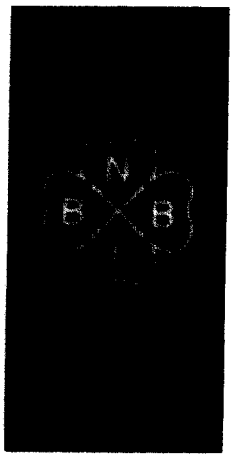

Date Distributed: June 11, 2010

THE
NATIONAL
BOARD
OF BOILER AND
PRESSURE VESSEL
INSPECTORS

SUBCOMMITTEE ON INSPECTION

AGENDA

Meeting of July 21, 2010
Columbus, Ohio

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.**

2. **Announcements**

   NBIC Procedure Training: Mr. Terry Parks plans to discuss the NBIC Procedures with the subcommittee.

3. **Adoption of the Agenda**

4. **Approval of Minutes of January 2010**

5. **Review of the Roster (Attachment 1)**

   Mr. Jason Safarz would like to become a member of the SG on Inspection General. Attached please find his resume and letter of support. A vote will be taken.

6. **Inquiries**

   There were no inquiries assigned to this subcommittee.

7. **Public Review Comments for 2011 Edition Cycle A**

   There were no public review comments received for this subcommittee.

8. **Action Items (Attachment 2)**

   NB07-0905 ***Part 2 4.3.1-4.3.3 SC Inspection*** Review these sections for completeness and consistency in pressure testing. Mr. Cook suggested forming a TG from all three parts. A task group of D. Parrish and J. Yagen has been assigned. Included in the attachment is an email from Mr. Galanes requesting that his concern be addressed in this action item. (See Attachment 2, pgs. 1-17)

   July 2007
   A progress report was given.

   January 2008
   A progress report was given.

   July 2008
   A progress report was given.

   January 2009
   A progress report was given.

   July 2009
   A progress report was given and the task group was altered. The new task group members are G. Galanes (Lead),M. Horbaczewski, D. Parrish, J. Yagen and M. Clark.

   January 2010
   A letter ballot was sent to the MC and it failed. The subcommittee will examine it again.

   July 2010
   Mr. Parrish is expected to report.

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. (No Attachment)

July 2007

A progress report was given. Changes to the DOT glossary were approved previously due to approved public review comments.

January 2008

A progress report was given. The task group has met twice to discuss the public review comments received from the 2007 edition and in the process 11 more issues were identified.

July 2008

A progress report was given.

January 2009

Mr. Staniszewski gave a progress report. An advanced notice of proposed rulemaking by the D.O.T. under Docket # PHMSA 2005-21351 is scheduled to be released by June 30, 2009.

July 2009

A progress report was given. Mr. Staniszewski reported that the docket did not make its release date.

January 2010

A progress report was given.

July 2010

Mr. Staniszewski is expected to report.

NB08-0321 ***Part 2 1.5 SG on Insp. Spec.*** In paragraph 1.5 Inspection Activities, add verbiage to address change of service for a pressure vessel. These requirements should caution inspectors, owners, and jurisdictional authorities of the inherent dangers involved when changing service. A new supplement or new Subject under 2.3.6, Description and Concerns of Specific Types of Pressure Vessels, should be added to address the specific requirements for inspection of pressure vessels that have been converted from one service to another. A Task Group of all three parts of the NBIC has been formed under the leadership of Bob Wielgoszinski. Task group members from Inspection are G. McRae (Chair), R. Reetz, R. Wacker, D. Cook, and J. Getter. It was noted that some wording exists in Part 2 1.5.2 (a, 2.3.5.4 b)5 and 2.3.2 b) that deals with service conditions. (See Attachment 2, pg. 18)

July 2008

A task group was assigned.

January 2009

A progress report was given.

July 2009

A progress report was given.

January 2010
A progress report was given.

July 2010
Mr. Staniszewski is expected to report.

NB08-0701 ***Part 2 S7 SG on Insp. Spec.*** Add a requirement for change of service from above ground to below ground installations of LPG tanks. We also need requirements for how to inspect these tanks. A task group of G. McRae (Chair), G. Galanes, J. Getter, M. Huffman, V. Mullins, J. Riley D. Cook, J. Richardson and V. Newton has been assigned. (No Attachment)

January 2008
A progress report was given and a task group was assigned.

July 2008
A progress report was given.

January 2009
A progress report was given.

July 2009
A progress report was given.

January 2010
A progress report was given,

July 2010
Mr. McRae is expected to report.

NB08-0702 ***Part 2 S7 SG on Insp. Spec.*** The maximum corrosion allowance for a LPG tank should be 10% of the minimum thickness required. A task group of G. McRae (Lead), G. Galanes, J. Getter, M. Huffman, V. Mullins, J. Riley, D. Cook, J. Richardson and V. Newton has been assigned. (No Attachment)

January 2008
A progress report was given and a task group was assigned.

July 2008
A progress report was given.

January 2009
A progress report was given.

July 2009
A progress report was given.

January 2010
No progress at this time.

July 2010
Mr. McRae is expected to report.

NB08-0703 ***Part 2 S7 SG on Insp. Spec.*** Investigate the feasibility of marking or stamping a re-rated name plate on a LPG tank that is being altered from an above ground tank to a below ground tank. A task group of G. McRae (Chair), G. Galanes, J. Getter, M. Huffman, V. Mullins, J. Riley, D. Cook, J. Richardson and V. Newton has been assigned. (No Attachment)

July 2008
A progress report was given and a task group was assigned.

