THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD TASK GROUP ON INTERPRETATIONS

(REPAIRS AND ALTERATIONS)

MINUTES

Meeting of July 13th, 2020
Louisville, KY

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The National Board of Boiler & Pressure Vessel Inspectors
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1. **Call to Order**
   The meeting was called to order at 1:10 PM by Chair Mr. Rick Sturm.

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

3. **Announcements**
   Secretary Hellman announced the National Board will be hosting a reception for all committee members and visitors on Wednesday evening at 5:30pm at the Bluegrass Ballroom on the third floor of The Brown Hotel.

4. **Adoption of the Agenda**
   A motion was made and seconded to adopt the Agenda and was unanimously approved.

5. **Approval of the Minutes of the January 13th, 2020 Meeting**
   There was a motion to approve the Minutes of January 13th, 2020 as published. The motion was seconded and approved with one abstention (P. Shanks).

6. **Interpretations**

Item Number: 19-26	**NBIC Location: Part 3, 3.3.2**	**Attachment 2**

General Description: Clarification on welding repairs on appendages

Subgroup: Repairs and Alterations
Task Group: P. Shanks – PM

Explanation of Need: The original submitter of this item will sometimes need to perform a welding repair on an appendage (not on the tank itself) in order for the complete process of refurbishment to be done for their customers' expectations. There appears to be no direct reference to these types of minor welding repairs for the refurbishment process in the NBIC code.

January 2020 Meeting Action: Mr. P. Shanks presented, and his proposal was approved by the subcommittee. The Main Committee provided several suggested changes that Mr. Shanks agreed to address for the July 2020 meeting.

Meeting Action: P. Shanks presented. A motion was made, seconded, and unanimously approved to **Close with a response to the inquirer that this is outside the scope of the NBIC**.

Item Number: 20-3 **NBIC Location: Part 3, 3.3.4.8** **Attachment 3**

General Description: Inspector involvement in Fitness-for-Service Assessments

Subgroup: Repairs and Alterations
Task Group: J. Siefert (PM)

Explanation of Need:
The below questions are intended to gain clarity as to first which Inspector (i.e. "IS" Commissioned or "R" Endorsement) signs the FFSA Form NB-403 when an "R" Certificate Holder is involved with a repair in that region as well as determine what level of review of the Fitness-for-Service the Inspector is expected to complete. If it is an Inspector holding a "R" Endorsement with an AI Commission (not tested on NBIC Part 2), shouldn't the relevant pages in NBIC Part 2 concerning Fitness for Service be included in their tested body of knowledge, so they are aware of the detailed rules?

The Body-Of-Knowledge for National Board Inspectors holding either an "IS" Commission or "R" Endorsement does not reference ASME FFS-1/API 579 Fitness-For-Service Standard or have any expectation that the Inspector be capable of determining if the correct Fitness for Service methodology was used or that the assumptions taken by the Engineer in the analysis were the most appropriate or accurate. Clarification is also requested due to the Form NB-403 signature block stating "Verified by" for the Inspector without any other disclaimers as typically found on other Forms signed by Inspectors such as ASME MDRs and NBIC Form R-1/R-2.

January 2020 Meeting Action: Mr. Carter presented the proposal. Mr. Galanes proposed creating a new action item to address FFS assessments in Part 3 as a way to handle this. This was a Progress Report.

Meeting Action: J. Siefert presented that Action Item 20-10 may address this inquire and submitted a **Progress Report** to await the outcome of Item 20-10.

New Interpretation Requests:

Item Number: 20-11	**NBIC Location: Part 3, 3.3.3**	**Attachment 4**

General Description: Scope of Repairs

Subgroup: Repairs and Alterations

Task Group: K. Moore (PM)

Explanation of Need:
NBIC Part 3 lists several examples of repair but nowhere limits the scope or amount of these examples that can be utilized when performing repairs. This creates some uncertainty when performing some types of repairs, such as replacing the tubesheets of a fixed tubesheet type heat exchanger as listed in 3.3.3 e). According to ASME BPV Code Section VIII Division 1 Part UHX, Section 13, the length of the tubes is a design parameter and therefore replacing the tubesheet in accordance with its original design might require the replacement of the tubes as well to maintain the original design length.

Meeting Action: K. Moore presented. Discussion took place on if tubsheet replacement activities may qualify as a Repair or Alteration. P. Becker indicated that she would be opening a new Action Item to revise the definition of an alteration in 3.4.4 d) for clarification. The submitted proposal was revised. A motion and second was made and the **proposal was Unanimously Approved** as amended.

Item Number: 20-14	**NBIC Location: Part 3, 3.3.3 & 5.12.4.1**	**Attachment 5**

General Description: Mechanical Repair with no welding

Subgroup: Repairs and Alterations

Task Group: P. Edwards (PM)

Explanation of Need:
ASME Section VIII, Division 3 Code stamped "Parts" are being replaced with new ASME Code stamped "Parts" without any documentation. The original ASME Data Report listed the original "Part" serial number and will no longer be accurate if the original "Part" is replaced.

Meeting Action: P. Edwards presented a proposal. A motion was made, seconded, and the **proposal was Unanimously Approved.**

Item Number: 20-17	**NBIC Location: Part 3, 3.3.3**	**Attachment 6**

General Description: Weld build of wasted areas with different material

Subgroup: Repairs and Alterations

Task Group: G. Galanes (PM), J. Siefert

Explanation of Need:
It is common practice to weld build the wasted area of a component with original material and then to overlap with a corrosion resistant material to prevent future wasting of the component. It would be more efficient to simply restore the wasted area with the corrosion resistant material, provided that it meets or exceeds the strength requirements of the original material.

