
ADDITIONAL EXAMPLES OF TAPER
THREAD BOILER STUDS

Figure 12.7-b



TYPICAL INSTALLATION OF
TAPER THREAD BOILER STUD
IN A THROUGH HOLE

Figure S1.2.7-c



NB15-2210 – SG Graphite – 11-14-17

3.1 b)

The letter "G" shall be included on the "R" Certificate of Authorization for those organizations authorized to perform repairs/alterations of graphite pressure equipment except as permitted by Part 3, S3.5.5 f).

S3.5.5 f.)

f) As an alternative to e) any R Certificate Holder, with the concurrence of the Inspector, may install graphite tube plugs utilizing a tube plugging kit provided by an ASME Certificate Holder authorized to use the G designator. The kit shall include the following items:

1. Certified graphite plugs and certified cement ingredients, both accompanied by the appropriate documentation (Partial Data Report).
2. The qualified cementing procedure of the ASME Certificate Holder authorized to use the G designator, and a step-by-step procedural checklist that shall be followed explicitly. The procedure shall address the entire tube plugging process including plug configuration, tube hole cleaning and preparation, mixing and applying of the cement, application of the plugs, securing the plugs during the curing process, controlling the curing process, and leak testing, thereby meeting S3.3.
3. To qualify the cement technician performing the repair, additional materials shall be provided and used to prepare a demonstration plug joint prior to performing the repair. This demonstration plug joint shall be tested for integrity by a hand twist test. A successful twist test, in conjunction with the procedural checklist, shall serve as a valid cement technician certification for a single repair operation.

The R Certificate Holder shall review the material certifications including verification that the shelf life of the cement has not been exceeded, and assure that the certified cement technician has completed the qualification demonstration, and has access to the procedure and checklist. The Inspector shall review and verify that the procedure and the other elements of the certified kit, as provided by the authorized G-designated ASME Certificate Holder, have been administered and completed prior to his acceptance. The R-certificate Holder shall note on Line 8 of the R-1 Form the installation of cemented graphite tube

plugs in accordance with this section. The letter "G" shall not be applied to the vessel when performing this alternative repair. The R Certificate Holder shall identify and document the location of the plugged tubes on the R Form.

1.6.6.2 – Quality Program Elements (Category 1)

l) Control of Measuring and Test Equipment

~~The provisions identified in ASME NQA-1, Part 1, Requirement 12 shall apply.~~

~~1) The "NR" Certificate Holder may perform periodic checks on equipment to determine calibration is maintained. When periodic checks are used the method and frequency shall be included in the "NR" Certificate Holder's Quality Assurance Program and if discrepancies are found, shall be resolved to the prior periodic check.~~

~~2) The "NR" Certificate Holder may accept accreditation for calibration activities by National Voluntary Laboratory Accreditation Program (NVLAP), American Association for Laboratory Accreditation (A2LA) or other accrediting body recognized by NVLAP through the International Laboratory Accreditation Cooperation (ILAC) mutual recognition arrangement (MRA) provided the following requirements are met:~~

~~a. Accreditation is to ANSI/ISO/IEC 17025:2005 "General Requirements for the Competence of Testing and Calibration Laboratories";~~

~~b. Scope of the accreditation for the calibration laboratory covers needed measurement parameters, ranges and uncertainties;~~

~~c. "NR" Certificate Holder shall specify that calibration reports shall include, laboratory equipment/ standards used and as found and as left data;~~

~~d. The "NR" Certificate Holder shall verify conformance to the requirements of this process; and e. Utilization of this process shall be described and documented in the "NR" Certificate Holders QAM.~~

1.6.7.2 – Quality Program Elements (Category 2)

l) Control of Measuring and Tests Elements

~~Control of Measuring and Test Equipment Measures shall be established and documented to ensure that tools, gages, instruments, and other measuring and testing equipment and devices used in activities affecting quality are of the proper range, type, and accuracy to verify conformance to established requirements. A procedure shall be in effect to ensure that they are calibrated and properly adjusted at specified periods or use intervals to maintain accuracy within specified limits. Calibration shall be traceable to known national standards, where these standards exist, or with the device manufacturer's recommendation.~~

