

Date Distributed:



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

NATIONAL BOARD INSPECTION CODE SUBGROUP REPAIRS & ALTERATIONS

Minutes

Meeting of January 14th, 2025
Charleston, SC

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
Columbus, Ohio 43229-1183
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1. Call to Order

Chair Underwood called the meeting to order at 8:00 a.m. Eastern Time

2. Roll call of Members and Introduction of Visitors

Secretary Hellman took roll and introduced in person and online members and visitors. ([Attachment 1](#))

3. Check for a Quorum

25/26 members were present; a quorum was established.

4. Announcements

- This meeting marks the end of Cycle A for the 2027 NBIC edition.
- The National Board will be hosting a reception on Wednesday evening from 5:30 p.m. to 7:30 p.m. at the Hyatt Place rooftop bar, the Pour Taproom.
- The National Board will be hosting breakfast and lunch on Thursday for those attending the Main Committee meeting. Breakfast will be served from 7:00 a.m. to 8:00 a.m. in Grand Magnolia Foyer, and lunch will be served from 11:30 a.m. to 12:30 p.m. in Sterling Hall Foyer.
- Meeting schedules, meeting room layouts, and other helpful information can be found on the National Board website under the **NBIC** tab → NBIC Meeting Information.
- The NBIC Committee has transitioned from NB File Share to SharePoint. Remember to add any attachments that you'd like to show during the meeting (proposals, reference documents, powerpoints, etc.) to the NBIC SharePoint site (nationalboard.sharepoint.com/sites/NBIC) **prior to the meeting.**
 - Note that access to the NBIC SharePoint site is limited to committee members only.
 - ALL powerpoint attachments/presentations must be sent to the NBIC Secretary for approval prior to the meeting.
 - Contact Jonathan Ellis (nbicsecretary@nbbi.org) for any questions regarding NBIC SharePoint access.
- When possible, please submit proposals in Word format showing “strike through/underline.” Project Managers: please ensure any proposals containing text from previous NBIC editions are updated with text from the most current edition.
- If you'd like to request a new Interpretation or Action item, do so on the National Board Business Center.
 - Anyone, member or not, can request a new item.
- As a reminder, anyone who would like to become a member of a group or committee:
 - Should attend at least two meetings prior to being put on the agenda for membership consideration. The nominee will be on the agenda for voting during their third meeting.
 - The nominee must submit the formal request along with their resume to the NBIC Secretary **PRIOR TO** the meeting. nbicsecretary@nbbi.org
 - If needed, we can also create a ballot for voting on a new member between meetings.
- Thank you to everyone who registered online for this meeting. The online registration is very helpful for planning our reception, meals, room setup, etc. It is also a good way to make sure we have the most up-to-date contact information. Please continue to use the online registration for each meeting.

5. Awards and Special Recognitions - None

6. Adoption of the Agenda

The Agenda was editorially revised and membership considerations were updated to include R. Spuhl's resignation and Lane Baker's consideration.

7. Approval of the Minutes of the July 16, 2024, Meeting

The minutes are available for review on the National Board website, www.nationalboard.org and were unanimously approved (UA) by the SG.

8. Review of Rosters

a. Membership Nominations

Mr. Lane Baker (AIA) was UA as a new member of the subgroup.

b. Membership Reappointments

- i. The following Subgroup R&A memberships are set to expire prior to the July 2025 NBIC meetings: Mr. Eric Cutlip (NB Cert. Holder) and Mr. Raymond Spuhl (AIA).
- Mr. Cutlip's membership was not renewed based on lack of attendance.
 - Mr. Spuhl will resign from SG R&A and will be considered for SC R&A membership.

c. Officer Nominations - None

d. Resignations

Mr. Raymond Spuhl will be resigning from the SG R&A membership.

9. Presentations: Matt Sweetland, Director of Engineering for PEM electrolyzers at Plug Power presented an Introduction to Electrolyzers. ([Attachment 2](#))

- **Breakout Session** –

10. Action Items

Item Number: A21-45	NBIC Location: Part 3, Supplements	No Attachment
<p>General Description: Engineered Repairs and Alterations Supplement</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Schaser (PM), B. Boseo, B. Ray, D. Marek, R. Underwood, J. Siefert, P. Becker</p> <p>Explanation of Need: : In an effort to simplify the main body of NBIC Part 3, we are proposing a new Supplement called Engineered Repairs and Alterations which will import some existing, more complex activities from the main body and then eventually add new repair and alteration activities that are not currently addressed in the Part 3.</p> <p>July 2024 SG R&A Meeting Action: R. Underwood presented a PR; this proposal is ready for SC.</p> <p>July 2024 SC R&A Meeting Action: M Schaser presented a PR and is on hold until the new engineered repairs scope is approved by BOT.</p> <p>SG R&A Jan. 2025 Meeting Action: M Schaser presented a PR and is on hold until the new engineered repairs scope is approved by BOT.</p>		

Item Number: A21-53	NBIC Location: Part 3, S8.5 a)	No Attachment
<p>General Description: Post Repair Inspection of weld repairs to CSEF steels</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Gilston (PM), E. Cutlip, A. Triplett</p> <p>Explanation of Need: The requirement for Inspector involvement in post-repair inspections to CSEF weld repairs is to ensure future safe operation of the boiler. This is a function of the inservice Authorized Inspection Agency, not the Repair Inspector, whose duties end with completion of repair documentation.</p> <p>July 2024 Meeting Action: P. Gilston presented a PR.</p> <p>SG R&A Jan. 2025 Meeting Action: P. Gilston presented Rev. 3 of his proposal to show changes from previous version. After discussion, Mr. Gilston decided to revise further and submit the proposal via LB to the SG. This was a PR.</p>		

Item Number: A22-18	NBIC Location: Part 3, Glossary	No Attachment
General Description: Definition of blowdown and blowoff		
Subgroup: Repairs and Alterations		
Task Group: K. Moore (PM). M. Quisenberry, G. Scribner, M. Wadkinson		
Explanation of Need: These terms are not consistently used throughout the industry. This is to provide guidance to use the correct term when addressing the equipment or the action.		
July 2024 Meeting Action: K. Moore presented a PR.		
SG R&A Jan. 2025 Meeting Action: K. Moore presented that definitions are being worked on by G. Scribner and M. Wadkinson and motioned to Close w/No Action . The motion was UA .		

Item Number: A23-09	NBIC Location: Part 3, New Supplement	No Attachment
General Description: Scope and Rules for use of Additive Manufacturing Pressure Parts		
Subgroup: Repairs and Alterations		
Task Group: G. Galanes (PM), J. Siefert, B. Schaefer, W. Sperko, J. Ferreira, J. Getter, T. Seime, M. Wadkinson		
Explanation of Need: Developing rules for the use of additive manufacturing pressure parts in alterations.		
July 2024 Meeting Action: G. Galanes presented revisions to the proposal based on the Rvw & Comment LB. This will go to SG R&A for LB Vote.		
NOTE: This item was approved by the Subgroup via letter ballot on September 27, 2024.		
SG R&A Jan. 2025 Meeting Action: G. Galanes presented a status update. This proposal passed SG LB (18-0) and will be on SC R&A's agenda. Status Update .		

Item Number: A23-21	NBIC Location: Part 3, 3.3.4.9	No Attachment
<p>General Description: Boiler tube plug guidelines and inclusion or watertube boilers</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: S. Lombardo (PM), P. Gilston, K. Moore, A. Triplett T. White, J. Ferriera</p> <p>Explanation of Need: Currently both firetube and watertube boilers require a boiler tube be plugged when replacement of a tube is not practicable at the time the defective tube is detected.</p> <p>July 2024 Meeting Action: P. Gilston presented a proposal for a vote. The item passed with 4 negatives and 3 abstentions. (Neg. votes = M. Quisenberry, T. McBee, L. Dutra, C. Hopkins; Abstentions = B. Schaefer, J. Ferreira, T. Seime)</p> <p>NOTE: This item failed to pass through Subcommittee R&A.</p> <p>SG R&A Jan. 2025 Meeting Action: S. Lombardo was selected as the new PM to replace E. Cutlip. This was a PR.</p>		

Item Number: A23-24	NBIC Location: Part 3	No Attachment
<p>General Description: Repairs to quick actuating closures</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: T. McBee (PM), C. Becker, M. Schaser, A. Khssassi, R. Smith</p> <p>Explanation of Need: Put safe guidelines for repairs to quick actuating closures.</p> <p>July 2024 Meeting Action: T. McBee presented a proposal which was UA.</p> <p>NOTE: This proposal is currently being balloted to Main Committee till 1/14/25.</p> <p>SG R&A Jan. 2025 Meeting Action: This proposal is currently being balloted to Main Committee – Status update</p>		