January 2009
A progress report was given.

July 2009
A progress report was given.

January 2010
No progress at this time.

July 2010
Mr. McRae is expected to report.

NB10-1101 ***Part 2 2.2.10.7 SG Inspection General*** Inspector's responsibility for boiler controls. (See Attachment 2, pgs. 19-20)

January 2010
A Task Group was assigned. Venus Newton, Chair, Robert Dobbins, Tim Barker, Jim Riley and Mark Mooney.

July 2010
Mr. Newton is expected to report.

NB10-1301 ***Part 2 SG Inspection Specific*** Address anhydrous ammonia nurse tank inspection. (No Attachment)

January 2010
A task group of Greg McRae (Chair) Stan Staniszewski, Jim Getter and Bob Reetz was assigned.

July 2010
Mr. McRae is expected to report.

8. New Business

NB10-0402 ***Part 2 1.3 SC Inspection*** Add API 510 Pressure Vessel Inspection Code to Part 2 1.3 Reference to other Codes and Standards. (See Attachment 2, pg.21

9. Future Meetings

January 2011, Austin, Texas
July 2011, Columbus, Ohio

10. Adjournment

Respectfully Submitted,

Bill Smith
Secretary
:rh
H:\ROBIN-Active Documents\NBIC Secretarial Documents\Committees\SC on Inspection\SC on Inspection\Agendas\Agenda Inspection 0110.doc

ATTACHMENT 1

SC on Inspection

Member	Title	ExpirDate	Interest Category
Bacon, Steven E.		8/31/2012	Users
Barker, Timothy		1/31/2012	Auth Inpection Agencies
Canonico, Dr. Domenic A.		8/31/2012	General Interest
Cook, Don	Chair	8/31/2012	Jurisdictional Authorities
Getter, Jim		8/31/2012	Manufacturer
Horbaczewski, Mark		8/31/2012	Users
McRae, Greg		8/31/2012	Manufacturer
Mooney, Mark		8/31/2012	Auth Inpection Agencies
Newton, Venus		7/31/2010	Auth Inpection Agencies
Parrish, Dave		8/31/2012	Auth Inpection Agencies
Reetz, Robert		7/31/2010	Jurisdictional Authorities
Richardson, John		8/31/2012	Manufacturer
Riley, Jim		8/31/2012	Users
Schwartzwalder, Mike		8/31/2012	NB Certificate Holders
Smith, Bill	Secretary		
Staniszewski, Jr., Stanley	Vice Chair	8/31/2012	Regulatory Authorities
Wacker, Randy A.		8/31/2012	Manufacturer

Total Members: 16

CEC Combustion Services Group

Inspections • Testing • Training • Design • Upgrades • Tuning

March 19, 2010

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

RE: National Board

Dear Robin,

CEC Combustion Services Group, Inc. will provide the time for Mr. Jason Safarz to attend meetings and fulfill the duties as required by NBIC Part 2 Subcommittee (Subgroup-Inspection-General). Our firm will also handle all the related travel expenses associated with these responsibilities to serve on the Subcommittee.

Sincerely,

John Puskar
Principal
CEC Combustion Services Group, Inc.

11699 Brookpark Road ❶ Cleveland, Ohio 44130 ❶ 216.749.2992 ❶ Fax 216.398.8403
www.combustionsafety.com

CEC Combustion Services Group

Inspections • Testing • Training • Design • Upgrades • Tuning

March 19, 2010

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

RE: National Board NBIC Part 2 Subcommittee & Subgroup Interest

Dear Robin,

I am writing to express interest in joining the NBIC Part 2 Subcommittee (Subgroup-Inspection-General).

My firm, CEC Combustion Services Group, Inc., specializes in boiler and combustion system safety (along with ovens and furnaces) and is a leader in the industry when it comes to testing of safety devices, training or personnel, and evaluation of gas piping and related safety systems. We actively participate in Codes and Standards committees in an effort to advance the cause for safety.

I currently sit on other Codes and Standards committees which would be of interest to the National Board. This work includes the American Society of Mechanical Engineers Control and Safety Devices for Automatically Fuel Fired Boilers (ASME CSD-1) for the past six years, Underwriters Laboratories Standards Technical Panel for Heating, Water Supply, and Power Boilers – Electric (UL 834), and participation in the American Insurance Association (AIA) meetings (Boiler and Machinery Legislative Committee).

I will be able to attend all meetings in support of this subcommittee work including the upcoming meeting in July 2010. Thank you for your consideration and please let me know if any additional information is needed.

Sincerely,

Jason Safarz
Senior Account Engineer
CEC Combustion Services Group, Inc.