Meeting Action: G. Galanes presented a proposal. The proposal was revised after discussion and a motion was made, seconded, the proposal was **Unanimously Approved as revised.**

Item Number: 20-21	**NBIC Location: Part 3, 4.4.1 e)**	**Attachment 7**

General Description: Combination of NDE methods

Subgroup: Repairs and Alterations

Task Group: M. Quisenberry (PM)

Explanation of Need:
Clarification on the intent of 4.4.1 e) 1-5 when using VT and another NDE method but on separate welds.

Meeting Action: J. Siefert presented a **Progress Report** that he is working on the proposal to revise the Committee's Q and A and will present his proposal at SG R&A. P. Edwards called to attention Interpretations 17-01 and 01-40 addressing "practicable" as used in 4.2 a) and 4.4 e)1).

Item Number: 20-23	NBIC Location: Part 3, 3.4.5.1 b)	Attachment 8

General Description: Alteration of ASME Section VIII Div.2 vessels

Subgroup: Repairs and Alterations

Task Group: G. Galanes (PM), J. Siefert

Explanation of Need:
Many Div.2 vessels which are in need of repair are of sufficient age whereby all of the original paperwork was paper work. Even with the best efforts such documents can become damaged or lost by the flooding event associated with the gulf coast hurricane events and or the types of refinery fires that are all too common. In a good deal of cases these vessels simply need a new B-16.5 weld neck flange or a gasket surface weld metal build up in order to allow continued leak free surface but due to some documents being unavailable the owner is left to choose between making no repair or making a repair which is not compatible with the NBIC.

Meeting Action: G. Galanes presented a proposal. The proposal was revised after discussion and a motion was made, seconded, and the revised proposal was **Unanimously Approved.**

Item Number: 20-24	NBIC Location: Part 3, 3.3.5.1 a) & 3.4.5.1 a)	Attachment 9

General Description: Certification of repair or alteration plans

Subgroup: Repairs and Alterations

Task Group: B. Morelock (PM)

Explanation of Need:
3.4.5.1 b) allows for the UDS to be revised if a proposed alteration plan is not compatible with the original. this revised UDS must be certified by an engineer as must the Alteration plan, there currently does not appear to be a separation of the two certifying activity's which is not in the spirit of Div.2 requiring different engineers for the UDS and MDR.

Meeting Action: B. Morelock presented a proposal. After discussion, Mr. Morelock decided to open **a new Action Item** to revise 3.3.5.2 a) and 3.3.5.2 b) to address the P.E. who signs the UDS. (Taskgroup: B. Morelock (PM), R. Troutt, P. Shanks). The proposal was revised and then motioned, seconded, and **Unanimously Approved to Close with a Response to the Inquirer that new Action Item will be opened to address the issue.**

Item Number: 20-29	NBIC Location: Part 3, 3.4.4	Attachment 10

General Description: PV Cycles of operations change as an alteration

Subgroup: Repairs and Alterations

Task Group: P. Shanks (PM)

Explanation of Need:
Isostatic Presses in particular (but found in other pressure vessels also) are restricted by the data report to a finite number of cycles. Operators of these vessels routinely use curves to modify what is considered a cycle and extend the life of the vessel. These vessels represent a substantial risk of failure and this practice is very difficult for the inservice inspector to successfully track and audit to ensure the integrity of these vessels are maintained as this is a grey area in the current code as written.

Meeting Action: P. Shanks presented a proposal. The proposal was revised after discussion and a motion was made, seconded, and the revised proposal was **Unanimously Approved.**

Item Number: 20-49	NBIC Location: Part 3, 4.4.2 c)	Attachment 11

General Description: Alternative Method in lieu of pressure testing

Subgroup: Repairs and Alterations

Task Group: G. Galanes (PM)

Explanation of Need:
Since contamination of pressure-retaining items by liquids is possible and pressure testing is not practicable for the huge high-pressure vessel to be modified, and NDE is not effective for the planned modification, alternative method to ensure the structural integrity is required.

Meeting Action: G. Galanes presented a proposal. A motion was made, seconded, and the proposal was **Unanimously Approved.**

7. Future Meetings

January 11th – 14th, 2021 – New

Orleans, LA July 12th – 15th, 2021 –

Cincinnati, OH

8. Adjournment

There being no further business before the Task Group, the Chair adjourned the meeting at 3:33 PM, without objection.

Respectfully submitted,

Terrence Hellman
Task Group Interpretations Secretary

NBIC Interpretations Task Group - 1/13/2020

First Last	Email	Company	Phone #	Signature	Attending Reception?
Terrence Hellman	thellman@nationalboard.org	NBBI	(405) 512-4210		✓
Rick Sturm	rsturm@utah.gov	State of Utah	801-326-7266		✓
Michael Queenberry	michael@allcatri.com	ATS Mechanical	(801) 566-7174		✓
Paul Shantes	Paul.Shantes@onecis.ca	OneCIS	832 716 6269		✓
Robert McGuire	robert.b.mcguire@ge.com	GE	860 719-2916		✓
Luis Ponce	lponce@nationalboard.org	NBBI	915 478 7685		✓
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Robert Wielgoszinski	Robert_Wielgoszinski@HSB.com	HSB	860 670 0779		✓
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George Grimes	ggrimes@diamondtribal.com	DTS	815-634-2727		✓