Item Number: A23-35	NBIC Location: All Parts, 9.1	No Attachment
<p>General Description: Definition of "non-load bearing attachment" (All Parts)</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: T. White (PM), A. Khssassi , J. Walker</p> <p>Explanation of Need: The term "nonload bearing attachment" is used as a basis for determining a routine repair but is not defined in the NBIC.</p> <p>July 2024 Meeting Action: T. White presented a PR.</p> <p>SG R&A Jan. 2025 Meeting Action: T. White presented a PR.</p>		

Item Number: A23-39	NBIC Location: Part 3, 3.3.1	Attachment 3
<p>General Description: Strengthening Prevention of Defect Recurrence</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: J. Ferreira (PM), J. Walker, F. Johnson, P. Gilston, A. Henson, G. Galanes, B. Hrubala</p> <p>Explanation of Need: The existing text recommends, but does not require an investigation of the cause, extent, and likelihood of recurrence of defects. The existing text also has no requirement for anyone to act to prevent the recurrence of defects. Where root and/or proximate causes of defects are known, or could be determined, someone needs to act to prevent catastrophic failure of equipment.</p> <p>July 2024 Meeting Action: J. Ferreira presented a proposal which was UA by both Subgroup and Subcommittee. During the Main Committee meeting, discussion was held on the applicability of the guidance given in the proposal and the overall wording of the proposal. The Committee asked that the proposal go back to subgroup and subcommittee for additional work.</p> <p>SG R&A Jan. 2025 Meeting Action: J. Ferreira presented a revised proposal that was UA.</p>		

Item Number: A23-40	NBIC Location: Part 3, 3.3.4.1	No Attachment
<p>General Description: Strengthening Requirements to Ensure Defect Removal</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: L. Dutra (PM), E. Cutlip, A. Renaldo, R. Valdez, T. McBee, A. Henson</p> <p>Explanation of Need: The existing text alludes to the potential need for nondestructive examination (NDE) to ensure complete removal of defects but does not require it. The means to ensure defects have been removed must be understood by all to ensure safety. There is an interpretation of the 2021 NBIC that compounds this issue permitting repair organizations to not follow the requirements of NBIC Part 3, 3.3.4.8 even when the characteristics of the defect cannot be fully established.</p> <p>July 2024 Meeting Action: L. Dutra presented a PR.</p> <p>SG R&A Jan. 2025 Meeting Action: L. Dutra motioned to Close w/No Action based on A23-41 passing. The motion was UA.</p>		

Item Number: A23-61	NBIC Location: Part 3, S9.3	No Attachment
<p>General Description: Revise NBIC R-2 Report and guide</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: B. Schaefer (PM), T. LeBeau, S. Marks</p> <p>Explanation of Need: Updates to the R-2 Report and the guide for completing R Report.</p> <p>July 2024 Meeting Action: B. Schaefer presented a PR.</p> <p>SG R&A Jan. 2025 Meeting Action: T. LeBeau presented a proposal, and discussions regarding de-coupling the “Pressure Testing” section of the form from the Construction portion led to this to be revised further. Stacey Marks was added to the TG. This was a PR.</p>		

Item Number: A23-68	NBIC Location: Part 3, 3.4.4 c) and d)	Attachment 4
<p>General Description: Changes to Examples of Alterations</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Schaser (PM), T. McBee, P. Becker, P. Davis</p> <p>Explanation of Need: The current wording of 3.4.4.d (2023) is open ended and may result in allowing significant design changes to a pressure vessel under the guise of a repair when an alteration is a more appropriate classification. Rewording is required to limit the scope of potential design changes.</p> <p>July 2024 Meeting Action: M. Schaser presented a PR.</p> <p>SG R&A Jan. 2025 Meeting Action: M. Schaser presented a PR. The proposal led to discussions on the need to revise the definition of “Alteration”. P. Davis was added to the TG to assist with revising the format/content of the examples of alterations further. Mr. Lane Baker requested to be removed from the TG.</p>		

Item Number: A23-77	NBIC Location: Part 3, 4.2 a)	No Attachment
<p>General Description: Performance of Original NDE During Repairs and Alterations</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: A. Triplett (PM), S. Frazier, J. Walker, R. Collins, P. Becker</p> <p>Explanation of Need: The existing language in Part 3, Section 4, Paragraph 4.2.a does not provide enough guidance or flexibility for Repair Organizations and owners to prescribe appropriate NDE for repairs/alterations to existing welds. Based on the limited, often non-specific documentation typically available to these entities during NBIC repairs and alterations, additional allowances and direction should be provided.</p> <p>July 2024 Meeting Action: A. Triplett presented a PR. A Rvw & Comment LB was to go to SG R&A.</p> <p>NOTE: No LB was issued.</p> <p>SG R&A Jan. 2025 Meeting Action: T. White presented that a proposal based on the 2025 Ed. Will be worked on. This was a PR.</p>		

Item Number: A24-11	NBIC Location: Part 3, S9	No Attachment
<p>General Description: Addition of a section on the R-1 Form for "Unresolved Issues"</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Quisenberry (PM), T. Seime, T. McBee</p> <p>Explanation of Need: There have been multiple instances discussed during NBIC meetings of Certificate Holders having to leave known defects unrepaired because of the owner/user not wanting to make the repair. This field would allow AIA and Jurisdictional Authorities to be made aware of known and identified issues with a pressure retaining item that were not corrected. Additionally, this provides cover for the Certificate Holder that they identified the defect, brought it to everyone's attention, and the owner/user decided to leave it.</p> <p>July 2024 Meeting Action: No action was taken on this item, as it was in Rvw & Comment LB from 6/27/24 – 7/18/24.</p> <p>SG R&A Jan. 2025 Meeting Action: M. Quisenberry presented. Discussions regarding liability led to this being pulled back as a PR. The following were added to the TG: L. Dutra, M. Toth, A. Khssassi, M. Vogt.</p>		

Item Number: A24-17	NBIC Location: Part 3, 5.7.5 b)	No Attachment
<p>General Description: Specific Requirements For Stamping And Nameplates</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: E. Cutlip (PM), B. Schaefer, A. Khssassi</p> <p>Explanation of Need: 2023 ASME Section VIII-Div 1 UG-119(c)(5) has been revised to allow for the use of mechanical etching or laser annealing on nameplates.</p> <p>July 2024 Meeting Action: B. Schaefer presented a PR.</p> <p>SG R&A Jan. 2025 Meeting Action: B. Schaefer selected as PM (replaces E. Cutlip). J. Ferreira and T. LeBeau added to the TG. This was a PR.</p>		

Item Number: A24-18	NBIC Location: Part 3, 9.1	Attachment 5
<p>General Description: Definition of Controlled Fill</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Gilston (PM), A. Triplett, R. Collins, F. Johnson</p> <p>Explanation of Need: Interpretation item I 23-79 addresses the use of the term ‘controlled fill’ in relation to welding method 6. The term is used in 2.5.3 d in relation to welding method 6 and more specifically in Supplement 8. Supplement 8 gives a lot of detail in schematics about a controlled fill in terms of weld bead placement, its use in controlling heat input etc., but in Welding Method 6 the term is not specifically used, but direction for welding is given, typically preheats are specified, electrode size for SMAW, and the use of stringer beads only.</p> <p>July 2024 Meeting Action: P. Gilston presented a proposal which was UA by SG. This will need to be voted on by Parts 1, 2, and 4.</p> <p>SG R&A Jan. 2025 Meeting Action: P. Gilston presented a proposal which has yet to be voted on by SG for Part 2. This was a PR.</p>		

Item Number: A24-20	NBIC Location: Part 3, 9.1	No Attachment
<p>General Description: Define "Engineered Repairs" and "Engineered Alterations"</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Schaser (PM), B. Ray, R. Underwood, B. Boseo, D. Marek, J. Siefert, P. Becker</p> <p>Explanation of Need: The new supplement dealing with "Engineered Repairs and Alterations" (A21-45) will impact Part 3 Section 1, the NB-415, QRRs, the application process for Certificate Holders, and other documents to be determined. Defining "Engineered Repairs" and "Engineered Alterations" clarify the intent for these new scopes.</p> <p>July 2024 Meeting Action: M. Schaser presented a PR.</p> <p>SG R&A Jan. 2025 Meeting Action: M. Schaser presented a PR until BOT allows for the revisions in NB-415 to be accepted.</p>		

Item Number: A24-21	NBIC Location: Part 3, 9.1	No Attachment
General Description: Engineered Repairs and Alterations - Section 1 Scope and Manual reqs		
Subgroup: Repairs and Alterations		
Task Group: M. Schaser (PM), B. Ray, R. Underwood, B. Boseo, D. Marek, J. Siefert, P. Becker		
Explanation of Need: The scope of "Engineered Repairs and Alterations" (A21-45) needs to be clarified in 1.4.1 d) and reflected in the scope statement requirements for manuals in 1.5.1 a).		
July 2024 Meeting Action: M. Schaser presented a PR.		
SG R&A Jan. 2025 Meeting Action: M. Schaser presented a PR.		