1.6.8.2 – Quality Program Elements (Category 3)

l) Control of Measuring and Test Equipment

~~Control of Measuring and Test Equipment Procedures, methods and frequency of calibration shall be described for all types of measuring and test equipment used to verify quality. Any discrepancies shall be identified and resolved.~~

1.6.6.2 l), 1.6.7.2 l), 1.6.8.2 l)

Add to Category 1, 2, and 3 the following:

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' Quality Program and the following requirements are met:

a) 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, "General Requirements for the Competence of Testing and Calibration Laboratories";
b) For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges and uncertainties.
c) 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.
d) The NR Certificate Holder's purchase documents shall include:
    1) Service provided shall be in accordance with their accredited ISO/IEC-17025:2005 program and scope of accreditation;
    2) As-found calibration data shall be reported in the certificate of calibration when items are found to be out-of-calibration;
    3) Standards used to perform calibration shall be identified in the certificate of calibration;
    4) Notification of any condition that adversely impacts the laboratories ability to maintain the scope of accreditation;
    5) Any additional technical and/or quality requirements, as necessary, which may include; tolerances, accuracies, ranges, and standards.
    6) Service suppliers shall not subcontract services to any other supplier.
e) The NR Certificate Holder shall upon receipt inspection, validate that the laboratory documentation certifies that:
    1) Services provided by the laboratory has been performed in accordance with their ISO/IEC-17025:2005 program and performed within their scope; and
    2) Purchase order requirements have been met.

NB16-0810, Comments by Webb, 6-22-17: (passed SG 1-9-18)

I absolutely endorse Mr. Edwards original thought of merely revising the example of an Alteration, Part 3, 3.4.4 e) to include the details described in accepted Committee action NB16-0810 as example-"j".

While I am not opposed to Mr. Scribner's rendering, I am more aligned to the Alternative-2 offering below as it reads closer to a revision to example "e)" as originally proposed by Mr. Edwards without displacing action NB16-0810:

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

Item Number: NB16-1302 NBIC Location: Part 3, S3.2 p)

p) Completed repairs shall be subjected to a pressure test. The test pressure shall not be less than ~~the maximum allowable working pressure or twice the operating pressure, whichever is lower~~operating pressure or more than maximum allowable working pressure. The test pressure shall be maintained for 30 minutes minimum.

Justification:

Present pressure range requirements are excessive and cause unnecessary hardship. This action brings them more in line with the general requirements in Part 3.

Page A-6

Item Number: NB16-1303 NBIC Location: Part 3, S3.5.1f)

f) All damage ~~should~~ shall be examined and should be evaluated to determine the cause. Identification and elimination of the cause is essential in helping to prevent a recurrence

Page A-7

National Board item

17-0301

The NBIC considered your question. The NBIC does not prohibit the use of mechanical plugs. Plugging leaking tubes is addressed in Part 3 of the NBIC, in 3.3.4.9.

Action: It is recommended to close the item with correspondence that states the use of screws to plug leaks is not addressed by the NBIC. Should you wish a code revision, please follow-up with a request for code revision and provide further information as to limits for this type of mechanical repair.

17-152 Ballot Document *(Passed)12-4-17*

17-152

Purpose; Revise 2.5.3.2 Welding Method 2 and 2.5.3.4 Welding Method 4 to allow for full thickness weld repairs to HRSG tube to header welds in steam service. As more HRSG's are being repaired, there is growing need for temper bead repairs on tube to header welds that are full thickness.

See proposed revisions below based on need from EPRI membership

Existing

2.5.3.2 WELDING METHOD 2

When using this method, the following is required:

3) For P-No. 4 and P-No. 5A materials, the minimum preheat, interpass temperature, and technique
shall be in accordance with NBIC Part 3, 2.5.3.4. The repair depth for temper bead repairs to pressure
retaining items of P-No. 4 and P-No. 5A materials is limited to welds not penetrating through full thickness.

