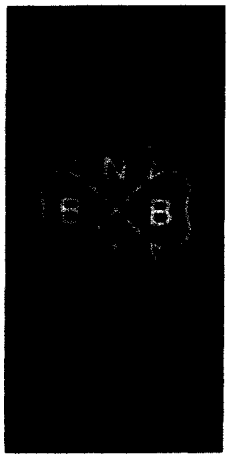
Date Distributed: February 10, 2010



THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD INSPECTION CODE
SUBGROUP ON INSPECTION- GENERAL

MINUTES

Meeting of January 19, 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, Jim Getter called the meeting to order at 8:00 AM on January 19, 2010.

2. **Announcements**
   a) The National Board would host a reception on January 20, 2010 from 6:30–9:30 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**
   Motion was made to adopt the Agenda. The motion was unanimously approved.

4. **Approval of the Minutes of July 2009**
   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. Dr. Canonico was excused. .

6. **Interpretations**
   There were no interpretations assigned to the subgroup.

7. **Action Items**

   NB07-0905 ***Part 2 4.3.1- 4.3.3 SG Inspection General*** Review these sections for completeness and consistency in pressure testing. The Task Group has members representing all three parts. 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 much discussion and many revisions, a motion was made to accept the document as revised. The motion was unanimously approved. See **Attachment 2.**

8. **New Business**
   NB10-1101 ***Part 2 2.2.10.7 SG Inspection General*** Inspector's responsibility for boiler controls. A Task Group was assigned. Venus Newton, Chair, Robert Dobbins, Tim Barker, Jim Riley and Mark Mooney.

9. **Future Meetings**
   July 2010 Columbus, Ohio
   January 2011 Austin, Texas

10. **Adjournment**
    The meeting was adjourned at 12:00 noon on January 19, 2010

    Respectfully Submitted,

    Bill Smith
    Secretary, Subgroup on Inspections, General

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

Attendance List Inspection - General Subgroup

Meeting Date: **January 19, 2010**

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*	**Domenic A. Canonico** Canonico & Assoc. 35 Old Riding Way Signal Mountain, TN 37377 Ph: 423-886-7730 Fax: 423-752-2650 E-mail: canonicod@bellsouth.net	Attended: Yes ☐ No ☒ DMH *Initial*
John Richardson Consultant - Dresser, Inc. 980 Richardson Road Colfax, LA 71417 Ph: 318-627-5504 Fax: 318-627-2969 E-mail: jwrichar@aol.com	Attended: Yes ☑ No ☐ JWR *Initial*	**Jim Getter** Worthington Cylinders 200 Old Wilson Bridge Road Columbus, OH 43085 P: 614-438-3087 F: 614-438-3083 E-mail: jmgetter@worthingtonindustries.com	Attended: Yes ☒ No ☐ JMG *Initial*
Robert Dobbins Zurich N.A. 565 Reinhardt Road Lincolnton, NC 20892 P: 704-748-1641 F: 704-748-6778 E-mail: Robert.dobbins@zurichna.com	Attended: Yes ☑ No ☐ RWD *Initial*	**David Parrish** FM Global 1151 Bos-Prov Turnpike PO Box 9102 02062 Norwood, MA 0262-9102 P: 781-255-4734 F: 781-762-9375 E: david.parrish@fmglobal.com	Attended: Yes ☒ No ☐ *Initial*
Mark Horbaczewski Midwest Generation 3501 S. Pulaski Chicago, Illinois 60623 P: 773-650-5441 F: E-mail: MHorbaczewski@MWGen.com	Attended: Yes ☑ No ☐ MSH *Initial*	**Greg McRae** Quality Assurance Manager Trinity Industries, Inc. 2525 Stemmons Freeway Dallas, TX 75207 Ph: 214 589 8559 ~~888-558-8265~~ Fax: 214-589-8553 E-mail: greg.mcrae@trin.net	Attended: Yes ☑ No ☐ *Initial*