Interpretation IN19-26

Proposed Interpretation

Inquiry:	IN19-26
Source:	Doug Biggar
Subject:	NBIC Part 3 Section Part 3, 3.3.2
Edition:	[Current/all]
General Description:	Repair of none pressure boundary parts
Question 1:	If a welding repair is done to an appendage of a horizontal ASME LPG pressure vessel such as a faulty leg or the raised data plate holder, is this considered routine and are we exempt to have an inspector present to witness it and/or fill out a specialized form?
Reply 1:	No inspector needs to be present as the welding is not performed on any part of the pressure vessel directly related to its performance under pressure.
Question 2:	What is the minimum length of an appendage we can weld onto without being an ASME/NBIC certified welder (only a standard welding ticket)?
Reply 2:	1/4”
Committee’s Question 1:	Are refurbishment activities such as shot blasting, thread cleaning and painting considered within the scope of the NBIC?
Committee’s Reply 1:	No
Rationale 1:	These activities should not affect the pressure retaining integrity of the item, per the introduction to the NBIC that (maintenance) is the function of the NBIC. Reasonably these activities fall outside the scope of the NBIC
Committee’s Question 2:	Do welding activities on items which have neither a pressure retaining or load bearing function fall within the scope of the NBIC
Committee’s Reply 2:	No.
Rationale:2	These welds are such that typical ASME BPV construction codes would not dictate the qualification of the welders or welding operators.
NBIC Vote	

Include in response letter: NA

Rationale:

Having emailed the enquirer to determine the scope of their typical operations it was clear that there was a general misunderstanding about the purpose of the NBIC, the proposed questions are overly specific and as sure fail to grasp the crux of the issue hence the question re-write. Q3 was added to ensure that no misunderstand occurs. With the exception of a very hardline reading on Section 3.3.2 a) the NBIC addresses in the main body and the introduction the pressure retaining capability of the item and not work conducted elsewhere.

Sections 3.3.2 e), 3.3.3 & 3.4.4 address working (welding / replacing) on components which have a pressure retaining function. Pipes, tubes, heads, shell, and tube sheet are mentioned, integral parts without pressure retaining function such as legs and davit arms are not addressed.

Section 3.3.3 a) can be read as "Weld repairs ~~or replacement of pressure parts or~~ of (sic) attachments that have failed in a weld or in the base material;"

Immediate Actions Regarding Fitness for Service

Need	Original Proposal	New Proposal
Clarification of which inspector signs NB-403 if the FFSA is done according to requirements in Part 3, 3.3.4.8 “Repair of Pressure-Retaining Items without Complete Removal of Defects”	Item 20-3, request for interpretation from Nathan Carter (HSB)	Needs to be referenced in the main body of Code, rather than as interpretation. See item 20-10. If Item 20-10 is sufficient, drop Item 20-3 in January 2021 meeting.
Clean up language and address Item 20-3 in the NBIC Part 3, 3.3.4.8	Item 20-10	Item 20-10 becomes a focused, minor language edits for 2021 edition (?)
General confusion of roles and responsibilities as part of a FFSA, RBI or FEA activity linked to general FFS needs	Item 20-10 should address this	**New item**, there is existing language in Part 2, 4.4.3 that should be improved to avoid duplication in multiple Parts
Development of a supplement to incorporate more guidance regarding ‘how to execute FFS’	Item 20-10	**New item** as this is a longer-term perspective that will incorporate new EPRI findings over the next four-years (multi-year, multi $$M dollar EPRI project initiated July 16, 2020)

New Item – “Development of Part 3 Fitness for Service Supplement”; linked to Part 3

New item – “Clarification of Fitness for Service Roles and Responsibilities”; linked to Part 2

PROPOSED INTERPRETATION

Inquiry No.	**20-3**
Source	Nathan Carter, HSB nathan_carter@hsb.org
Subject	Inspector involvement in Fitness-for-Service Assessments **Background:** The below questions are intended to gain clarity as to first which Inspector (i.e. "IS" Commissioned or "R" Endorsement) signs the FFSA Form NB-403 when an "R" Certificate Holder is involved with a repair in that region as well as determine what level of review of the Fitness-for-Service the Inspector is expected to complete. If it is an Inspector holding a "R" Endorsement with an AI Commission (not tested on NBIC Part 2), shouldn't the relevant pages in NBIC Part 2 concerning Fitness for Service be included in their tested body of knowledge, so they are aware of the detailed rules? The Body-Of-Knowledge for National Board Inspectors holding either an "IS" Commission or "R" Endorsement does not reference ASME FFS-1/API 579 Fitness-For-Service Standard or have any expectation that the Inspector be capable of determining if the correct Fitness for Service methodology was used or that the assumptions taken by the Engineer in the analysis were the most appropriate or accurate. Clarification is also requested due to the Form NB-403 signature block stating "Verified by" for the Inspector without any other disclaimers as typically found on other Forms signed by Inspectors such as ASME MDRs and NBIC Form R-1/R-2. An example is a R-Certificate holder was hired to repair a weld seam. It was discovered during a repair that multiple base metal laminations existed adjacent to the repair location. A Fitness for Services Evaluation was subsequently performed. The first question is whether or not it is the responsibility of the Repair Inspector to sign the FFSA form once everything has been properly vetted, since the defect being left in place is not necessarily within the scope of the initial repair being performed by the "R" Certificate Holder, or should this be signed off by a Commissioned Inservice Inspector, since they are examined on the rules of NBIC Part 2? Also, Form NB-403 is vague in the signature block region for the scope of what the Inspector is signed for. It could be alluded that without a statement, such as those found on the R-1 and R-2 forms, the Inspector is signing off on the appropriateness and adequacy of the Fitness-For-Service methodology performed by the Engineer.
Edition	2019; Part: Repairs and Alterations; Section: 3; Paragraph: 3.3.4.8 2019; Part: Inspection; Section: 4; Paragraph: 4.4
Question	Question 1: In accordance with NBIC Part 3, 3.3.4.8, a fitness-for-service condition assessment as described in NBIC Part 2, 4.4 shall be completed and adequately documented on the FFSA Form NB-403. Once Form NB-403 is completed, is it required that the Inspector signing this Form hold a National Board "R" Endorsement as described in RCI-1/NB-263? Question 2: NBIC Part 2 4.4.1 d) states that the Inspector shall indicate acceptance of the Report of FFSA by signing. Paragraph 4.4.3 b) states that the Inspector shall review the condition assessment methodology and ensure that the inspection data and documentation are in accordance with Part 2. Is the Inspector's signature on Form NB-403 an indication that the condition assessment and recommendations completed by the Engineer have been fully reviewed for appropriateness and accuracy by the Inspector?