4) For ASME Section VIII, Division 2 pressure vessels, where application of PWHT on in-service vessels
has been demonstrated to cause harm to vessel material, full thickness temper bead repairs are permitted to pressure-retaining items of P-No. 4 and P-No. 5A materials. They shall be completed per NBIC Part 3, 3.3.5 with the following requirements:

a. The full thickness repair weld shall be verified as being the full penetration.
b. Volumetric examination of the full thickness weld shall be performed.

Proposed Revision Underlined

2.5.3.2 WELDING METHOD 2

When using this method, the following is required:

3) For P-No. 4 and P-No. 5A materials, the minimum preheat, interpass temperature, and technique
shall be in accordance with NBIC Part 3, 2.5.3.4. The repair depth for temper bead repairs to pressure
retaining items of P-No. 4 and P-No. 5A materials is limited to welds not penetrating through full thickness.

4) Full thickness temper bead weld repairs are permitted to pressure retaining items of P-No 4 and P-No 5A materials under the following conditions;

a) ASME Section VIII, Division 2 pressure vessels, where application of PWHT on in-service vessels

has been demonstrated to cause harm to vessel material.

b) For tube to header welds in steam service.

Full thickness weld repairs above shall be completed per NBIC Part 3, 3.3.5 with the following requirements:

1. The full thickness repair weld shall be verified as being the full penetration.
2. Volumetric examination of the full thickness weld shall be performed.

Ballot Comments & Voting

Archived Comments for Ballot: 17-152-MC	
Galanes PE,George 11/13/2017 3:11:19 PM *Reply To: Wielgoszinski,Robert*	GWG comment 11-13-2017 Thanks for your support. The revision was to permit this welding method for tube to header welds in steam service only, which is flexible and can applied to Section I or ASME Section VIII Div 2 vessel construction. The reference back to Part 3, 3 3.5 was to ensure compliance for 1. The full thickness repair weld shall be verified as being the full penetration, and 2. Volumetric examination of the full thickness weld shall be performed.
Wielgoszinski,Robert 11/13/2017 1:35:22 PM	NOTE: This is a reiteration of my comments from ballot 17-170MC. I am not against this change, but is it the intent that the allowance of through thickness repairs be made for tube to header welds in Section VIII Div 2 vessels ONLY? Or is it for ANY tube to header welds of P-No.4 and 5A materials? Like in Section I boiler construction. The way it is worded, all through thickness welds must be in compliance with Part 3, 3.3.5, which is only for repairs to Section VIII Div 2 vessels. Is there a reason for the restriction? Also, why limit it to headers? There are some cylinders that could fall under the "drum" definition. Would this be permitted for tube to tubesheet welds in drums?
Staniszewski,Stanley 11/9/2017 9:06:54 AM	Mr. Pillow's editorial corrections should be adopted by the committee along with this item.
Webb,Michael 11/7/2017 8:50:39 AM	I am in favor of the revision proposed by Mr. Pillow.
Galanes PE,George 10/23/2017 12:16:24 PM *Reply To: Pillow,James*	GWG Comment 10/23/17, I agree with the editorial revisions, which further improves the rules proposed by Mr. Pillow in the attachment.
Pillow,James 10/23/2017 11:44:36 AM	I approve the new rules but think the wording and sentences structures can be improved. Please consider making the editorial changes shown on the attached. Reference Document: 17-152 Part 3 2.5.3.2 Full Thickness Repairs 2017 10 23.docx

Name	Email	Votes	Vote Date
Bradley Besserman	bbesserman@nationalboard.org	Not Voted	N/A
Brian Morelock	morelock@eastman.com	Approve	11/08/17
Craig Hopkins	chopkins@seattleboiler.com	Not Voted	N/A
Don Cook	dcook@dir.ca.gov	Not Voted	N/A
Gary Scribner	gscribner@nationalboard.org	Not Voted	N/A
George Galanes PE	ggalanes@diamondtechnicalservices.com	Approve	10/16/17
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Venus Newton	venus.newton@bpcllcga.com	Approve	10/17/17

National Board item

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Weld repair of corrugated roles should not be classified as a routine repair. The rolls are constructed of higher carbon steel (see 3.2.1 (b) at or above 0.35%, and as such, necessary precautions like preheat and NDT must be taken to ensure a sound weld repair.

