

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

**NATIONAL BOARD
INSPECTION CODE
SUBCOMMITTEE ON INSPECTION**

MINUTES

*Meeting of January 20, 2010
Austin, Texas*

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

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

1. Call to Order

The Chairman Don Cook called the meeting to order at 8:00 AM on January 20, 2010.

2. Announcements

- a) The National Board would host a reception on January 20, 2010 from 6:30–? pm.
- b) The National Board would host a continental breakfast on January 21,2010
- c) The National Board would provide lunch on January 21, 2010.

3. Adoption of the Agenda

A motion was made to adopt the Agenda. The motion was unanimously approved.

4. Approval of the Minutes of July, 2009

A motion was made to approve the minutes of the July, 2009 meeting. The motion was unanimously approved.

5. Review of the Roster

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

Prospective member to the Sub Group on Inspections - Specific, Dr. Marshall Clark and prospective members to the Sub Group on Inspections - General, Mr. Mark Mooney and Mr. Venus Newton were introduced. A motion was made to appoint them as members to the respective Sub Groups. The motion was unanimously approved.

6. Inquiries

There were no inquiries assigned to this Sub Committee.

7. Public Review Comments

There were no public review comments received for this Sub Committee.

8. Action Items

NB07-0905 Part 2 4.3.1-4.3.3 SC Inspection Review these sections for completeness and consistency in pressure testing.

The Task Group is comprised of G. Galanes (Lead), D. Parrish., M. Horbaczewski, M. Clark and J.Yagen. A report was given by Mr. Horbaczewski. After discussion, a motion was made to accept the changes as revised. The motion was unanimously approved. (**Attachment 2**)

NB07-0910 Part 2 S-6 SG Inspection Specific Review DOT supplement. The Task Group is comprised of S. Staniszewski (Lead), G. McRae, and J. Riley.

A progress report was given by Mr. Staniszewski.

NB07-0912 Part 2 SG Inspection Specific Inspection Guides Section 5 Review the National Board Inspection guides for Cast Iron Boilers, PRDs, Water Level Controls & Devices and Operating Controls. These can be obtained on the National Board website. Task Groups gave reports as follows:

Guide for Cast Iron Boilers – Task Group W. Barbato, R. Dobbins, and D. Canonico.

The work of this Task Group was approved during the July 2008 meeting.

Guide for PRD – Task Group J. Richardson and R. Wacker.

A progress report was given by Mr. Richardson.

Guide for Water Level Controls & Devices – Task Group S. Bacon and V. Newton.
The work of this Task Group was approved during the July 2008 meeting.
Guide for Operating Controls – Task Group S. Bacon and V. Newton.
The work of this Task Group was approved during the January 2009 meeting.

NB08-0321 Part 2 1.5 SG on Insp. Spec. Add in paragraph 1.5 Inspection Activities wording 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 Concern 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 has been formed from all three parts of the NBIC under the leadership of R. Wielgoszinski. Task group members from Part 2 are G. McRae(Lead), 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.

A progress report was given by Mr. Wielgoszinski.

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. Also needed are requirements for how to inspect these tanks.

The Task Group is comprised of G. McRae(Lead), G. Galanes, J. Getter, M. Huffman, V. Mullins, J. Reed, D. Cook, J. Richardson, and V. Newton. A progress report was given by Mr. McRae. No progress at this time.

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.

The Task Group is comprised of G. McRae(Lead), G. Galanes, J. Getter, M. Huffman, V. Mullins, J. Reed, D. Cook, J. Richardson, and V. Newton. A progress report was given by Mr. McRae. No progress at this time. Randy Wacker was assigned to the task group.

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.

The Task Group is comprised of G. McRae(Lead), G. Galanes, J. Getter, M. Huffman, V. Mullins, J. Reed, D. Cook, J. Richardson, and V. Newton. A progress report was given by Mr. McRae. No progress at this time.