Attendance List Inspection - General Subgroup

Meeting Date: **January 19, 2010**

Steven E. Bacon Inspector Supervisor Conoco Phillips Ferndale Refinery 3901 Unick Road PO Box 8 Ferndale, WA 98248 Ph: 360-384-8238 Fax: 360-384-8422 E-mail: steven.e.bacon@conocophillips.com	Attended: Yes ☑ No ☐ SEB *Initial*	Name: Randy Wacker Company: DuPont Address: 4417 Lancaster Pike City/State/Zip: Wilmington/DE/19880 Ph: 302 999-2607 Ext. cell 302 463-0376 Fax: 302 999-6273 E-mail: Randy.A.Wacker@USA.DuPont.com
Name: Angelo Bramucci Company: Alstom Power Inc. Address: 2000 Day Hill Road City/State/Zip: Windsor, CT 06095 Ph: 860-285-9176 Ext. Fax: E-mail: angelo.c.bramucci@power.alstom.com		Name: ~~MARK SPIER~~ JAMES RILEY Company: CONOCOPHILLIPS Address: 1380 SAN PABLO AVE City/State/Zip: RODEO, CA 94572 Ph: 510-245-5895 Ext. Fax: E-mail: jim.riley@conocophillips.com
Name: Venus Newton Company: Clubb & Son Address: 3445 Peachtree st City/State/Zip: Atlanta, Ga. 30326 Ph: 404-266-4069 Ext. Fax: E-mail: vnewton@clubb.com		Name: Mike Schwartzwalder Company: AEP Address: 1 Riverside Plaza, City/State/Zip: Columbus, Ohio 43215 Ph: 614-716-1913 Ext. Fax: 614-716-2403 E-mail: meschwartzwalder@aep.com
Name: DON COOK Company: STATE OF CA Address: 1515 CLAY ST #1302 City/State/Zip: OAKLAND CA 94612 Ph: 510 622-3050 Ext. Fax: 510 622-3063 E-mail: dcook@dir.ca.gov		Name: MARK MOONEY Company: LIBERTY MUTUAL INSURANCE CO Address: 20 RIVERSIDE ROAD City/State/Zip: WESTON, MA 02493 Ph: 781 690-7218 Ext. Fax: 603 334-3710 E-mail: MARK.MOONEY@LIBERTYMUTUAL.COM

Attendance List Inspection - General Subgroup

Meeting Date: January 19, 2010

H:\ROBIN-Active Documents\NBIC Secretarial Documents\Committees\Rosters\January 2010\Roster SG Inspection General 0110.doc

STAN STAWISZEWSKI	US DOT	VISITOR
JOE BLUEMEL	ONECIS/INS.	VISITOR
Marshal D. Clark	Stone+Webster	visitor
Robert Reetz	State of N.D.	Visitor
TIM BARKER	FM GLOBAL	VISITOR

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. A07	**liquid pressure** [replace "leak" with "liquid pressure"]

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.

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.

[add new text following 2.3.3, b]

ɔN 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.	[Change 2.4.6 b) with the following and delete paragraph "c."] **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.** ~~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.~~

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.	[Replace "hydrostatic" with "liquid pressure" and add "a" proceeding "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.
65	

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 TESTING~~ TEST OR EXAMINATION METHODS APPLICABLE TO INSPECTION** 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~~ an incompressible liquid, air, or other suitable test medium may be required at the discretion of the Inspector to assess ~~leak tightness~~ pressure boundary integrity of the pressure-retaining item. b) The Inspector is cautioned that such 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, these types of ~~pressure~~ tests of inservice components may reduce the remaining service life of the component due to causing permanent deformation of the item.

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.

71

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.

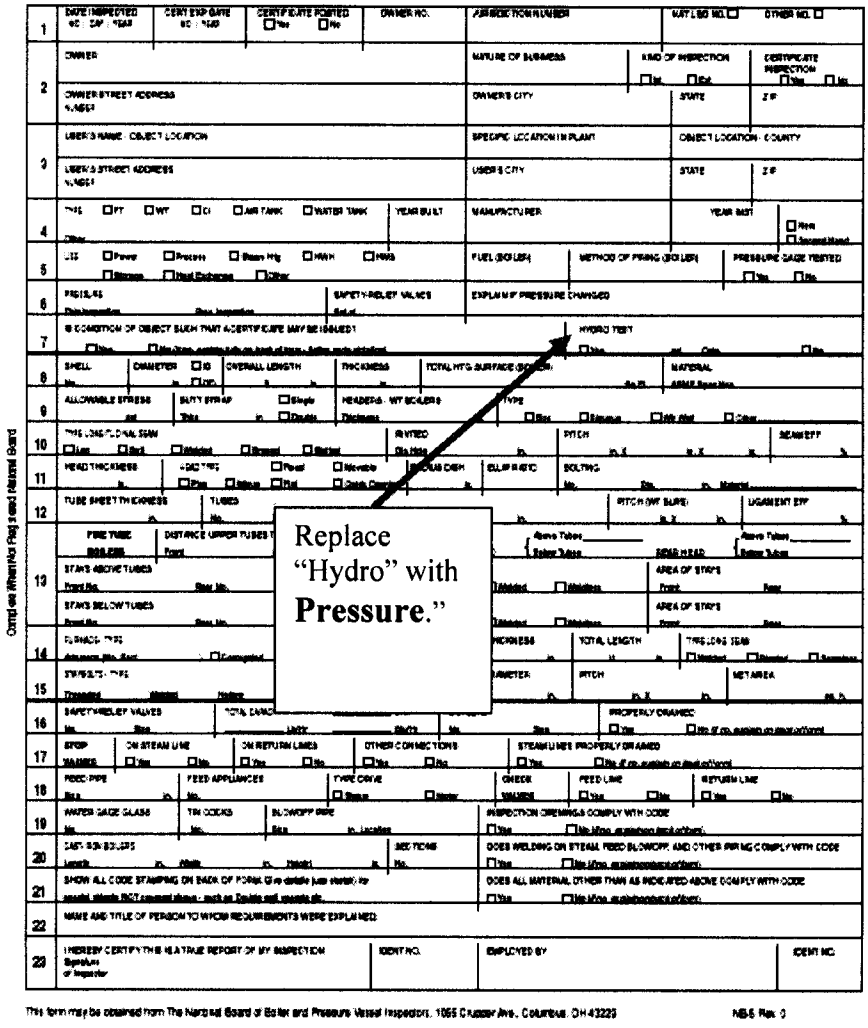
ION CODE • PART 2 — INSPECTION	
4.3.2 LEAK TESTING Leak testing for the purpose of detecting any leakage may be performed when a pressure test cannot be performed. Some methods or techniques for leak testing may include bubble test (direct pressure or vacuum), helium mass spectrometer, pressure change, 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.	**4.3.2** Delete
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.	**4.3.3 Delete**