These are controls that the AI should verify in-process.

It is recommended to close this item, and send correspondence that states the NBIC considered the request and at this time believes weld repair of corrugated roles should not be considered as routine repairs.

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1.6 "NR" PROGRAM REQUIREMENTS

1.6.1 SCOPE

a) This section provides requirements that must be met for an organization to obtain a National Board *Certificate of Authorization* to use the "NR" Symbol Stamp for repair/replacement activities to nuclear items constructed in accordance with the requirements of the ASME Code or other internationally recognized codes or standards for construction or inservice inspection of nuclear facilities.

b) For administrative requirements to obtain or renew a National Board "NR" *Certificate of Authorization* and the "NR" Symbol Stamp, refer to National Board Procedure NB-417, Accreditation of "NR" Repair Organizations.

1.6.2 GENERAL

a) An organization applying for an "NR" *Certificate of Authorization* shall have a written Quality Assurance Program (QAP) that details the specific requirements to be met based on the intended category of activities selected by that organization as described below and shown in Table 1.6.2. Controls used, including electronic capabilities, in the Quality Assurance Program shall be documented in a Quality Assurance Manual (QAM). Controls required to be included within the QAM shall include who, what, when, where, why and how with an understanding that the how can be a reference to an implementation procedure or instruction. Quality activities to be described in the Quality Assurance Program are identified in Section 1.6.5 of this part. Applicants shall address all requirements in their Quality Assurance Program based on the category of activity and scope of work to be performed (organization's capabilities) to which certification is requested.

1) Category 1

Any ASME Code certified item or system requiring repair/replacement activities irrespective of physical location and installation status prior to fuel loading.

2) Category 2

After fuel loading, any item or system under the scope of ASME Section XI requiring repair/replacement activities irrespective of physical location. Based on regulatory or jurisdictional acceptance, Category 2 may be used prior to fuel loading.

3) Category 3

Items constructed to codes or standards other than ASME, requiring repair/replacement activities irrespective of physical location, installation status and fuel loading.

b) Repair organizations performing repairs of pressure relief devices in nuclear service shall meet the additional requirements of NBIC Part 4, Section 4 and NBIC Part 4, Supplement 6.

TABLE 1.6.2

"NR" QUALITY ASSURANCE PROGRAM (QAP) REQUIREMENTS

Category of Activity	Owner	Organizations other than Owner
Category 1	10 CFR Part 50 Appendix B[1,2] and ASME Section III NCA-4000	10 CFR Part 50 Appendix B[1,2] and ASME Section III NCA-4000
Category 2	10 CFR Part 50, Appendix B[1] or NQA-1, Part 1 and ASME Section XI, IWA-4142	10 CFR Part 50, Appendix B[1], supplemented as needed with Owner's QA program; or ASME NQA-1, Part 1; or ASME Section III, -NCA-4000
Category 3	ASME NQA-1, or Specify the Standard to which certification is desired	ASME NQA-1, or Specify the Standard to which certification is desired
Note 1: Code of Federal Regulations (CFR) – rules and regulations published by the executive departments and agencies of the federal government of the United States.		
Note 2: 10 CFR 50 Appendix B – Title 10 of the Code of Federal Regulations Part 50 Appendix B describes the quality assurance criteria for nuclear plants and fuel reprocessing plants.		

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, 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

TABLE 1.6.2.1

ACRONYMS

ASME	American Society of Mechanical Engineers
Applicant	An Organization applying for "NR" *Certificate of Authorization* (new or renewal)
CFR	Code of Federal Regulations

Code	ASME Code of Construction, Section III, Division I, (NCA, NB, NC, ND, NE, NF, NG, and NH) or ASME Section XI Rules for Inservice Inspection of Nuclear Power Plant Components as applicable.
Jurisdiction	Enforcement Authority
NB	National Board of Boiler and Pressure Vessel Inspectors
NBIC	National Board Inspection Code
NB-263, RCI-1	Rules for Commissioned Inspectors
NCA	ASME Section III, Subsection NCA, General Requirements for Division 1 and Division 2
NQA–1*	ASME Quality Assurance Requirements for Nuclear Facility Applications
NR	Nuclear Repair
"NR" CH	"NR" Certificate Holder
QA	Quality Assurance
QAI–1	ASME Qualifications for Authorized Inspection
QAM	Quality Assurance Manual
QAP	Quality Assurance Program
QC	Quality Control
WA	ASME Section III, Division 3, Subsection WA, General Requirements