Item Number: A24-60	NBIC Location: Part 3, 3.3.5.2 a) and 3.4.5.1	Attachment 6
General Description: Revise the repair and alteration Sect VIII Div 2 and 3 paragraphs		
Subgroup: Repairs and Alterations		
Task Group: R. Collins (PM), T. LeBeau, A. Triplett		
Explanation of Need: A revision of Part 3, 3.3.5.2 a) and 3.4.5.1 a), b), and c) are needed to reconcile the NBIC to Divisions 2 and 3 of ASME Section VIII. The attached proposal includes the complete revision draft.		
July 2024 Meeting Action: R. Collins presented a PR.		
Note: T. Le Beau and A. Triplett added to TG per email from B. Underwood dated 7/25/24.		
SG R&A Jan. 2025 Meeting Action: R. Collins presented a proposal that was slightly revised and UA.		

Item Number: A24-61	NBIC Location: Part 3, 2.5.3 e) and 4.2	No Attachment
<p>General Description: Relocate Volumetric NDE requirement for Weld Repair Greater than 3/8-inch</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: M. Schaser (PM), M. Quisenberry, K. Derrick, and B. Schaefer</p> <p>Explanation of Need: Relocate the volumetric NDE requirement for weld repairs of 3/8-inch depth or greater from paragraph 2.5.3.e to paragraph 4.2.</p> <p>July 2024 Meeting Action: M. Schaser presented a PR. M. Quisenberry, K. Derrick, and B. Schaefer were added to the TG.</p> <p>SG R&A Jan. 2025 Meeting Action: M. Schaser presented a motion to Close w/No Action due to the passing of I24-16. The motion was UA.</p>		

New Action Items:

Item Number: A24-85	NBIC Location: Part 3, 3.4.4 m)	Attachment 7
<p>General Description: Example of alterations to include requalification of cycle life</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: R. Underwood (PM)</p> <p>Explanation of Need: Currently vessels above 10,000 psi are being "requalified" without any code documentation. This puts a conflict between the ASME data report limitations and the actual installation. This practice is being completed without inspector involvement.</p> <p>SG R&A January 2025 Meeting Action: R. Underwood selected as PM. Discussion led to a UA motion to send a Letter to Inquirer stating this is addressed by the following:</p> <ul style="list-style-type: none"> • NBIC Part 3, 3.4.5.1 • INTERP 23-16 • INTERP 19-15 		

Item Number: A24-93	NBIC Location: Part 3, Supplement 8	Attachment 8
<p>General Description: Changing Part 3 supplement 8's title for clarity</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Shanks (PM)</p> <p>Explanation of Need: Use of pressure equipment is unusual within NB-23 and has cause confusion within the industry as to the applicability for Supplement 8.</p> <p>SG R&A January 2025 Meeting Action: P. Shanks presented a proposal to update the title of Supplement 8 to replace “Pressure Vessels” with “Pressure Retaining Items”. The proposal was UA.</p>		

Item Number: A24-96	NBIC Location: Part 3, 5.5 a)	No Attachment
<p>General Description: Add examples of repairs and alterations specific to Electrochemical Stacks</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: A. Triplett (PM)</p> <p>Explanation of Need: With inclusion and initial deployments of electrochemical stacks as U Stamped pressure vessels under ASME BPVC Section VIII Division 1 and Code Case 3078, these stacks are starting to be shipped and registered with the National Board. Some basic examples of allowed repairs are needed to help guide an understanding of limitations for electrochemical stacks.</p> <p>SG R&A January 2025 Meeting Action: A. Triplett presented and discussion was held regarding that this proposal was predicated on the existing language dealing with PHE, however there is no definition of “active cell components” as used in the proposal. Mr. Triplett indicated he would work with Mr. Matt Sweetland (gave presentation on ECS and is originator of this Code revision) to address the concerns of the TG. Riley Collins and Ray Milette were added to the TG. This was a PR.</p>		

Item Number: A24-98	NBIC Location: Part 3, 2.5.2	No Attachment
<p>General Description: Review and revise the PWHT Requirements in 2.5.2</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: P. Gilston (PM), M. Schaser, W. Sperko</p> <p>Explanation of Need: Simplify PWHT requirements in 2.5.2.</p> <p>January 2025 Meeting Action: P. Gilston presented a PR - that he will be revising to simplify Heat Band and Soak Band dimensions and will be submitting a Rvw & Comment LB in the coming days. M. Schaser and W. Sperko were added to the SG.</p>		

Item Number: A25-04	NBIC Location: Part 3, 2.5.3	Attachment 9
<p>General Description: Part 3, 2.5.3 Special Service Equipment</p> <p>Subgroup: Repairs and Alterations</p> <p>Task Group: R. Derby (PM), P. Gilston</p> <p>Explanation of Need: An interpretation request was received regarding the use of alternate welding methods for pressure equipment identified as Special Service. Comments received in the initial R&C indicated that the current words did not support the proposed Q&A. The proposal had been presented as an intent interpretation, and the comment was made if this was the desire, then to have a separate action item.</p> <p>January 2025 Meeting Action: P. Gilston presented a new proposal (added today) that was revised and UA by the SG.</p>		