	Question 3: If the answer to Question 2 is No, is the Inspector's signature on Form NB-403 an indication of acceptance solely on the basis of review of the Form for completeness and verification that the requirements outlined in 4.4 were addressed?
Reply	Proposed Reply 1: Yes Proposed Reply 2: No Proposed Reply 3: Yes
Committee's Question	
Committee's Reply	
Rationale	

PROPOSED INTERPRETATION

Inquiry No.	**20-11**
Source	Hugh-Jean Nel, Sasol Hugh-Jean.Nel@sasol.com
Subject	Scope of Repairs **Background:** Historically NBIC has not defined limitations on the scope of repair provided the entire item is being rebuilt, see Question & Reply 2 & 3 in Interpretation 98-28. NBIC Part 3 lists several examples of repair but nowhere limits the scope or amount of these examples that can be utilized when performing repairs. This creates some uncertainty when performing some types of repairs, such as replacing the tubesheets of a fixed tubesheet type heat exchanger as listed in 3.3.3 e). According to ASME BPV Code Section VIII Division 1 Part UHX, Section 13, the length of the tubes is a design parameter and therefore replacing the tubesheet in accordance with its original design might require the replacement of the tubes as well to maintain the original design length.
Edition	2019; Part: Repairs and Alterations; Section: 3; Paragraph: 3.3.3 Examples of Repairs
Question	Question: Is it permissible for repair activities performed on pressure retaining item to have more than one activity listed in 3.3.3 with the scope of repair?
Reply	Proposed Reply: Yes, ~~provided that the scope of repairs has been approved by the Inspector, and when required, by the Jurisdiction.~~
Committee's Question 1	Can multiple repair activities referenced in 3.3.3 of Part 3 be listed on a single Form R-1 Report when performing a repair on a pressure retaining item?
Committee's Reply	Yes
Rationale	There is nothing in the NBIC that restrict the repair work performed on one vessel at the same time.
Committee's Question 2	Is it considered an alteration when the heat transfer surface(s)~~tube length~~ of a heat exchanger is changed ~~while replacing tube sheets~~ on a ~~ASME Section VIII, Div 1~~ pressure vessel?
Committee's Reply	Yes. Reference NBIC Part 3,. 3.4.4 d)
Rationale:	The tube length is a dimension as mentioned in 3.4.4. d

Interp 20-11

3.4.4 EXAMPLES OF ALTERATIONS

d) A change in the dimensions or contour of a pressure-retaining item;

3.3.3 EXAMPLES OF REPAIRS

e) Replacement of heat exchanger tubesheets in accordance with the original design;

INTERPRETATION 98-28

Subject: RC-1050(c) Replacement Parts Fabricated by an "R" Certificate Holder
Appendix 6 Pressure Retaining Replacement Items
RC-1050 Definition of New Replacement Parts

1998 Edition

Question 1: Does RC-1050(c) of the NBIC permit the holder of an "R" Certificate to fabricate by welding new and exact pressure retaining replacement parts for an ASME stamped item that the "R" stamp holder is repairing?

