



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

SUBCOMMITTEE INSPECTION

MINUTES

Meeting of January 21, 2015
Orlando, FL

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

The National Board of Boiler & Pressure Vessel Inspectors
1055 Crupper Avenue
Columbus, Ohio 43229-1183
Phone: (614)888-8320
FAX: (614)847-1828

1. Call to Order – 8:00 a.m.

Chairman, Mr. Mark Mooney called the meeting to order at 8:03 AM on January 21, 2015.

2. Announcements

- **Continental breakfast & Buffet lunch will be provided on Thursday morning**
- **Wednesday evening reception will be held at the hotel from 5-7pm**

3. Adoption of the Agenda

These changes were made from the original agenda posted to the website. Revised agenda is now on the website and on the cloud.

- NB11-0204 has been added to the agenda
- NB13-1002 has been added to the agenda. Has attachments pages 33-35 (on cloud)
- NB15-0204 has been added to the agenda. Has attachments pages 36-38 (on cloud)

A motion was made to adopt the revised agenda. The motion was unanimously approved.

4. Approval of Minutes of July 16, 2014 Meeting

A motion was made to approve the Subcommittee Inspection minutes from July 16, 2014. The motion was unanimously approved.

5. Review of the Roster (ATTACHMENT PAGES 1-4)

The attendees, members, alternates and guests are identified on **Attachment 1**. With the attached attendance listing, a quorum was established.

- Dr. Marshall Clark would like to become a member of the SG on Inspection.

A motion was made for Mr. Marshall Clark to become a member of the SG on Inspection. The motion was unanimously approved.

- Mr. Timothy Barker is eligible for renewal on the SG on Inspection.

A motion was made for reappointment of Mr. Timothy Barker as a member of the SG on Inspection. The motion was unanimously approved.

- Mr. Jess Richter is eligible for reappointment to the SG on FRP.

A motion was made for reappointment of Mr. Jess Richter to the SG on FRP. The motion was unanimously approved.

- Messrs. Frank Johnson, Jim Larson, Dennis Rupert and Mike Wahl are eligible for reappointment to the SG on Historical Boilers.

A motion was made for reappointment of Frank Johnson, Jim Larson, Dennis Rupert and Mike Wahl to the SG on Historical Boilers. The motion was unanimously approved.

- Mr. Robert Reetz has retired from the State of North Dakota therefore resigning from all NBIC Committee duties. A chairman for the SG on Historical Boilers needs to be appointed.

No vote was taken. There is no name for recommendation at this time. They should have one by the July 2015 meeting.

6. Action Items

- **NB07-0910 - Part 2 S6** - Review DOT supplement. A task group of S. Staniszewski (Chair), G. McRae and J. Riley has been assigned. This specific Supplement should be reviewed by task group for completeness and accuracy. (No attachments)

January 2015

C. Withers addressed the Subcommittee stating this item should be worked on with Part 3, Repairs and Alterations, to make sure everything stays consistent between the two Parts. No progress to report at this time.

Add C. Withers to the Task Group.

- **NB11-0204 - Part 2 & 3, S2 SG on Historical Boilers** - Review NDE requirements of stayed areas. A task group of M. Wahl (PM), J. Larson and F. Johnson has been assigned. (No attachment)

January 2015

A progress report was given by J. Getter. The final draft should be ready by the July 2015 meeting.

- **NB12-1501 - Part 2** - Review inspection requirements so as to align with installation requirements in Part 1. (No attachments)

January 2015

A progress report was given by Mr. V. Newton. Work is ongoing. The task group has completed CO2 and is now working on Biomass.

- **NB13-0903 Part 2, S2.14** - Add language to address the safety concerns when using liquid or gaseous fuels to fire a historical boiler. (No attachments)

January 2015

A progress report was given by J. Getter stating lots of discussion in SG historical. They should have more information at the July 2015 meeting.

- **NB13-1002 - Part 2, SG Insp. Spec.** – Review inspection requirements for B31.1 Power Piping. A Task Group consisting of Mike Schwartzwalder (Lead), Joe Frey, Venus Newton, Mark Mooney, Domenic Canonico, John Richardson, Mark Horbaczewski and Robbie Dobbins was assigned. **(ATTACHMENT PAGES 5-7)**

Reference:

July 2014

A motion was made to approve the document as corrected in Subgroup Inspection Specific. The motion was unanimously approved. When the item was presented to the NBIC Committee it was disapproved and returned to the subcommittee for more work. The item was then sent to the Main Committee as a letter ballot for comment only.

December 2014

Proposed wording was sent to the NBIC Committee for comment only. This wording will be reviewed at the NBIC meeting in January.

January 2015

The revised document that was presented and unanimously passed in SG was presented to the SC. A motion was made to move the document to MC for letter ballot vote. The motion was unanimously approved.

- **NB13-1201 – Part 2, 2.2.10.6** - This action item is a result of PRC PR13-0209 from Francis Brown. His comment stated, " The NBIC is supposed to be a safety Code so why is a "good practice" only a "good practice" if required by a Jurisdiction. For example 2.2.10 6a) is or is not that paragraph a "good practice" mandatory, but without the Jurisdictional requirement a good practice is optional with the owner/user. This section should be revised to indicate "good practices" should be complied with but are mandatory when required by the Jurisdiction.
(ATTACHMENT PAGE 8)

January 2015

A motion was made to keep the wording as is. The motion was unanimously approved. Mr. Mooney will send a response to the commenter.

- **NB13-1301 - Part 2** - Review methods of Finite Element Analysis as they pertain to inspection. A Task Group consisting of J. Riley (PM), S. Staniszewski, M. Schwartzwalder, M. Mooney and R. Pate was assigned.
(ATTACHMENT PAGES 9-12)

January 2015

A progress report was given by Mr. Riley. The document will go out for letter ballot comment only to the SG.

Add M. Clark to the task group.

- **NB13-1302 - Part 2** - Review Cryogenic vessel inspection requirements. A Task Group consisting of J. Riley (PM), A. Renaldo, R. Dobbins, J. Getter, R. Bartley and R. Pate was assigned.
(ATTACHMENT PAGES 13-14)

January 2015

A progress report was given by Mr. Riley stating the document will go out for letter ballot vote to the SG.

Add D. Graf to the task group.

- **NB13-1303 - Part 2** - Review Inspection requirements for Biomass Fueled Boilers. A Task Group consisting of M. Mooney (PM), M. Horbaczewski, D. Canonico, and J. Safarz were assigned.
(ATTACHMENT PAGES 15-17)

January 2015

A progress report was given by Mr. Mooney. The Task Group should have a draft for next meeting.

- **NB13-1404B - Part 2, S1** – Fillet welded staybolts. (No attachments)

January 2015

No report given.

- **NB13-1409 – Part 2, S1** – Method for analyzing bulges created by overheating in stayed boiler surfaces. (No attachments)

January 2015

A progress report was given by Mr. J. Getter. No progress to report at this time.

- **NB13-1701 – Part 2, 2.3.6.6** – Inspection requirements for wire wound pressure vessels. A task group consisting of R. Dobbins (PM), M. Mooney, J. Riley, V. Scarcella and G. Galanes was assigned.
(ATTACHMENT PAGES 18-20)

January 2015

J. Getter presented a document for review. A motion was made to letter ballot vote the document to SC. The motion was unanimously approved.

- **NB14-0501 - Part 2** - Update Part 2 Index. A Task Group consisting of D. Canonico and M. Mooney was assigned. (No attachments)

January 2015

A motion was made to close this item. The motion was unanimously approved.

- **NB14-0901 – Part 2** – Inspection of High Pressure Vessels
(ATTACHMENT PAGES 21)

January 2015

A motion was made to close this item with no changes. A comment will be sent back to the commenter from M. Mooney. The motion was unanimously approved. A new action item (NB15-0205) was opened for Inspection guidelines of high pressure/temperature pressure vessels.

Task group of M. Horbaczewski (PM), M. Schwartzwalder, D. Graf and G. Scribner was assigned.

- **NB14-1001 – Part 2, 5.2.1** - The NBIC does not address replacement of duplicate nameplates where the original nameplate is intact and attached to an inner vessel and may or may not be visible.
(ATTACHMENT PAGE 22)

January 2015

A progress report was given by M. Mooney. After much discussion in SC, this item has been sent back to SG for more work.

TG was revised and now consists of J. Larson (PM), P. Welch, D. Ford, R. Pate, J. Getter, G. McRae, M. Horbaczewski and B. Petersen.

- **NB14-1701 - Part 2** - Add diagrams for Local Thin Areas (LTA) for LP Gas and propane tanks. A TG of G. McRae (PM), T. Vandini, J. Getter and M. Mooney was assigned. (No attachments)

January 2015

A progress report was given by M. Mooney. No progress to report at this time.

- **NB14-1906 - Part 2** - Paragraph 6.1 is a scope for the supplement section. This is the only part that has this; it is not consistent with our formatting and is a repeat of what is covered in the Introduction under Supplements in all three parts. A TG of D. Canonico, M. Mooney and D. Graf has been assigned.
(ATTACHMENT PAGE 23)

January 2015

A motion in SG was unanimously passed in SG to remove 6.1 Scope. A motion was made in SC to remove paragraph 6.1 Scope. The motion was unanimously passed.

- **NB15-0201 – Part 2** – This item opened as a result of the closure of NB13-0701. Provide consistent language in all affected areas of the NBIC. TG of J. Riley (PM), R. Reetz, M. Mooney, T. Vandini, M. Clark, G. McRae has been assigned. (No attachments)

January 2015

A progress report was given by J. Riley. The TG is finding references to local corrosion and checking consistency.

- **NB15-0204 - Part 2, 5.5.2 - 5.5.3** – This item was opened to address issues in reaction to the passage of NB12-1801.
(ATTACHMENT PAGES 24-26)

Reference:

NB12-1801 - Part 2, 5.5.2 - 5.5.3 SG Inspection Specific - Replacement of stamping during inservice inspection.

July 2014

Mr. Mooney presented the comments from the Main Committee at Subgroup Specific meeting. The item will be sent to Main Committee for vote. A new action item (NB15-0204) has been opened for Inspection Subgroup to work with the manufacturers on their negatives regarding re-stamping.

