THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD INSPECTION CODE SUBCOMMITTEE ON INSPECTION

MINUTES

Meeting of July 14, 2014
Columbus, Ohio

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
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FAX: (614)847-1828

1. Call to Order

The Chairman, Mr. M. Mooney called the meeting to order at 8:00 AM on July 16, 2014.

2. Announcements

- The Executive committee will be discussing the consolidation of the Subgroups Inspection General and Specific. If this decision is made a new Chair and Vice Chair will need to be nominated for vote at the NBIC Committee meeting. Nominations should be discussed at this time.

- A vote was taken to appoint a Chairman for the combined Subgroup Inspection. J. Getter, M. Schwartswalder and S. Staniszewski were up for vote. Mr. J. Getter received the majority vote.

- A vote was taken to appoint a Vice Chairman for the combined Subgroup Inspection. M. Schwartswalder and S. Staniszewski were up for vote. Mr. M. Schwartzwalder received the majority vote.

- Reminder of the Crew Game reception on Wednesday evening.

3. Adoption of the Agenda

Agenda was corrected to add Action Item NB12-1501 which was left off the agenda. New action item NB15-0202 was also added to the agenda.
There was a motion to adopt the revised agenda. The motion was unanimously approved.

4. Approval of Minutes of January 14, 2014

There was a motion to approve the minutes of the January 14, 2014 meeting. The motion was unanimously approved.

5. Review of the Roster (ATTACHMENT 1)

- Mr. David Ford would like to become a member of the SG on Inspection specific. Mr. D. Ford's resume was reviewed by the SC on Inspection and a motion was made to accept him as a member of the SG on Inspection Specific. The motion was unanimously approved.

- Dr. Marshall Clark would like to become a member of the SG on Inspection General. Mr. M. Clark's resume was reviewed by the SC on Inspection and a motion was made to accept him as a member of the SG on Inspection General. The motion was unanimously approved.

- Mr. Greg McRae is eligible for reappointment to the SG in Inspection General. A motion was made to reappoint Mr. G. McRae to the SG in Inspection General. The motion was unanimously approved.

- Mr. Mark Mooney is eligible for reappointment to the SG in Inspection Specific. A motion was made to reappoint Mr. M. Mooney to the SG in Inspection Specific. The motion was unanimously approved.

- Dr. Neel Sirosh would like to become a member of the SG on FRP. A motion was made to accept Mr. N. Sirosh as a member of the SG on FRP. The motion was unanimously approved.

- Mr. Aaron Viet is eligible for reappointment to the SG on Graphite. A motion was made to accept Mr.

A. Viet as a member of the SG on Graphite. The motion was unanimously approved.

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

6. Inquiries

There were no interpretations assigned to this subcommittee.

7. Action Items

- **NB07-0910 - *Part 2 S6 SG Inspection Specific*-** 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 TG for completeness and accuracy. **(ATTACHMENT 2)**

  July 2014
  A written progress report was given by Mr. Staniszewski.

- **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)

  July 2014
  A progress report was given by Mr. Reetz. He will have more information to report in the January 2015 meeting.

- **NB12-1501 *Part 2, SG Inspection General*** Review inspection requirements so as to align with installation requirements in Part 1. (No attachment)

  July 2014
  A progress report was given by Mr. V. Newton. Mr. Newton stated that there should be more information to report in the January 2015 meeting.

- **NB12-1801 - *Part 2, 5.5.2 - 5.5.3 SG Inspection Specific* -** Replacement of stamping during inservice inspection**. (ATTACHMENT 3)**

  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.

- **NB13-0701 - *Part 2 4.4.7 j) 1) SG Inspection General* -** Revise wording to clarify the rule in this section. **(ATTACHMENT 4)**

  July 2014
  After much discussion, a motion was made to keep the wording as it currently reads. The motion was unanimously approved. A new action item was opened (NB15-0201) in Subgroup Inspection General to make the wording consistent in all parts of the NBIC.

- **NB13-0902 - *Part 2, S2, SG on Historical Boilers* -** Review alternate methods of Tube Sheet repair. A Task Group consisting of F. Johnson, T. Dillon and M. Wahl was assigned. (No attachment)

July 2014
This item was moved to Part 3.

- **NB13-0903 – *Part 2, S2.14 SG on Historical Boilers*** – Add language to address the safety concerns when using liquid or gaseous fuels to fire a historical boiler. (Attachment 2, pp. 17-18)

  July 2014
  A progress report was given by Mr. Reetz.

- **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 5)**

  July 2014
  A motion was made to approve the document as corrected in Subgroup Inspection Specific. The motion was unanimously approved.

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

  July 2014
  A progress report was given by Mr. Riley.