rro- g of tion ders ean nger cess ool- ical nta- ged tory enti- lec- ıage 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. B 1	Section 4.4.8.5 **3) <u>Liquid</u> pressure testing**

FORM NB-5 BOILER OR PRESSURE VESSEL DATA REPORT

FIRST INTERNAL INSPECTION

Standard Form for Jurisdictions Operating Under the ASME Code



FORM NB-6 BOILER FIRED PRESSURE VESSELS
REPORT OF INSPECTION

1	Date Inspected Mo / Day / Year	Cert Exp Date Mo / Year	Certificate Posted ___ Yes ___ No	Owner No.	Jurisdiction Number	NB No. ___ Other No. ___	
2	Owner				Nature of Business	Kind of Inspection Int ___ Ext ___	Certificate Insp Yes ___ No ___
	Owner Street Address Number				Owners City	State	ZIP Code
3	User's Name - Object Location				Specific Location in Plant	Object Location - County	
	User's Street Address Number				User's City	State	ZIP Code
4	Type ___ FT ___ WT ___ CI ___ Other			Year Built	Manufacturer		
5	Use ___ Power ___ Process ___ Steam Htg ___ HW Htg ___ HW Storage ___ Storage ___ Heat Exchange ___ Other				Fuel (Boiler)	Method of Firing (Boiler)	Pressure Gage Tested
6	Pressure MAWP This Inspection _____ Prev. Inspection _____		Safety-Relief Valves Set at _____ Total Capacity _____		Heating Surface or BTU (Input/Output)		
7	Is condition of object such that a certificate may be issued? ___ Yes ___ No (If no, explain fully under conditions)				Hydro test _____ psi Date _____ No ___		
8	Conditions: With respect to the internal surface, describe and state location of any scale, oil or other deposits. Give location and extent of any corrosion and state whether active or inactive. State location and extent of any erosion, grooving, bulging, warping, cracking or similar condition. Report on any defective rivits, bowed, loose or broken stays. State condition of all tubes, tube ends, welds, nipples, etc. Describe any adverse conditions with respect to pressure gage, water column, gage glass, gage cocks, safety valves, etc. Report condition of setting, linings, baffles, supports, etc. Describe any major changes or repairs made since last inspection.						
9	Requirements: (List Code Violations)						
10	Name and Title of Person to Whom Requirements Were Explained:						
	I Hereby Certify This Is A True Report Of My Inspection						
	Signature of Inspector	Ident. No.	Employed By			Ident. No.	

Replace "Hydro" with "**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 POSTED ☐Yes ☐No	OWNER NO.	JURISDICTION NUMBER	NAT'L BD NO. ☐ OTHER NO. ☐	
2	OWNER				NATURE OF BUSINESS	KIND OF INSPECTION ☐In ☐Ex	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 the internal surface, describe and state location of any scale, oil, or a pitting, grooving, bulging, warping, cracking, or similar condition. Report on any such conditions on last inspection.					as supports, etc. Describe any major changes or repairs made since	
9	REQUIREMENTS (LIST CODE VIOLATIONS)						
10	NAME AND TITLE OF PERSON TO WHOM REQUIREMENTS WERE EXPLAINED						
	I HEREBY CERTIFY THIS IS A TRUE REPORT OF MY INSPECTION _____ SIGNATURE OF INSPECTOR				DEAN NO.	EMPLOYED BY	DEAN NO.

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 "**Pressure**."

NATIONAL BOARD INSPECTION CO	Supplement S7.7 C
b) Common evidence of exposure to fire is: S7 1) charring or burning of the paint or other protective coat; Th or sh 2) burning or scarring of the metal; be 3) distortion; or S7 4) burning or melting of the valves. Cr	
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 S7)7 examination with emphasis given to the condition of the protective coating can be a) 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 b) 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. c)	[Replace "hydrostatic" with "liquid pressure" in part "c"] **liquid pressure**