January 2015

A progress report was given by M. Mooney. This item needs to be moved to SG and a task group needs to be assigned.

Add Mrs. B. Petersen to the TG.

- **NB15-0501 – Part 2, S7.10 h)** - This action item is a result of PR15-0142. Since a nameplate is required with a “R” stamp for the underground service change, was the requirement for an R-1/R-2 to be completed intentionally left off? Would it not be prudent for an Inspector to verify that the seal welding or flush patch welds comply at least visually comply with code? A “R” Certificate Holder is already required. Why not include an Inspector to verify the weld is acceptable and require a signed R-1/R-2 form, which is to be filed with the NB. There is a risk to life/property if a seal weld or flush patch on a LPG storage vessel is not completed in accordance with code requirements. Paragraph e) also introduces additional welding, which should be verified. Also please consider a new item for Part 3, which would refer the reader to this Supplement for a Change
(ATTACHMENT PAGE 27)

January 2015

A progress report was given by M. Mooney. A task group of T. Vandini (PM), G. McRae, J. Getter and D. Graf was assigned in SG

- **NB15-0502 – Part 2, S7.10 k)** - This item is a result of PR15-0143. Part k) is silent concerning qualified welders. I don't believe the intent is for unqualified welders to be seal welding or welding flush patches to close off unused connections (d) as well as welding the nameplate, especially since a qualified WPS is required. Consider requiring that the welder be qualified as specified in NBIC Part 3 2.2.3. Also, Consider providing more guidance to "stamp holder using a qualified welding procedure" by pointing the reader to Part 3. Consider changing this to "stamp holder using a qualified WPS or SWPS as specified in NBIC Part 3 2.2.1 and 2.2.2 respectfully."
(ATTACHMENT PAGE 28)

January 2015

A progress report was given by M. Mooney. A task group of T. Vandini (PM), G. McRae, J. Getter and D. Graf was assigned in SG.

- **NB15-0503 – Part 2, S10.6** - This item is a result of PR15-0704. The Term “Examination” is used throughout S11.6, S11.7, and S11.9. Was this intended to read “Inspection” instead, which is a duty of the Inspector?
(ATTACHMENT PAGE 29)

January 2015

A progress report was given by M. Mooney. A task group of R. Dobbins (PM), R. Pate and P. Welch was assigned in SG.

- **NB15-0504 –Part 2, S10.10** – This item is a result of public review comments PR15-0701, PR15-0702 and PR15-0703. These comments deal with inspector’s duties in performing inspections of high pressure composite vessels.
(ATTACHMENT PAGES 30-32)

January 2015

A progress report was given by M. Mooney. A task group of M. Mooney (PM), M. Horbaczewski and E. Brantley was assigned in SG.

Add V. Newton to TG.

- **NB15-0701 – Part 2, 2.3.6.8** - This item is a result of public review comment PR15-0204, PR15-0601 and PR15-0401. Do not incorporate the proposed change – Establishing a mandatory (shall) inspection requirement based on another inspection code is beyond the scope of the NBIC. To my knowledge, no other inspection code has ever been made mandatory under the NBIC. If inspection requirements are needed then one of two things should be done: 1) let individual jurisdictions set the requirements, or 2) within the NBIC include specific inspection requirements consistent with pressure vessels constructed to ASME Section VIII and ASME PVHO-1. An alternative to including specific requirements within the NBIC would be to change the text to: "Inspections may be conducted using ASME PVHO-2 for reference." It must be clear that the requirements of PVHO-2 are not a mandatory part of an NBIC inspection. See for example, PVHO-2 Section 4.0. None of the responsibilities listed include a commissioned boiler inspector. Even Section 7 states that there are various types of inspections. "Operational Inspections" are definitely beyond the scope and capabilities of a commissioned inspector.
(ATTACHMENT PAGES 33-35)

January 2015

A progress report was given by M. Mooney. A task group of M. Mooney (PM) and D. Buechel was assigned in SG.

- **NB15-0801 – Part 2, S10** - This action item is a result of PR15-0602. AIA believes that several aspects of the proposed requirements are either undefined or otherwise beyond the normal scope and training of National Board Commissioned Inspectors. Imposing these requirements on Special Inspectors may also place them in the untenable position of assuming liability beyond the limits of the insurance policies under which they perform inspections. Items of concern include the failure to define the terms “sufficient clearance” (S10.2b), “safely supported” (S10.2d), “guarded (S10.2f); and “permanent” (S10.3a). We recommend either defining or deleting these terms. Furthermore, Commissioned Inspectors are not qualified to (i) determine whether a CO2 detector is set to alarm at any particular concentration (S10.5); (ii) verify the posting of warning signs and determine the setpoint of any alarms (S10.6); or (iii) determine the length of safety relief/vent lines or verify that the materials selected for valves, piping, tubing, hoses and fittings used in the LCDSV system meet certain requirements. We recommend deleting these sections.
(ATTACHMENT PAGE 36)

January 2015

A progress report was given by M. Mooney. A task group of M. Mooney (PM), P. Welch, E. Brantley and T. Barker was assigned in SG.

Add V. Newton & E. Brantley to TG.

- **NB15-0901 – Part 2 S10 - NB15-0901 – Part 2 S10** - This action item is a result of PR15-0205, PR15-0206, PR15-0207, PR15-0208, PR15-0209, PR15-0210, PR15-0211 and PR15-0402. Much of Supplement 10 contains requirements for inspection of equipment or systems that are outside the scope of the insurance policies that insurance company’s issue. If these inspections are mandated by the Jurisdiction, then the inspectors employed by these insurance companies will be forced to make inspections in where they have no business interest. Further, this puts indefensible liability on the Inspector and his/her employer. I recommend either deleting this Supplement from the 2015 edition and rework it to be more guidance related then requirement based, or add a suitable disclaimer in the Scope paragraph, S10.1, that would exempt Inspector conformance to this supplement if carbon dioxide systems or parts thereof, are not within the employer’s scope of activity.
(ATTACHMENT PAGES 37-44)

January 2015

A progress report was given by M. Mooney. A task group of M. Mooney (PM), P. Welch, E. Brantley and T. Barker was assigned in SG.

Add V. Newton & E. Brantley to TG.

- **NB15-1002 – Part 2** – Address wording of “ASME Code Symbol Stamp” vs. “Symbol” vs. “Code Symbol” vs. “Stamp” vs. “Certification. (No attachment)

January 2015

SG motioned to make this item editorial. A motion was made in SC to make this item editorial. The motion was unanimously approved.

7. New Business

- Mr. Mooney discussed with the SC that there will be no colored pictures in the 2017 NBIC.
- Add Joel Amato, Clayton Novack and J. Getter to SG Historical. A motion was made and unanimously approved.
- For July 2015 Agenda, David Ford would like to be added to the SC Inspection.

8. Future Meetings

July 2015 – Columbus, Ohio
January 2016 – Tucson, Arizona

9. Adjournment

The meeting was adjourned at 11:00 AM on January 21, 2015.

Respectfully Submitted,

Jodi Metzmaier
Secretary
:jm

SC on Inspection

1/4

Attachment
Pages 1-4

| Last Name | First Name | Interest Category | Role | |
|----------------------|------------|------------------------------------|------------|---|
| Mooney | Mark | Authorized Inspection Agencies | Chair | ✓ |
| Staniszewski, Jr. | Stanley | Regulatory Authorities | Vice Chair | X |
| Metzmaier | Jodi | | Secretary | ✓ |
| Barker | Timothy | Authorized Inspection Agencies | Member | ✓ |
| Canonico | Domenic | General Interest | Member | X |
| Getter | Jim | Manufacturers | Member | ✓ |
| Horbaczewski | Mark | Users | Member | ✓ |
| McRae | Greg | Manufacturers | Member | ✓ |
| Newton | Venus | Authorized Inspection Agencies | Member | ✓ |
| Pate | Ralph | Jurisdictional Authorities | Member | ✓ |
| Reetz | Robert | Jurisdictional Authorities | Member | X |
| Riley | Jim | Users | Member | ✓ |
| Safarz | Jason | General Interest | Member | X |
| Schwartzwalder | Mike | Users | Member | ✓ |
| Vandini | Thomas | National Board Certificate Holders | Member | X |
| Welch | Paul | Authorized Inspection Agencies | Member | ✓ |

Attendance List SC on Inspection

Meeting Date: January 21, 2015

Attachment
pages 1-4

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|--|--|---|---|
| <p>Paul Welch Arise, Inc. 2530 Trotters Lane Social Circle, GA 30025</p> <p>Ph: 678-446-5290 Fax: Email: paul.welch@ariseinc.com</p> | <p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><u>PSW</u> Initial</p> | <p>Domenic A. Canonico Canonico & Assoc. 1423 East Brow Road Signal Mountain, TN 37377</p> <p>Ph: 423-886-1008 Fax: E-mail: canonicod@epbfi.com</p> | <p>Attended: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>_____ Initial</p> |
| <p>Stanley Staniszewski, Jr. US Dept. of Transportation, Pipelines & Administration Hazardous Materials Safety East Building PHH -20 1200 New Jersey Ave. SE Washington, DC 20590</p> <p>Ph: 202-366-4545 x 0453 Fax: 202-366-3753 E-mail: stanley.staniszewski@dot.gov</p> | <p>Attended: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>_____ Initial</p> | <p>Mark Horbaczewski Diamond Technical Services 3333 Warrensville Road Lisle, IL 60532</p> <p>Ph.: 773-447-5667 Fax: Email: MHorbaczewski@diamondtechnicalservices.com</p> | <p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><u>MH</u> Initial</p> |
| <p>Tim Barker FM Global 601 108th NE Suite 1400 Bellevue, WA 98004</p> <p>Ph: 360-801-3790 Fax: E-mail: Timothy.Barker@FMGlobal.com</p> | <p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><u>TMB</u> Initial</p> | <p>Jason Safarz Sales Director CEC Combustion Services Group 1699 Brookpark Road Cleveland, OH 44130</p> <p>Ph: 216-749-2992 Fax: 216-398-8403 Email: jsafarz@combustionsafety.com</p> | <p>Attended: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>_____ Initial</p> |
| <p>Mark Mooney Liberty Mutual Insurance Chief Engineer 20 Riverside Road MS:03BN Weston, MA</p> <p>Ph: 781-891-890 x 27329 Fax: 781-642-6512 E-mail: Mark.Mooney@Libertulmual.com</p> | <p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><u>MM</u> Initial</p> | <p>Jim Getter Worthington Cylinders 200 Old Wilson Bridge Road Columbus, OH 43085 P: 614-840-3087 F: 614-438-3083 E-mail: jim.getter@worthingtonindustries.com</p> | <p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><u>JG</u> Initial</p> |
| <p>Mike Schwartzwalder Stress Engineer Services, Inc. 5380 Courseview Drive Mason, OH 45045</p> <p>Ph: 614-581-6456 Fax 614-716-1744-794-1469 E-mail: meschwartzwalder@aep.com</p> | <p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><u>MS</u> Initial</p> | <p>Jodi Metzmaier National Board 1055 Crupper Ave. Columbus, OH 43229 P: 614-888-8320 F: 614-847-1828 E: jmetzmaier@nationalboard.org</p> | <p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><u>JM</u> Initial</p> |