- **NB13-1302 *Part 2 SG Inspection General* -** Review cryogenic vessel inspection requirements. A Task Group consisting of J. Riley (PM), A. Renaldo, R. Dobbins, R. Bartley and R. Pate were assigned. (No attachment) (No attachment)

  July 2014
  A progress report was given by Mr. Riley. The task group is still working and hopes to have something to present in the January 2015 meeting.

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

  July 2014
  A progress report was given by Mr. Mooney. A new handout was reviewed with the subcommittee. The item was sent back to the task group to work on the language to apply only to Part 2.

- **NB13-1404B - *Part 2, SG on LB*** – Fillet welded staybolts.

  July 2014
  Per Mr. Reetz, no action to report at this meeting.

- **NB13-1409 – *Part 2, SG on LB*** – Method for analyzing bulges created by overheating in stayed boiler surfaces.

  July 2014
  Per Mr. Reetz, no action to report at this meeting.

- **NB13-1701 - *Part 2, 2.3.6.6 SG Inspection Spec.* –** Inspection requirements of wire wound pressure vessels. **(ATTACHMENT 6)**

  July 2014
  Mr. Dobbins presented a side by side document showing the changes. A letter ballot will be sent out for further comment.

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

  July 2014
  A progress report was given by Mr. Mooney. The NB staff is working on the index. Any additions from the committee will be sent to Mr. Mooney or Mr. Canonico.

- **NB14-0502 - *Part 2, 2.6.7, SG Inspection General*** - Revise the wording in this section to state that PVHOs should be constructed to ASME PVHO-1 and inspected to ASME PVHO-2. **(ATTACHMENT 7)**

  July 2014
  A motion was made to accept the revised wording. The motion was unanimously approved.

- **NB14-0901 – *Part 2, SG Inspection Specific*** – Inspection of High Pressure Vessels

  July 2014
  A progress report was given by Mr. Mooney. The task group will be speaking with the originator.

- **NB14-1001 –*Part 2, 5.2.1 SG Insp. Spec.* -** 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.

  July 2014
  A progress report was given by Mr. Mooney. The task group needs to do more work.

- **NB14-1701 - *Part 2, SG on Insp. Spec.* -** Add diagrams for Local Thin Areas (LTA) for LP Gas and propane tanks.

  July 2014
  A task group of G. McRae, J. Getter, and T. Vandini was assigned.

- N**B14-1905 - *Part 2 S10.6 SC on Inspection* -** In Part 2, Section S10.6 the last sentence of the first paragraph currently reads "The warning signs shall be as follows" .The proposal would change the above sentence to read "The required warning sign shall be as shown in Figure S10.6". **(ATTACHMENT 8)**

  July 2014
  A motion was made to accept the revised wording. The motion was unanimously approved.

- **NB14-1907 - *Part 2, 6.1 SC on Inspection*-**Paragraph 6.1 is a scope for the supplement section. This is the only part that has this and it is not consistent with our formatting and is a repeat of what is covered in the Introduction under Supplements in all three parts. (No attachment)

  July 2014
  A progress report was given by Mr. Mooney. A task group was assigned in Subgroup Inspection Specific.

9. New Business

Web-Ex Training – Mr. Scribner and Ms. Miller presented a PowerPoint presentation for the Web-Ex meeting in October 2014.

- **NB15-0202 – Clarification (ATTACHMENT 9)**

  July 2014

  1. **4.4.8.7 (3) - already approved by main committee. "sum of dimensions". Which dimensions 7" or 50"? Will draw public comments –** motion was made to revise the wording **(ATTACHMENT 9 - B).** The motion was unanimously approved.

  2. **S7.10 (4) should say "Removed", not "moved"** - Subcommittee has determined this change should be made as editorial.

  3. **S9.1 - Remove "local" jurisdiction as jurisdiction is already defined. (remove the word "local")** - Motion was made to revise the wording **(ATTACHMENT 9 - C).** The motion was unanimously approved.

  4. **S9.3 - ANSI KG1 is now CGA G-2.1** - Subcommittee has determined this change should be made as editorial.

  5. **Table S9.4 - Last line in first row section column "NFPA 56 should be consulted" appears to belong to the second row, second column. Also add CGA G-2.1 should be consulted in its place in the first row.** – Subcommittee has determined this change should be made as editorial.

  6. **S10.2 – Change the wording to "The Inspector shall verify that LCDSV's:" and remove "LCDSVs from a-f.** - Subcommittee has determined this change should be made as editorial.

  7. **2.3.6.8 a - PVHO-2 is not a construction standard (it's an inspection standard). Add "and inspected to PVHO-2" instead.** - Motion was made to revise the wording **(ATTACHMENT 9 - A).** The motion was unanimously approved.