11. Future Items:

P. Gilston discussed new items he intended to open and send to LB to the SG prior to the next meeting.

12. Future Meetings

- July 7-10, 2025 – Cincinnati, OH
- January 12-15, 2026 – New Orleans, LA

13. Adjournment @ 3:36 PM by Chair Underwood.

Respectfully submitted,

Terrence Hellman

Terrence Hellman

SG R&A Secretary

Subgroup Repairs and Alterations

	Full Name	Email Address	Company Name	Title	Registration Type	Role
X	Davis, Paul	paul.davis22@woodplc.com	Wood Group USA, Inc.	QA/QC Consultant	In-person	Member - Vice Chair
X	Underwood, Bob	robert_underwood@hsb.com	Hartford Steam Boiler	Quality Engineer	In-person	Member - Chair
X	Collins, Riley	rileycollins@eastman.com	Eastman Chemical Company	Mechanical Engineer	In-person	Member
X	Dutra, Louis	Ldutra@baycityboiler.com	Bay City Boiler	QA/QC Manager	In-person	Member
X	Ferreira, Jon	JONATHAN_FERREIRA@HSB.COM	The Hartford Steam Boiler Inspection and Insurance Company	Technical Service Manager	In-person	Member
X	Hopkins, Craig	CHOPKINS@SEATTLEBOILER.COM	Seattle Boiler Works, Inc.	President	In-person	Member
X	Johnson, Frank	fjkeck22@aol.com	JJohnson Welding	Owner	In-person	Member
X	Khsassani, AZIZ	AKHSSASSI@HOTMAIL.COM	Régie du bâtiment du Québec	Province of Québec Chief Inspector	In-person	Member
X	LeBeau, Tim	tlebeau@southernco.com	Southern Company Services		In-person	Member
X	McBee, Timothy	Timothy.McBee@tuvsud.com	ARISE Boiler Inspection and Insurance Company RRG	Manager of Codes and Standards	In-person	Member
X	Quisenberry, Michael	michael@spartan-mech.com	Spartan Boiler	President	In-person	Member
X	Schaefer, Ben	bschaefer@aep.com	AEP	Quality Control Manager	In-person	Member
X	Schaser, Matt	mschaser@e2g.com	The Equity Engineering Group, Inc.	Senior Engineer	In-person	Member
X	Seime, Trevor	tsseime@nd.gov	State of North Dakota	Chief Boiler Inspector	In-person	Member
X	Siefert, John	jsiefert@epri.com	EPRI	Program Manager	In-person	Member
X	Sperko, Walter	wsperko@bellsouth.net	Sperko Engineering	President	In-person	Member
X	Spuhl, Raymond	raymond_spuhl@hsb.com	Hartford Steam Boiler Inspection and Insurance Company	Manager Code Services	In-person	Member
X	Vogt, Mark	mark.vogt@vistracorp.com	VISTRA	Consulting Engineer - Boiler SME	In-person	Member
X	White, Thomas	THOMAS.WHITE@NRG.COM	NRG Energy	Specialist IV	In-person	Member
X	Frazier, Steve	steve.frazier@seattle.gov	City of Seattle	Chief Boiler Inspector	Remote	Member
X	Sekely, Jim	jsekely@comcast.net	Welding Services, Inc.	President	Remote	Member
X	Toth, Marty	mtoth@boiscotraininggroup.com	ECS Consulting, LLC	Principal	Remote	Member
X	Triplett, Andrew	triplett@ornl.gov	UT-Battelle, LLC	Boiler and Pressure Vessel Program Lead	Remote	Member
X	Cutlip, Eric	evcutlip@babcock.com				Member
X	McGuire, Bob	robert.b.mcguire@ge.com				Member
X	Achema, Timothy	timothy.achema@ladwp.com	Los Angeles Department of Water and Power	Senior Safety Engineer Pressure Vessels	In-person	
X	Amato, Joel	jamato@nationalboard.org	NBBI	Executive Director	In-person	
X	Baker, Lane	LBaker@US.TUV.com	TUV Rheinland AIA Services LLC.	Manager, Codes and Standards International	In-person	
X	Bates, Johnathon	bates@ibb026.org	Boilermakers	BA/ST	In-person	
X	Becker, Pat	pbecker@epri.com	EPRI	Technical Leader- Materials Program, Codes & Standards	In-person	
X	Boseo, Brian	bmboseo@burnsmcd.com	Burns & McDonnell	Corporate Director of Construction Quality	In-person	
X	Burpee, John	john.h.burpee@maine.gov	State of Maine	Chief Boiler Inspector	In-person	
X	Carlson, Mike	camx235@lni.wa.gov	State of Washington	Chief Boiler/Pressure Vessel Inspector	In-person	
X	Cheng, Alex	kinwai.cheng@dot.gov	US DOT PHMSA	Engineer	In-person	
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X	Melfi, Teresa	teresa_melfi@lincolnelectric.com	Lincoln Electric	Technical Fellow	In-person	
X	Miletti, Ray	rlmiletti@babcock.com	Babcock & Wilcox	Director, Global Quality	In-person	
X	Misiewicz, Ken	kmisiewicz@pleuneservice.com	Pleune Service Company		In-person	
X	Moore, Kathy	kathymoore@joemoorecompany.com	Joe Moore & Company, Inc	QCM	In-person	
X	Reamey, Raymond	rreamey@turner-industries.com	Turner Industries Group	Director, Quality Services	In-person	
X	Shanks, Paul	paul.shanks@tuvsud.com	ARISE	Senior Technical Specialist	In-person	
X	Simmons, Timothy	tsimmons@boilermakers.org	International Brotherhood of Boilermakers	International President	In-person	
X	Stevens, Will	Wstevens@lmce.solutions	Liquidmetal	QC Manager	In-person	
X	Sweetland, Matthew	msweetland@plugpower.com	Plug Power, Inc.	Senior Director	In-person	
X	Valdez, Richard	rvaldez@prim.com	ARB, INC.	Quality Director	In-person	
X	Valimento, William	william.valimento@ladwp.com	Los Angeles Department of Water & Power	Senior Safety Engineer Pressure Vessels	In-person	
X	Wadkinson, Melissa	melissa.wadkinson@fulton.com	Fulton Thermal Corp	Chief Engineer	In-person	
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X	Dacanay, Julius	julius.j.dacanay@hawaii.gov	State of Hawaii	Manager and Chief Boiler Inspector	Remote	
X	Fumey, Devin	Devin.Fumey@fulton-pacific.com			Remote	
X	Gladden, Billy	gladdebj@oge.com	Oklahoma Gas and Electric Company	Quality Control Coordinator PS	Remote	
X	Haney, Clifford	clifford.haney@tuvsud.com	Arise	District Manager	Remote	
X	Henson, Adam	adam.henson@csb.gov	U.S. Chemical Safety and Hazard Investigation Board	Chemical Safety Recommendations Specialist	Remote	
X	Johnson, Zachary	zach.johnson@cenovus.com	Cenovus Energy / Toledo Refinery	Sr. Process Safety & Reliability Engineer	Remote	
X	Kerr, James	jamesmarinakerr@gmail.com	Pro-Par inc	Director of Quality	Remote	
X	Lombardo, Steven	steven.lombardo@ge.com	GE Vernova	Senior Engineer - Pressure Parts	Remote	
X	Lynch, Daniel	danl@isbservices.com	Industrial Steel & Boiler Services, Inc.	QC Manager	Remote	

X	Marks, Stacey	stacey.marks@bureauveritas.com	Bureau Veritas	Director of Training	Remote	
X	Patel, Tusharkumar	tusharpatel0914@gmail.com	Applus Certification Services	Inspection Manager	Remote	
X	Riddell, Jordan	jordan.riddell@cenovus.com	Cenovus	Integrity Manager	Remote	
X	Shumskiy, Jeremiah	jeremiahs@isbservices.com			Remote	
X	Speck-Kern, Edward	edward.speck-kern@fpl.com	Florida Power & Light Co.	Engineering Leader	Remote	
	Wagner, Thomas	thomas.wagner@fmglobal.com	FM	Operations Chief Inspector	Remote	
	Winters, Michael	michael@stateboilerinspectors.com	ABI	Inspector	Remote	
X	Goossens, Greg	ggoossens@nbbi.org	National Board of Boiler and Pressure Vessel Inspectors	Director of Jurisdictional Affairs	Staff	
	Ponce, Luis	lponce@nationalboard.org	National Board of Boiler and Pressure Vessel Inspectors	Manager of Technical Services	Staff	
X	Rogers, Christa	crogers@nationalboard.org	NBBI	Executive Assistant	Staff	



Electrolyzer Introduction

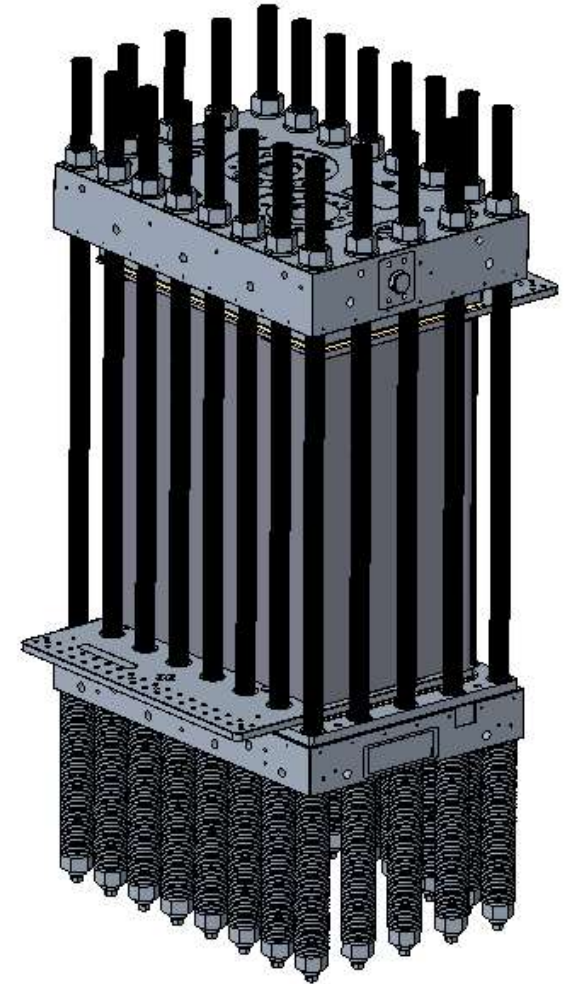
M. Sweetland
Director of Engineering - Electrolyzers

6/11/2024

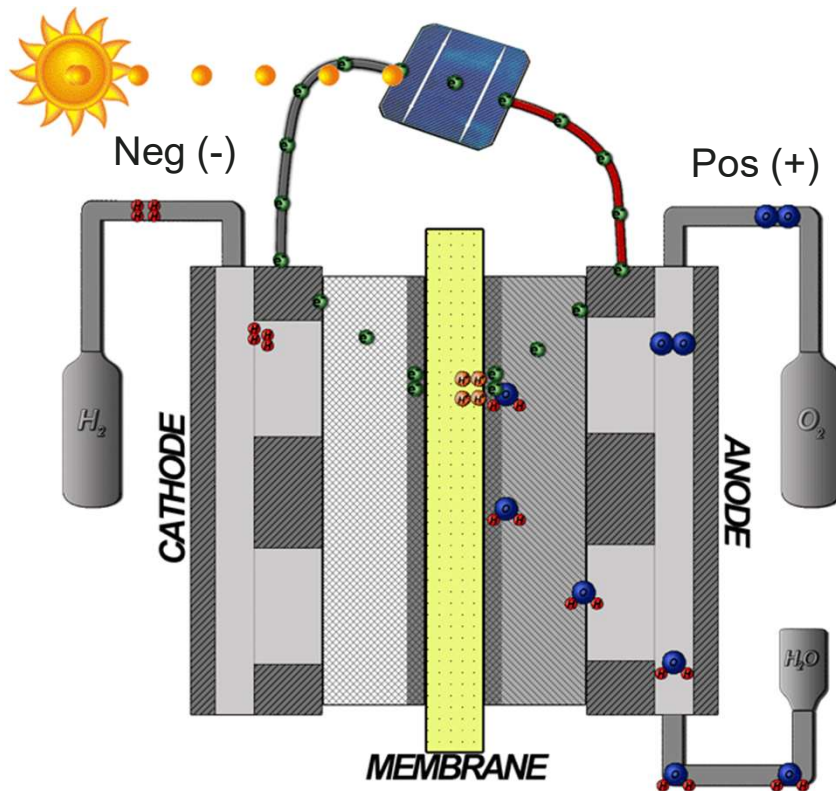
Copyright 2024, Plug Power Inc.

