



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

# **NATIONAL BOARD SUBGROUP INSPECTION**

## **MINUTES**

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Meeting of January 10<sup>th</sup>, 2017  
San Diego, California

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

The National Board of Boiler & Pressure Vessel Inspectors  
1055 Crupper Avenue  
Columbus, Ohio 43229-1183  
Phone: (614)888-8320  
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**1. Call to Order**

The meeting was called to order at 8:02 a.m. on January 10, 2017 by Mr. Jim Getter.

**2. Introduction of Members and Visitors**

The attendees are identified on the attendance sign in sheet (**Attachment Pages 1 & 2**). With the attached attendance listing, a quorum was established.

**3. Announcements**

- The National Board invites all committee members and visitors to a reception at the Quad AleHouse on Wednesday, January 11<sup>th</sup>. The event begins at 5:30pm. The venue is approximately a five minute walk from the hotel.
- The draft of the 2017 edition of the NBIC has been approved by the NBIC Committee, and will be available for purchase on July 1<sup>st</sup>, 2017.
- Additional announcements were made by the Secretary, Jodi Metzmaier

**4. Adoption of the Agenda**

The agenda was then adopted unanimously.

**5. Approval of the Minutes of July 19<sup>th</sup>, 2016 Meeting**

The minutes from the July 2016 meeting are posted on the National Board website.

**6. Review of Rosters**

Added David Buechel and Bryce Hart to the roster. They were both voted into the Subgroup on Inspection in July 2016.

**a. Membership Nominations**

- There were no new membership nominations.

**b. Membership Reappointments**

- Mr. Darrell Graf, Mr. Mike Horbaczewski and Mr. Thomas Vandini were voted unanimously to continue their membership with the Subgroup on Inspection. Any appointments are subject to the approval of the Chairman of the Board of Trustees.

**7. Interpretations**

<b>Item Number: IN16-0501</b>	<b>NBIC Location: Part 2</b>	<b>Attachment Page 6</b>
<b>General Description:</b> Change of service from Ammonia to LP gas		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> None assigned.		
<b>January 2017 Meeting Action:</b>		
In July 2016 the response to the interpretation was discussed as proposed by SG Inspection. A motion was made to approve the response. The motion was unanimously approved. The item was not letter balloted in the period between meetings because approval of the 2017 edition took priority. No further action was taken by the SG during this meeting.		

## 8. Action Items – Old Business

<b>Item Number: NB14-0901</b>	<b>NBIC Location: Part 2</b>	<b>No Attachment</b>
<b>General Description:</b> Review inspection requirements for pressure vessels designed for high pressures		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> M. Horbaczewski (PM), M. Schwartzwalder, D. Graf, G. Scribner		
<b>January 2017 Meeting Action:</b> Mr. Hobaczewski gave a progress report stating they should have something to present in July 2017.		
<b>Add Mr. Brandon Wilson to the Task Group.</b>		

<b>Item Number: NB16-1001</b>	<b>NBIC Location: Part 2, CO2 Supp.</b>	<b>No Attachment</b>
<b>General Description:</b> Edit CO2 supplement based on AIA proposed revision		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> None assigned.		
<b>January 2017 Meeting Action:</b> Mr. Mooney gave a progress report stating the task group still needs to work on the wording.		
<b>A task group was assigned: M. Mooney (PM), D. Buechel, T Barker, V. Newton</b>		

## 9. Action Items – New Business

<b>Item Number: NB16-2808</b>	<b>NBIC Location: Part 2, 2.3.6</b>	<b>No Attachment</b>
<b>General Description:</b> Result of public review comments submitted after deadline, review use of mandatory code language in 2.3.6		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> None assigned		
<b>January 2017 Meeting Action:</b> Two action items, NB-17-0201 & NB17-0202, have been opened to replace this item number. NB16-2808 was unanimously approved to be closed.		

<b>Item Number: NB16-2809</b>	<b>NBIC Location: Part 2, S12</b>	<b>Attachment Pages 3-5</b>
<b>General Description:</b> Result of public review comments submitted after deadline, review use of mandatory code language in S12		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> None assigned		
<b>January 2017 Meeting Action:</b> Two documents were presented in the SG, one with revised wording to S12.2d and one with revised wording throughout Supplement 12. These documents were revised based on the public review comments. The revised wording was reviewed and unanimously approved by the Subgroup.		

<b>Item Number: NB17-0201</b>	<b>NBIC Location: Part 2, 2.3.6</b>	<b>Attachment Pages 6</b>
<b>General Description:</b> Result of public review comments submitted after deadline, review use of mandatory code language in 2.3.6		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> M. Mooney (PM), D. Buechel, D. Graf		
<b><u>January 2017 Meeting Action:</u></b>		
Proposed wording was reviewed for 2.3.6.6 c 1 by the Subgroup. A motion was made and the revised wording was unanimously approved.		