10. Future Meetings

- January 19-22, 2015, Orlando, Florida
- July 21-24, 2015, Columbus, Ohio

11. Adjournment

The meeting was adjourned around 2:30 PM on July 16, 2014.

Respectfully Submitted,

Jodi Metzmaier
Secretary

Attachment 1 – Attendance Roster
Attachment 2 – NB07-0910
Attachment 3 – NB12-1801
Attachment 4 – NB12-1801
Attachment 5 – NB13-1002
Attachment 6 – NB13-1701
Attachment 7 – NB14-0502
Attachment 8 – NB14-1905
Attachment 9 – NB15-0202

Attendance List SC on Inspection

Meeting Date: July 16, 2014

Paul Welch Arise, Inc. 2530 Trotters Lane Social Circle, GA 30025 Ph: 678-446-5290 Fax: Email:paul.welch@ariseinc.com	Attended: Yes ☑ No ☐ PSW Initial	**Domenic A. Canonico** Canonico & Assoc. 1423 East Brow Road Signal Mountain, TN 37377 Ph: 423-886-1008 Fax: E-mail: canonicod@epbfi.com.	Attended: Yes ☑ No ☐ DAC Initial
Stanley Staniszewski, Jr. US Dept. of Transportation, Pipelines & Administration Hazardous Materials Safety East Building PHH -20 1200 New Jersey Ave. SE Washington, DC 20590 Ph: 202-366-4545 x 0453 Fax: 202-366-3753 E-mail: stanley.staniszewski@ dot.gov	Attended: Yes ☑ No ☐ SS Initial	**Robert Reetz** Chief Boiler Inspector North Dakota Insurance Department Boiler Inspection Program 600 East Blvd. Bismarck, ND 58505 Ph: 701/328-9607 Fax: 701/328-9610 E-mail:**breetz@nd.gov**	Attended: Yes ☑ No ☐ Initial
Tim Barker FM Global 601 108th NE Suite 1400 Bellevue, WA 98004 Ph: 360-801-3790 Fax: E-mail: **Timothy.Barker@FMGlobal.com**	Attended: Yes ☑ No ☐ TMB Initial	**Jason Safarz** Sales Director CEC Combustion Services Group 1699 Brookpark Road Cleveland, OH 44130 Ph: 216-749-2992 Fax: 216-398-8403 Email: jsafarz@combustionsafety.com	Attended: Yes ☐ No ☑ Initial
Mark Mooney Liberty Mutual Insurance Chief Engineer 20 Riverside Road MS:03BN Weston, MA Ph: 781-891-890 x 27329 Fax: 781-642-6512 E-mail: Mark.Mooney@Libertulmual.com	Attended: Yes ☐ No ☐ Initial	**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	Attended: Yes ☑ No ☐ Initial
Mike Schwartzwalder Stress Engineer Services, Inc. 5380 Courseview Drive Mason, OH 45045 Ph: ~~513-336-6701~~ 614-581-6456 Fax ~~614-716-1744~~ E-mail: ~~mschwartzwalder@stress.com~~ mschwartzwalder@aep.com	Attended: Yes ☑ No ☐ Initial	**Bill Smith** National Board 1055 Crupper Ave. Columbus, OH 43229 P: 614-888-8320 F: 614-847-1828 E: bsmith@nationalboard.org	Attended: Yes ☑ No ☐ WKS Initial

Attendance List SC on Inspection

Meeting Date: **July 16, 2014**

Jim Riley Conoco Phillips 1380 San Pablo Ave. Rodeo, CA 94572-1354 P: 510-245-5895 F: E-mail: jim.riley@conocophillips.com	Attended: Yes ☑ No ☐ JMR *Initial*	**Ralph Pate** Chief Elevator/Boiler Inspector Alabama Department of Labor<br~~100 North Union St., Suite 630~~<br~~PO Box 303500~~ 649 Monroe St. Montgomery AL 36131 Ph: 334-242-3066 Fax: 334-353-4528 Email: ralph.pate@labor.alabama.gov	Attended: Yes ☑ No ☐ *Initial*
Venus Newton Manager of Jurisdictional Inspection Services One CIS Insurance Company 3380 Chastain Meadows Pkwy Kennesaw, GA 30144 Ph: 770-590-6726 Cell: 678-457-1310 Fax: E-mail: venus.newton@us.bureauveritas.com	Attended: Yes ☑ No ☐ VN *Initial*	**Greg McRae** Engineering and Technical Director Trinity Containers, LLC 2525 Stemmons Freeway Dallas, TX 75207 Ph: 214-589-8559 Fax: 214-589-8553 E-mail: greg.mcrae@trin.net	Attended: Yes ☑ No ☐ *Initial*
Tom Vandini Director of Quality and Continuous Improvement Quality Steel Corporation 721 Graham Drive Fremont, OH 43420 PH. : (419) 333-5205 Mobile: (419) 455-3933 Email: tvandini@propanetank.com	Attended: Yes ☑ No ☐ JNV *Initial*	**Mark Horbaczewski** Diamond Technical Services 3333 Warrensville Road Lisle, IL 60532 Ph.: 773-447-5667 Fax: Email: MHorbaczewski@diamondtechnicalservices.com	Attended: Yes ☑ No ☐ MH *Initial*
Name: DAVID FORD Company: VSDOT / FMCSA DF Address: 300 NEW BERN SUITE 468 City/State/Zip: Raleigh NC 27601 Ph: 919 886 1297 Fax: E-mail: DAVID.FORD@DOT.GOV		For planning purposes please check below which days you will be attending this week. Tuesday ☑ Wednesday ☑ Thursday ☐ Briefly explain your reason for attending the meeting:	