Attendance List SC on Inspection

Attachment
pages 1-4

Meeting Date: January 21, 2015

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|---|--|--|--|
| <p>Jim Riley Conoco Phillips 66 1380 San Pablo Ave. Rodeo, CA 94572-1354</p> <p>P: 510-245-5895 F:</p> <p>E-mail: <u>jim.riley@conocophillips.com</u> Jim.Riley@P66.com</p> | <p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><u>JMR</u> Initial</p> | <p>Ralph Pate Chief Elevator/Boiler Inspector Alabama Department of Labor 100 North Union St., Suite 630 PO Box 303500 649 Monroe St. Montgomery AL 36131</p> <p>Ph: 334-242-3066 Fax: 334-353-4528 Email: <u>ralph.pate@labor.alabama.gov</u></p> | <p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><u>RPP</u> Initial</p> |
| <p>Venus Newton Manager of Jurisdictional Inspection Services One CIS Insurance Company 3380 Chastain Meadows Pkwy Kennesaw, GA 30144</p> <p>Ph: 770-590-6726 Cell: 678-457-1310 Fax: E-mail: <u>venus.newton@us.bureauveritas.com</u></p> | <p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><u>VN</u> Initial</p> | <p>Greg McRae Engineering and Technical Director Trinity Containers, LLC 2525 Stemmons Freeway Dallas, TX 75207</p> <p>Ph: 214-589-8559 Fax: 214-589-8553 E-mail: <u>greg.mcrae@trin.net</u></p> | <p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><u>G</u> Initial</p> |
| <p>Tom Vandini Director of Quality and Continuous Improvement Quality Steel Corporation 721 Graham Drive Fremont, OH 43420</p> <p>PH. : (419) 333-5205 Mobile: (419) 455-3933 Email: <u>tvandini@propanetank.com</u></p> | <p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><u>TJV</u> Initial</p> | <p>Name: Matthew Vazquez Company: ASME Address: 2 Park Avenue City/State/Zip: New York, NY 10016 Phone: (212) (212) 591-8522 Fax: Email: Vazquezm@asme.org</p> | |
| <p>Name: DAVID FORD Company: VSDOT / FMCSA Address: City/State/Zip: Raleigh NC 27601 Phone: 919 886 1297 Fax: Email: DAVID.FORD@DOT.GOV</p> | | <p>Name: CHARLES WATKINS Company: Address: MB City/State/Zip: VISITOR Phone: Fax: Email:</p> | |

Attendance List SC on Inspection

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Attachment
pages 1-4

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|---|--|
| <p>Name: DARRELL GRAF Company: AIR PRODUCTS & CHEMICALS Address: 100 BASS RD City/State/Zip: CARRIERS MS 39426 Phone: 601-799-2889 Fax: Email: GRAF DR@APCI.COM</p> | <p>Name: Bonnie Petersen Company: Marguip Ward United Address: 1300 N. Airport Rd City/State/Zip: Phillips, WI 54555 Phone: 715-339-2191 Fax: Email: bonnie.petersen@marguipwardunited.com</p> |
| <p>Name: ERNEST BRANTLEY Company: XL INSURANCE Address: 810 N. Perkins St. City/State/Zip: DeQuincy, LA 70633 Phone: 337-842-7044 Fax: Email: ERNEST.BRANTLEY@BPCLLCA.COM</p> | <p>Name: DAVID BUECHEL Company: HS B LLC Address: 4300 SETON ST City/State/Zip: Pittsburgh PA 15227 Phone: 412 310-7740 Fax: 412 885-8120 Email: DAVID_BUECHEL@HSB.COM</p> |
| <p>Name: Company: Address: City/State/Zip: Phone: Fax: Email:</p> | <p>Name: Company: Address: City/State/Zip: Phone: Fax: Email:</p> |
| <p>Name: Company: Address: City/State/Zip: Phone: Fax: Email:</p> | <p>Name: Company: Address: City/State/Zip: Phone: Fax: Email:</p> |

National Board Inspection Code Action item NB13-1002- Revision Dated 1/20/15

NB13-1002 - Part 2, SG Insp. Spec. – Review inspection requirements for B31.1 Power Piping. A Task Group consisting of Mike Schwartzwalder (Lead), Joe Frey, Venus Newton, Mark Mooney, Marshall Clark, Domenic Canonico, Mark Horbaczewski and Robbie Dobbins were assigned.

For Discussion, I propose the following additions to the Part 2- Inspection, 2013 edition Section 1.3 add paragraph 1.3(v) ASME B31.1, Power Piping, Chapter VII, Operation and Maintenance.

Add to Part 2- Section 9 Inspection, Glossary of Terms Definitions; 9.1 Definitions; **Covered piping systems (CPS):** These are piping systems on which condition assessments ~~are to~~ should be conducted. As a minimum for piping designed to B31.1, the CPS are to include NPS 4 and larger of the main steam, hot reheat, cold reheat steam and boiler feedwater systems. In addition to the above, CPS also includes NPS 4 and larger piping in other systems that operate above 750° F (400° C) or above 1025 psi (7100 kPa). The owner-user may include other piping systems.

Insert new Section 2.4.8 –Covered Piping Systems (CPS)

Covered piping systems are piping systems, designed to B31.1, on which conditions assessments ~~are to~~ should be conducted. It is recognized that all of the documentation, data and records listed in the following may not be available for a specific plant, particularly older plants. In these cases, the owner or user should ensure to the extent possible that Covered Piping Systems do not represent unnecessary safety risks.

- a) In addition to boiler external piping, which is addressed under the original construction codes, the owner or user should consider establishing operation and maintenance procedures for Covered Piping Systems CPS which could fail as a result of creep, fatigue, wall thinning, corrosion fatigue and graphitization. The consequences of failure of CPS could pose a safety risk to personnel and equipment ~~result in death, injury and loss of property~~. The following guidance is provided as examples of written operation and maintenance procedures that owners or users prepare to ensure safe operation of these components;
- 1) Operation of piping systems within design limits,
 - 2) Documentation of actual operating temperatures,
 - 3) Documentation of significant system transients or excursions including thermal hydraulic events,
 - 4) Documentation of alterations and repairs,
 - 5) Documentation of maintenance of pipe supports for piping operating within the creep regime,

- 6) Documentation of maintenance of piping system elements such as vents, drains, relief valves, desuperheaters, and instrumentation necessary for safe operation,
 - 7) Assessment of degradation mechanisms, including but not limited to creep, fatigue, graphitization, corrosion, erosion, and flow accelerated corrosion,
 - 8) Quality of flow medium,
 - 9) Documentation of the condition assessment, and
 - 10) Other required maintenance
- b) A condition assessment program should be established to provide assessment and documentation of the condition of all CPS. This program should contain (but not limited to) as many of the following elements as appropriate;
- 1) System name,
 - 2) Listing of original material specifications and their editions,
 - 3) Design diameters and wall thicknesses,
 - 4) Design temperature and pressure,
 - 5) Normal operating temperatures and pressures,
 - 6) Operating hours, both cumulative and since last assessment,
 - 7) Actual modes of operation since last condition assessment (such as number of hot, warm, and cold starts),
 - 8) Pipe support hot and cold walkdown readings and conditions since last conditions assessment for piping systems that are operated within the creep regime,
 - 9) [Alterations](#) and repairs since last condition assessment,
 - 10) Description and list of any dynamic events, since last condition assessment,
 - 11) Actual pipe wall thickness and outside diameter measurements since last condition assessment,
 - 12) Summary of pipe system inspection findings including areas of concern, and
 - 13) Recommendations for re-inspection interval.
- c) Record of CPS should be maintained for the life of the piping system and should include those items listed in items a and b, applicable to the component, in addition to original as-built drawings, and repaired piping drawings.

d) It is also recommended that the owner or user should have a program, which documents pipe support readings, piping system displacements and modifications, which are taken during hot and cold walk downs. The owner or user should evaluate the effects of unexpected piping position changes, significant vibrations, and malfunctioning supports on the piping system's integrity and safety and record results and or corrective action taken in accordance with c).

~~d)~~e) Records of repairs or alterations to Covered Piping Systems (CPS) CPS shall be recorded documented on the applicable R form, if required, or another suitable document.

This action item is a result of PRC PR13-0209 from Francis Brown. His comment stated, " The NBIC is supposed to be a safety Code so why is a "good practice" only a "good practice" if required by a Jurisdiction. For example 2.2.10 6a) is or is not that paragraph a "good practice" mandatory, but without the Jurisdictional requirement a good practice is optional with the owner/user. This section should be revised to indicate "good practices" should be complied with but are mandatory when required by the Jurisdiction.

Instructions: If unable to submit electronically, please print this form and fax or mail. Print or type clearly.

Date: 12/10/12

Commenter Name: Francis Brown

Commenter Address: 1055 Crupper Avenue
Columbus, OH 43229

Commenter Phone: 614-431-3226

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Section/Subsection Referenced: Part 2, 2.2.10.6

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

The NBIC is supposed to be a safety Code so why is a "good practice" only a "good practice" if required by a jurisdiction. For example: 2.2.10.6a) Is or is not that paragraph a good practice? A jurisdiction only makes a "good practice" mandatory, but without the jurisdictional requirement a good practice is optional with the owner/user. This section should be revised to indicate "good practices" should be complied with but are mandatory when required by the jurisdiction.