9. New Business

NB10-1301 Part 2 2.3.6.4 Anhydrous Ammonia Nurse Tank Inspection. A Task Group of G. McRae (Chair), S. Staniszewski, J. Getter, and R. Reetz were assigned.

10. Future Meetings

July, 2010 Columbus, Ohio
January, 2011 Austin, Texas

11. Adjournment

The meeting was adjourned at 11:30 pm on January 20, 2010.

Respectfully Submitted,

Bill Smith
Secretary, Subcommittee on Inspections

Attachment 1- Attendance Roster 3 pages
Attachment 2- NB07-0905 15 pages


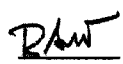
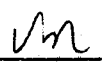
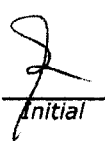


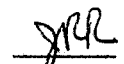
Attendance List SC on Inspection

Meeting Date: January 20, 2010

<p>Don Cook Principal Safety Engineer Dept. of Industrial Relations Div. of Industrial Safety & Health 1515 Clay Street, Suite 1302 Oakland, CA 94612-1302</p> <p>Ph: 510-622-3050 Fax: 510-622-3063 E-mail: dcook@hq.dir.ca.gov</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>DC</i> Initial</p>	<p>Domenic A. Canonico Canonico & Assoc. 35 Old Riding Way Signal Mountain, TN 37377</p> <p>Ph: 423-886-7730 Fax: 423-886-7730 E-mail: canonicod@bellsouth.net</p>	<p>Attended: Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>_____ Initial</p>
<p>Stanley Staniszewski, Jr. US Dept. of Transportation, Pipelines & Administration Hazardous Materials Safety East Building PHH -20 1200 New Jersey Ave. SE Washington, DC 20590</p> <p>Ph: 202-366-4545 x 0453 Fax: 202-366-3753 E-mail: stanley.staniszewski@dot.gov</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>SS</i> Initial</p>	<p>Robert Reetz Chief Boiler Inspector North Dakota Insurance Department Boiler Inspection Program 1701 S. 12th Street Bismarck, ND 58504-6644</p> <p>Ph: 701/328-9607 Fax: 701/328-9610 E-mail: breetz@nd.gov</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>RR</i> Initial</p>
<p>Tim Barker FM Global 601 108th NE Suite 1400 Bellevue, WA 98004</p> <p>Ph: 360-801-3790 Fax: E-mail: Timothy.Barker@FMGlobal.com</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>TMB</i> Initial</p>	<p>David Parrish FM Global 1151 Bos-Prov Turnpike PO Box 9102 Norwood, MA, 02622-9102 P: 781-255-4734 F: 781-762-9375 E: david.parrish@fmglobal.com</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>DP</i> Initial</p>
<p>Mark Mooney Liberty Mutual Insurance Regional Manager - East Senior Engineering Specialist 20 Riverside Road MS:03BN Weston, MA Ph: 781-891-890 x 27329 Fax: 781-642-6512 E-mail: Mark.Mooney@LibertyMutual.com</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>MM</i> Initial</p>	<p>Jim Getter Worthington Cylinders 200 Old Wilson Bridge Road Columbus, OH 43085 P: 614-840-3087 F: 614-438-3083 E-mail: jmgetter@worthingtonindustries.com</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>JMG</i> Initial</p>
<p>Mike Schwartzwalder American Electric Power 1 Riverside Plaza Columbus, OH 43215</p> <p>Ph: 614-716-1913 Fax 614-716-1744 E-mail: meschwartzwalder@aep.com</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>MS</i> Initial</p>	<p>Bill Smith National Board 1055 Crupper Ave. Columbus, OH 43229 P: 614-888-8320 F: 614-847-1828 E: bsmith@nationalboard.org</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p><i>WKS</i> Initial</p>