Attendance List SC on Inspection

Meeting Date: **July 16, 2014**

Name: Mark Anderson Company: Marquip, LLC Address: 1300 North Airport Rd. City/State/Zip: Phillips, WI 54555 Ph: 715:339:2191 ext. 2407 Fax: E-mail: Mark.Anderson@MarquipWard United.Com	For planning purposes please check below which days you will be attending this week. Tuesday ☑ Wednesday ☑ Thursday ☑ Briefly explain your reason for attending the meeting:
Name: Bonnie Petersen Company: Marquip, LLC Address: 1300 N. Airport Rd City/State/Zip: Phillips, WI 54555 Ph: 715:339:2191 ext 1235 Fax: E-mail: Bonnie.Petersen@Marquipwardunited.com	For planning purposes please check below which days you will be attending this week. Tuesday ☑ Wednesday ☑ Thursday ☐ Briefly explain your reason for attending the meeting: NB12-1801
Name: Joe Frey Company: Stress Engineering Services Address: 13800 Westfair East Dr City/State/Zip: Houston TX 77041 Ph: 713 201 7861 Fax: 281-955-2638 E-mail: joe.frey@stress.com	For planning purposes please check below which days you will be attending this week. Tuesday ☒ Wednesday ☒ Thursday ☒ Briefly explain your reason for attending the meeting: NB13-1002
Name: Ernest Brantley Company: XL Insurance America Address: 5018 Bristol Industrial Way Suite 300 City/State/Zip: Buford, GA. 30518 Ph: 337-842-7044 Fax: E-mail: Ernest.Brantley@BPCLLC.GA.com	For planning purposes please check below which days you will be attending this week. Tuesday ☐ Wednesday ☑ Thursday ☑ Briefly explain your reason for attending the meeting:

Attendance List SC on Inspection

Meeting Date: July 16, 2014

Name: DAVID BUECHEL Company: HSB I+I Address: 4300 SETON ST City/State/Zip: Pittsburgh PA 15227 Ph: 412 310 - 7740 Fax: E-mail: DAVID_BUECHEL@HSB.COM	For planning purposes please check below which days you will be attending this week. Tuesday ☐ Wednesday ☑ Thursday ☑ Briefly explain your reason for attending the meeting: Become familiar with the workings of NB. Assist on sub committees as needed.
Name: Marshal D. Clark Company: Investigative Eng Corp Address: 3 Glenview Dr City/State/Zip: Littleton CO 80123 Ph: 720-287-3983 Fax: E-mail: mclark@investigativeengineeringcorp.com	For planning purposes please check below which days you will be attending this week. Tuesday ☒ Wednesday ☒ Thursday ☐ Briefly explain your reason for attending the meeting: Utility industry interest
Name: Jodi Metzmaier Company: National Board Address: City/State/Zip: Ph: 614-888-8320 x277 Fax: E-mail: jmetzmaier@nationalboard.org	For planning purposes please check below which days you will be attending this week. Tuesday ☐ Wednesday ☐ Thursday ☐ Briefly explain your reason for attending the meeting:
Name: Company: Address: City/State/Zip: Ph: Fax: E-mail:	For planning purposes please check below which days you will be attending this week. Tuesday ☐ Wednesday ☐ Thursday ☐ Briefly explain your reason for attending the meeting:

ATTACHMENT 2

NB07-0910 January 2014

Status Report on DOT Rulemaking Activities:

DOT published a Notice of Proposed Rule Making (NPRM) to incorporate by reference into regulations the latest edition (2013) of the NBIC and ASME Section XII as an option to the currently required 1998 edition of the ASME Code and 1992 Edition of the NBIC. The public comment period is now closed.

DOT is now in the process of reviewing the comments and questions submitted, and evaluating new information presented. A final regulatory approach will be determined after that point, with another notification published in the Federal Register.