4.4.2 GENERAL REQUIREMENTS

a) Organizations or qualified individuals with experience in inspection, design, construction, repairs, or failure analysis of pressure-retaining items should be consulted to assist in identifying damage mechanisms, and to evaluate condition assessment results of pressure-retaining items. Documentation and inspection data used for fitness for service assessment should be evaluated for compliance, with codes, industry standards/ experience or **good engineering practices**, and shall be acceptable to the Jurisdiction. Understanding the operation of equipment or systems and interaction with their internal or external service environment is necessary to correctly identify damage mechanisms.

Response:

Section 2.2.10.6(a) does not appear to have a reference to “good practice” or “good engineering practice”. Several sections in the Code refer to “good engineering practice” as something that should be used. (see section 4.4.2) In these cases, it is ultimately up to the Jurisdiction to determine if they choose to make it a requirement / mandatory. No change is necessary.

Supplement SX Inspector Review Guidelines for Finite Element Analysis (FEA)

Revision date: July 1, 2014

NB FEA Task Group

PART 2, SECTION 4

INSPECTION – EXAMINATIONS, TEST METHODS, AND EVALUATIONS

4.6 CALCULATIONS

This Section describes review by the Inspector of calculations prior to acceptance of quantitative engineering assessments per industry standards (such as Fitness-For-Service) for in-service equipment, and repairs and alterations.

4.6.1 ENGINEER EXPERIENCE

For quantitative engineering assessments, repairs and alterations, all calculations shall be completed prior to the start of any physical work or fitness-for-service acceptance. All design calculations shall be completed by an engineer (as designated by the manufacturer, R-stamp organization, owner or user) experienced in the design portion of the standard code used for construction of the item. Refer to NBIC Part 3, Sections 3.2.4, 3.2.5, and 3.2.6 for design and calculations requirements for repairs and alterations.

4.6.1.2 FINITE ELEMENT ANALYSIS (FEA) ENGINEER EXPERIENCE

Finite Element Analysis (FEA) may be used to support quantitative engineering assessments or design for repairs and alterations as follows.

- a) When quantitative engineering analysis is used to demonstrate the structural integrity of an in-service component containing a flaw or damage.
- b) Where the configuration is not covered by the available rules in the standard code used for construction.
- c) When there are complicated loading conditions or when a thermal analysis is required.

Because the FEA method requires more extensive knowledge of, and experience with, pressure equipment design and the FEA software package involved, the analysis and report submitted to the Inspector for review shall be completed and certified by a Professional Engineer (PE) licensed and registered as required by the manufacturer, R-stamp organization, owner or user and the jurisdiction if applicable.

The Inspector may require an initial explanation of why the FEA is applicable before the analysis is performed. The inspector shall verify ~~that~~ the validity of the FEA report, that it has been certified by a licensed and registered Professional Engineer, and that it is available for review by the manufacturer, R-stamp organization, owner or user and the jurisdiction. Owing to the specialized nature of FEA, the report must be clear and concise. Further guidelines are found in NBIC Part 2 Sx. INSPECTOR REVIEW GUIDELINES FOR FINETE ELEMENT ANALYSIS (FEA).

Supplement SX

Inspector Review Guidelines for Finite Element Analysis (FEA)

Revision date: July 1, 2014

NB FEA Task Group

SX.1 SCOPE

This Supplement provides guidelines to be followed when a finite element analysis (FEA) is submitted as part of a quantitative engineering assessment for in-service equipment, or a repair or alteration package for a pressure retaining item for review by the Inspector, and the local jurisdiction if required. Refer to NBIC Part 2 Section 4.6.

SX.2 TERMINOLOGY

- a) Finite element analysis (FEA) as applied in engineering is a computational tool for performing engineering analysis. It includes the use of mesh generation techniques for dividing a complex problem into small elements for simulation, as well as the use of software program coded with finite element method algorithm.
- b) Quantitative engineering assessment refers to methodologies whereby flaws contained within a pressure retaining item are assessed in order to determine the adequacy of the structure for continued service without failure. The result of the assessment provides guidance on structural integrity, inspection methods and intervals, and shapes decisions to operate, repair, monitor or replace the structure.

SX.3 CHECKLIST

The following presents a thought-provoking checklist of areas to consider and discuss with the FEA practitioner engineer performing the analysis and may be used to familiarize the Inspector with the FEA approach and method- as part of validating the FEA report, and aid in preparing an analysis specification.

SX.3.1 PRESSURE RETAINING ITEM INFORMATION

- a) Vessel type, size, region/section and component(s) under FEA consideration
- b) Materials of construction and materials properties (including those as a function of temperature)
- c) Original code of construction
- d) Repair and alteration history
- e) Known extent of degradation and associated damage mechanisms (if available/any)
- f) Operating conditions (temperature and heat flux, pressure including vacuum, cyclical service, etc.)
- g) Other loads (seismic, earthquake, etc.)

SX.3.2 SCOPE OF THE FEA

- a) The objective of the FEA analysis (to be used to support quantitative engineering analysis, repair, alteration, etc.)
- b) The justification for use of FEA rather than rules in the code of construction. Refer to NBIC PART 2 4.6.1.2

SX.3.3 FEA SOFTWARE AND MODELLING

- a) The software version to be used for the analysis
- b) The type of analysis (i.e. stress, static, dynamic, elastic, plastic, small or large deformations, heat transfer, etc.)
- c) The modelling approach that will be used (solids, shells, simplification of geometry, mesh generation, solver technique, division into elements and element size, boundary restraints, etc.)
- d) The geometries to be modeled (non-corroded, corroded and future corrosion allowance, bulge, dent, groove, crack, etc.)

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SX.4 REPORT REQUIREMENTS

The following checklist of areas to consider and discuss with the FEA practitioner engineer completing the certified report may be used to define what should be included in the report. [An alternate useful reference is the following presentation: Proceedings of the ASME 2014 Pressure Vessels & Piping Conference, PVP2014-28958, Writing and Reviewing FEA Reports Supporting ASME Section VIII, Division 1 and 2 Designs – Practical Considerations and Recommended Good Practice.](#)

SX.4.1 SECTIONS TO BE INCLUDED IN THE REPORT

- a) An introduction and/or executive summary
- b) A description of the model
- c) A presentation of the results
- d) An analysis of the results and conclusions

SX.4.2 LISTING OF INFORMATION THAT MAY BE INCLUDED IN THE FEA REPORT

SX.4.2.1 ANALYSIS METHOD

- a) State the scope of the FEA and the justification for using it; give the program and version
- b) Note whether or not the problem is linear.
- c) Give an overview of how the analysis is conducted, for example:
 - 1) Calculations are done to simplify radiation boundary conditions so that the problem is linear.
 - 2) Thermal loads are applied to the FEA model and temperatures generated
 - 3) Temperatures at select locations are compared to the radiation simplification calculations
 - 4) Mechanical loads are added
 - 5) Stresses are generated
 - 6) Stress classification results are generated
 - 7) Results are verified by comparison to something (for example BPVVC Section VIII Division 2 Part 5 Design by Analysis)
 - 8) Results are compared to the construction code
- d) Note if any of the geometry is not included in the stress model

SX.4.2.2 STRUCTURAL DESCRIPTION / MESH / STRESS CLASSIFICATION LINE LOCATIONS

- a) Reference the geometry source or show a drawing or sketch with dimensions that relate the model geometry to the actual structure in the FEA analysis
- b) Name all the parts, usually best done with a sketch
- c) Note any symmetry
- d) Give the type of element used for each component
- e) Describe the mesh type (h, p, 2D, 3D), shape, and order (2nd order or above) and show plots of the mesh
- f) Show the top and bottom of shells or beam orientations and indicate if they are thick or thin elements
- g) Show the cross sections with stress recovery points for beams
- h) Describe any boundary conditions such as supports, restraints, loads, and forces as well as the method of restraining the model to prevent rigid body motion.
- i) Describe parts that are connected by node sharing or contact and tell whether the connections are thermal, mechanical, or both

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j) Give the stress classification line locations (usually best done with a sketch)

SX-4.2.3 Material Properties

- a) List properties used for every component, references to other sources are not sufficient. They must be explicitly listed. Show the values of any properties modified for the sake of the model. For example, the model density is often modeled.
- b) Show calculations for properties that are modified for the sake of the model.
- c) Discuss any given artificial properties for the analysis (for example the modulus was set to 1000 psi so that the component would not influence the mechanical model. Or, above 1200F the properties are assumed to be constant).
- d) Reference the source for all material properties.

SX-4.2.4 Restraints and loads

- a) Show all restraints and loads
- b) Discuss the justification for all restraints and loads, and give calculations if they were done to determine the restraints or loads (for example, end pressure).
- c) Discuss any contact regions.
- d) Give initial or default temperatures.

SX-4.2.5 Validation

- a) Describe how the model was validated.
- b) Describe the accuracy of the model digitization either by use of convergence or to the accuracy of previous successful models.

SX-4.2.6 Results

For each model the following should be presented

- a) Give temperature plots.
- b) Give deformed geometry plots
- c) Give stress classification line results and comparison to Code allowable.
- d) Relate the results of the model to the defined allowable stresses of the original Code of construction.
- e) Refer to ASME Section VIII, Division 2, Part 2, Section 2.3.3.1(c)(2) Documentation requirements of design-by-analysis calculations in Part 5.

SX-4.2.7 Reference Documents Used:

Typical reference documents could include:

- a) ASME BPVC II-D
- b) ASME BPVC Section VIII Division 1
- c) ASME BPVC Section VIII Division 2
- d) ASME/API-579
- e) Drawings
- f) UDS
- g) ASCE ~~7-05~~

Inspection of Static Vacuum Insulated Cryogenic Vessels

This section covers the periodic inspection and testing of static vacuum insulated cryogenic pressure vessels used in the storage of refrigerated liquefied gases. Owner-users should inspect static cryogenic vacuum-insulated storage tanks to ensure that the equipment is in safe serviceable condition.