Attendance List SC on Inspection

Meeting Date: January 20, 2010

<p>Steven E. Bacon Inspector Supervisor Conoco Phillips Ferndale Refinery 3901 Unick Road PO Box 8 Ferndale, WA 98248</p> <p>Ph: 360-384-8238 Fax: 360-384-8422 E-mail: steven.e.bacon@conocophillips.com</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p> Initial</p>	<p>Randy Wacker Dupont 4417 Lancaster Pike CRO 722/1050 Wilmington, DE 19880</p> <p>Ph: 302-999-2607 Fax: 302-999-6273 E-mail: randy.a.wacker@usa.dupont.com</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p> Initial</p>
<p>Venus Newton Chubb & Son 3445 Peachtree Rd. N.E. Atlanta, GA 30326</p> <p>Ph: 404-266-4069 Fax: 404-269-6849</p> <p>E-mail: vnewton@chubb.com</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p> Initial</p>	<p>Greg McRae Engineering and Technical Director Trinity Containers, LLC 2525 Stemmons Freeway Dallas, TX 75207</p> <p>214-589-8559 Ph: 888-558-8265 Fax: 214-589-8553 E-mail: greg.mcrae@trin.net</p>	<p>Attended: Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p> Initial</p>
<p>John Richardson Consultant - Dresser, Inc. 980 Richardson Road Colfax, LA 71417</p> <p>Ph: 318-627-5504 Fax: 318-627-2969</p> <p>E-mail: jwrichar@aol.com</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p> Initial</p>	<p>Mark Horbaczewski Midwest Generation 3501 S Pulaski Chicago, IL 60623</p> <p>Ph: 773-650-5441 Fax: E-mail: MHorbaczewski@MWGen.com</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p> Initial</p>
<p>Jim Riley Conoco Phillips 1380 San Pablo Ave. Rodeo, CA 94572-1354</p> <p>P: 510-245-5895 F:</p> <p>E-mail: jim.riley@conocophillips.com</p>	<p>Attended: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p> Initial</p>		<p>Attended: Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Initial</p>

Attendance List SC on Inspection

Meeting Date: January 20, 2010

<p>Angelo Bramucci Alstom Power Inc. 2000 Day Hill Road Windsor, CT 06095 angelo.c.bramucci@alstom power.alstom.com 860-285-9176</p>		<p>Marshal Clark Structural Integrity Ass. Inc 10813 S River Front Parkway Ste 135 South Jordan, Ut 84095 801-676-0216 mclark@structint.com</p>	
<p>THOMAS BUELLER DYNEX GENERATION 604 PIERCE BLVD OFALON IL 62269 3144202834 6182065840 tom.bueller@dynex.com</p>			

EXISTING TEXT	PROPOSED TEXT
<p>SECTION CODE • PART 2 — INSPECTION</p> <p>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.</p> <p>2) The Inspector shall review all personnel safety requirements as outlined in 1.4 prior to entry.</p> <p>Note: If a boiler has not been properly prepared for an internal inspection, the inspector shall decline to make the inspection.</p> <p>2.2.7 EVIDENCE OF LEAKAGE</p> <p>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.</p> <p>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.</p>	<p>liquid pressure</p> <p>[replace “leak” with “liquid pressure”]</p>