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 t~~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 ~~t~~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:

_____
(name of jurisdiction)

_____
(address)

_____

_____
(telephone no.)

Submitted by:

_____
(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.

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)

ATTACHMENT 4

NB13-0701

Reference: NBIC Part 2, Section 4, 4.4.7.2(j)(1)

Background:

Given the condition where the calculated required thickness equals 3/16 inch, a measured pit depth of 1/8 inch and an actual thickness of the pressure-retaining item measured to be 1/2 inch.

Viewing the rule in NBIC, Part 2, Section 4, 4.4.7.2(j) [where (j)2 and (j)3 are not applicable] would appear to result in the wrong conclusion. As such the rule will require either repair or evaluation per 4.4.8.7(g) then to Part 2, 1.3 and finally to API-510. All this for a condition which should have been acceptable, without repair, on the first consideration.

Request for revision, NBIC, Part 2, Section 4, 4.4.7.2(j)(1)

Current Text

j) Local Metal Loss
Corrosion pitting shall be evaluated in accordance with NBIC Part 2, 4.4.8.7. Widely scattered corrosion pits may be left in the pressure-retaining item in accordance with the following requirements:

1) Their depth is not more than one-half the required thickness of the pressure-retaining item wall (exclusive of corrosion allowance);

Proposed Text

j) Local Metal Loss
Corrosion pitting shall be evaluated in accordance with NBIC Part 2, 4.4.8.7. Widely scattered corrosion pits may be left in the pressure-retaining item in accordance with the following requirements:

1) Their depth(exclusive of corrosion allowance) is not more than one half the ~~required~~ actual thickness of the pressure-retaining item wall ~~(exclusive of corrosion allowance)~~with the remaining thickness being equal to or larger than one half the required thickness;

National Board Inspection Code Action item NB13-1002- Revision Dated 7/14/2014

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 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 or user may include other piping systems.

Insert new Section 2.4.X –COVERED PIPING SYSTEMS

Covered Piping Systems are piping systems, designed to B31.1, on which condition assessments are to 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 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 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).

e) Records of repairs or alterations to Covered Piping Systems (CPS) shall be recorded on the applicable R form. (Rxx)

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2.3.6.6 INSPECTION OF WIRE WOUND PRESSURE VESSELS

EXISTING TEXT:	SUGGESTED TEXT:
(a) This section describes guidelines for inspection of wire wound pressure vessels. Typically, wire wound pressure vessels are designed to allow for internal pressure to reach 80,000 psig with newer vessels having been designed and fabricated to ASME Section VIII, Div. 3. However, there are other wire wound pressure vessels which have been fabricated prior to the publication of ASME Section VIII, Div. 3 that have been installed as state specials.	(a) This section provides guidelines for inspection of wire wound pressure vessels typically designed for 10,000 psi or greater service. 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. 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, but still require fatigue life analysis to determine a safe operating life.
The scope of inspection 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.	The primary failure mode is fatigue cracking. Early detection of any damage to the cylinder, closures or frame is essential to avoid catastrophic failure. In addition to frequent visual inspection of the vessel system, the mechanisms for opening and closing the cylinder should be examined for alignment and safety interlocks, alarms and operating controls tested. In addition to visual inspection, the internal surface of the cylinder and all surfaces of the closures should be examined by either magnetic particle or dye penetrant as appropriate for the materials. Internal or external cooling jackets should be removed for these inspections.

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(b) Wire wound pressure vessels are a unique design where the containment or enclosure for handling internal pressure is a thin walled, high strength steel cylinder or stainless steel cylinder that is externally wrapped with multiple layers of high strength steel wire. 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.	(b) 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, the most frequent of these being isostatic pressing and hydrostatic extrusion. Isostatic pressing can be performed either cold temperatures, at room temperature, with liquid as the pressure medium, or hot, at temperatures of 2000 to 3300°Fwith 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, hot pressing at pressures up to 29,000 psi. 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.	Wire wound vessels may be found in foods and drinks processing, ceramic or refractory processing and powdered metal processing utilizing a liquid compressing fluid at ambient or slightly elevated temperature. With a lower process temperature and liquid media, the design pressure may exceed 200,000 psi (1379 MPa). Ceramic, refractory and metal processing is also performed at elevated temperature, up to 3632ºF (2000ºC). The “hot” processes utilize an inert gas fluid with 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. Both cold and hot processes are commonly found in research facilities and in universities.
(c) Record keeping	(c) Record keeping
(1) The history of the vessel’s cycles should be established. For vessels that are in service, records should be available that will provide a number or reasonable estimate of the cycles of past operations (design cycles). If such a record is not available, a fracture mechanics evaluation with a fatigue analysis test must be performed in order to determine the remaining life and number of cycles available to the vessel as well as the MAWP. The user must maintain these records going forward.	(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 fatigue analysis performed to establish remaining life before resuming operation.
(2) Operating data should be recorded and include the following whenever the vessel is operating:	(2) Operating data should be recorded and include the following whenever the vessel is operating:

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a. Number of cycles b. Pressure c. Temperature d. Any unusual conditions	a. Number of cycles b. Maximum pressure c. Maximum temperature d. Any unusual conditions
(d) Due to the cyclic nature of operation of this type of vessel, in-service inspections should be occurring on the vessel parts based on the number of cycles these parts are subjected to. This can be determined by application of fatigue analysis techniques. The fatigue analysis study would be carried out prior to installing and using the isostatic press or vessel and cover all components that will carry stress.	(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 would reveal as allowable cycles for a particular press:	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	> 10^6Cycles	“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 endurance of the above press is thus limited by the closure. The permissible number of cycles for this press may be set at 40,000.	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 the inspection interval varies between 0.25 and 0.5. The	An acceptable factor of safety for vessel fatigue inspection interval varies between 0.25 and 0.5 of

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inspection interval for the above press would therefore be every 10,000 to 20,000 cycles, but not later than after five years of service. If, during one of the regular inspections, a crack or flaw is detected, an immediate study for the evaluation of the crack growth per cycle of operation would need to be conducted by means of fracture mechanics methods. The number of cycles would be calculated for the crack to reach critical dimensions leading to rapid catastrophic failure. With the application of safety factor 0.25, the number of cycles of operation until the next inspection could be established.	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.
The vessel would now have an established inspection cycle criteria that would need to be reviewed and verified.	[delete this sentence.]
Other components of the vessel that should be regularly inspected include the following:	As part of the frequent inspection, the following items should be reviewed:
(1) Review of the materials of construction to determine if the cylinder and heads are stainless steel or high strength steel for purposes of deciding on an appropriate surface examination method using either liquid penetrant or wet fluorescent magnetic particle test methods.	(1) Verify no change in the process, such as the processing fluid, that might adversely impact vessel integrity.
(2) Review of original manufacturer inspection recommendations for the frame, yolk, cylinder and heads, if available. Inspection frequency is based on either number of operating cycles or time (2 year or 5 year intervals) with specific inspection locations.	(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

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	replaced to avoid premature operation.
Because the high strength wire is not accessible, gage marks for elongation values based on a re-established wire tension from wire wrapping is provided.	[suggest omitting this descriptive information as it will be in the manufacturer's recommendations or addressed by the vessel service provider]
Some manufacturers use punch marks with calibrated gages to compare changes in elongation. Measurement of the cylinder inner diameter is obtained using a template or micrometer.	[suggest omitting this descriptive information as it will be in the manufacturer's recommendations or addressed by the vessel service provider]
(3) 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.	[This is all covered in above text for wire wound vessels. Monoblock is outside scope of this section – delete this text.]
(4) 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.	[This is all covered in above text. No need to repeat – delete this text.]
(5) 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.	[This is all covered in above text. No need to repeat – delete this text.]
(e) Gages, Safety Devices, and Controls	[Suggest deleting this section entirely. These points are all addressed in the proceeding text.]

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(1) 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.	
(2) Verify that all safety device isolation valves are locked open if used.	
(3) 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.	
(4) 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.	
(5) Verify audible and visual alarms are installed to indicate unsafe conditions.	

ATTACHMENT 7
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2.3.6.7 INSPECTION OF PRESSURE VESSELS FOR HUMAN OCCUPANCY (PVHO's)

A pressure vessel for human occupancy (PVHO) as defined by ASME PVHO-1-2007 is a pressure vessel that encloses a human being within its pressure boundary while it is under internal or external pressure. PVHO's include, but are not limited to, submersibles, diving bells, personal transfer capsules, decompression chambers, recompression chambers, hyperbaric chambers, high altitude chambers and medical hyperbaric oxygenation facilities.

This section provides guidelines for inspection of PVHO's. Due to the many different designs and applications of PVHO's, potential failures of components or safety concerns that are not specifically covered, such as rapid decompression or fire/sparking issues shall be considered and may necessitate the use of other inspection standards.

a) General / Operational

1) PVHO's must be constructed in accordance with ASME PVHO-1 and inspected in accordance with ASME PVHO-2 or other codes acceptable to the jurisdiction. The ASME PVHO-1 and PVHO-2 codes require ASME Code Section VIII design and construction and therefore the vessels shall bear a "U" or "U2" ASME stamping.
2) Cast and ductile iron fittings are not allowed on the vessel or associated piping.
3) Due to the human occupancy element, operating practices typically require an attendant trained in normal and emergency conditions to monitor the use of the vessel. This training shall be confirmed during the inspection.
4) PVHO's shall have a depressurization rate less than 145 PSI/sec.
5) The installation shall be such that there is adequate clearance to inspect it properly. In some applications, such as underground tunneling, it may be impossible to perform a complete external inspection and other methods shall be used to adequately assess the external condition.