11699 Brookpark Road ❹ Cleveland, Ohio 44130 ❹ 216.749.2992 ❹ Fax 216.398.8403
www.combustionsafety.com

Jason Safarz - Qualification Summary

Relevant Education:

- Bachelors of Science:
  - Mechanical Engineering – Cleveland State University
  - Physics – Baldwin Wallace
- Combustion Safety, Inc. - Junior & Senior Auditor Course
- Allen-Bradley Fundamentals of Programmable Controller Systems
- Maxon Burner & Valve Seminar(s)
- North American Combustion Seminar(s)
- OSHA Approved Course General Industrial Safety (9 Modules)
- ITT Engineers Training for Pumps and Hydronic Systems

Certifications/Memberships:

- ASME CSD-1 Standards Committee Member for Automatically Fuel Fired Boilers (since Oct. 2004)
- UL 834 (Underwriters Laboratory) Standards Technical Panel Member
- American Insurance Association (AIA), Boiler and Machinery Legislative Committee participation
- National Fire Protection Association (NFPA)
- Association of Energy Engineers (AEE)
- Universal Refrigeration Certification, ID #071505022075
- Combustion Safety, Inc. Class "A" Senior Auditor

Combustion Safety, Inc. Experience - Engineering Manager & Senior Account Engineer

- Trained in the safe application and testing of natural gas, propane, #2-#6 oil, biofuels, and coal.
- Inspected or managed safety inspections on over 8,000 pieces of equipment (boilers and ovens) at more than 300 facilities worldwide.
- Manufacturers training and knowledge base Include:

Allen Bradley	Dungs	Johnston	Patterson-Kelley	Superior
Antunes	Eclipse	Kewanee	Protection Controls	Teledyne Laars
A.O. Smith	Engineered Air	King-National	Rapid Air	Titan
Ajax	Fisher	Krom Schroder	Raypak	TMI
Asco	Fireye	Lochinvar	Reznor	Trane
Babcock & Wilcox	Foster Wheeler	Mammoth	Rheem	Volcano
Bryan	Fulton	Maxon	Rite	Weben Jarco
Carrier	Hastings	Miura	Rupp Air	Weil-McClain
Clayton	Honeywell	Modine	Sellars	Wickes
Cleaver-Brooks	Hydrotherm	National	Siemens	Wisconsin
Columbia	Indeck	Nebraska	Sterling	Yokogawa
Dayton	Industrial Air Sys	North American	Strand	York-Shipley

ATTACHMENT 2

NB07-0905 Part Revision Proposal April 5, 2010

Subject Pressure Testing Terminology in the NBIC

File Number 07-0905 **Prop. on Pg.**

Proposal Review current use of pressure testing terminology and revise as necessary to provide consistency of terminology across Parts 1-3 of the NBIC. Also, evaluate need for cautionary statement regarding low toughness materials subjected to pressure testing.

Explanation

Project Manager M. Horbaczewski

Task Group Galanes (CHAIR), Parrish, Yagen, and Horbaczewski.

Task Group Negatives **TG Meeting Date**

Background

This task group (TG) has been re-assigned to report back to the NBIC main committee Chair. The purpose of this TG is to review pressure testing terminology as currently stated in the NBIC, and to recommend necessary revisions to provide consistency of pressure testing terminology for Parts 1-3 of the NBIC.

EXISTING TEXT	PROPOSED TEXT
rION CODE • PART 2 — INSPECTION procedures. Alternatively, lines may be blanked or sections of pipe removed. Blowoff lines, where practicable, shall be disconnected between pressure parts and valves. All drains and vent lines shall be open. 2) The Inspector shall review all personnel safety requirements as outlined in 1.4 prior to entry. Note: If a boiler has not been properly prepared for an internal inspection, the inspector shall decline to make the inspection. **2.2.7 EVIDENCE OF LEAKAGE** a) It is not normally necessary to remove insulating material, masonry, or fixed parts of a boiler for inspection, unless defects or deterioration are suspected or are commonly found in the particular type of boiler being inspected. Where there is evidence of leakage showing on the covering, the Inspector shall have the covering removed in order that a thorough inspection of the area may be made. Such inspection may require removal of insulating material, masonry, or fixed parts of the boiler. b) For additional information regarding a leak in a boiler or determining the extent of a possible defect, a leak test may be performed per 4.3.3.	**~~liquid~~ pressure** [replace "leak" with "liquid pressure"] **4.3.1** [replace 4.3.3. with 4.3.1]

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2.3.3 EXTERNAL INSPECTION The purpose of an external inspection is to provide information regarding the general condition of the pressure vessel. The following should be reviewed: a) Insulation or Other Coverings If it is found that external coverings such as insulation and corrosion-resistant linings are in good condition and there is no reason to suspect any unsafe condition behind them, it is not necessary to remove them for inspection of the vessel. However, it may be advisable to remove small portions of the coverings in order to investigate attachments, nozzles, and material conditions. Note: Precautions should be taken when removing insulation while vessel is under pressure. b) Evidence of Leakage Any leakage of gas, vapor, or liquid should be investigated. Leakage coming from behind insulation coverings, supports or settings, or evidence of past leakage should be thoroughly investigated by removing any covering necessary until the source of leakage is established. 36	**For additional information regarding a leak in a pressure vessel or determining the extent of a possible defect a ~~liquid~~ pressure test may be performed per Section 4.3.1.** [add new text following 2.3.3, b]