Note:

* Latest Edition endorsed by the Regulatory Authority

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, Criteria for Acceptance of Authorized Inspection Agencies for New Construction or accredited in accordance with NB-369, Qualifications and Duties for Authorized Inspection Agencies (AIAs) Performing Inservice Inspection Activities and Qualification of Inspectors of Boilers and Pressure Vessels.
b) Have a written Quality Assurance Program that complies with the requirements of this section and address all controls for the intended category and scope of activities.
c) Have a current edition of the NBIC.
d) Have available ASME Section XI, the code of construction and referenced code sections and standards appropriate for the scope of work to be performed. ASME Section XI and codes of construction (Editions/Addenda) shall meet the requirements of the Regulatory Authority and the owner.

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.

1.6.5 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, 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 1.6.2-1 of this section.

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 Table 1.6.2 of this section for Category 1 activities. The following quality elements shall

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be specified and described within the QAM.

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.

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.

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 1.6.9 of this section.
~~6)~~7) Specified controls including responsibilities for personnel shall be described in the quality

assurance program.

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 owner's 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 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.

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:

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.

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.

h) Control of Purchased Material, Items, and Services

1) The provisions identified in ASME NQA-1, Part 1, Requirement 7 shall apply, except:
   a) Procurement of Authorized Inspection Agency services is not applicable as specified in paragraph 507.
   b) The decision to perform bid evaluation as described in paragraph 300 is the responsibility of the "NR" Certificate Holder.
   c) 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.

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d) The provisions identified in ASME NQA-1, Part 1, Requirement 7, paragraph 700 are not applicable to this section.

2) 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-~~3970~~ 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-~~3855.5.~~4255.5

3) 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.

4) 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-~~3970~~ 4470 as applicable.

5) Add wording from NB16-0609 pending approval

~~h~~)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 ~~valves~~ values when required, and spaces for inclusion of document numbers and revision levels, signatures, / stamps and dates of examinations or tests performed, verified, and/or witnessed by the "NR" Certificate Holder's qualified Representative and Authorized Nuclear Inspector.

~~i~~)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 conform~~s~~ to the specified acceptance criteria as listed on drawings, procedures, instructions, specifications or other appropriate documents including revisions.

~~j~~)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; and
f. Acceptance criteria used to verify acceptability.
~~f.~~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.

~~k)~~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. Pre-requisites 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.

~~l)~~m) Control of Measuring and Test Equipment

The provisions identified in ASME NQA-1, Part 1, Requirement 12 ~~-~~shall apply.

1) The "NR" Certificate Holder may perform periodic checks on equipment to determine calibration is maintained. When periodic checks are used the method and frequency shall be included in the "NR" Certificate Holder's Quality Assurance Program and if discrepancies are found, shall be resolved to the prior periodic check.
2) The "NR" Certificate Holder may accept accreditation for calibration activities by National Voluntary Laboratory Accreditation Program (NVLAP), American Association for Laboratory Accreditation (A2LA) or other accrediting body recognized by NVLAP through the International Laboratory Accreditation Cooperation (ILAC) mutual recognition arrangement (MRA) provided the following requirements are met:
   a. Accreditation is to ANSI/ISO/IEC 17025:2005 "General Requirements for the Competence of Testing and Calibration Laboratories";
   b. Scope of the accreditation for the calibration laboratory covers needed measurement parameters, ranges and uncertainties;
   c. "NR" Certificate Holder shall specify that calibration reports shall include, laboratory equipment/standards used and as found and as left data;
   d. The "NR" Certificate Holder shall verify conformance to the requirements of this process; and
   e. Utilization of this process shall be described and documented in the "NR" Certificate Holders QAM. Note: replace paragraph 2 above with NB16-0609 pending approval

~~m)~~n) Handling, Storage and Shipping

The provisions of ASME NQA-1, Part 1, and Requirement 13 shall apply.