PEM Electrolyzers

- PEM (Proton Exchange Membrane) Technology is 60+ years old (evolved from NASA)
- ASME Published Code Case 3078 in Fall of 2023 – Provides Path to U Stamp
- Technology produced pressurized Hydrogen from Water + Electricity
- Typically 2 chamber vessels
- MAWP available up to 650 psi with operating temperatures up to 100°C



Review of PEM (Proton Exchange Membrane) Electrolysis

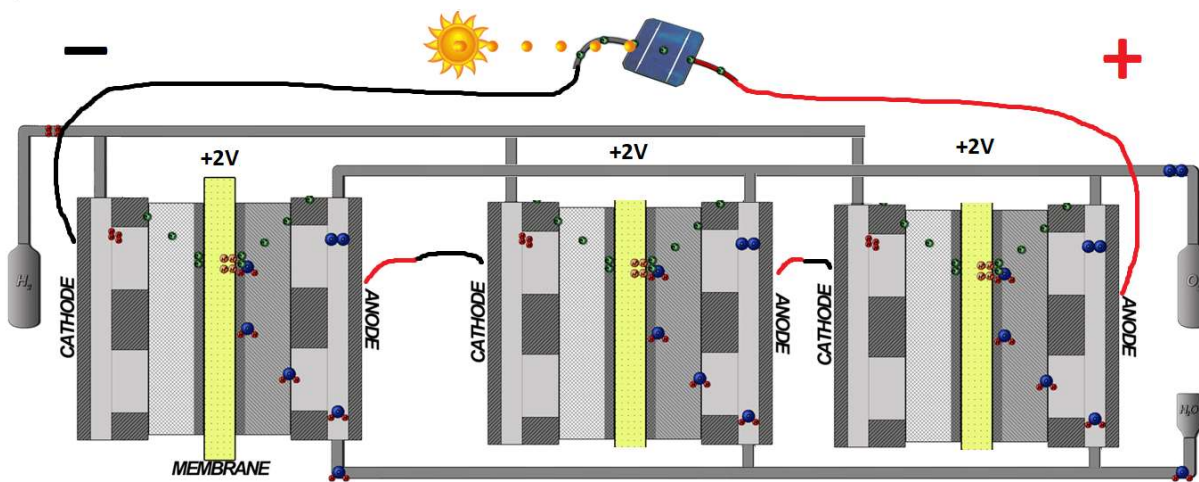


- High Purity Water is fed to Anode (via Circulating Pump)
- DC Voltage applied across Anode/Cathode – ~2V per cell
- H₂ is produce on Cathode side along with some water
- H₂ can be produced at higher pressures in the Cathode than Anode
- O₂ is produced in Anode with circulating Anode flow



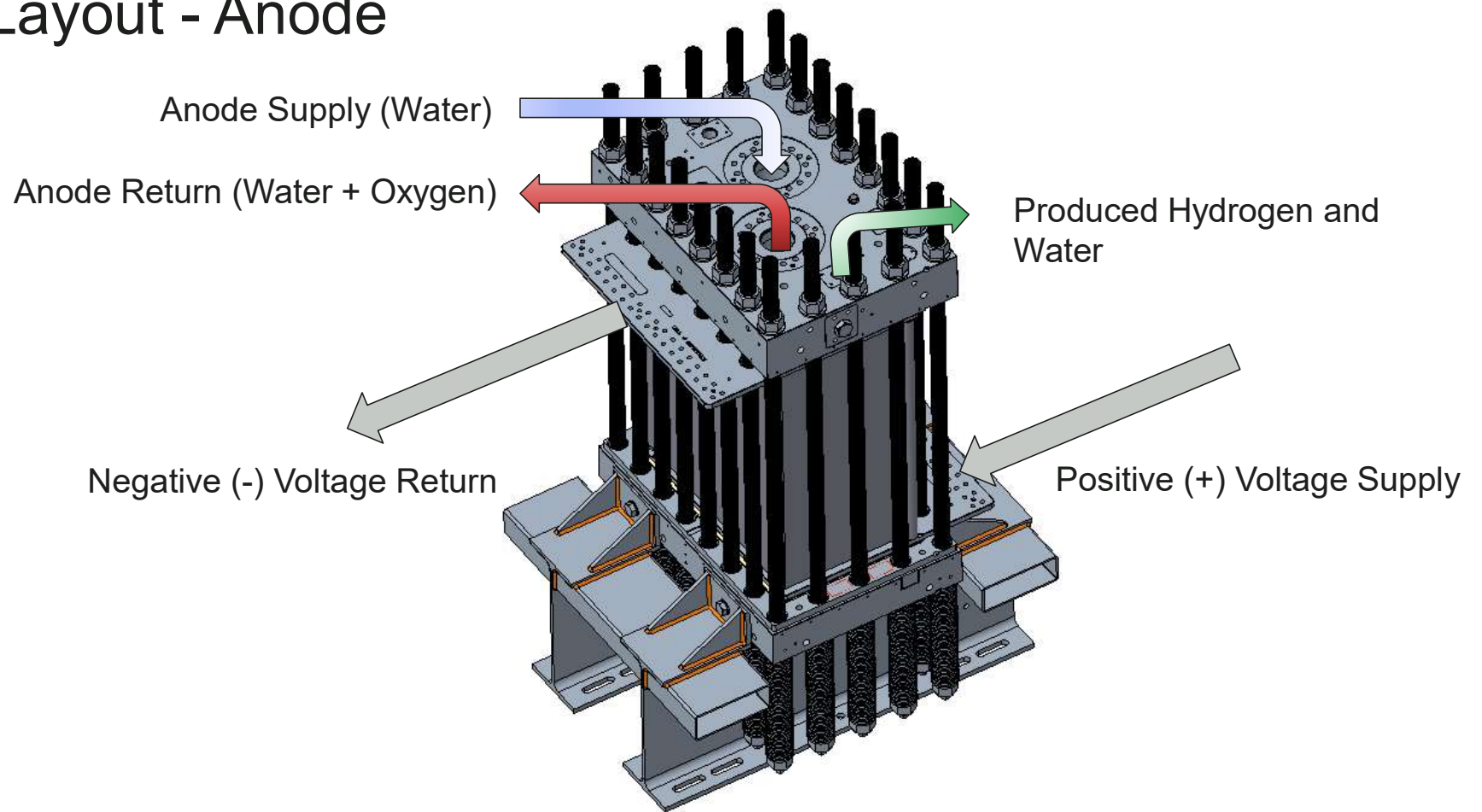
Single Cell PEM Electrolysis

Stack Consists of a Series of Cell in Electrical Series



- Repeated cells can be mounted in electrical series
- ~2.2 VDC per cell with ability to stack hundreds of cells per stack
- Current densities over 3 A/cm² and nominal active areas over 1000 cm² per cell
- Currents of over 4000 A per stack with voltages up to 1500 VDC