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JN CODE • PART 2 — INSPECTION **2.4.6 EVIDENCE OF LEAKAGE** a) A leak should be thoroughly investigated and corrective action initiated. Leaks beneath piping insulation should be approached with caution, especially when removing insulation from a pressurized piping system for inspection. b) A pressure test may be required to obtain additional information regarding the extent of a defect or detrimental condition. c) To determine tightness, the test pressure need be no greater than the normal operating pressure. The metal temperature should be not less than 70°F (21°C) and the maximum metal temperature during inspection should not exceed 120°F (49°C). The potential corrosive effect of the test fluid on the piping material should be considered.	[Replace 2.4.6 with following and delete part "c."] **b) For additional information regarding a leak in piping or determining the extent of a possible defect a ~~liquid~~ pressure test may be performed per Section 4.3.1.** ~~c) To determine tightness, the test pressure need be no greater than the normal operating pressure. The metal temperature should be not less than 70°F (21°C) and the maximum metal temperature during inspection should not exceed 120°F (49°C). The potential corrosive effect of the test fluid on the piping material should be considered.~~

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3.4.9 CRACKS a) Cracks may result from flaws existing in material or excessive cyclic stresses. Cracking can be caused by fatigue of the metal due to continual flexing and may be accelerated A07 by corrosion. Fire cracks are caused by the thermal differential when the cooling effect of the water is not adequate to transfer the heat from the metal surfaces exposed to the fire. Some cracks result from a combination of all these causes mentioned. b) Cracks noted in shell plates and fire cracks that run from the edge of the plate into the rivet holes of girth seams should be repaired. Thermal fatigue cracks determined by engineering evaluation to be self arresting may be left in place. c) Areas where cracks are most likely to appear should be examined. This includes the ligaments between tube holes, from and between rivet holes, any flange where there may be repeated flexing of the plate during operation and around welded connections. d) Lap joints are subject to cracking where the plates lap in the longitudinal seam. If there is any evidence of leakage or other distress at this point, the Inspector shall thoroughly examine the area and, if necessary, have the plate notched or slotted in order to determine whether cracks exist in the seam. Repairs of lap joint cracks on longitudinal seams are prohibited. e) Where cracks are suspected, it may be necessary to subject the pressure-retaining item to a hydrostatic test or nondestructive examination to determine their presence and location. A07 f) Cracks shall either be repaired, or formally evaluated by Crack Propagation Analysis to quantify their existing mechanical integrity. 65	[Replace "hydrostatic" with "pressure" and add "a" preceding "nondestructive."] e) Where cracks are suspected, it may be necessary to subject the pressure-retaining item to a **~~liquid~~ pressure** test or **a** nondestructive examination to determine their presence and location.

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4.3.1 PRESSURE TESTING a) During an inspection of a pressure-retaining item, there may be certain instances where inservice conditions have adversely affected the tightness of the component or the inspection discloses unusual, hard to evaluate forms of deterioration that may affect the safety of the vessel. In these specific instances, a pressure test using air, water, or other suitable test medium may be required at the discretion of the Inspector to assess leak tightness of the pressure-retaining item. b) The Inspector is cautioned that a pressure test will not provide any indication of the amount of remaining service life or the future reliability of a pressure-retaining item. The pressure test in this instance only serves to determine if the pressure-retaining item contains defects that will not allow the item to retain pressure. In certain instances, pressure tests of inservice components may reduce the remaining service life of the component due to causing permanent deformation of the item.	**4.3.1. PRESSURE TEST METHODS** a) During an inspection, there may be certain instances where in-service conditions have adversely affected the tightness or the inspection discloses unusual, hard to evaluate forms of deterioration that may affect the pressure retaining capability of the pressure retaining item. In these specific instances, a pressure test using an incompressible liquid, air, or other suitable test medium may be required at the discretion of the Inspector to assess pressure boundary integrity of the pressure-retaining item. b) The Inspector is cautioned that a pressure test will not provide any indication of the amount of remaining service life or the future reliability of a pressure-retaining item. The pressure test only serves to determine if the item contains defects that will not allow the item to retain pressure. In certain instances, pressure tests of in-service items may reduce the remaining service life due to causing permanent deformation.

NATIONAL BOARD INSPECTION CC

c) If an inservice pressure test is required, the following precautions shall be met:

1) The test pressure should not exceed 90% of the set pressure of the lowest setting pressure relief device on the component to avoid damage to pressure relief devices.

2) Test pressure should be selected or adjusted in agreement between the Inspector and the owner-user. When the original test pressure includes consideration of corrosion allowance, the test pressure may be further adjusted based upon the remaining corrosion allowance.

3) The metal temperature during a pressure test should not be less than 60°F (16°C) unless the owner-user provides information on the toughness characteristics of the vessel material to indicate the acceptability of a lower test temperature.

4) The metal temperature shall not be more than 120°F (49°C) unless the owner-user specifies the requirement for a higher test temperature. If the owner-user specifies a test temperature higher than 120°F (49°C), then precautions shall be taken to afford the Inspector close examination without risk of injury.

5) When contamination of the vessel contents by any medium is prohibited or when a pressure test is not practical, other testing methods described below may be used provided the precautionary requirements of the applicable Section of the original construction code or other standards are followed. In such cases, there shall be agreement as to the testing procedure between the owner-user and the Inspector.

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c) Use of pressure test methods, written or otherwise, shall be in agreement between the owner-user and the Inspector.

All instrumentation, including pressure and temperature gages, used to monitor a test shall be properly calibrated.

When contamination of the vessel contents by water is prohibited or when a liquid test is not practical due to weight or other considerations, alternate test media may be used provided the precautionary requirements of the applicable section of the original construction code or other standards are followed. In such cases, there shall be agreement as to the testing procedure between the owner-user and the Inspector.

Pressure testing shall not be conducted using flammable or toxic fluids.