Definition: A static vacuum insulated cryogenic vessel is a vessel that is thermally insulated for use with one or more cryogenic fluids, consisting of: 1) an inner vessel holding the cryogenic fluid, 2) an outer jacket that serves as an air tight enclosure which supports the inner vessel, holds the insulation and enables the vacuum to be established, and 3) the associated piping system.

Outdoor installation general observation:

Check that the following conditions or safe guards are adequate prior to doing a periodic external inspection of the vessel:

- Surface water drainage is directed away from the location of installation. Proximity of storage tank to sewer inlets shall comply with local fire code.
- Installations are in place, such as a wall, to prevent gases from spreading across the location if there is a slope between vessels (and lower rooms if any) Comment: NFPA 55 already establishes requirements for the tank to be a set distance from openings and air intakes. These distances ensure ample time for spilled product to evaporate and dilute in the air. Containment walls are rarely used.
- Protective measures are in place for the vessels and components from mechanical impact damage (such as barricades, safe set-back distances, pells-poles and bars).
- Protection is in place for the external vessel supports from leaking cryogenic fluid Comment: Proper drainage is the only protection afforded against leaking cryogenic fluid. No other protections are in place for most systems.
- Any gas from pressure relief devices or vents is discharged to a safe place.
- There is sufficient ventilation to avoid the formation of explosive gas-air mixtures or an oxygen deficient/enriched atmosphere.

Periodic Visual Inspection:

A periodic external visual inspection of the vessel and equipment should be made to ensure that the vacuum between the inner vessel and outer jacket has not been compromised. If the vessel has lost vacuum, the owner-user of the cryogenic storage vessel shall immediately investigate the cause. Any loss of vacuum should be investigated as this could affect the integrity of the vessel and support system. If the cause is due to an internal pipe failure as evidenced by vapor escaping from the vacuum relief device, the pressure should be immediately reduced to atmospheric pressure followed by emptying of all of the cryogenic liquid in a safe manner.

External visual inspections are possible at all accessible parts of the vessel and piping. The following inspections should be included as part of the periodic external visual inspection.

- A functional check of essential and critical valves and their operability.
- Leak tests under operating conditions of the vessel and piping.
- Assessing if there have been any significant changes in the operational conditions of the installation and its surroundings.
- Check that there is no excessive out-of-roundness or deformation of the outer vessel
- Check all nozzle attachments
- Check the vessel supports to make sure there is no structural damage.
- Check that any attachments to the outer jacket are not damaged or affecting the vessel condition.
- Verification of periodic testing and repair (or replacement) of the pressure relief device(s)

- Check that the pressure relief device(s) are not continually venting. PRD's may vent periodically under normal circumstances but should be reported for maintenance testing and repair if venting continually.
- Checking the condition of the outer vessel, piping and accessories
- Check for abnormal frosting on outer vessel surface. Under normal usage, frost and ice will develop around pipes, valves, controls and vaporizers- Inspect the outer skin of the outer vessel for any new or abnormal signs of excessive frosting.

Extended Interval Pressure Testing

The Owner-User should consider conducting a pressure test of the vessel at extended intervals, such as every 8 to 15 years. An example is a pneumatic pressure test at 110% of design pressure. At the same time, a vacuum test, such as for 3 hours, may also be conducted. Comment: It is the position of the Compressed Gas Association that periodic pressure tests are not required for vacuum-jacketed cryogenic vessels. This is due to non-corrosive service, the performance history of existing tanks, and the excellent fracture toughness of the inner vessel material at cryogenic temperature. Please refer to CGA Position Statement PS-4. As for periodic vacuum tests; it is unwise to ever test vacuum once a tank is in service. Loss of vacuum is easily detected by observing frost forming on the outer vessel, or by the relief actuating. Testing vacuum is the most frequent cause of vacuum problems. So, vacuum tests are only performed when loss of vacuum is suspected, or when a vessel is being refurbished.

1.2 Administration

Add to end of Part 2, Section 1.2

Unless otherwise specifically required by the Jurisdiction, the duties of the Inspector do not include inspection to other standards and requirements (environmental, construction, electrical, operational, undefined industry standards, etc.) for which other regulatory agencies have authority and responsibility to oversee.

Proposed New Supplement for Part 2

Inspection of Biomass Fired Boiler Installations (Section 6, Supplement 9)

S9.1 - Scope

- a) This supplement provides rules for continued inspection of biomass fired boilers and the additional equipment utilized in these installations. In this context Biomass is intended to mean various types of wood wastes, or wood byproducts.
- b) Many of the requirements of the earlier Sections of Part 2 are common to all boiler installations irrespective of the fuel being fired; therefore this supplement will address the differences that occur when solid fuels, such as Biomass, are being used. Thus the primary thrust of this section will be directed toward the inspection of the fuel handling and distribution systems, and the impact these systems may have on the pressure vessel itself.

S9.2 – Assessment of Installation

- a) A general assessment of the complete installation shall be undertaken, in terms of observable results of operating and maintenance practices. Indicators include the general boiler room cleanliness, for example significant quantities of fuel particles (dust) should not be apparent in the boiler room.
- b) The combustion air inlet shall be free of any debris or dust particle build up, and where moveable louvered intakes exist, the actuating mechanisms shall be clean and operate freely. Corrective action is required when non-compliance is noted.
- c) The flue gas venting system shall be checked for tightness, with no observable signs of leakage. Corrective action is required if leakage is noted.
- d) The intakes of the various fans or blowers shall be free of fuel particle build up or signs of other debris. Corrective action in terms of cleaning is required when discrepancies are noted.

- e) fuel metering equipment and the fuel transportation system shall be free from signs of particulate or dust leakage. Corrective action in terms of cleaning and repair work is required as necessary.
- f) Electrical equipment and controls shall be properly protected from the ingress of dust, by ensuring that all cover plates are properly installed and all panel doors are intact, operable and closed.
- g) Verify that all guards for rotating equipment (shafts, bearings, drives) are correctly installed and fan inlet screens are in place.
- h) On the boiler, generally check for signs of potential problems, including;
 - Water leaks
 - Ash Leaks
 - Condition of insulation and lagging.
 - Casing leaks or cracks
 - Check all safety valves for bypass and ensure the inspection plugs are capped and the drain lines are piped away from traffic areas.
 - Missing or misaligned pieces or parts ie twisted, misaligned or bound up buck stays, missing linkage bolting.
 - Condition of support systems
 - Provision of “Danger” or “Caution” signs
 - Excess vibration
 - Excess noise.
- i) Verify that the Owner/User has established function test, inspection, requirements, maintenance and testing of all controls and safety devices in accordance with the manufacturer’s recommendations. Verify that these activities are conducted at assigned intervals in accordance with written procedures, non-conformances which impact continued safe operation of the boiler are corrected and the results are properly documented. These activities shall be at a frequency recommended by the manufacturer, or frequency required by the jurisdiction. Where no frequencies are recommended, or prescribed, the activity should be conducted at least annually

S9.3 – Boiler Room Cleanliness

- a) While boiler room cleanliness is of primary importance in all boiler rooms it is of particular importance in biomass fired boiler rooms. Biomass can contain fine particulate, which if allowed to leak from the transportation system into the

surrounding boiler room, will eventually be drawn into fans, resulting in the possibility of combustion air systems becoming plugged.

- b) Boiler rooms containing quantities of fine dusts are susceptible to fire or explosion, again emphasizing the need for high standards of cleanliness.

S9.4 – Emission Control Requirements

- a) Emission control is dependent upon the fuel being fired and the emission requirements prevailing at the location of the boiler installation. As such they are a part of the initial design and installation process, and apart from ensuring that they are kept in top working condition, so that emission requirements are not violated; there is little that can be done from the inspector's point of view.
- b) When Continuous Emissions Monitors (CEM's) are in use, they should be demonstrated to be functioning properly and have a current calibration sticker.
- c) Delta-P pressure gauges which measure the pressure drop across the various elements of the emission control system should all be functioning correctly.
- d) There should be no sign of erosion caused by entrained particulate matter, in any part of the breaching, ductwork, stack or the individual emission control elements.
- e) On systems in which the emissions control system incorporates a baghouse, appropriate fire detection and suppression systems shall be incorporated and functioning properly.

2.3.6.6 INSPECTION OF WIRE WOUND PRESSURE VESSELS

- (a) This section provides guidelines for inspection of wire wound pressure vessels typically designed for 10,000 psi or greater service. The scope of inspection of these vessels should include components affected by repeated opening and closing, such as the frame, yolk and cylinder inner diameter surface, or alignment of the yolk with the cylinder, lack of maintenance and a check for inoperable or bypassed safety and warning devices.
- (b) These vessels consist of four parts, a wire wound cylinder, two end closures and a frame to retain the closures in the cylinder. The wire is one continuous piece and is wound in tension. On the cylinder, the wire can only carry circumferential or radial loading. The cylinder is typically not of sufficient thickness to carry axial load which requires the end closures have no threads or retaining grooves and requires a frame to retain the pressure vessel axial load imposed on the closures. The purpose for this design is to minimize weight of the containment cylinder using thinner wall materials and using external wound wire to induce a compressive preload. This design also provides increased resistance to damage from fatigue loading.

Note that some vessels may be monoblock cylinders (no winding) with wire wound frame and some vessels may be wire wound cylinder with a forged or welded plate frame (not wire wound). Use of a frame to retain the end closures removes the sharp transitions in shape (threads or grooves) associated with monoblock cylinder failures. The design of high pressure vessels is typically based on fatigue life criteria. The majority of operating wire wound vessels in North America today were fabricated under the rules of ASME BPVC Section VIII Division 3, Alternative Rules for Construction of High Pressure Vessels. Some inservice vessels may have been constructed the ASME BPVC Section VIII Division 1 or Division 2 rules, and others installed as "State Specials" that still require fatigue life analysis to determine a safe operating life. The primary failure mode is fatigue cracking. Early detection of any damage to the cylinder, closures or frame is essential to avoid catastrophic failure

High pressure design requires use of high strength materials, which have relatively low ductility. The material thickness required for reasonable fatigue life is greatly reduced by the pre-tensioned wire wound design. Typical winding design provides compression sufficient that at vessel design conditions there is no circumferential stress in the cylinder. These vessels have been used in various industrial applications, including foods and drinks processing, ceramic or refractory processing and powdered metal processing utilizing a liquid compressing fluid at ambient or slightly elevated temperature. The most frequent of these are isostatic pressing and hydrostatic extrusion. Isostatic pressing can be performed at either cold temperatures, at room temperature, with liquid as the pressure medium, or hot, at temperatures of 2000 to 3300°F with gas as the pressure medium. In hot isostatic presses, the vessel wall is separated from the hot space by insulation, which keeps the vessel wall operating at a low temperature of approximately 120 to 180°F.