<p>2.3.3 EXTERNAL INSPECTION</p> <p>The purpose of an external inspection is to provide information regarding the general condition of the pressure vessel. The following should be reviewed:</p> <p>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.</p> <p>Note: Precautions should be taken when removing insulation while vessel is under pressure.</p> <p>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.</p> <p>36</p>	<p>For additional information regarding a leak in a pressure vessel or determining the extent of a possible defect a test may be performed per Section 4.3.1.</p> <p>[add new text following 2.3.3, b]</p>
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<p>JN CODE • PART 2 — INSPECTION</p> <p>2.4.6 EVIDENCE OF LEAKAGE</p> <p>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.</p> <p>b) A pressure test may be required to obtain additional information regarding the extent of a defect or detrimental condition.</p> <p>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.</p>	<p>[Change 2.4.6 b) with the following and delete paragraph “c.”]</p> <p>b) For additional information regarding a leak in piping or determining the extent of a possible defect a test may be performed per Section 4.3.1.</p> <p>e) 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.</p>
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<p>3.4.9 CRACKS</p> <p>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 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.</p> <p>A07</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>A07 f) Cracks shall either be repaired, or formally evaluated by Crack Propagation Analysis to quantify their existing mechanical integrity.</p> <p style="text-align: center;">65</p>	<p>[Replace “hydrostatic” with “liquid pressure” and add “a” preceding “nondestructive.”]</p> <p>e) Where cracks are suspected, it may be necessary to subject the pressure-retaining item to a <u>liquid pressure</u> test or <u>a</u> nondestructive examination to determine their presence and location.</p>
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<p>it y a e t- r- e e d</p> <p>4.3.1 PRESSURE TESTING</p> <p>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.</p> <p>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.</p> <p>if e er - il</p> <p>70</p>	<p>4.3.1. PRESSURE TESTING TEST OR EXAMINATION METHODS APPLICABLE TO INSPECTION</p> <p>a) During an inspection of a pressure-retaining item, there may be certain instances where in-service conditions have adversely affected the tightness of the component or the inspection discloses unusual, hard to evaluate forms of deterioration that may affect the pressure retaining capability of the vessel. In these specific instances, a pressure test using air, water or other suitable test medium <u>an incompressible liquid, air, or other suitable test medium</u> may be required at the discretion of the Inspector to assess leak tightness <u>pressure boundary integrity</u> of the pressure-retaining item.</p> <p>b) The Inspector is cautioned that <u>such a</u> 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, <u>these types of</u> pressure tests of inservice components may reduce the remaining service life of the component due to causing permanent deformation of the item.</p>
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NATIONAL BOARD INSPECTION CODE

- 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.

4.3.1 (continued)

Strike out existing c) 1 thru 4

c) Use of these test procedures, 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 ~~any medium~~ water is prohibited or when a liquid pressure test is not practical ~~other testing methods described below due to weight or other considerations, other 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.

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 LIQUID 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 particularly those manufactured prior to 1970 may not

have sufficient notch toughness to prevent brittle fracture during pressure testing conducted at or even above generally acceptable temperature of 60°F.

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 TEST:

A liquid pressure test is the preferred method.

Test pressure should be selected or adjusted in agreement between the Inspector and the owner-user.

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.

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. 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 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 PRESSURE TEST

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 may 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.