Stack Layout - Anode



Typical Stack Construction

Nuts

Negative Current Collector

Tie Rods

Positive Current Collector

Spring Washer Stack

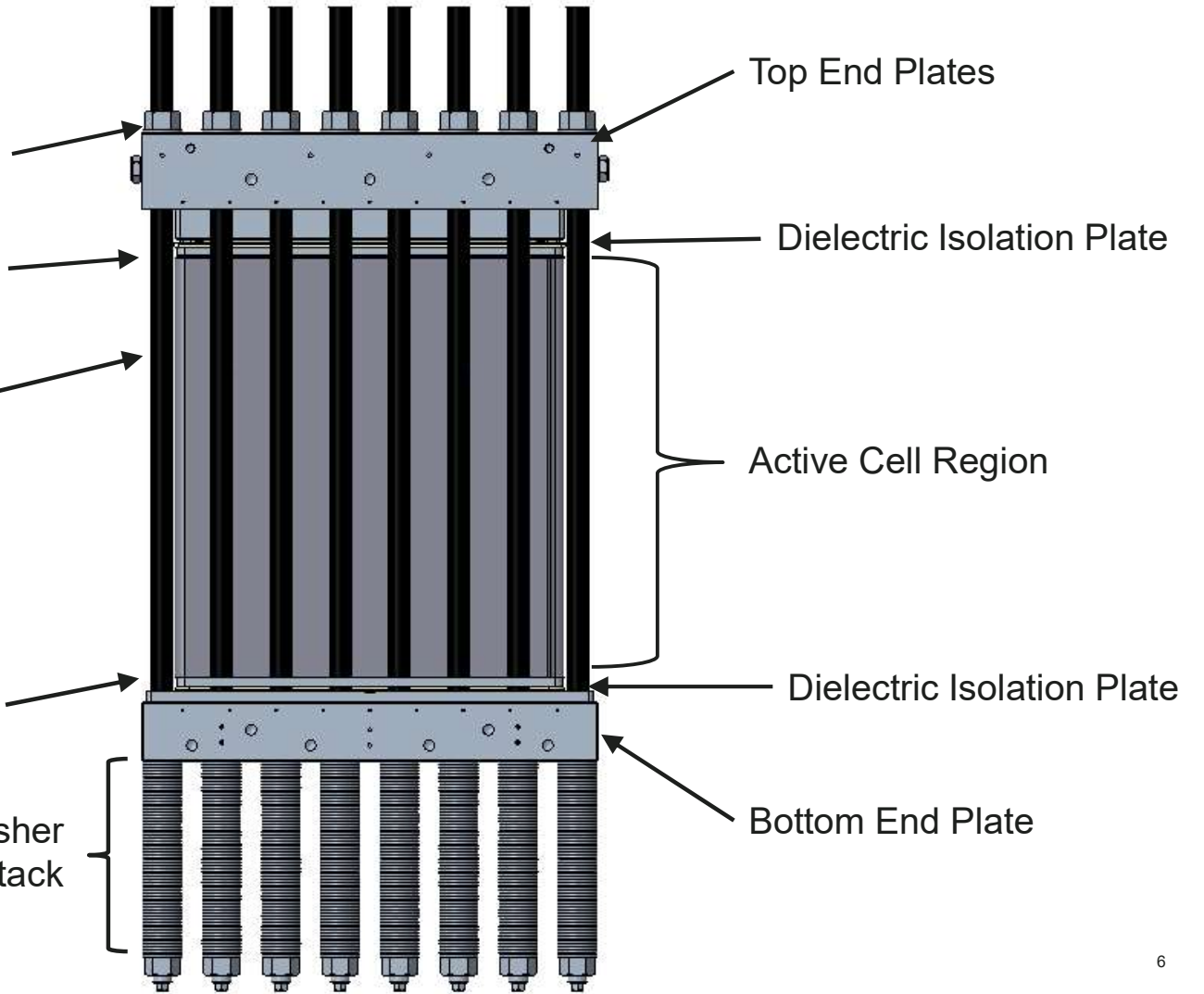
Top End Plates

Dielectric Isolation Plate

Active Cell Region

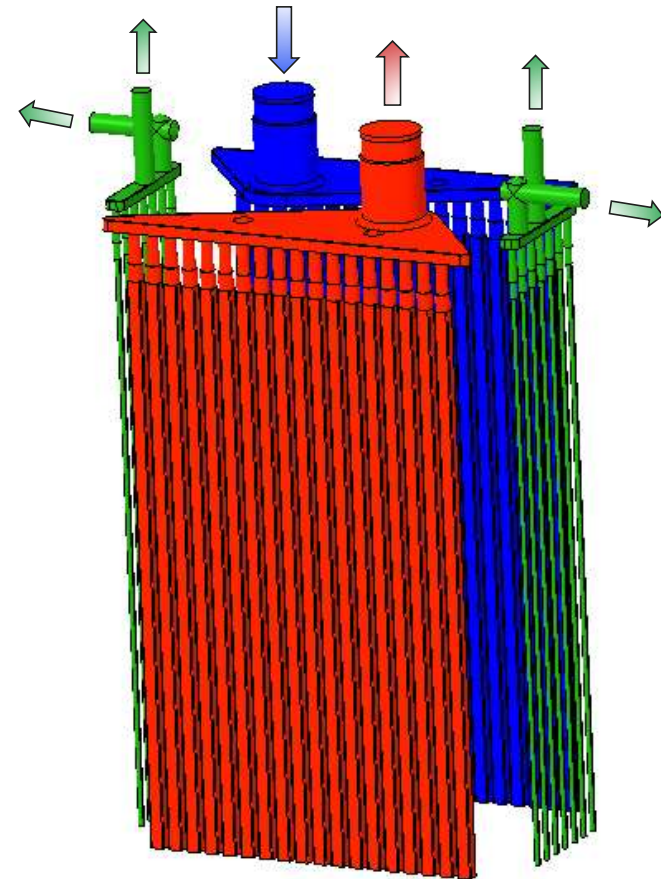
Dielectric Isolation Plate

Bottom End Plate

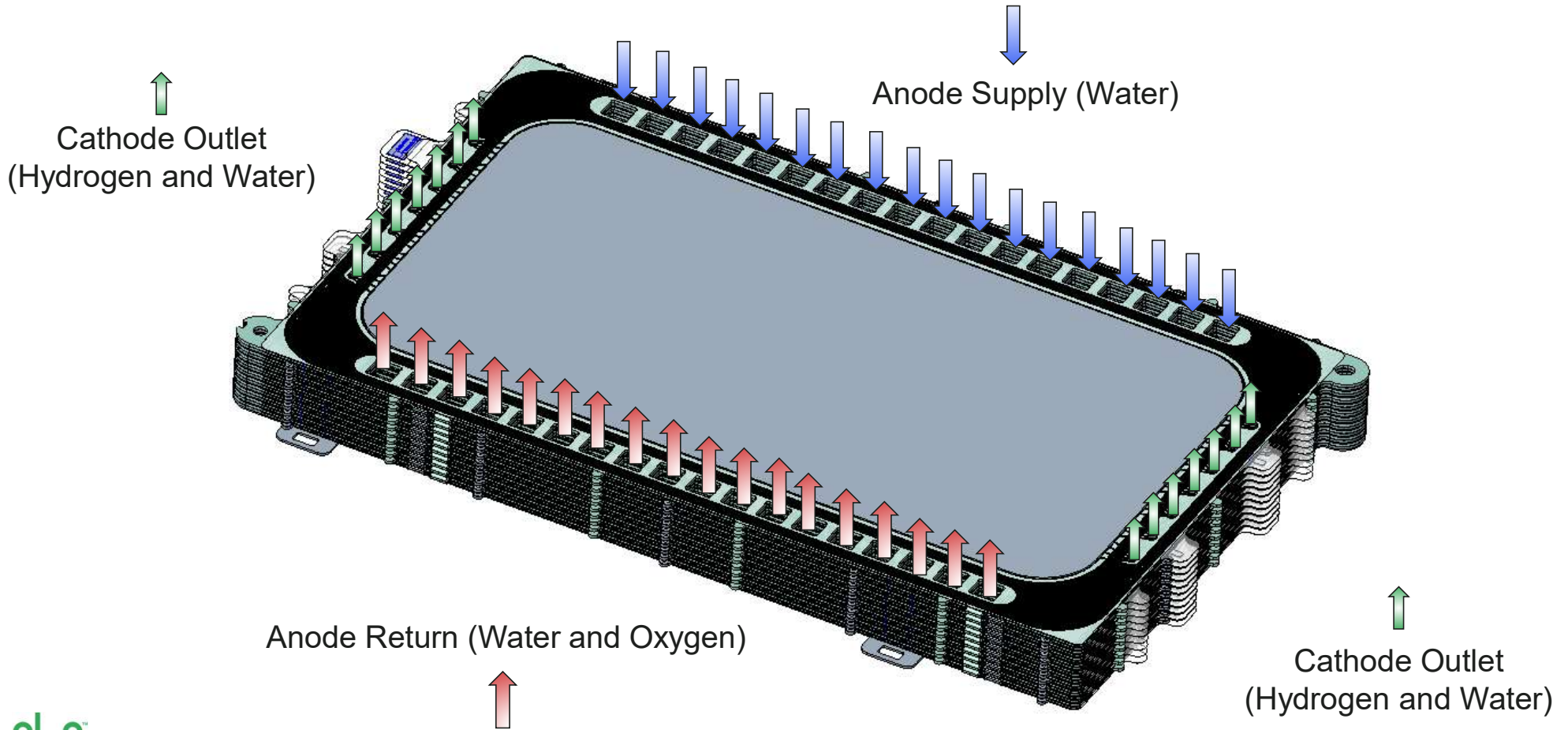


Stack Internal Fluid Volumes

- Very Limited Internal Flow Volumes
- Anode Supply/Return
- Cathode Exit
- Most of Volume of Internal Cells consists of porous structures with 10-50% porosity



Stacked Cell Layout



ASME BPVC – Code Case 3078

- No Path existed for U Stamp certification due to polymer frames/MEA/dielectrics
- Code Case 3078 provides path to U Stamp
 - All pressure-containing parts shall be constructed using materials permitted by this Division except for dielectric materials, membrane materials, and other internal ECS component materials used for the purpose of electrochemical process provided that when used in ECS, they meet the type test requirements in CSA/ANSI B22734 or ISO 22734.
- Code Case provided exemption for cell and electrical components. All other items must comply with ASME BPVC Section VIII Div 1 Rules.
 - End Plate
 - Tie Rods
 - Nuts