Cold pressing is used for regular production at pressures up to 87,000 psi. Ceramic, refractory and metal processing is also performed at elevated temperature, up to 3632°F (2000°C). The "hot" processes utilize an inert gas fluid pressure up to 45,000 psi (310

MPa). Continuous cooling is necessary for the hot process and may contribute to corrosion damage of the cylinder or closures.

Hydrostatic extrusion is generally performed either cold, at room temperature, or warm, at temperatures up to 1110°F, in both cases with liquid as the pressure medium.

Hydrostatic extrusion is used for regular production at pressures up to 200,000 psi. Both cold and hot processes are commonly found in research facilities and in universities.

(c) Record keeping

(1) Since these vessels have a finite fatigue life, it is essential a record be maintained of each operating cycle, recording both temperature and pressure. Deviation beyond design limits is cause for suspending operation and reevaluation of remaining fatigue life. Vessels having no operating record should be inspected and a fracture mechanics evaluation with a fatigue analysis test be performed to establish remaining life before resuming operation.

(2) Operating data should be recorded and include the following whenever the vessel is operating:

- a. Number of cycles
- b. Maximum pressure
- c. Maximum temperature

(d) Any unusual conditions (d) Any damage to the cylinder or closures can lead to premature failure. Frequent visual inspection should be made of internal and external surfaces of the cylinder, frame and closures. A thorough examination should be completed if any visually apparent damage is identified or if any excursion beyond design temperature or pressure occurs.

In addition, surfaces of the cylinder and closures should be examined by dye penetrant or magnetic particle method at intervals based on vessel remaining life. Closures may require ultrasonic examination of passageways.

Following is an example of what the results of such a study might reveal as allowable cycles for a particular wire wound vessel:

| | | |
|-------------------|------------------------------|--|
| Columns | > 10 ⁶ Cycles | “Columns” are beams on either side of frame, between the yokes. |
| Yokes | > 10 ⁶ Cycles | “Yokes” are the circular ends of the frame. |
| Wires of frames | > 10 ⁶ Cycles | “Wires” place frame in compression |
| Cylinder | 100 X 10 ³ cycles | |
| Wires of Cylinder | 60 X 10 ³ cycles | “Wires” place cylinder in compression. |
| Closures | 30 X 10 ³ cycles | All connections to the vessel are through the closures. These passageways create stress raisers, as do grooves for sealing system. |

The vessel design life in this example is thus limited by the closure. The calculated design life is 30,000 cycles at design pressure and temperature.

An acceptable factor of safety for vessel fatigue inspection interval varies between 0.25 and 0.5 of the remaining design life. The inspection interval for the above example is therefore 10,000 to 20,000 cycles, but should not exceed five years.

In addition to scope of frequent inspection, the fatigue inspection should include measurement of the cylinder inside diameter and frame inside length to detect reduced tension in the wire windings. Note that monoblock cylinders and plate frames require additional inspection due to differing construction.

If a crack or flaw is detected during any inspection, an immediate evaluation, repair and study of impact on remaining fatigue life should be completed by a National Board authorized repair agency. Using the results of this study, and application of safety factor 0.25 (due to known damage), the number of cycles of operation to the next fatigue inspection is established.

As part of the frequent inspection, the following items should be reviewed:

- (1) Verify no change in the process, such as the processing fluid, that might adversely impact vessel integrity.
 - (2) Review the vessel manufacturer's inspection recommendations for vessel, closures and frame. If manufacturer's recommendations are not available, obtain recommendations from a recognized wire wound vessel service provider.
 - (3) Verify any repair to pressure retaining items has been completed by National Board authorized service provider having wire wound vessel expertise.
 - (4) Verify overpressure protection with appropriate set pressure and capacity is provided. Rupture discs are commonly used for pressures exceeding 14,500 psi (100 MPa) to avoid valve seat leakage. Overpressure protection devices are frequently replaced to avoid premature operation.
- (e) Additional Inspection Criteria
- (1) If there are no manufacturer's recommendations available for the vessel, the following are additional recommended inspections that should be conducted to ensure vessel integrity and safety
 - a. Conduct annual visual and dimensional vessel inspections with liquid penetrant examination of maximum stressed areas to ensure that the surfaces are free of defects. Conduct ultrasonic examination of the vessel after every 25% of the design cycle life or every five years, whichever comes first, to detect subsurface cracks. Special attention Should be given to the roots of threads and closures using threaded head retention construction. Other geometric discontinuities that are inherent in the design or irregularities resulting from localized corrosion, erosion, or mechanical damage should be carefully examined. This is particularly important for units of monoblock construction.

- b. The closure mechanism of the vessel end-closure is opened and closed frequently during operation. It should be closely inspected for freedom of movement and proper contact with its locking elements. Wire wound vessels must have yoke-type closures so the yoke frame will need to be closely inspected on a regular basis
- c. Should pitting, cracks, corrosion, or other defects are found during scheduled inspection; verify that an evaluation using fracture mechanics techniques is performed. This is to determine MAWP, cyclic life and extent of NDE frequency based on crack growth rate.

(2) Gages, Safety Devices, and Controls

- a. Verify that the vessel is provided control and monitoring of the pressure, temperature, electrical system, fluid flow, liquid levels, and all variables that are essential for the safe operation of the system. If the vessel is automatically controlled, manual override should be available. Also, safety interlocks should be provided on the vessel closure to prevent vessel pressurization if the vessel closure is not complete and locked.
- b. Verify that all safety device isolation valves are locked open if used.
- c. Verify appropriate pressure relief device is installed with relief setpoint at low a pressure as possible, consistent with the normal operating pressure but in no case higher than the design operating pressure of the vessel. Rupture discs are normally considered more suitable for these types of applications since pressure relief devices operating at pressures above 14500 psi may tend to leak by their seat.
- d. Verify that pressure and temperature of the vessel coolant and vessel wall is controlled and monitored. Interlock devices associated with these monitoring devices that will deenergize or depressurize the vessel are strongly recommended due to the potential significant damage that can be caused by release of energy in the event of overpressurization due to excess pressure or temperature in the vessel.
- e. Verify audible and visual alarms are installed to indicate unsafe conditions.

Action Item Request Form

EXISTING LANGUAGE in 2013 NBIC Part 2

5.2 REPLACEMENT OF STAMPED DATA DURING INSERVICE INSPECTION

5.2.1 AUTHORIZATION

a) When the stamping on a pressure-retaining item becomes indistinct or the nameplate is lost, illegible, or detached, but traceability to the original pressure-retaining item is still possible, the Inspector shall instruct the owner or user to have the stamped data replaced. All re-stamping shall be done in accordance with the original code of construction, except as modified herein. Requests for permission to re-stamp or replace nameplates shall be made to the Jurisdiction in which the pressure-retaining item is installed. Application must be made on the *Replacement of Stamped Data Form*, NB-136 (see NBIC Part 2, 5.3.2). Proof of the original stamping and other such data, as is available, shall be furnished with the request. Permission from the Jurisdiction is not required for the reattachment of nameplates that are partially attached. When traceability cannot be established, the Jurisdiction shall be contacted.

b) When there is no Jurisdiction, the replacement of stamped data shall be authorized and witnessed by a National Board Commissioned Inspector and the completed Form NB-136 shall be submitted to the National Board.

I propose the following revisions to NBIC Part 2 paragraphs 5.2.1 (a) and 5.2.2 a)

Stamped Data Form, NB-136 (see NBIC Part 2, 5.3.2). Proof of the original stamping and other such data, as is available, shall be furnished with the request. Permission from the Jurisdiction is not required for the reattachment of duplicate nameplates or nameplates that are partially attached. When traceability cannot be established, the Jurisdiction shall be contacted.

5.2.2 REPLACEMENT OF STAMPED DATA

a) The re-stamping or replacement of data shall be witnessed by a National Board Commissioned Inspector and shall be identical to the original stamping. The requirement to witness replacement of a duplicate nameplate may be waived if acceptable to the Jurisdiction.

JUSTIFICATION FOR CODE REVISION:

The NBIC does not seem to address replacement of "Duplicate" nameplates where the original nameplate is intact and attached to an inner vessel and may or may not be visible such as on a cryogenic vessel that has an inner and outer shell, the inner vessel being the actual pressure retaining item. It seems reasonable that since the AI is not required to witness a duplicate nameplate as addressed in ASME Section VIII Div 1 UG 119 (f), the AI should not be required to witness the replacement of a "Duplicate" nameplate or request permission from the Jurisdiction.

James P. Larson

OneCIS Insurance Co.

Remove 6.1 SCOPE

PART 2, SECTION 6 INSPECTION — SUPPLEMENTS

6.1 SCOPE

- ~~a) This Section contains detailed inspection requirements for specific pressure-retaining items identified as Supplements.~~
- ~~b) Inspection of items described in these Supplements may include application of additional inspection requirements contained in other sections of NBIC Part 2.~~
- ~~c) Each Supplement is numbered in sequential order and follows the same numbering system used for the main text preceded by the letter "S." Each page of the Supplement will identify the Supplement name and number in the top heading.~~

In the roman numeral section of the NBIC it states:

Supplements

Supplements are contained in each Part of the NBIC to designate information pertaining only to a specific type of pressure-retaining item (e.g., Locomotive Boilers, Historical Boilers, Graphite Pressure Vessels.) Supplements follow the same numbering system used for the main text, preceded by the letter "S." Each page of the Supplement will identify the Supplement number and name in the top heading.