b) Internal Inspection

1) A visual internal inspection of the vessel shall be performed. Inspect for any cracks and note areas that are subject to high stress such as welds, welded repairs, head-to-shell transitions, sharp interior corners, and interior surfaces opposite external attachments or supports.
2) The vessel shall be free of corrosion, dents, gouges or other mechanical damage.
3) All openings leading to external fittings or controls shall be free from obstruction.
4) All exhaust inlets shall be checked to prevent a chamber occupant from inadvertently blocking the opening.

c) External Inspection, Conditions that may warrant further investigation.

1) The Inspector shall closely examine the external condition of the pressure vessel for corrosion, dents, gouges or other mechanical damage. 2) The lower half and the bottom portions of insulated vessels shall receive special focus, as condensation or moisture may gravitate down the vessel shell and soak into the insulation, keeping it moist for long periods of time causing corrosion of the external portions of the vessel. Penetration locations in the insulation or fireproofing such as saddle supports, sphere support legs, nozzles, or fittings shall be examined closely for potential moisture ingress paths. When moisture penetrates the insulation, the insulation may actually work in reverse, holding moisture in the insulation and/or near the vessel shell. It may be necessary to remove the insulation in order to fully assess the condition of the vessel.
3) Insulated vessels that are run on an intermittent basis or that have been out of service require close scrutiny.
4) The surface treatment (coating) of the vessel shall be in good condition.

d) Inspection of Parts and Appurtenances (piping systems, pressure gage, bottom drain)

1) Cast iron parts are not allowed on PVHO's and shall be replaced with parts fabricated with suitable materials, in accordance with the original code of construction.
2) Check to ensure that the valves and fittings are installed , functional and conform to the original code of construction.
3) The Inspector shall note the pressure indicated by the gage and compare it with any other gages on the same system. If the pressure gage is not mounted on the vessel itself, it shall be ascertained that the gage is installed on the system in such a manner that it correctly indicates actual pressure in the vessel.
4) The system shall have a pressure gage designed for at least the most severe condition of coincident pressure in normal operation. This gage shall be clearly visible to the person adjusting the setting of the pressure control valve and is typically graduated to not less than 1.5 times the MAWP of the vessel.

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5) Provisions shall be made to calibrate pressure gages or to have them checked against a standard test gage.
6) The drain opening shall be functional.7) Any vents and exhausts shall be piped at least 10 feet from any air intake.
8) Venting shall be provided and functional at all high points of the piping system.

e) Inspection of Viewports / Windows

1) Each window shall be individually identified and marked in accordance with PVHO-1 or other code of construction.
2) If there are any penetrations through windows, they must be circular.
3) Windows must be free of crazing, cracks and scratches.
4) Windows and viewports have a maximum interval for seat/seal inspection and refurbishment. Documentation shall be checked to ensure compliance with PVHO-2, Table 7.1.3 or other code of construction as applicable.
5) Any window and viewport repairs have been completed by a qualified window fabricator in accordance with the original code of construction or repair code.

f) Inspection of Pressure Relief Devices

1) Pressure relief devices must have a quick opening manual shutoff valve installed between the chamber and the pressure relief device within easy access to the operator, with a frangible seal in place sealing the valve normally open..
2) The pressure relief device shall be constructed in accordance with ASME Code Section VIII or the original code of construction.
3) The discharge from the pressure relief device must be piped to a safe point of discharge.
4) Rupture disks may be used only if they are in series with a pressure relief valve, or when there is less than 2 cubic feet of water volume when allowed by the original code of construction.
5) Verify that the safety valve is periodically tested either manually by raising the disk from the seat or by removing and testing the valve on a test stand.

g) Construction Form Completion Verification

The following forms are required to be completed when the PVHO is built in accordance with the ASME Code:

1) PVHO-1 Form GR-1 Manufacturer's Data Report for Pressure Vessels for Human Occupancy
2) PVHO-2 Form VP-1 Fabrication Certification for Acrylic Windows
3) Other codes of construction shall have similar forms to document the PVHO's design conditions.