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PROPOSED REVISION OR ADDITION

Item No. A 23-39
Subject/Title Strengthening Prevention of Defect Recurrence
NBIC Location Part: Repairs and Alterations; Section: 3; Paragraph: Paragraph 1 (3.3.1)
Project Manager and Task Group Jon Ferreira (PM), Tom White, Jamie Walker and Adam Henson
Source (Name/Email) Adam Henson / adam.henson@csb.gov
Statement of Need The existing text recommends, but does not require an investigation of the cause, extent, and likelihood of recurrence of defects. The existing text also has no requirement for anyone to act to prevent the recurrence of defects. Where root and/or proximate causes of defects are known, or could be determined, someone needs to act to prevent catastrophic failure of equipment.
Background Information On April 3, 2017, an explosion occurred at the Loy-Lange Box Company in St. Louis, Missouri. The incident occurred when the bottom head of a pressure vessel called a semi-closed receiver (SCR), which was used in the company's steam generation system, catastrophically failed. The SCR was launched in the air as the result of the explosion and landed on a neighboring business. One employee of the Loy Lange Box Company and three members of the public were fatally injured. The U.S. Chemical Safety and Hazard Investigation Board (CSB) investigated this incident and learned during the investigation that the SCR was repaired by an R stamp organization in 2012 five years prior to the incident. During the repair, a wasted area of the bottom head of the SCR was flush patched. The cause of the defect was determined to be oxygen pitting corrosion. Evidence gathered during the investigation suggests that the defects in the head were not fully removed during the repair activity. The R stamp organization stated during the investigation that Loy-Lange requested an "emergency repair" following the discovery of a leak from the SCR. The R stamp organization stated further that they interpreted this to mean the repair needed to be completed immediately, presumably so production could resume as normal. This was not the first time the SCR leaked. The vessel leaked previously in April 2004, August 2012, and November 2012. In addition to causing these leaks oxygen pitting corrosion was also discovered in other parts of Loy Lange's steam system. During the investigation, the CSB noted that no effort was made to determine the extent of the oxygen pitting corrosion in the steam generation system, including the SCR, and that Loy Lange's operating practices up to the date of the incident were such that oxygen levels within the steam generation system were not effectively managed. Had the level of oxygen within the steam generation system been effectively managed following any of the leaks repaired over the years the 2017 incident would not have happened. Full details of the Loy-Lange Box Company Pressure Vessel Explosion are available at this link: https://www.csb.gov/loy-lange-box-company-pressure-vessel-explosion/



**THE NATIONAL BOARD
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PROPOSED REVISION OR ADDITION

Item No. A 23-68	
Subject/Title Change to Examples of Alterations	
NBIC Location Part: Repairs and Alterations; Section: 3; Paragraph: 3.4.4	
Project Manager and Task Group	
Source (Name/Email) Matt Schaser / mschaser@e2g.com	
Statement of Need The current wording of 3.4.4.d (2023) is open ended and may result in allowing significant design changes to a pressure retaining items under the guise of a repair when an alteration is a more appropriate classification. Rewording is required to limit the scope of potential design changes.	
Background Information A recent interpretation request (I23-63) has identified a potential for unintended use of paragraph 3.4.4.d (2023). Current wording suggests major changes (changing the type of head) to a pressure retaining item may be viewed as a repair rather than an alteration. It is believed that this is not the intent of the recent (2023) revisions to 3.4.4.d. Updates are required to both 3.4.4.c and 3.4.4.d to limit the scope of 3.4.4.d.	
Existing Text 3.4.4.c The addition of new nozzles or openings in a boiler or pressure vessel except those classified as repairs; 3.4.4.d A change in the dimensions or contour of a pressure-retaining item that decreases its pressure retaining capability;	Proposed Text 3.4.4.c The addition of new nozzles or openings <u>or components (nozzle, head, flange, etc.) in a boiler or pressure vessel</u> pressure-retaining item that were not included considered in its original design analysis, except those classified as repairs; 3.4.4.d Any change in the dimensions or contour of <u>the dimensions or contour of</u> a pressure-retaining item that decreases its <u>stamped</u> pressure retaining capability;

COMMITTEE	VOTE:				Passed	Failed	Date
	Approved	Disapproved	Abstained	Not Voting			



**THE NATIONAL BOARD
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PROPOSED REVISION OR ADDITION

Item No. A 24-18 Rev 01		
Subject/Title Controlled Fill Definition		
NBIC Location All Parts, Section 9, Glossary of Terms		
Project Manager and Task Group Philip Gilston (PM), A. Triplett		
Source (Name/email) Philip Gilston (philip_gilston@hsb.com)		
Statement of Need There is no definition of the term 'controlled fill'.		
Background Information <p>Interpretation item I 23-79 addresses the use of the term 'controlled fill' in NBIC Part 3, 2.5.3 d in relation to Welding Method 6 for Grade 91 material.</p> <p>While the term 'controlled fill' is not specifically used in the text of Welding Method 6 (2.5.3.6), directions are given for such variables as typical preheats, electrode size for SMAW, and the use of stringer beads only. The term is used explicitly in Supplement 8 for CSEF repairs, where S8.3.b says that "To control heat input the weld repair shall be performed using a "controlled fill" technique"; details are also given on such items as preheats, electrode size, required fill pass overlap, etc., and a lot of detail is provided in schematics including specifics on weld bead placement.</p>		
Existing Text None	Proposed Text <u>Changes form Rev 00 shown</u> Controlled Fill – requirements specified <u>control of weld technique</u> for a permitted weld repair process in order to manage heat input to ensure <u>satisfactory weld properties</u> by <u>controlling distortion, promoting tempering and minimizing the risk of cracking by</u> addressing variables <u>including but not limited to heat input, such as</u> preheat and interpass temperature, weld consumable type and diametersize , weld technique (string or weave); <u>and</u> bead placement ete .	Clean Copy Controlled Fill – control of weld technique for a repair process to ensure satisfactory weld properties by controlling distortion, promoting tempering and minimizing the risk of cracking by addressing variables including but not limited to heat input, preheat and interpass temperature, weld consumable type and size, weld technique (string or weave) and bead placement.

Committee	VOTE				Passed	Failed	Date
	Approved	Disapproved	Abstained	Not Voting			

Existing Text (2025 Edition)**S11.2.3 REPAIR OF ASME SECTION VIII, DIVISION 2 OR DIVISION 3 PRESSURE VESSELS**

a) Scope

The following requirements shall apply for the repair of pressure vessels constructed to the requirements of Section VIII, Division 2 or Division 3 of the ASME Code.

b) Repair Plan

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

1) Engineer Review and Certification

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

If the UDS is lost or destroyed, the ASME nameplate and the applicable ASME Section VIII, Division 2 or Division 3 Manufacturer's Data Report, Partial Data Reports, and/or Manufacturer's Design Report shall be used to reconstruct the UDS. The reconstructed UDS shall meet the requirements of and be certified in accordance with the latest edition of ASME Section VIII, Division 2 or Division 3.

2) Authorized Inspection Agency Acceptance

After the repair plan is reviewed and certified, it shall be submitted for acceptance to the Authorized Inspection Agency/Owner-User Inspection Organization employing the Inspector performing the acceptance inspection and signing the Form R-1.

S11.3.2 ALTERATION OF ASME SECTION VIII, DIVISION 2 OR DIVISION 3, PRESSURE VESSELS

a) Alteration Plan

1) Engineer Review and Certification

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

b. Provided the alteration does not introduce a condition that would require an engineer to sign the Manufacturer's Design Report for ASME Section VIII, Division 2, Class 1 vessels, the certifying requirement may be waived for vessels that did not require the Manufacturer's Design Report to be certified during initial construction.

c. If the UDS is lost or destroyed, the ASME nameplate and the applicable ASME Section VIII, Division 2 or Division 3 Manufacturer's Data Report, Partial Data Reports, and/or Manufacturer's Design Report shall be used to reconstruct the UDS. The reconstructed UDS shall meet the requirements of and be certified in accordance with the latest edition of ASME Section VIII, Division 2 or Division 3.

Proposed Text**S11.2.3 REPAIR OF ASME SECTION VIII, DIVISION 2 OR DIVISION 3 PRESSURE VESSELS**

a) Scope

The following requirements shall apply for the repair of pressure vessels constructed to the requirements of Section VIII, Division 2 or Division 3 of the ASME Code.

b) Repair Plan

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

1) ~~Engineer~~-Review and Certification

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

If the UDS is lost or destroyed, the ASME nameplate and the applicable ASME Section VIII, Division 2 or Division 3 Manufacturer's Data Report, Partial Data Reports, and/or Manufacturer's Design Report shall be used to reconstruct the UDS. The reconstructed UDS shall meet the requirements of and be certified in accordance with the latest edition of ASME Section VIII, Division 2 or Division 3.