NOTE: The requirements of NBIC Part 3 shall be followed when performing a liquid pressure test following repair or alteration of a pressure retaining item.

4.3.1.1 ALL PRESSURE TESTING:

Careful design of the test procedure can limit potential damage. For testing of pressure retaining items, parameters that should be considered are the test media, the test pressure, materials of construction and the metal temperature and temperature of the test media. Some carbon steel and low alloy steel materials that were manufactured prior to 1970 may not have sufficient notch

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	toughness to prevent brittle fracture during pressure testing conducted at or even above generally acceptable temperature of 60°F (16 deg C). For thick-walled pressure retaining items, it is recommended to seek technical guidance in establishing the notch toughness characteristics of the steel plate prior to pressure testing so that the metal temperature may be warmed above 60 deg F (16 deg C) to avoid brittle fracture. The organization making any pressure test shall determine that the pressure-retaining item material has adequate notch toughness at the minimum temperature of the material and the test media during the pressure test. **4.3.1.2 LIQUID PRESSURE TESTING:** Test pressure should be selected or adjusted in agreement between the Inspector and the owner-user. The liquid test pressure shall not exceed the lesser of 150% of the MAWP or the test pressure established by the original code of construction. <u>When a pressure relief device is left in place,</u> the test pressure should not exceed 90% of the set pressure of the lowest setting pressure relief device on the pressure retaining item to avoid damage to pressure relief devices.

	During a liquid pressure test where the test pressure will exceed 90% of the set pressure of a pressure relief device, the device shall be removed whenever possible. If removal of valve-type devices is not possible or practical, a spindle restraint such as a gag may be used provided that the valve manufacturer's instructions and recommendations are followed. Extreme caution should be employed to ensure only enough force is applied to contain pressure. Excessive mechanical force applied to the spindle restraint may result in damage to the seat and/or spindle and may interfere with the proper operation of the valve. The spindle restraint shall be removed following the test. The organization who performs the liquid pressure test and applies a spindle restraint shall attach a metal tag that identifies the organization and date the work was performed to the pressure-relieving device. If the seal was broken, the organization shall reseal the adjustment housing with a seal that identifies the responsible organization. The process shall be acceptable to the jurisdiction where the pressure-retaining items are installed. The metal temperature shall not be more than 120°F (49°C) unless the owner-user specifies the requirement for a higher test temperature. If the owner-user specifies a test temperature higher than 120°F (49°C), then precautions shall be taken to afford the Inspector close examination without risk of injury. Hold-time for the liquid pressure test shall be for a minimum of 10

	minutes prior to the examination by the Inspector. Test pressure shall be maintained for the time necessary for the Inspector to conduct the inspection. **4.3.1.3 PNEUMATIC TESTING** A test using a compressible gas should not be considered due to the potential hazard unless a liquid pressure test cannot be performed without damaging the pressure retaining item or causing contamination of the internal surfaces of the pressure retaining item. Concurrence of the owner and the Inspector shall be obtained and the Jurisdiction where required prior to conducting a pneumatic test. The test pressure shall be the minimum required to verify leak tightness integrity but shall not exceed the maximum pneumatic test pressure of the original code of construction. Precautionary requirements of the original code of construction shall be followed. **WARNING:** Adequate safety precautions shall be taken to ensure personnel safety when a compressible gas is used due to the volumetric expansion potential upon release of the pressure test gas. Consideration shall be given to possible asphyxiation hazards. Properly calibrated instrumentation shall be used to detect leakage of the testing medium. The instrumentation selected shall be appropriate for the test medium. Instrumentation may detect changes in pressure or chemical

	concentrations and shall be sensitive enough to detect leakage.

4.3.2 LEAK TESTING

Leak testing for the purpose of detecting any leakage may be performed when a pressure test cannot be performed. Some methods or techniques for leak testing may include bubble test (direct pressure or vacuum), helium mass spectrometer, pressure change, or flow measurement. Use of leak test procedures shall be in agreement between the owner-user and the Inspector. Use of written procedures and experienced personnel is required when performing leak tests. The Inspector shall review the written procedure to become familiar with limitations, adequacy, methods, and acceptance standards identified.

4.3.3 EVIDENCE OF LEAKAGE IN A BOILER

For additional understanding regarding a leak in a boiler, see 2.2.7 for the extent of a possible defect. A pressure test may be performed as follows:

a) To determine tightness, the test pressure shall be no greater than the maximum allowable working pressure stamped on the pressure-retaining item.

b) During a pressure test where the test pressure will exceed 90% of the set pressure of a pressure relief device, the device shall be removed whenever possible. If not possible or practical, a spindle restraint such as a gag may be used provided that the valve manufacturer's instructions and recommendations are followed. Extreme caution should be employed to ensure only enough force is applied to contain pressure. Excessive mechanical force applied to the spindle restraint may result in damage to the seat and/or spindle and may interfere with the proper operation of the valve. The spindle restraint shall be removed following the test.