PROPOSED CHANGES – NBIC Part 2, SECTION 5 5.2 – 5.3.1

5.2 REPLACEMENT OF STAMPING OR NAMEPLATE DURING INSERVICE INSPECTION

5.2.1 AUTHORIZATION

- a) When the stamping on a pressure-retaining item becomes indistinct or the nameplate is lost, illegible, or detached, but traceability to the original pressure-retaining item is still possible, the Inspector shall instruct the owner or user to have the nameplate or stamped data replaced. All re-stamping shall be done in accordance with the original code of construction, except as modified herein. Requests for permission to re-stamp or replace nameplates shall be made to the Jurisdiction in which the ~~pressure-retaining item is installed.~~ nameplate or stamping is re-applied. Application must be made on the Replacement of Stamped Data Form, NB-136 (see 5.3.2). Proof of traceability to the original nameplate or stamping, and other such data, as is available, shall be furnished with the request. Permission from the Jurisdiction is not required for the reattachment of nameplates that are partially attached. When traceability cannot be established, the Jurisdiction shall be contacted. The completed Form NB-136 (see 5.3.2) shall be submitted to the National Board.
- b) When there is no Jurisdiction, the traceability shall be accepted and the replacement of the nameplate or stamped data shall be authorized and witnessed by a National Board Commissioned Inspector, ~~and~~ The completed Form NB-136 (see 5.3.2) shall be submitted to the National Board.

5.2.2 REPLACEMENT OF NAMEPLATE OR STAMPED DATA

- a) The re-stamping or replacement of data shall be witnessed by a National Board Commissioned Inspector, ~~and shall be identical to the original stamping.~~
- b) The Re-stamping or replacement of a code symbol stamp shall be performed only as permitted by the governing code of construction.
- c) Replacement nameplates shall be clearly marked “replacement”.

5.2.3 REPORTING

Form NB-136 shall be filed with the Jurisdiction by the owner or user (if required) ~~or and~~ The National Board by the “R” Stamp Holder owner or user together with bearing a facsimile of the replacement stamping or nameplate, as applied, and shall also bear the signature of the “R” Stamp holder that performed the replacement and the National Board Commissioned Inspector who authorized and witnessed the replacement.

5.3 NATIONAL BOARD INSPECTION FORMS

5.3.1 SCOPE

The following forms (5.3.2 through 5.3.7.1) may be used for documenting specific requirements as indicated on the top of each form.

Note: Jurisdictions may have adopted other forms and may not accept these forms.

PROPOSED CHANGES TO FORM NB-136
REPLACEMENT OF STAMPED DATA FORM, NB-136
in accordance with provisions of the *National Board Inspection Code*

Submitted to:

Submitted by:

(name of jurisdiction)

(address)

(telephone no.)

(name of owner, user, or certificate holder)

(address)

(telephone no.)

1. Manufactured by _____
(name and address)

2. Manufactured for _____
(name and address)

3. Location of Installation _____
(address)

4. Date Installed _____

5. Previously installed at _____

6. Manufacturer's Data Report Attached No Yes

7. Item registered with National Board No Yes, NB Number _____

8. Item identification _____ Year built _____

Type _____ Dimensions _____

Mfg. Serial no. _____ Jurisdiction no. _____

MAWP _____ psi Safety relief valve set at _____ psi

9. Complete the reverse side of this report with a true facsimile of the legible portion of the nameplate or:

10. If nameplate is lost or illegible, traceability documentation, verified by the Inspector, shall be attached to this report, identifying the object, to the Manufacturer's Data referenced on this form.

11. I request authorization to replace the stamped data and/or nameplate on the above described pressure-retaining item in accordance with the rules of the *National Board Inspection Code* (NBIC).

Owner or User's Organization Name
"R" Certificate Holder's Name: _____ Number _____

Signature _____ Date _____

Title _____

Verification of Traceability _____ NB Commission _____
(Name of inspector)

12. Authorization is granted to replace the stamped data or to replace the nameplate of the above described pressure-retaining item.

Signature _____ Date _____
(chief inspector or authorized representative)

Jurisdiction (if available) or NB Commission number _____

The following is a true facsimile of the legible portion of the item's original nameplate, (if available). Please print. Where possible, also attach a rubbing or picture of the nameplate.

[Empty box for original nameplate facsimile]

The following is a true facsimile of the item's replacement stamping or nameplate

ADDED

I certify that to the best of my knowledge and belief, the statements in this report are correct, and that the replacement information, data, and identification numbers are correct and in accordance with provisions of the *National Board Inspection code*. ~~Attached is a facsimile or rubbing of the stamping or nameplate.~~

~~Name of Owner or User~~

"R" Certificate Holder _____ Number _____

Signature _____ Date _____
(Authorized representative)

Witnessed by _____ Employer _____
(Name of inspector)

Signature _____ Date _____ NB Commission _____
(Name of inspector)

(Back)

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National Board Inspection Code
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Make additional copies as needed

Comments Must be Received No Later Than: October 13, 2014

Instructions: If unable to submit electronically, please print this form and fax or mail. Print or type clearly.

Date: October 7, 2014

Commenter Name: Nathan Carter

Commenter Address: HSB Global Standards, One State Street, PO Box 299
Hartford, CT 06141-0299

Commenter Phone: 860-722-5750

Commenter Fax: _____

Commenter Email: nathan_carter@hsbct.com

Section/Subsection Referenced: Part 2, S7.10 h)

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

Since a nameplate is required with a "R" stamp for the underground service change, was the requirement for an R-1/R-2 to be completed intentionally left off? Would it not be prudent for an Inspector to verify that the seal welding or flush patch welds comply at least visually comply with code? A "R" Certificate Holder is already required. Why not include an Inspector to verify the weld is acceptable and require a signed R-1/R-2 form, which is to be filed with the NB. There is a risk to life/property if a seal weld or flush patch on a LPG storage vessel is not completed in accordance with code requirements. Paragraph e) also introduces additional welding, which should be verified.

Also please consider a new item for Part 3, which would refer the reader to this Supplement for a Change of Service.

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, rhowgh@nationalboard.org

NB Use Only

Commenter No. Issued: PR15-01 Project Committee Referred To: _____

Comment No. Issued: 42 SC Inspection _____

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Hartford, CT 06141-0299

Commenter Phone: 860-722-5750

Commenter Fax: _____

Commenter Email: nathan_carter@hsbct.com

Section/Subsection Referenced: Part 2, S7.10 k)

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text
Part k) is silent concerning qualified welders. I don't believe the intent is for unqualified welders to be seal welding or welding flush patches to close off unused connections (d) as well as welding the nameplate, especially since a qualified WPS is required. Consider requiring that the welder be qualified as specified in NBIC Part 3 2.2.3. Also, Consider providing more guidance to "stamp holder using a qualified welding procedure" by pointing the reader to Part 3. Consider changing this to "stamp holder using a qualified WPS or SWPS as specified in NBIC Part 3 2.2.1 and 2.2.2 respectfully."

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

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Commenter No. Issued: PR15-01 Project Committee Referred To: _____
 Comment No. Issued: 43 SC Inspection _____

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Hartford, CT 06141-0299

Commenter Phone: 860-722-5750

Commenter Fax: _____

Commenter Email: nathan_carter@hsbct.com

Section/Subsection Referenced: Part 2, S11.6, S11.7, S11.9

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

The Term "Examination" is used throughout S11.6, S11.7, and S11.9. Was this intended to read "Inspection" instead, which is a duty of the Inspector?

S11.7. Should there be a Visual Acuity requirement?

Source: Own Experience/Idea Other Source/Article/Code/Standard

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, rough@nationalboard.org

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 Commenter No. Issued: PR15-07 Project Committee Referred To:
 Comment No. Issued: 04 SC Inspection

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Commenter Address: HSB Global Standards, One State Street, PO Box 299
Hartford, CT 06141-0299

Commenter Phone: 860-722-5750

Commenter Fax: _____

Commenter Email: nathan_carter@hsbct.com

Section/Subsection Referenced: Part 2, S11.10.2 another

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

S11.10 specifies very complex, details throughout. Would it not be prudent for the Examiner to prepare a written procedure capturing all of the requirements in S11.10 as well as addressing all of the requirements in ASME Section V, Article 11? Would it also be prudent to require this procedure to be demonstrated to the Inspector also or at a minimum require that the procedure be available for review by the Inspector during his/her inspection cycle?

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, rhowgh@nationalboard.org

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Commenter No. Issued: PR15-07

Project Committee Referred To:

Comment No. Issued: 01

SC Inspection

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Commenter Address: HSB Global Standards, One State Street, PO Box 299
Hartford, CT 06141-0299

Commenter Phone: 860-722-5750

Commenter Fax: _____

Commenter Email: nathan_carter@hsbct.com

Section/Subsection Referenced: Part 2, S11.10.2 and S11.10.6

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

The Title "Test Procedure" is used in both Sections S11.10.2 and S11.10.6 under S11.10 Acoustic Emission Examination. Was it the intent to have "Test Procedure" listed twice for Acoustic Emission. If not, suggest that these two paragraphs be consolidated. The latter is more detailed than the former.

Source: Own Experience/Idea Other Source/Article/Code/Standard

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, rough@nationalboard.org

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Commenter No. Issued: PR15-07 Project Committee Referred To: _____

Comment No. Issued: 02 SC Inspection

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Comments Must be Received No Later Than: October 13, 2014

Instructions: If unable to submit electronically, please print this form and fax or mail. Print or type clearly.

Date: 10/04/2014

Commenter Name: Brian W. Moore, P.E.

Commenter Address: Hartford Steam Boiler

One State St, P.O. Box 5024, Hartford, CT 06102

Commenter Phone: 860-722-5657

Commenter Fax: 860-722-5530

Commenter Email: brian_moore@hsb.com

Section/Subsection Referenced: Part 2 Section 2.3.6.8

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

Do not incorporate the proposed change – Establishing a mandatory (shall) inspection requirement based on another inspection code is beyond the scope of the NBIC. To my knowledge, no other inspection code has ever been made mandatory under the NBIC. If inspection requirements are needed then one of two things should be done: 1) let individual jurisdictions set the requirements, or 2) within the NBIC include specific inspection requirements consistent with pressure vessels constructed to ASME Section VIII and ASME PVHO-1. An alternative to including specific requirements within the NBIC would be to change the text to: "Inspections may be conducted using ASME PVHO-2 for reference." It must be clear that the requirements of PVHO-2 are not a mandatory part of an NBIC inspection. See for example, PVHO-2 Section 4.0. None of the responsibilities listed include a commissioned boiler inspector. Even Section 7 states that there are various types of inspections. "Operational Inspections" are definitely beyond the scope and capabilities of a commissioned inspector.