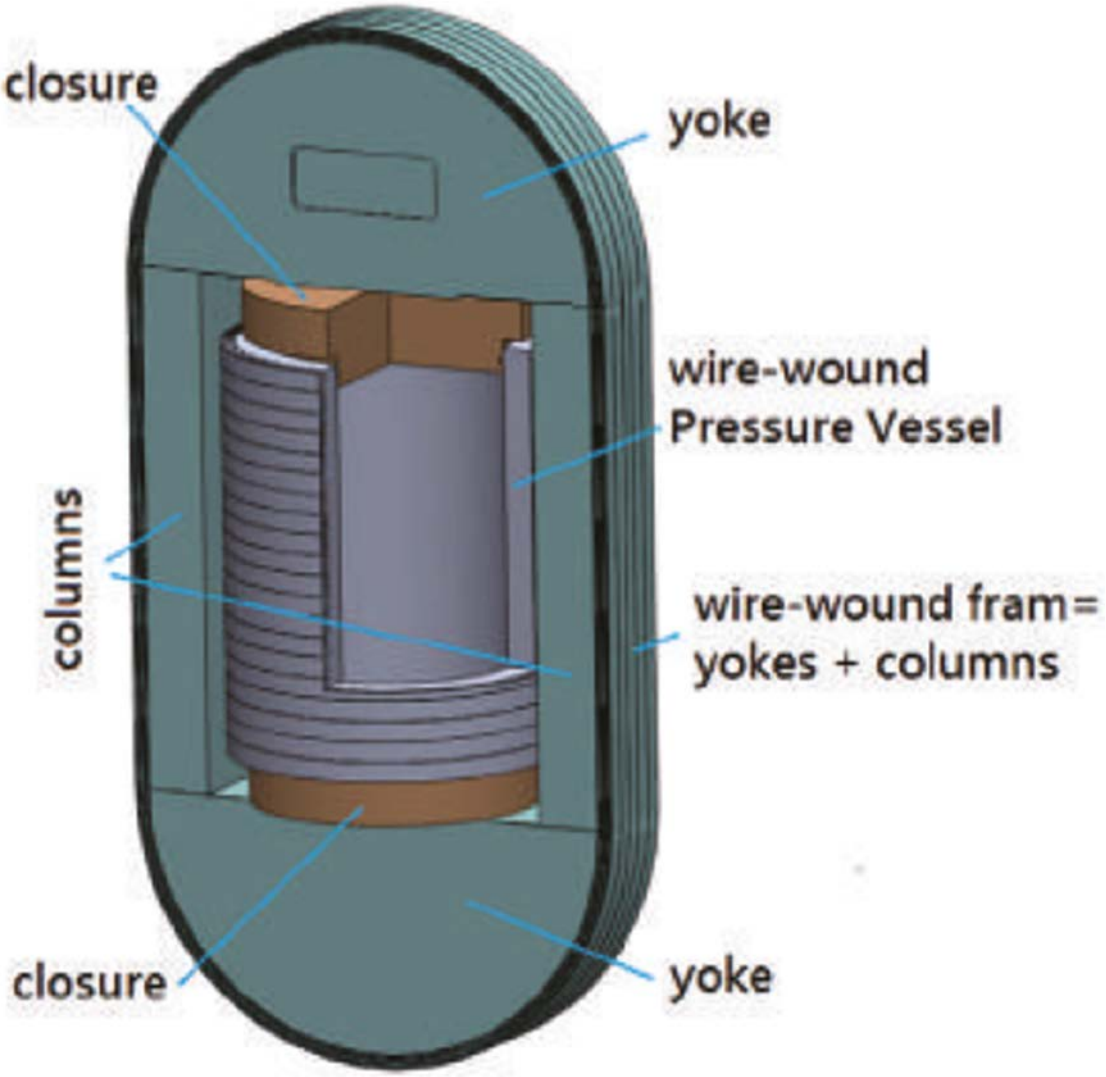
Reply 1: No. ASME replacement parts fabricated by welding that require shop inspection by an Authorized Inspector shall be fabricated by an organization having an appropriate ASME Certificate of Authorization.
Question 2: An ASME stamped item is determined to be corroded beyond repair and the only salvageable part is the ASME Code stamping or nameplate. Is it the intent of the NBIC to permit a holder of an "R" Certificate only to build a complete new and exact pressure retaining replacement item using the original ASME construction Code, Section, Edition and Addenda and same materials, transfer and document the transfer of the ASME stamping or nameplate on an R-1 Form to the new pressure-retaining item and stamp the repair with the "R" stamp?
Reply 2: No.
Question 3: Does the NBIC define the point at which a repair becomes new construction?
Reply 3: No.

PROPOSED INTERPRETATION

Item No. **20-14**	Mechanical Installation of Replacement Parts in ASME Section VIII Division 3 Pressure Vessels
Source	Monte Bost, monte_bost@hsb.com, 937-620-3676
Subject	Part 3, Section 3.2.2, 3.3.3, and 5.12.4.1, Installation of Replacement of Parts Without Welding
Edition	2019
Question	Q1: A Section VIII, Division 3 pressure vessel is made without welding from machined forgings. The pressure retaining components consist of a cylinder, end closures and a frame that holds the end closures in place. If one of the pressure retaining components is replaced with a new ASME-stamped "Part", is this activity considered a repair? Q2: For the repair described in Question (1) above, how shall Line 7, "REPAIR TYPE" be indicated on the Form R-1, *Report of Repair*?
Proposed Reply	R1: Yes R2: Indicate "Type of Repair: Mechanical" in Line 10 "Remarks".
Committee's Question	Q1: An ASME Section VIII, Division 3 pressure vessel is made without welding from machined forgings. The pressure retaining components consist of a cylinder, end closures and a frame that holds the end closures in place. Is replacement of one of the pressure retaining components with a new ASME-stamped "Part" considered a repair? Q2: For the repair activity described in Question 1, does indication of "Mechanical Repair" in Line 10 Remarks of Form R-1 meet the requirements for identification of Repair Type in Line 7 of Form R-1?
Committee's Reply	R1: Yes, see Part 3, 3.3.3.h R2: Yes.
Rationale	The definition of "Mechanical Assembly" in Part 3, Section 9, includes language related to restoration of the pressure retaining boundary. The examples of repairs described in Part 3, 3.3.3.h involving use of replacement parts are not limited to installation by welding. Per Part 3, Section 1.5.1.h, the Quality System shall include controls for repairs and alterations, including mechanical assembly, as applicable. Per Part 3, Section 5.12.4.1, use of the Remarks Section on Form R-1 is available to include supplemental information not otherwise covered on the form.
SC Vote	
NBIC Vote	
Negative Vote Comments	

Background / Explanation of Need

A Section VIII, Division 3 pressure vessel is made from machined forgings with no welding. The pressure retaining items are a cylinder, end closures and a frame that holds the end closures in place. A sketch is provided.



The original ASME Data Report does not reflect the correct “Part” serial number when it is replaced with no documentation. ASME Section VIII, Division 3 Code stamped "Parts" are being replaced with new ASME Code stamped "Parts" without any documentation. The original ASME Data Report listed the original "Part" serial number and will no longer be accurate if the original "Part" is replaced.