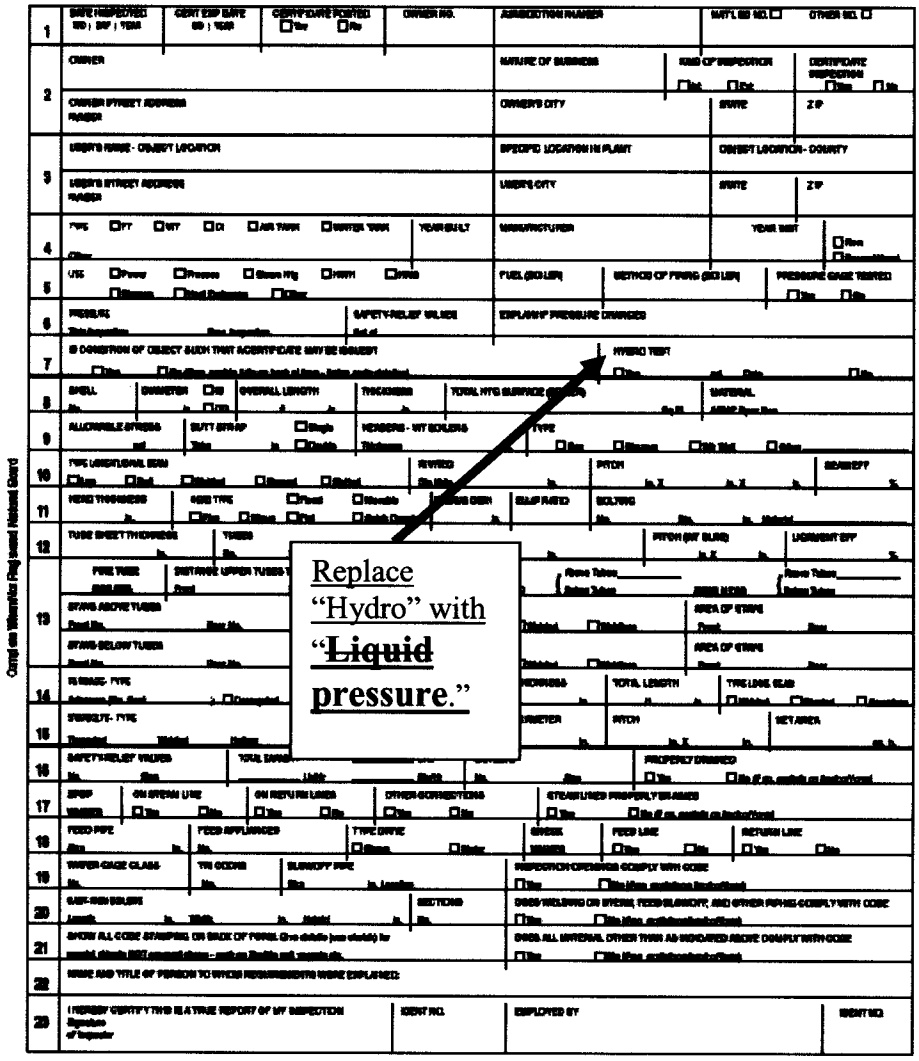
4.3.2 Delete

4.3.3 Delete

12/17

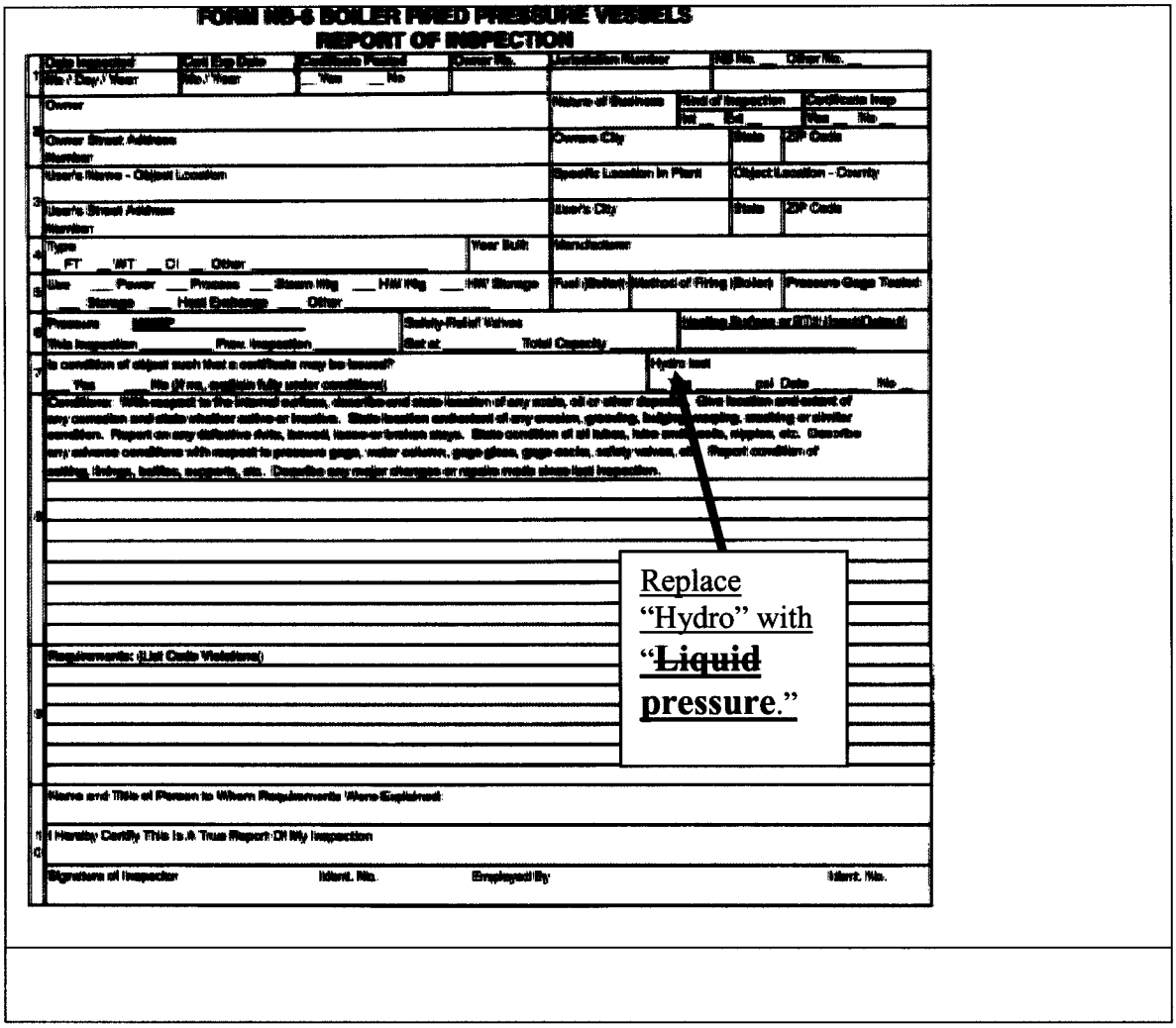
rro- g of tion ders ean nger cess ool- ical nta- ged tory enti- lec- nage ver- s to n of c) Components subjected to fire damage can exhibit altered mechanical properties, and should be evaluated to determine if the material has retained necessary strength and toughness as specified in the original code of construction. Heating above the lower critical temperature results in a phase transformation that upon rapid cooling can dramatically affect material properties. Evaluation methods may consist of: 1) Portable hardness testing 2) Field metallography or replication 3) Pressure testing 4) Magnetic particle testing 5) Liquid penetrant testing 6) Visual examination 7) Dimensional verification checks d) If visual distortion or changes in the microstructure or mechanical properties are noted, consider replacing the component or a detailed engineering analysis shall be performed to verify continued safe operation. e) Techniques for evaluating fire damage are referenced in applicable standards. See 1.3. S 1	[NOTE: This is existing Section 4.4.8.5] **3) Liquid pressure testing**