~~n)~~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 owner's 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; and

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.
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.

~~o)~~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' corrective action measures.

~~p)~~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.

~~q)~~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.

~~r)~~s) Audits

The provisions identified in ASME NQA-1, Part 1, and Requirement 18 shall apply and shall include

the following:

A comprehensive system of planned and periodic ~~internal~~ audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed ~~by the "NR" Certificate Holder~~. Audits shall include internal audits by the Certificate Holder and audits by the Authorized Inspection Agency. Audit frequency shall be specified in the organization's Quality Assurance Manual. Audits shall be conducted at least annually for any ongoing code activity 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, and Quality Assurance Program revisions. 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 Inspector 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.

~~s)~~t) Authorized Nuclear Inspector

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

~~t)~~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.

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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, 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.

1.6.7.2 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.

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.

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.

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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.
~~7)~~8) Specified controls including responsibilities for personnel shall be described in the quality assurance program.

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 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 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.

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. 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.

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.

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.

h) Control of Purchased Material, Items, and Services

Purchase of materials and small products shall meet the requirements specified in ASME Section XI, 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. 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.

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.

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.

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, 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.

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.

m) Control of Measuring and Test Equipment

1) Measures shall be established and documented to ensure that tools, gages, instruments, and other measuring and testing equipment and devices used in activities affecting quality are of the proper range, type, and accuracy to verify conformance to established requirements. A procedure shall be in effect to ensure that they are calibrated and properly adjusted at specified periods or use intervals to maintain accuracy within specified limits. Calibration shall be traceable to known national standards, where these standards exist, or with the device manufacturer's recommendation.

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.

o) Quality Assurance Records

Documentation, reports and records shall be in accordance with ASME Section XI, 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 1.6.7.2 n) 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

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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 ~~at his~~ upon request.

2) Records to be maintained as required in NBIC Part 3, 1.6.7.2 n) 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;
   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 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 System 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.

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.

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.

r) Nonconforming Materials or Items

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.

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.

s) Audits

A comprehensive system of planned and periodic ~~internal~~ audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed ~~by each organization~~,. Audits shall include internal audits by the Certificate Holder and audits by the Authorized Inspection Agency. Audit frequency shall be specified in the organization's Quality Assurance Manual. Audits shall be conducted at least annually 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 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 Inspector 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.

t) Authorized Nuclear Inspector

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

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.

1.6.8 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.

1.6.8.2 QUALITY PROGRAM ELEMENTS

a) Organization

~~Persons and organization shall have authority and freedom to identify quality problems; initiate, recommend or provide solutions and verify implementation of solutions.~~ 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.

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.

c) QAP

The quality assurance program shall be documented by written policies, procedures and instructions. It s~~S~~hall 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, ~~and~~ 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.~~8~~6.9 of this section. Specified controls including responsibilities for personnel shall be described in the quality assurance program.

d) Design Control

Established measures to assure ~~approximate~~ applicable quality standards and regulatory requirements are accurately specified and translated ~~included~~ 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.

e) Procurement Document Control

Documents for procurement of material, equipment and services shall ensure regulatory requirements, design bases and other quality requirements ~~and~~ are included or referenced. Procurement documents shall require contractors or subcontractors provide a Quality Assurance Program consistent with the provisions specified herein. ~~in this NBIC Part 3, 1.8.8.~~ Controls necessary to ensure materials, equipment, and services meet specified design criteria shall be clearly described within the quality assurance program.

f) Instructions, Procedures and Drawings

Activities affecting quality shall be accomplished in accordance with prescribed instructions, procedures or drawings and shall include ~~approximate~~ appropriate quantitative or qualitative ~~qualified~~ acceptance criteria to determine activities are satisfactorily accomplished.

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.

h) Control of Purchased~~s~~, 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.

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.

j) Control of Processes

Documents used to control processes shall be prepared, including the document numbers and revision to which the process conforms and ~~conform to specified acceptance criteria~~ shall include space for providing reporting of results of specific operations at checkpoints of repair/replacement activity, and provide for signatures, initials, stamps and dates for activities performed by the Certificate Holders' 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.