PROPOSED INTERPRETATION

Inquiry No.	**20-17**
Source	Roy Darby, Chevron Products Company roy.darby@chevron.com
Subject	Weld build of wasted areas with different material **Background:** It is common practice to weld build the wasted area of a component with original material and then to overlap with a corrosion resistant material to prevent future wasting of the component. It would be more efficient to simply restore the wasted area with the corrosion resistant material, provided that it meets or exceeds the strength requirements of the original material. This represents cost savings for industry with no expected downside.
Edition	2019; Part: Repairs and Alterations; Section: 3; Paragraph: 3.3.3 Examples of Repairs and 3.3.4.3 Wasted Areas
Question	Question: Would it be acceptable as a repair to weld build wasted areas with a material of different nominal composition and, equal to or greater in ultimate stress from that used in the original design, provided the replacement material satisfies the material and design requirements of the original code of construction under which the vessel was built? The minimum required thickness would be at least equal to the thickness stated on the original Manufacturer's Data Report. This would be an amalgamation of 3.3.3 (c),(d), and (r) into a single activity.
Reply	Proposed Reply: Yes.
Committee's Question	May a corrosion resistant filler metal of different chemical composition but of equal strength as that of the base metal for a pressure retaining item be ~~used for weld repair of wasted areas~~ considered a repair?
Committee's Reply	No
Rationale	Under examples of repair in 3.3, these are provided as specific examples of repair and as such the 2019 Edition of the NBIC does not specifically address this type of weld repair, as an example. ~~This is consulting.~~

PROPOSED INTERPRETATION

Inquiry No.	**20-21**
Source	Eric Feeney, TEI Construction Services efeeney@teiservices.com
Subject	Nondestructive Examination **Background:** When a boiler outage is being performed, there may be 50-10,000+ welds made. We are accustomed to performing 100% volumetric examination when a hydrostatic test is not being performed. Some of our inspectors suggest that we can perform a portion of the NDE as volumetric and the remainder as VT. When I read 4.4.1 e) it seems to have validity, but I generally have understood paragraph e) to have been referring to each individual weld and not the repair as a whole. This is what I would like clarification on.
Edition	2019; Part: Repairs and Alterations; Section: 4; Paragraph: 4.4.1 e)
Question	Question: May a portion of a repair be subject to NDE other than visual, and the remainder of the repair be subject to exclusive use of VT in accordance with Part 3, 4.4.1 e)?
Reply	Proposed Reply: Yes.
Committee's Question	Question: If the scope of the repair requires multiple weld repairs, may a portion of a repair be subject to a suitable NDE method(s) other than VT, and the remainder of the repair be subjected to the exclusive use of VT in accordance with Part 3, 4.4.1 e)?
Committee's Reply	Proposed Reply: Yes.
Rationale	

Relevant Background

4.4.1 TEST OR EXAMINATION METHODS APPLICABLE TO REPAIRS (19)

Based on the nature and scope of the repair activity, one or a combination of the following examination and test methods shall be applied to repairs and replacement parts used in repairs.

e) Nondestructive Examination (NDE)

NDE may be conducted. NDE methods used shall be suitable for providing meaningful results to verify the integrity of the repair. Exclusive use of visual examination (VT) is only permitted with the following considerations:

1) When a pressure test or alternative NDE methods other than visual examination, are not practicable the exclusive use of direct VT as an NDE method shall be limited to routine repairs, as identified in NBIC Part 3, 3.3.2.

2) For each repair being considered, the exclusive use of direct VT as an NDE method shall be acceptable to the Inspector, and where required, the Jurisdiction.

3) As a minimum, direct VT shall be performed after the root weld layer or first-pass is deposited, and the final weld surface. Other weld layers shall be examined as identified by the Inspector and, where required, the Jurisdiction.

4) Personnel completing direct VT shall be qualified and certified in accordance with paragraph NBIC Part 3, 4.2- b), AWS QC-1, or any nationally recognized standard acceptable to the Jurisdiction. Visual acuity shall be demonstrated using as a minimum, standard J-2 letters on standard Jaeger test type charts for near vision.

5) Direct VT shall be performed in accordance with a written procedure meeting the procedure and reporting requirements listed in the original code of construction or ASME Section V, Article 9.

Part 3, Section 9, Glossary of Terms
Repair — The work necessary to restore pressure-retaining items to a safe and satisfactory operating condition. (Would seem to imply that ‘repair’ can include one or more welds repairs)

PROPOSED INTERPRETATION

Inquiry No.	**20-23**
Source	Paul Shanks, OneCIS Paul.shanks@onecis.com
Subject	Alteration of ASME Section VIII Div.2 vessels **Background:** Many Div.2 vessels which are in need of repair are of sufficient age whereby all of the original paperwork was paper work. Even with the best efforts such documents can become damaged or lost by the flooding event associated with the gulf coast hurricane events and or the types of refinery fires that are all too common. In a good deal of cases these vessels simply need a new B-16.5 weld neck flange or a gasket surface weld metal build up in order to allow continued leak free surface but due to some documents being unavailable the owner is left to choose between making no repair or making a repair which is not compatible with the NBIC. **Explanation of Need:** 3.3.5.2 & 3.4.5.1 both require that a repair or alteration for div.2 vessels are checked for compatibility with the original UDS which is clearly best practice for these higher stressed vessels, however a great deal of work needed on these vessels no doubt due to the higher level of engineering examination during initial fabrication is limited to fixing the problems that come form leaking gaskets i.e. corrosion on gasket faces which may require weld metal build up less than 20"2 or replacement of an ASME standard flange like for like. The professional engineer whom must review and sign for repair plans is qualified to review the service history and/or whatever original documentation is available and determine if a simple flange replacement or weld metal build up is acceptable or not.
Edition	2019 NBIC, Part 3, 3.4.5.1 b)
Question	Question: Given that Paragraph 3.4.5.1 b) allows for the User Design Specification (UDS) to be revised in the case where a proposed alteration is not compatible with the existing UDS is it unacceptable in cases where the original UDS is not available to generate a new UDS which is compatible with the design load case included with the original Manufactures Design Report?
Reply	Proposed Reply: No.
Committee's Question	In Part 3, 3.4.5.1 b) for an ASME Section VIII, Div 2 or Div 3 vessel, may an R-Certificate holder generate a replacement User Design Specification (UDS) in the event the original UDS was lost/destroyed?
Committee's Reply	No.
Rationale	The UDS is a unique document that contains the User's specific information regarding design conditions of the Div 2 or Div 3 vessel. Revising an existing UDS is not the same as generating a completely new UDS if the original was lost.