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, rhough@nationalboard.org

NB Use Only

Commenter No. Issued: PR15-02

Project Committee Referred To:

Comment No. Issued: 04

SC on Inspection

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Comments Must be Received No Later Than: October 13, 2014

Instructions: If unable to submit electronically, please print this form and fax or mail. Print or type clearly.

Date: October 13, 2014

Commenter Name: Robert Wielgoszinski

Commenter Address: HSB Global Standards
One State Street, Hartford, CT 06060

Commenter Phone: 860-722-5064

Commenter Fax: 860-722-5505

Commenter Email: Robert_wielgoszinski@hsbct.com

Section/Subsection Referenced: Part 2, paragraph 2.3.6.8

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

Inspections that are specified by the NBIC should be performed in accordance with the NBIC, and not be performed to other Codes or Standards. The specific details for inspection should be extracted from the standard and written into the NBIC. This places the NBIC in control of which inspections they need performed. This paragraph should be withheld from publication in the NBIC until revised to specify the inspections needed.

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, rrough@nationalboard.org

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Commenter No. Issued: PR15-04 _____ Project Committee Referred To: _____

Comment No. Issued: 01 _____ SC Inspection _____

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Comments Must be Received No Later Than: October 13, 2014

Instructions: If unable to submit electronically, please print this form and fax or mail. Print or type clearly.

Date: **October 13, 2014**

Commenter Name: **Kenneth A. Stoller - American Insurance Association (AIA)**

Commenter Address: **2101 L Street NW, Suite 400**
Washington, DC 20037

Commenter Phone: **202-828-7167**

Commenter Fax: **202-495-7866**

Commenter Email: **kstoller@aiadc.org**

Section/Subsection Referenced: **Supplement 10, Inspection of Liquid Carbon Dioxide Storage Vessels**

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

AIA believes that several aspects of the proposed requirements are either undefined or otherwise beyond the normal scope and training of National Board Commissioned Inspectors. Imposing these requirements on Special Inspectors may also place them in the untenable position of assuming liability beyond the limits of the insurance policies under which they perform inspections. Items of concern include the failure to define the terms “sufficient clearance” (S10.2b), “safely supported” (S10.2d), “guarded (S10.2f); and “permanent” (S10.3a). We recommend either defining or deleting these terms. Furthermore, Commissioned Inspectors are not qualified to (i) determine whether a CO2 detector is set to alarm at any particular concentration (S10.5); (ii) verify the posting of warning signs and determine the setpoint of any alarms (S10.6); or (iii) determine the length of safety relief/vent lines or verify that the materials selected for valves, piping, tubing, hoses and fittings used in the LCDSV system meet certain requirements. We recommend deleting these sections.

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, rrough@nationalboard.org

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Commenter No. Issued: PR15-06 Project Committee Referred To: _____

Comment No. Issued: 02 SC Inspection

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Comments Must be Received No Later Than: October 13, 2014

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Date: 10/04/2014

Commenter Name: Brian W. Moore, P.E.

Commenter Address: Hartford Steam Boiler

One State St, P.O. Box 5024, Hartford, CT 06102

Commenter Phone: 860-722-5657

Commenter Fax: 860-722-5530

Commenter Email: brian_moore@hsb.com

Section/Subsection Referenced: Part 2 Supplemnt 10 S10.3 a)

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

Delete S10.2 a) This is unenforceable language and beyond the scope of knowledge of a National Board Commissioned inspector. The word "permanent" is undefined and beyond the knowledge of a commissioned inspector to determine. There can be no uniform and consistant interpretation of "permanent."

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, rrough@nationalboard.org

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Commenter No. Issued: PR15-02 Project Committee Referred To:

Comment No. Issued: 05 SC Inspection

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Date: 10/04/2014

Commenter Name: Brian W. Moore, P.E.

Commenter Address: Hartford Steam Boiler

One State St, P.O. Box 5024, Hartford, CT 06102

Commenter Phone: 860-722-5657

Commenter Fax: 860-722-5530

Commenter Email: [brian moore@hsb.com](mailto:brian_moore@hsb.com)

Section/Subsection Referenced: Part 2 Supplemnt 10 S10.2 d)

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

Delete S10.2 d) This is unenforceable language and beyond the scope of knowledge of a National Board Commissioned inspector. The expression "safely supported" is undefined and beyond the knowledge of a commissioned inspector to determine. If "safely supported" means chained to the wall with a lock, then this subparagraph should so state, otherwise there can be no uniform and consistant interpretation of "safety supported".

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, rhough@nationalboard.org

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Commenter No. Issued: _____ PR15-02 _____ Project Committee Referred To:

Comment No. Issued: _____ **06** _____ **SC Inspection**

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Commenter Phone: 860-722-5657

Commenter Fax: 860-722-5530

Commenter Email: [brian moore@hsb.com](mailto:brian_moore@hsb.com)

Section/Subsection Referenced: Part 2 Supplemnt 10 S10.2 f)

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

Delete S10.2 f) This is unenforceable language and beyond the scope of knowledge of a National Board Commissioned inspector. The word "guarded" is undefined and beyond the knowledge of a commissioned inspector to determine. If "guarded" means a 6" diameter steel pipe, filled with concrete, and buried 3' onto the ground, then this subparagraph should so state, otherwise there can be no uniform and consistant interpretation of "guarded".

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, rhough@nationalboard.org

NB Use Only

Commenter No. Issued: _____ PR15-02 _____ Project Committee Referred To:

Comment No. Issued: _____ **07** _____ **SC Inspection**

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Commenter Address: Hartford Steam Boiler

One State St, P.O. Box 5024, Hartford, CT 06102

Commenter Phone: 860-722-5657

Commenter Fax: 860-722-5530

Commenter Email: brian_moore@hsb.com

Section/Subsection Referenced: Part 2 Supplemnt 10 S10.3 a)

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

Delete S10.2 a) This is unenforceable language and beyond the scope of knowledge of a National Board Commissioned inspector. The word "permanent" is undefined and beyond the knowledge of a commissioned inspector to determine. There can be no uniform and consistant interpretation of "permanent."

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, rrough@nationalboard.org

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Commenter No. Issued: PR15-02 Project Committee Referred To: _____

Comment No. Issued: 08 SC Inspection

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Commenter Fax: 860-722-5530

Commenter Email: brian_moore@hsb.com

Section/Subsection Referenced: S10.5 Gas Detection Systems

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

National Board Commissioned inspectors do not inspect to NIOSH or ACGIH documents. It is not appropriate to cite these as mandatory, which is how this subparagraph will be interpreted. Commissioned inspectors are not qualified to determine whether a detector is set to alarm at any particular concentration.

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

Submit Form To: Robin Hough, Secretary, NBIC Committee, The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229, fax 614-847-1828, email, rrough@nationalboard.org

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Commenter No. Issued: PR15-02 _____ Project Committee Referred To: _____

Comment No. Issued: 09 _____ **SC Inspection**

**National Board of Boiler and Pressure Vessel Inspectors
National Board Inspection Code
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Comments Must be Received No Later Than: October 13, 2014

Instructions: If unable to submit electronically, please print this form and fax or mail. Print or type clearly.

Date: 10/04/2014

Commenter Name: Brian W. Moore, P.E.

Commenter Address: Hartford Steam Boiler

One State St, P.O. Box 5024, Hartford, CT 06102

Commenter Phone: 860-722-5657

Commenter Fax: 860-722-5530

Commenter Email: [brian moore@hsb.com](mailto:brian_moore@hsb.com)

Section/Subsection Referenced: Part 2 Supplemnt 10 S10.6

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

Delete S10.6. Verifying signage is beyond what in-service commissioned inspectors are chartered to do. Such signage is within the purview of OSHA for a safe work environment for employees. Commissioned in-service inspectors do inspect to any requirements of OSHA. In addition, the in-service inspectors are not qualified to determine the setpoint of any alarms. This entire section should be deleted.

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

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Commenter Email: brian_moore@hsb.com

Section/Subsection Referenced: Part 2 Supplemnt 10 S10.7

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

Delete S10.7. The materials specifications are beyond what a commissioned in-service can verify. Valves, piping, tubing, and fittings may not be visibly marked for such verification. Further, the inspector cannot verify S10.7 a)3) "...the working pressure of the applicable circuit in the system..." The caution is not enforceable language for an inspector: "Caution: Company's and or individuals filling or refilling LCDSV's shall be responsible for utilizing fill equipment that is acceptable to the manufacturer to prevent over pressurization of the vessel." In S10.7 d) the length of a vent line cannot be reasonable determined by an in-service inspect. Tracing a line with a tape measure to determine its length is not practical or reasonable. Finally, the tables reference a "Fire Flow Rate" which is a manufacturer/user determined rating under Section VIII. This entire section, including the tables, should be deleted.

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

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Commenter No. Issued: PR15-02

Project Committee Referred To:

Comment No. Issued: 11 SC Inspection

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Date: October 13, 2014

Commenter Name: Robert Wielgoszinski

Commenter Address: HSB Global Standards
One State Street, Hartford, CT 06060

Commenter Phone: 860-722-5064

Commenter Fax: 860-722-5505

Commenter Email: Robert_wielgoszinski@hsbct.com

Section/Subsection Referenced: Part 2, Supplement 10

Comment/Recommendation: *Proposed Solution:* New Text Revise Text Delete Text

Much of Supplement 10 contains requirements for inspection of equipment or systems that are outside the scope of the insurance policies that insurance companies issue. If these inspections are mandated by the Jurisdiction, then the inspectors employed by these insurance companies will be forced to make inspections in where they have no business interest. Further, this puts indefensible liability on the Inspector and his/her employer. I recommend either deleting this Supplement from the 2015 edition and rework it to be more guidance related then requirement based, or add a suitable disclaimer in the Scope paragraph, S10.1, that would exempt Inspector conformance to this supplement if carbon dioxide systems or parts thereof, are not within the employer's scope of activity.

Source: Own Experience/Idea Other Source/Article/Code/Standard _____

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Comment No. Issued: 02 _____ Inspection _____