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

1	DATE INSPECTED MO DAY YEAR	CERT EXPIRES DATE MO YEAR	CERTIFICATE PORTED <input type="checkbox"/> Yes <input type="checkbox"/> No	OWNER NO.	ASME JOB NUMBER	MAPLEB NO. <input type="checkbox"/>	OTHER NO. <input type="checkbox"/>
2	OWNER	NATURE OF BUSINESS	KIND OF INSPECTION <input type="checkbox"/> In <input type="checkbox"/> Out	CERTIFICATE INSPECTION <input type="checkbox"/> Yes <input type="checkbox"/> No	OWNER'S STREET ADDRESS NUMBER	OWNER'S CITY	STATE ZIP
3	LIBER'S NAME OBJECT LOCATION	SPECIFIC LOCATION IN PLANT	OBJECT LOCATION - COUNTY	LIBER'S STREET ADDRESS NUMBER	LIBER'S CITY	STATE	ZIP
4	TYPE <input type="checkbox"/> HT <input type="checkbox"/> WT <input type="checkbox"/> D <input type="checkbox"/> AIR TANK <input type="checkbox"/> WATER TANK	YEAR BUILT	MANUFACTURER	YEAR INST.	<input type="checkbox"/> Yes <input type="checkbox"/> No		
5	IS <input type="checkbox"/> Power <input type="checkbox"/> Process <input type="checkbox"/> Steam HT <input type="checkbox"/> HWH <input type="checkbox"/> HNS	FUEL BOILER	METHOD OF FIRING BOILER	PRESSURE GAUGE TESTED <input type="checkbox"/> Yes <input type="checkbox"/> No			
6	PSI'S, KG	SAFETY-RELIEF VALVES Set at	EXPLAIN IF PRESSURE CHANGED				
7	IS CONDITION OF OBJECT SUCH THAT A CERTIFICATE MAY BE ISSUED? <input type="checkbox"/> Yes <input type="checkbox"/> No				HYDRO TEST <input type="checkbox"/> Yes <input type="checkbox"/> No		
8	SHELL	DIAMETER	OVERALL LENGTH	THICKNESS	TOTAL HTG SURFACE AREA	MATERIAL ASME Spec. No.	
9	ALLOWABLE STRESS	SAFETY STRAP <input type="checkbox"/> Yes <input type="checkbox"/> No	HEADERS - HT BOILERS <input type="checkbox"/> Yes <input type="checkbox"/> No	TYPE <input type="checkbox"/> Box <input type="checkbox"/> Round <input type="checkbox"/> Ell. etc. <input type="checkbox"/> Other	SCAM EFF.		
10	THE JOINTS SHALL BE <input type="checkbox"/> Butt <input type="checkbox"/> Lap <input type="checkbox"/> Staggered <input type="checkbox"/> Staggered <input type="checkbox"/> Other	WELDED	WELDED	WELDED	WELDED	SCAM EFF.	
11	HEAD THICKNESS	SAFETY STRAP	HEADERS - HT BOILERS	TYPE	SCAM EFF.		
12	TUBE SHEET THICKNESS	TUBES	HEADERS - HT BOILERS	TYPE	SCAM EFF.		
13	PIPE TUBE	DISTANCE UPPER TUBES	HEADERS - HT BOILERS	TYPE	SCAM EFF.		
14	STAYS ABOVE TUBES	STAYS BELOW TUBES	HEADERS - HT BOILERS	TYPE	SCAM EFF.		
15	STAYS ABOVE TUBES	STAYS BELOW TUBES	HEADERS - HT BOILERS	TYPE	SCAM EFF.		
16	STAYS ABOVE TUBES	STAYS BELOW TUBES	HEADERS - HT BOILERS	TYPE	SCAM EFF.		
17	SAFETY-RELIEF VALVES	TOTAL SALES	HEADERS - HT BOILERS	TYPE	SCAM EFF.		
18	STOP VALVES	ON STEAM LINE	ON RETURN LINES	OTHER CONNECTIONS	STEAM LINES PROPERLY ORANGED		
19	FEED PIPE	FEED APPLIANCES	TYPE OFF	ON	FEED LINE	RETURN LINE	
20	WATER GAUGE GLASS	TRUCKS	BLOWOFF PIPE	SECTION	INSPECTION CREW HAS COMPLY WITH CODE		
21	SHOW ALL CODE STAMPING ON BACK OF FORM (to be done by user) to	DOES WELDING ON STEAM FEED BLOWOFF AND OTHER PIPING COMPLY WITH CODE					
22	NAME AND TITLE OF PERSON TO WHOM REQUIREMENTS WERE EXPLAINED						
23	I HEREBY CERTIFY THIS IS A TRUE REPORT OF MY INSPECTION	IDENT NO.	EMPLOYED BY	IDENT NO.			

Replace
"Hydro" with
"Pressure."

This form may be obtained from The National Board of Boiler and Pressure Vessel Inspectors, 1055 Cludson Ave., Columbus OH 43225

NATIONAL BOARD INSPECTION CODE		Supplement S7.7 C
<p>b) Common evidence of exposure to fire is:</p> <ol style="list-style-type: none"> 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. <p>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.</p>	<p style="text-align: right;">S7 Th or sh be S7 Cr wi tif ur or Vi S7 a) b) c)</p>	<p>[Replace "hydrostatic" with "liquid pressure" in part "c"]</p> <p style="text-align: center;">liquid pressure</p>