PROPOSED INTERPRETATION

Inquiry No.	**20-24**
Source	Paul Shanks, OneCIS Paul.shanks@onecis.com
Subject	**Certification of repair or alteration plans** **Background:** NBIC Part 3 3.3.5.2 a) requires the repair plan to be reviewed and certified to ensure the work involved is compatible with the User's Design Specification (UDS) and the Manufacturer's Design Report (MDR). 3.4.5.1 b) allows the UDS to be revised if a proposed alteration plan is not compatible with the original UDS. This revised UDS must be certified by an engineer as well as the alteration plan. Currently, NBIC Part 3 does clarify the separation of the two certifying activities which is not in the spirit of ASME Section VIII, Division.2 requiring different Certifying Engineers for the UDS and MDR.
Edition	2019 NBIC, Part 3 3.3.5.2 a) and Part 3, 3.4.5.1 b)
Question	Question: Is it acceptable for the repair plan or alteration plan to be certified by one of the same engineers that certified the UDS, Revised UDS or MDR?
Reply	Proposed Reply: No.
Committee's Question 1	**May the Certifying Engineer who certified the MDR or UDS of an ASME Section VIII Division 2 or 3 pressure retaining item (PRI) certify the repair plan?**
Committee's Reply 1	**Yes**
Committee's Question 2	**May the Certifying Engineer who certified the MDR or UDS of an ASME Section VIII Division 2 or 3 PRI certify the alteration plan or the revised UDS?**
Committee's Reply 2	**Yes**
Committee's Question 3	**May the Certifying Engineer who certified the revised UDS certify the alteration plan on an ASME Section VIII Division 2 or 3 PRI.**

Committee's Reply 3	**No**
Rationale	**ASME Section VIII, Division 2** **ANNEX 2-A** **GUIDE FOR CERTIFYING A USER'S DESIGN SPECIFICATION** **2-A.2 CERTIFICATION OF THE USER'S DESIGN SPECIFICATION** **2-A.2.1** When required by 2.2.1.1 or 2.2.1.2, certification of the User's Design Specification requires the signature(s) of one or more Certifying Engineers with requisite experience and qualifications as defined in Annex 2-J. The Certifying Engineer(s) shall certify that the User's Design Specification meets the requirements of 2.2.2. *(a)* The Certifying Engineer(s) shall prepare a statement to be affixed to the document attesting to compliance with the applicable requirements of the Code (see 2-A.2.3). *(b)* This Certifying Engineer shall be other than the Certifying Engineer who certifies the Manufacturer's Design Report, although both may be employed by or affiliated with the same organization. *(c)* The Certifying Engineer shall identify the location and authority under which he or she has received the authority to perform engineering work stipulated by the user in the User's Design Specification. **2-A.2.2** When more than one Certifying Engineer certifies and signs the User's Design Specification the area of expertise shall be noted next to their signature under "areas of responsibilities" (e.g., design, metallurgy, pressure relief, fabrication). In addition, one of the Certifying Engineers signing the User's Design Specification shall certify that all elements required by this Division are included in the Specification. **2-A.2.3** An example of a typical User's Design Specification Certification Form is shown in Table 2-A.1. **ANNEX 2-B** **GUIDE FOR CERTIFYING A MANUFACTURER'S DESIGN REPORT** **2-B.2 CERTIFICATION OF MANUFACTURER'S DESIGN REPORT BY A CERTIFYING ENGINEER** **2-B.2.1** When required by either 2.3.3.1(a) or 2.3.3.2, certification of the Manufacturer's Design Report requires the signature(s) of one or more Certifying Engineers with requisite experience and qualifications as defined in Annex 2-J. The Certifying Engineer(s) shall certify that the Manufacturer's Design Report meets the requirements of 2.3.3. *(a)* The Certifying Engineer(s) shall prepare a statement to be

	affixed to the document attesting to compliance with the applicable requirements of the Code (see 2-B.4). *(b)* This Certifying Engineer shall be other than the Certifying Engineer who certifies the User's Design Specification, although both may be employed by or affiliated with the same organization. *(c)* The Certifying Engineer shall identify the location and authority under which he or she has reached the authority to perform engineering work stipulated by the user in the User's Design Specification. **2-B.2.2** When more than one Certifying Engineer certifies and signs the Manufacturer's Design Report, the area of expertise shall be noted next to their signature under "areas of responsibilities" (e.g., design, metallurgy, pressure relief, fabrication). In addition, one of the Certifying Engineers signing the Manufacturer's Design Report shall certify that all elements required by this Division are included in the Report. Here is an older interpretation from ASME Section VIII, Division 2 as well: **Standard Designation:** BPV Section VIII Division 2 **Edition/Addenda:** 2013 **Para./Fig./Table No:** Annex 2-A **Subject Description:** Section VIII, Division 2; Annex 2-A - User Design Specification (UDS) **Date Issued:** 01/07/2016 **Record Number:** 15-2001 **Interpretation Number:** BPV VIII-2-16-1 **Question(s) and Reply(ies):** Question: In accordance with paragraph 2-A.2.1(a), is it prohibited for a Manufacturer to obtain the services of a Registered Professional Engineer to certify the User's Design Specification provided that the same engineer does not certify both the User Design Specification and the Manufacturer's Design Report? Reply: No.