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
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.

l) Test Control

Tests shall be performed using~~to~~ written procedures identifying prerequisites, acceptance limits, calibration, equipment, personnel qualifications, environmental conditions, and required documentation. ~~required.~~ Personnel responsibilities shall be described for performance, acceptance/inspection and documenting results.

m) Control of Measuring and Test Equipment

Procedures, methods and frequency of calibration shall be described for all types of measuring and test equipment used to verify quality. Controls shall ensure accuracy within specified limits. Any discrepancies shall be identified and resolved.

n) Handling, Storage and Shipping

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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.

o) Records

1) All quality related records shall be classified, identified, verified, maintained, distributed, ~~retraceable,~~ 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

~~1)~~2) ~~T~~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 for registration shall be maintained in accordance with NBIC Part 3, 5.6.

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 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) Corrective action requirements shall also extend to the performance of subcontractors' activities.

~~Measures established to assure conditions adverse to quality are promptly identified and corrected and action taken to preclude repetition.~~

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.

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.

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s) Audits

~~A system of planned and periodic audits shall be established to verify compliance of the Quality Assurance Program. Audits shall include; written procedures, checklists, trained/qualified personnel not having direct responsibility for areas being audited, documentation, review by management and follow-up actions when required.~~ A comprehensive system of planned and periodic audits of the "NR" Certificate Holder's Quality Assurance Program shall be performed. Audits shall include internal audits by the Certificate Holder and audits by the Authorized Inspection Agency. Audit frequency shall be specified in the organization's Quality Assurance Manual. Audits shall be conducted at least annually 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 Inspector 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.

t) Authorized Nuclear Inspector

Qualifications and duties shall be as specified in ASME QAI-1 and NB-263, RCI-1 for the Authorized Inspection Agencies, Authorized Nuclear Inspector and the Authorized Nuclear Inspector Supervisor. ~~for the Authorized Inspection Agencies, Authorized Nuclear Inspector and the Authorized Nuclear Inspector Supervisor.~~ Additional requirements are specified in Sections 1.~~8~~6.6.2 s), 1.~~8~~6.7.2 s), and 1.6~~8~~.9.

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.

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

Interface with the owner's repair/replacement program shall meet the following:

a) The "NR" Certificate Holder's repair/replacement plan (see Table 1.6.9) shall be subject to the

acceptance of the owner and the owner's Authorized Nuclear Inservice Inspector (ANII) and shall be subject to review by the Jurisdiction and Regulatory Authorities having jurisdiction at the plant site.

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

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

d) The "NR" Certificate Holder shall provide a copy of the signed Form NR-1 or Form NVR-1, as 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.

Table 1.6.9

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.

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2.5.3.4 WELDING METHOD 4

When using this method, the following is required:

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

For ASME Section VIII Division 2 pressure vessels, where application of PWHT on in-service vessels has
been demonstrated to cause harm to vessel material, full thickness temper bead repairs are permitted.

They shall be completed per NBIC Part 3, 3.3.5 with the following requirements:
1) The full thickness repair weld shall be verified as being full penetration.
2) Volumetric examination of the full thickness weld shall be performed.

Proposed Revision Underlined

2.5.3.4 WELDING METHOD 4

When using this method, the following is required:

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

Full thickness temper bead weld repairs are permitted under the following conditions;

1) ASME Section VIII, Division 2 pressure vessels, where application of PWHT on in-service vessels
has been demonstrated to cause harm to vessel material.

2) For tube to header welds in steam service.

Full thickness weld repairs shall be completed per NBIC Part 3, 3.3.5 with the following requirements:
1) The full thickness repair weld shall be verified as being full penetration.
2) Volumetric examination of the full thickness weld shall be performed.