<b>Item Number: NB17-0202</b>	<b>NBIC Location: Part 2, 2.3.6.6 d &amp; 2.3.6.9</b>	<b>Attachment Pages 7-9</b>
<b>General Description:</b> Result of public review comments submitted after deadline, review use of mandatory code language in 2.3.6		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> M. Mooney (PM), D. Buechel, D. Graf		
<b><u>January 2017 Meeting Action:</u></b>		
The wording in 2.3.6.6d was reviewed and proposed new wording was submitted to the Subgroup. The wording in 2.3.6.9 was reviewed and the Subgroup decided the wording did not need to be changed. A motion was made to accept the revised wording in 2.3.6.6d, and it was unanimously approved.		

<b>Item Number: NB17-0203</b>	<b>NBIC Location: Part 2, S12.5</b>	<b>No Attachment</b>
<b>General Description:</b> Clarification on Calibration of gas detectors		
<b>Subgroup:</b> Inspection		
<b>Task Group:</b> D. Buechel (PM), D. Graf, B. Hart		
<b><u>January 2017 Meeting Action:</u></b>		
Task group was assigned. No action at this time.		

## 10. Future Meetings

July 17-20, 2017 – Columbus, Ohio

January 8-11, 2018 – Location TBD

## 11. Adjournment

A motion was made and unanimously approved to adjourn the meeting at 11:55 a.m.

Respectfully submitted,



Jodi Metzmaier  
SG Inspection Secretary

## SG Inspection Attendance Sheet - 1/10/17

Name	Company	Phone Number	Email	Signature	Attend Rec.?	Guest?
Jim Getter	Worthington Industries	(614) 840-3087	<a href="mailto:jim.getter@worthingtonindustries.com">jim.getter@worthingtonindustries.com</a>		X	
Mike Schwartzwalder	AEP	(614) 581-6456	<a href="mailto:mschwartzwalder@aep.com">mschwartzwalder@aep.com</a>			
Jodi Metzmaier	National Board	(614) 888-8320	<a href="mailto:jmetzmaier@nationalboard.org">jmetzmaier@nationalboard.org</a>		X	
Timothy Barker	Factory Mutual FM GLOBAL	(781) 255-4784 360 801 3790	<a href="mailto:tjmothy.barker@fmglobal.com">tjmothy.barker@fmglobal.com</a>		X	
Ernest Brantley	XL Insurance	(337) 842-7044	<a href="mailto:ernest.brantley@boclcga.com">ernest.brantley@boclcga.com</a>		X	
Domenic Canonico	Canonico & Assoc.	(423) 886-1008	<a href="mailto:canonicod@ebnfi.com">canonicod@ebnfi.com</a>			
David Ford	U.S. DOT	(202) 366-4545	<a href="mailto:david.ford@dot.gov">david.ford@dot.gov</a>			
Darrell Graf	Air Products & Chemicals	(601) 799-2889	<a href="mailto:grafdr@airproducts.com">grafdr@airproducts.com</a>		X	X
Mark Horbaczewski	Diamond Technical Services	(630) 799-8162	<a href="mailto:mhorbaczewski@diamondtechnicalservices.com">mhorbaczewski@diamondtechnicalservices.com</a>		X	
Greg McRae	Trinity Industries	(214) 589-8559	<a href="mailto:greg.mcrae@trin.net">greg.mcrae@trin.net</a>		✓	
Mark Mooney	Liberty Mutual	(781) 891-8900	<a href="mailto:mark.mooney@libertymutual.com">mark.mooney@libertymutual.com</a>		✓	
Venus Newton	Boiler & Property Insurance	(770) 614-3111	<a href="mailto:venus.newton@boilerproperty.com">venus.newton@boilerproperty.com</a>			
Jim Riley	Phillips 66	(510) 245-5895	<a href="mailto:jim.riley@p66.com">jim.riley@p66.com</a>		X	
Stanley Staniszewski	U.S. DOT	(202) 366-4545	<a href="mailto:stanley.staniszewski@dot.gov">stanley.staniszewski@dot.gov</a>			
Thomas Vandini	Quality Steel Corporation	(419) 334-2664	<a href="mailto:tvandini@propanetank.com">tvandini@propanetank.com</a>		✓	
Paul Welch	Arise	(678) 446-5290	<a href="mailto:paul.welch@ariseinc.com">paul.welch@ariseinc.com</a>		X	
JAMES ROBERTS	TRINITY	214 589 8344	JAMES.ROBERTS@TRIN.NET		X	✓
MATTHEW SANSONE	NYS	303-886-585	matthew.sansone@labor.ny.gov			✓
DAVE BUECHEL	HSB	412 310 7740	david.buechel@hsb.com		✓	
Donnie LeSage	LA SIM	225 268-5549	Donnie.LeSage@LAGov		✓	
CHARLES WUTHERS	NBS	614 888 8320	clwuthers@nationalboard.org			✓



NB16-2809  
Part 2 Supplement 12

Replace mandatory "shall" with nonmandatory "should" in all places listed below.