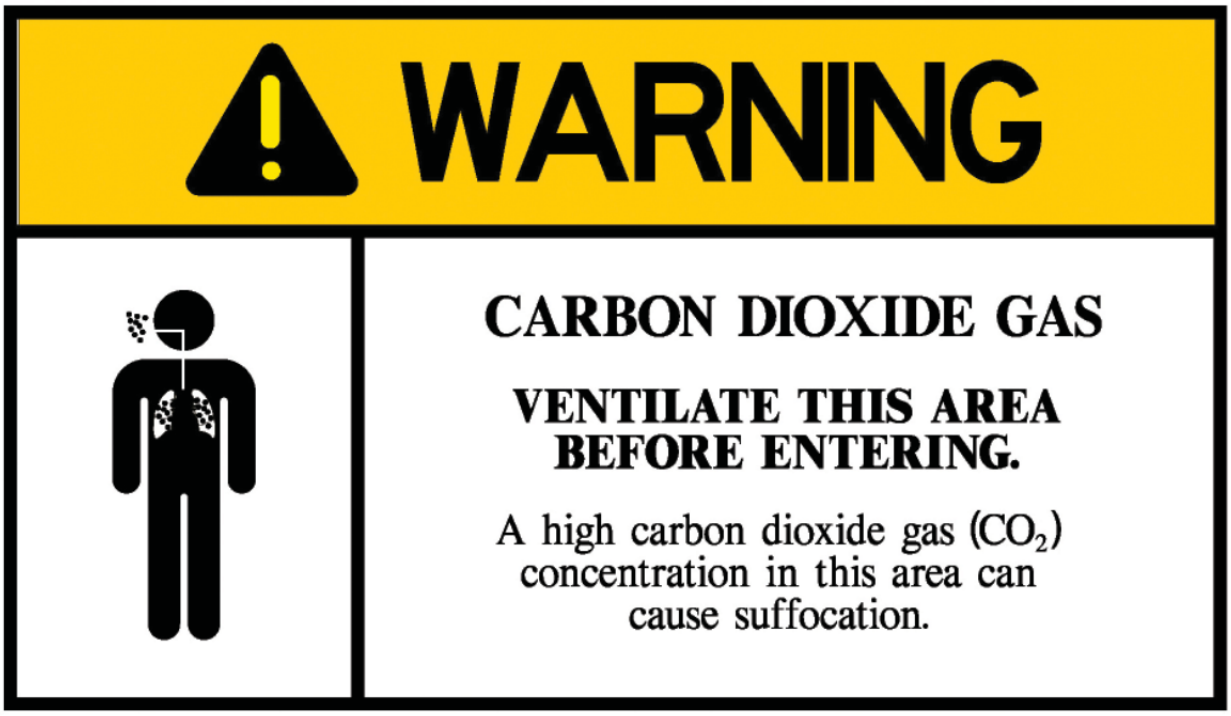
h) All PVHO's under the jurisdiction of the U.S. Coast Guard must also comply with 46 CFR Part 197.

ATTACHMENT 8
NB14-1905

S10.6 SIGNAGE

The Inspector shall verify that warning signs are posted at the entrance to the building, room, enclosure, or enclosed area where the container is located. The warning sign shall be at least 8 in (200mm) wide and 6 in. (150mm) high. The wording shall be concise and easy to read and the upper portion of the sign must be orange as shown in figure NBIC Part 2, Figure S10.6. The size of the lettering must be as large as possible for the intended viewing distance and in accordance with jurisdictional requirements. When no jurisdictional requirements exist, the minimum letter height shall be in accordance with NEMA American National Standard for Environmental and Facility Safety Signs (ANSI Z535.2). The warning signs shall be as shown in figure S10.6:

Figure S10.6 CO_2 Warning Sign



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ATTACHMENT 9
NB15-0202

A)

a) General / Operational

1) PVHO's must be constructed in accordance with ASME PVHO-1 and inspected in accordance with ASME PVHO-2 or other codes acceptable to the jurisdiction. The ASME PVHO-1 and PVHO-2 codes require ASME Code Section VIII design and construction and therefore the vessels shall bear a "U" or "U2" ASME stamping.
2) Cast and ductile iron fittings are not allowed on the vessel or associated piping.
3) Due to the human occupancy element, operating practices typically require an attendant trained in normal and emergency conditions to monitor the use of the vessel. This training shall be confirmed during the inspection.
4) PVHO's shall have a depressurization rate less than 145 PSI/sec.
5) The installation shall be such that there is adequate clearance to inspect it properly. In some applications, such as underground tunneling, it may be impossible to perform a complete external inspection and other methods shall be used to adequately assess the external condition.

B) Clarify Part 2, 4.4.8.7

f) Widely scattered corrosion pits may be left in the pressure-retaining item in accordance with the following requirements:

1) Their depth is not more than one-half the required thickness of the pressure-retaining item wall (exclusive of corrosion allowance);

2) The total area of the pits does not exceed 7 sq. in. (4500 sq mm) within any 50 sq. inches (32000 sq.mm); and

3) The sum of their dimensions (depth and width) along any straight line within this 50 sq. inch (32000 sq.mm) area does not exceed 2 in. (50 mm)

C.) Part 2, S9.1 - Strike the word "local" before "jurisdiction"