Ballot and Voting

Archived Comments for Ballot: 17-170-MC	
Galanes PE,George 11/13/2017 3:12:36 PM *Reply To: Wielgoszinski,Robert*	GWG 11-13-2017 Same comment repeated for this ballot.
Wielgoszinski,Robert 11/13/2017 1:33:04 PM	I am not against this change, but is it the intent that the allowance of through thickness repairs be made for tube to header welds in Section VIII Div 2 vessels ONLY? Or is it for ANY tube to header welds of P-No.4 and 5A materials? Like in Section I boiler construction. The way it is worded, all through thickness welds must be in compliance with Part 3, 3.3.5, which is only for repairs to Section VIII Div 2 vessels. Is there a reason for the restriction? Also, why limit it to headers? There are some cylinders that could fall under the "drum" definition. Would this be permitted for tube to tubesheet welds in drums?
Staniszewski,Stanley 11/9/2017 9:08:54 AM	Mr. Pillow's editorial corrections should be adopted by the committee along with this item.
Webb,Michael 11/7/2017 8:45:47 AM	I too are in favor of the revision proposed by Mr. Pillow...
Galanes PE,George 10/23/2017 12:14:17 PM	GWG Comment 10/23/17: I agree with the editorial revisions, which further improves the rules proposed by Mr. Pillow in the attachment.
Pillow,James 10/23/2017 11:57:28 AM	I approve the revisions but think the wording and sentence structure can be improved. Please consider the editorial changes shown in the attached. Reference Document: 17-170 Part 3 2.5.3.4 Full Tickness Repiars 2017 10 23.docx

Name	Email	Votes	Vote Date
Bradley Besserman	bbesserman@nationalboard.org	Not Voted	N/A
Brian Morelock	morelock@eastman.com	Approve	11/08/17
Craig Hopkins	chopkins@seattleboiler.com	Not Voted	N/A
Don Cook	dcook@dir.ca.gov	Not Voted	N/A
Gary Scribner	gscribner@nationalboard.org	Not Voted	N/A
George Galanes PE	ggalanes@diamondtechnicalservices.com	Approve	10/23/17
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James Pillow	jpillow@commonarc.com	Approve	10/23/17
Jim Riley	jim.riley@conocophillips.com	Not Voted	N/A
Jim Sekely	jsekely@comcast.net	Approve	11/05/17
Joel Amato	joel.amato@state.mn.us	Approve	10/27/17
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Kevin Simmons	kevin.simmons@pentair.com	Approve	11/09/17
Larry McManamon	lmac@glabap.com	Not Voted	N/A
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Paul Edwards	edwar1pd@westinghouse.com	Approve	11/09/17
Paul Welch	paul.Welch@ariseinc.com	Approve	11/08/17
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Stanley Staniszewski	stanley.staniszewski@dot.gov	Approve	11/09/17
Venus Newton	venus.newton@bpcllcga.com	Approve	10/17/17

17-180 Galanes 12-12-17

2.5.3.6 WELDING METHOD 6

This welding method provides requirements for welding only Grade 91 tube material within the steam boiler Setting. ~~and when it is impracticable to perform local postweld heat treatment (PWHT).~~

The proposed revision shown above is to remove impracticable because this is redundant and is referenced in 2.5.3 below along with inadvisable.

2.5.3 ALTERNATIVE WELDING METHODS WITHOUT POSTWELD HEAT TREATMENT

a) Under certain conditions, postweld heat treatment, in accordance with the original code of construction, may be inadvisable or impractical. In such instances, the following alternative methods may be used.

Rationale: In WM 6 we have seemed to create confusion regarding the word impractical. Instead, since we have used both impractical and inadvisable in 2.5.3 and this applies to all alternative Welding Methods this would seem to suffice and remove confusion by owner's/user's.

2017 NBIC Current Text

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

d) Statement of Authority and Responsibility

A dated *Statement of Authority*, signed by an officer of the organization, shall be included in the manual. Further, the *Statement of Authority* shall include:

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

2) A statement that if there is a disagreement in the implementation of the Quality System, the matter is to be referred for resolution to a higher authority in the company;

3) The title of the individual who will be responsible to ensure that 1) above is followed and has the freedom and authority to carry out the responsibility.

NBIC Proposed Text

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

d) Statement of Authority and Responsibility

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

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

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

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

4) A statement of the full support of management for the Quality System