FORM NB-5 BOILER OR PRESSURE VESSEL DATA REPORT
FIRST INTERNAL INSPECTION
Standard Form for Jurisdictions Operating Under the ASME Code



Replace "Hydro" with "~~Liquid~~ pressure."

This form may be obtained from The National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Ave., Columbus, OH 43229 NB-5 Rev. 6


FORM NB-6 BOILER FIRED PRESSURE VESSELS
REPORT OF INSPECTION
Replace "Hydro" with "~~Liquid~~ pressure."

FORM NB-7 PRESSURE VESSELS
REPORT OF INSPECTION
Standard Form for Jurisdictions Operating Under the ASME Code

1	DATE INSPECTED	CERT EXP DATE	CERTIFICATE POWER? ☐Yes ☐No	OWNER NO.	JURISDICTION NUMBER	NAT'L BD NO. ☐ OWNER NO. ☐	
2	OWNER				NATURE OF BUSINESS	KIND OF INSPECTION ☐Int ☐Ext	CERTIFICATE INSPECTION ☐Yes ☐No
	OWNER'S STREET ADDRESS				OWNER'S CITY	STATE	ZIP
3	USER'S NAME - OBJECT LOCATION				SPECIFIC LOCATION IN PLANT	OBJECT LOCATION - COUNTY	
	USER'S STREET ADDRESS				USER'S CITY	STATE	ZIP
4	TYPE ☐AIR TANK ☐WATER TANK ☐OTHER			YEAR BUILT	MANUFACTURER		
5	USE ☐STORAGE ☐PROCESS ☐HEAT EXCHANGE ☐OTHER				SIZE	PRESSURE GAGE TESTED ☐Yes ☐No	
6	PRESSURE ALLOWED THIS INSPECTION _____ PREVIOUS INSPECTION _____			SAFETY RELIEF VALVES SET AT _____ TOTAL CAPACITY _____		EXPLAIN IF PRESSURE CHANGED	
7	IS CONDITION OF OBJECT SUCH THAT A CERTIFICATE MAY BE ISSUED? ☐ YES ☐ NO (IF NO, EXPLAIN FULLY UNDER CONDITIONS)					HYDRO TEST ☐ YES _____ PSI DATE _____ ☐ NO	
8	CONDITIONS: With respect to internal surfaces, describe and state location of any cracks, distortion, grooving, bulging, warping, scaling, or similar conditions. Report any such conditions whether found before or after last inspection.					etc. supports, etc. Describe any major changes or repairs made since	
9	REQUIREMENTS (LAW CODE VIOLATIONS)						
10	NAME AND TITLE OF PERSON TO WHOM REQUIREMENTS WERE EXPLAINED						
	I HEREBY CERTIFY THIS IS A TRUE REPORT OF MY INSPECTION			COMM NO.	EMPLOYED BY		COMM NO.
	SIGNATURE OF INSPECTOR						

This form may be obtained from The National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Ave., Columbus, OH 43229 NB-7 Rev. 2

Replace "Hydro" with "**Liquid pressure.**"