PROPOSED INTERPRETATION

Inquiry No.	20-29
Source	Craig Bierl, Chubb Limited craig.bierl@chubb.com
Subject	PV Cycles of operations change as an alteration **Background:** Isostatic Presses in particular (but found in other pressure vessels also) are restricted by the data report to a finite number of cycles. Operators of these vessels routinely use curves to modify what is considered a cycle and extend the life of the vessel. These vessels represent a substantial risk of failure and this practice is very difficult for the inservice inspector to successfully track and audit to ensure the integrity of these vessels are maintained as this is a grey area in the current code as written. This is the real life scenario that has appeared on 7 of these vessels in the last 6 months (that is every one that I have been involved in evaluating for insurance coverage). 1. ASME data report says X cycles. Normally around 15-25,000. 2. Vessel is 20+ years old 3. You ask about operation and the vessel operates 330 days per year and has 5 operating cycles per day (some are 2 some are more, just throwing a number up to illustrate). So, simple math says 330x5=1650 cycles per year 25,000/1650=15.15 years of life 4. You ask for records of the operation a. You are presented with a degraded cycle curve b. "we don't operate at maximum temp (and/or) pressure" so we aren't taking a full cycle c. So now the same vessel shows that it only has 650 cycles on it or 1200 (instead of 30,000) 5. Their argument is that they are below the "design cycles", well there is no rational that the inspector can adequately track the design cycles to a degree of comfort. a. I attached one of the better design cycle tracking mechanism's I have seen, however it is still lacking Bottom line, the "operational cycle" is easily trackable. The use of curves to increase the operational cycle count beyond the ASME data report cycle maximum appears to be in conflict and lacks standardization, which makes it difficult to audit and ensure uniform measures are being taken. The cycle count appears on the data report as a criteria, if that criteria is intended to limit the operational cycle, than the use of a curve to extend that cycle should be considered an alteration and rerating of the vessel. If the cycle count on the data report is not intended to be limited by the operating cycle, then some form of standard should be created for the different types of variances that are used to extend this cycle count (by temperature, pressure, etc).
Edition	2019 NBIC, Part 3, 3.4.4 2019 NBIC, Part 2, 2.3.6.8 & 2.3.6.10
General Description	Section VIII Div.2 or Div.3 cycle life design definition

Question	Question: Should the use of a curve to extend the number of operating cycles beyond the number of cycles indicated on the ASME data report be considered an alteration/re rating of a pressure vessel (ASME Section 8 Part 3)?
Reply	Proposed Reply: Yes. The use of a curve to extend the number of operating cycles is a change in the material data on the ASME data report and is therefore an alteration of the vessel and should be considered as such through a formal re-rating process.
Committee's Question	When the design ~~definition~~ of a PRI includes cyclic loading data, should an adjustment, modification or change in analysis of ~~said~~the original design data be considered an alteration?
Committee's Reply	Yes
Rationale	For PRI's in cyclic service (thermal or mechanical) the load histograms are just as essential to the design definition as MAWP or MDMT, when those values are changed we consider that to be an alteration. In Section ~~8~~ VIII Div.2 for a class 1 vessel per paragraph 2.2.2.1 supplying the information to do fatigue analysis triggers the UDS into needed an RPE sign off. Per 2.3.3.1 conducting fatigue analysis is one of 4 events that triggers an RPE signature on the manufactures design report. Per NBIC: **Alteration** — A change in the item described on the original Manufacturer's Data Report which affects the pressure containing capability of the pressure-retaining item. (See NBIC Part 3, 3.4.3, *Examples of Alteration*) Nonphysical changes such as an increase in the maximum allowable working pressure (internal or external), increase in design temperature, or a reduction in minimum temperature of a pressure-retaining item shall be considered an alteration.
SC Vote	
NBIC Vote	
Negative Vote Comments	

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PROPOSED INTERPRETATION

Inquiry No.	**20-49**
Source	Susumu Terada Terada.susumu@kobelco.com Kobe Steel, Ltd.
Subject	Subject: Alternative Method in lieu of Pressure Testing or Examination in Part 3, 4.4.2 c
Edition	2019
Question	Question: When contamination of pressure-retaining items by liquids is possible, pressure testing is not practicable and NDE is not effective, may finite-element analysis in accordance with Part 5 of the same edition of the original construction code, ASME Code Section VIII, Div. 2, be used to ensure the structural integrity of the alteration?
Reply	Proposed Reply: Yes. Concurrence of the owner shall be obtained in addition to the Inspector and Jurisdiction where required.
Committee's Question	When performing an alteration on a pressure testing item and use of examination or test methods listed in Part 3, 4.4.2 are not possible, can finite elemental analysis be used in accordance with the original code of construction?
Committee's Reply	This is outside the scope of the NBIC.
Rationale	This inquiry was submitted regarding not being able to pressure test with liquid or perform NDE. However, the Inquirer failed to consider or eliminate pneumatic testing as a possibility in Part 3, 4.4.2b.