Note: Additional design personnel requirements or qualifications specified by the user or jurisdiction are outside of the scope of this Supplement.

2) Authorized Inspection Agency Acceptance

After the repair plan is reviewed and certified, it shall be submitted for acceptance to the Authorized Inspection Agency/Owner-User Inspection Organization employing the Inspector performing the acceptance inspection and signing the Form R-1.

S11.3.2 ALTERATION OF ASME SECTION VIII, DIVISION 2 OR DIVISION 3, PRESSURE VESSELS

a) Alteration Plan

1) ~~Engineer~~-Review and Certification

~~a.~~ Prior to the commencement of work, ~~The~~ alteration plan shall be reviewed and certified by a person or persons an engineer meeting the requirements criteria of the original code of construction ASME Section VIII, Division 2 or Division 3, as applicable, for a designer, engineer, or Certifying Engineer an engineer signing and certifying a Manufacturer's Design Report. The review and certification shall ensure the work involved in the alteration is compatible with the User's Design Specification (UDS) and the Manufacturer's Design Report.

~~b.~~ Provided the alteration does not introduce a condition that would require an engineer to sign the Manufacturer's Design Report for ASME Section VIII, Division 2, Class 1 vessels, the certifying requirement may be waived for

2) UDS

If the alteration is such that the work is not compatible with, or changes one or more requirements of the original UDS, the UDS shall be revised by the user with the new parameters or changes. The revisions shall be certified by an engineer meeting the criteria of ASME Section VIII, Division 2 or Division 3, as applicable, for an engineer signing and certifying a Manufacturer's Design Report.

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

3) Manufacturer's Design Report

- a. The "R" Certificate Holder shall prepare, or cause to have prepared, a supplement to the Manufacturer's Design Report to reconcile the new parameters or changes with the UDS.
- b. The supplement to the Manufacturer's Design Report shall be certified by an engineer meeting the criteria of ASME Section VIII, Division 2 or Division 3, as applicable, for an engineer signing and certifying a Manufacturer's Design Report.

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

4) Authorized Inspection Agency Acceptance

Following review and certification, the alteration plan shall be submitted for acceptance to the Authorized Inspection Agency/Owner-User Inspection Organization whose inspector will perform the acceptance inspection and sign the Form R-2.

~~vessels that did not require the Manufacturer's Design Report to be certified during initial construction.~~

- c. If the UDS is lost or destroyed, the ASME nameplate and the applicable ASME Section VIII, Division 2 or Division 3 Manufacturer's Data Report, Partial Data Reports, and/or Manufacturer's Design Report shall be used to reconstruct the UDS. The reconstructed UDS shall meet the requirements of and be certified in accordance with the latest edition of ASME Section VIII, Division 2 or Division 3.

Note: Additional design personnel requirements or qualifications specified by the user or jurisdiction are outside of the scope of this Supplement.

2) ~~UDS~~User's Design Specification

If the alteration is such that the work is not compatible with, or changes one or more requirements of the original UDS, the UDS shall be revised by the user with the new parameters or changes. If the code of construction requires certification of the UDS, ~~the~~ revisions shall be certified by a person or persons an engineer meeting the requirements criteria of the original code of construction ASME Section VIII, Division 2 or Division 3, as applicable, for a designer, engineer, or Certifying Engineer an engineer signing and certifying a UDSManufacturer's Design Report.

Note: Additional design personnel requirements or qualifications specified by the user or jurisdiction are outside the scope of this Supplement. ~~The engineer qualification criteria of the jurisdiction where the pressure vessel is installed should be verified before selecting the certifying engineer.~~

3) Manufacturer's Design Report

- a. The "R" Certificate Holder shall prepare, or cause to have prepared, a supplement to the Manufacturer's Design Report to reconcile the new parameters or changes with the UDS.
- b. The supplement to the Manufacturer's Design Report shall be certified by a person or persons an engineer meeting the requirements criteria of the original code of construction ASME Section VIII, Division 2 or Division 3, as applicable, for a designer, engineer, or Certifying Engineer an engineer signing and certifying a Manufacturer's Design Report.

Note: Additional design personnel requirements or qualifications specified by the user or jurisdiction are outside the scope of this Supplement. ~~The engineer qualification criteria of the jurisdiction where the pressure vessel is installed should be verified before selecting the certifying engineer.~~

4) Authorized Inspection Agency Acceptance

Following review and certification, the alteration plan shall be submitted for acceptance to the Authorized Inspection Agency/Owner-User Inspection Organization whose inspector will perform the acceptance inspection and sign the Form R-2.

NBIC Action Item A24-85
 Submitted by Craig Bierl (cbierl@chubb.com)
 January 6, 2025



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

Subject:	Example of alterations to include requalification of cycle life
NBIC Location:	2023 NBIC, Part 3, 3.4.4
Statement of Need:	Currently vessels above 10,000 psi are being "requalified" without any code documentation. This puts a conflict between the ASME data report limitations and the actual installation. This practice is being completed without inspector involvement.
Background Information:	I have requested a change to the wording in Part 2 in conjunction with this request in order to clarify what the inspector involvement and process should be (conforming to the NB Alteration process).

Proposed Text:

3.4.4 Examples of Alterations

m) Any change in a vessels design cycle life or requalification of a vessel beyond the original designed cycle life.

NBIC Action Item A24-93
 Submitted by Paul Shanks (paul.shanks@tuvsud.com)
 November 1, 2024



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

Subject:	Changing Part 3 supplement 8's title for clarity
NBIC Location:	2023 NBIC, Part 3, Supplement 8
Statement of Need:	Use of pressure equipment is unusual within NB-23 and has cause confusion within the industry as to the applicability for supplement 8.
Background Information:	The first sentence of s8.1 a) talks to PRI's and the final sentence talks about situations not covered under weld methods 6 or 7 which are limited to boiler only.

Proposed Text:

**SUPPLEMENT 8
 WELD AND POST REPAIR INSPECTION OF CREEP STRENGTH ENHANCED
 FERRITIC STEEL PRESSURE-~~RETAINING ITEMS-EQUIPMENT~~**



THE NATIONAL BOARD
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PROPOSED INTERPRETATION

Item No. A25- XX04 Rev 0001
Subject/Title Part 3, 2.5.3 Special Service Equipment
Project Manager and Task Group Robert Derby (PM), Phil Gilston
Source (Name/email) Paul Shanks / paul.shanks@bureauveritas.com (now with Arise Boiler Inspection & Insurance Company)
Statement of Need An interpretation request was received regarding the use of alternate welding methods for pressure equipment identified as Special Service. Comments received in the initial R&C indicated that the current words did not support the proposed Q&A. The proposal had been presented as an intent interpretation, and the comment was made if this was the desire, then to have a separate action item.
Background Information In section VIII Div.1 construction some special service conditions as described in UW-2 make mandatory PWHT when it is not otherwise required for the actual thickness of material and P-number. This subtlety leads some to believe that the use of the Alternative weld methods is either not allowed or that they can only be conducted as an alteration.

Proposed Revision

Current Wording (Approved for 2025)	Proposed Wording for 2027
2.5.3 b) Competent technical advice should be obtained from the manufacturer of the pressure-retaining item or from another qualified source, such advice being especially necessary if the alternative is to be used in highly stressed areas, if service conditions are conducive to stress corrosion cracking, if materials are subject to hydrogen embrittlement, or are operating at temperatures in the creep range, or if the alternative is being considered for “on-stream” repairs or “hot tapping” on piping systems. Selection of the welding method used shall be based on the rules of the original code of construction together with the above mentioned advice concerning the adequacy of the weld in the as-welded condition at operating and pressure test conditions.	2.5.3 b) <u>Evaluation for Use of Alternative Weld Methods</u> Competent technical advice should be obtained from the manufacturer of the pressure-retaining item or from another qualified source, <u>for repair of pressure parts subject to any of the following conditions:</u> <ol style="list-style-type: none"> 1) <u>Items identified as special services conditions per the original code of construction e.g., lethal service, where PWHT was not exempted for new construction;</u> 2) <u>Repairs in highly stressed areas where the stress concentration cannot be reduced by weld repair alone;</u> 3) <u>Parts subject to high-cycle operation or fatigue service;</u> 4) <u>Where any one of the following service conditions are conducive to:</u>

	<p><u>a. stress corrosion cracking</u></p> <p>1) <u>hydrogen embrittlement</u></p> <p><u>b.</u></p> <p>2) <u>creep damage are operating at temperatures in the creep range</u></p> <p><u>c.</u></p> <p>5) <u>The alternative is being considered for "on-stream" repairs or "hot tapping" on piping systems.</u></p> <p>Selection of the welding method used shall be based on the rules of the original code of construction together with the above mentioned advice concerning the adequacy of the weld in the as-welded condition at operating and pressure test conditions.</p>

VOTE							
COMMITTEE	Approved	Disapproved	Abstained	Not Voting	Passed	Failed	Date