NATIONAL BOARD INSPECTION CO	Supplement S7.7 C
b) Common evidence of exposure to fire is: 1) charring or burning of the paint or other protective coat; 2) burning or scarring of the metal; 3) distortion; or 4) burning or melting of the valves.	
c) A pressure vessel that has been subjected to the action of fire shall be removed from service until it has been properly evaluated. The general intent of this requirement is to remove from service pressure vessels which have been subject to the action of fire that has changed the metallurgical structure or the strength properties of the steel. Visual examination with emphasis given to the condition of the protective coating can be used to evaluate exposure from a fire. This is normally determined by visual examination as described above with particular emphasis given to the condition of the protective coating. If there is evidence that the protective coating has been burned off any portion of the pressure vessel surface, or if the pressure vessel is burned, warped, or distorted, it is assumed that the pressure vessel has been overheated. If, however, the protective coating is only smudged, discolored, or blistered, and is found by examination to be intact underneath, the pressure vessel shall not be considered affected within the scope of this requirement. Vessels that have been involved in a fire and show no distortion shall be requalified for continued service by retesting using the hydrostatic test procedure applicable at the time of original fabrication.	[Replace "hydrostatic" with "liquid pressure" in part "c"] **liquid pressure**

NB08-0321

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

The following addition to the NBIC is proposed;

Add requirements to change the service of pressure vessels in Part 1, Installation, Part 2, Inspection, and Part 3 Repairs and Alterations.

Statement of Need

The Federal Railroad Administration has a proposal out on railcars carrying Poison Inhalation Hazard (PIH) that will require a number of existing tank cars to be retired early. There is a potential that some of these tanks will be recycled into stationary tanks for service other then what they were design for.

Additionally, this practice already occurs in some industries without any consideration for any damage mechanisms that made have been present in the initial service. The NBIC does not currently address these types of events.

Background Information

Part 2 – Add in Paragraph 1.5 Inspection Activities verbiage to address change of service for a pressure vessel. These requirements should caution inspectors, owners, and jurisdictional authorities of the inherent dangers involved when changing service. A new supplement or new Subject under 2.3.6, Description and Concerns of Specific Types of Pressure Vessels, should be added to address the specific requirements for inspection of pressure vessels that have been converted from one service to another.

NB10-1101
Part 2 2.2.10.7
SG Inspection General
Inspector's Responsibility for Boiler Control's

2.2.10.7 Controls and Other Safety Devices

Establishing proper operation and maintenance of controls and safety devices is essential to safe boiler operation. Owner/Users are responsible for establishing and implementing management programs which will ensure such action is taken. In addition, any repairs to controls and safety devices must only be made by qualified individuals or organizations. Documentation of compliance with these management systems and repairs is an essential element of demonstrating the effectiveness of such systems.

a) Verify that the burner is labeled and listed by a recognized testing agency, that piping and wiring diagrams exist, that commissioning tests have been conducted and that a contractor/manufacturer's installation report has been completed and is available for review.

b) Verify that the Owner/User has established function tests, inspection requirements, maintenance and testing of all controls and safety devices in accordance with manufacturer's recommendations. Verify that these activities are conducted at assigned intervals in accordance with a written procedure, that non-conformances which impact continued safe operation of the boiler are corrected, and that the results are properly documented. These activities shall be conducted at a frequency recommended by the manufacturer or the frequency required by the jurisdiction. Where no frequencies are recommended or prescribed, the activity should be conducted at least annually.

    1. Where allowed, by the jurisdiction, Performance Evaluation may be used to increase or decrease the frequencies based on document review and approval by an appropriate engineer.

c) Verify that adequate combustion air is supplied to the boiler room.

d) Verify that a manually operated remote emergency stop button exists at each boiler room exit door.

e) Verify that low water and flow controls and protective devices are provided, when required by the jurisdiction as follows:

1. All steam boilers have at least two low water fuel cutoffs or equivalent protection to prevent startup and to cut off the fuel prior to loss of water level in the sight glass. Where required by the code of construction or jurisdictional requirements, low water protection with manual reset shall be provided.

2. All hot water heating or supply boilers have a low water cutoff device that is located to protect the boiler from a low water condition. Manual reset shall be provided.

3. All electric boilers are protected from a low water condition either by construction or a low water cutoff.

4. All forced flow circulation boilers should have a flow sensing device installed that will shut the burner down on a loss of flow.

f) Verify that steam pressure and temperature controls and protective devices are provided as follows:

1. All steam boiler systems have one operating steam pressure control and one high steam pressure limit control

2. All hot water boiler systems have one operating water temperature control and a high temperature limit control.

g) For other controls and devices such as, but not limited to, burners, fuel train valves and safety controls, fuel pumps, fuel measuring, and forwarding equipment, the Owner/User is responsible for establishing a program for periodic testing of those devices by qualified individuals and that proper records are maintained.

h) Any repair, alteration, or replacement of a control or safety device will meet the requirement of the original installation, be conducted by trained and qualified individuals with any additional certification as required by the jurisdiction, and will be documented.

NB10-0402

Add API 510 Pressure Vessel Inspection Code to Part 2 1.3

Background: The API Code was included in the NBIC until the 2003 Addendum.

Statement of Need: Gives Inspectors, inspection agencies, and Jurisdictions another tool/standard to use as a guideline for inspections and repairs and alterations of pressure vessels.