S12.3 b) Portable LCDSV installations with no permanent remote fill connection:  
Warning: LCDSVs shall not be filled indoors...

- 4) Are provided with a pathway that provides a smooth rolling surface to the outdoor, unenclosed fill area. There ~~shall~~ should not be any stairs or other than minimal inclines in the pathway.

S12.5 A continuous gas detection system shall be provided in the room or area where container systems are filled and used, in areas where the heavier ~~that~~ than-air gas can congregate and in below grade outdoor locations. Carbon dioxide (CO<sub>2</sub>) sensors ~~shall~~ should be provided within 12 inches (305mm) of the floor in the area where the gas is most likely to accumulate or leaks are most likely to occur. The system shall be designed to detect and notify at a low level alarm and high level alarm.

- a) The threshold for activation of ~~the a~~ a low level alarm shall not exceed a carbon dioxide concentration of 5,000 ppm (9,000 mg/m<sup>3</sup>) Time Weighted Average (TWA) over 8 hours. When carbon dioxide is detected at the low level alarm, the system shall activate a signal at a normally attended location within the building.
- b) The threshold for activation of the high level alarm shall not exceed a carbon dioxide concentration 30,000 ppm (54,000 mg/m<sup>3</sup>). When carbon dioxide is detected at the high level alarm, the system shall activate an audible ~~and visual~~ alarm at a location approved by the jurisdiction having authority.

## S12.6 SIGNAGE

The inspection should verify that hazard identification signs are posted at the entrance to the building, room, enclosure, or enclosed area where the container is located. The warning sign shall be at least 8 in (200mm) wide and 6 in. (150mm) high and indicate...

## S12.7 VALVES, PIPING, TUBING AND FITTINGS

- a) 1) Components shall be rated for the operational temperatures and pressures encountered in the applicable circuit of the system.
- a) 2) All valves and fittings used on the LCDSV shall be rated for the maximum allowable working pressure(MAWP) stamped on the tank.
- a) 3) All piping, hoses and tubing used in the LCDSV system shall be rated for the working pressure of the applicable circuit in the system and have a burst pressure rating of at least four times the MAWP of the piping, hose or tubing.

NB16-2809  
Part 2 Supplement 12

b) Relief Valves – The inspection should verify that each LCDSV shall have at least one ASME/NB stamped & certified relief valve with a pressure setting at or below the MAWP of the tank. The relief valve shall be suitable for the temperatures and flows experienced during relief valve operation. The minimum relief valve capacity shall be designated by the manufacturer. Additional relief valves that do not require ASME stamps may be added per Compressed Gas Association pamphlet, CGA S-1.3 Pressure Relief Device Standards Part 3, Stationary Storage Containers for Compressed Gases, recommendations. Discharge lines from the relief valves shall be sized in accordance with NBIC Part 2, Tables S12.7-a and S12.7-b. Note: Due to the design of the LCDSV the discharge line may be smaller in diameter than the relief valve outlet size.

Caution: Company's-Companies and or individuals filling or refilling LCDSV's shall beare responsible for utilizing fill equipment that is acceptable to the manufacturer to prevent over pressurization of the vessel.

c) Isolation Valves – The inspection should verify that each LCDSV shall havehas an isolation valve installed on the fill line and tank discharge, or gas supply line in accordance with the following requirements:

- 1) Isolation valves shall be located on the tank or at an accessible point as near to the storage tank a possible.
- 2) All valves shall be designed or marked to indicate clearly whether they are open or closed.
- 3) All valves shall-should be capable of being locked or tagged in the closed position for servicing.
- 4) Gas supply and liquid CO2 fill valves shall be clearly marked for easy identification.

d) Safety Relief/Vent Lines – The inspection, where possible, should verify the integrity of the pressure relief/vent line from the pressure relief valve to outside vent line discharge fitting. All connections shall be securely fastened to the LCDSV. The minimum size and length of the lines shall be in accordance with NBIC Part 2, Tables S12.7-a and S12.7-b. Fittings or other connections may result in a localized reduction in diameter have been factored into the lengths given by the NBIC Part 2, Tables S12.7-a and S12.7-b.

Table S12.7M-b

Note: Due to the design of the LCDSV, the discharge line may be smaller in diameter than the relief valve outlet size but shall not be smaller than that shown in tables NBIC Part 2, S12.7-a and -b.

COMMENT: The above note is immediately after the metric Tables S12.7M-a and –b, but the references tables are the customary units S12.7-a and –b. This appears to be a mistake.



NB16-2809  
Part 2, S12.2d

Delete reference to seismic requirements. Seismic analysis and sizing of pipe snubbers is beyond the knowledge of in-service boiler inspectors. This is scope creep.

#### S12.2 GENERAL REQUIREMENTS (ENCLOSED AND UNENCLOSED AREAS)

The inspection should verify that LCDSVs are:

- a) not located within 10 feet (3050 mm) of elevators, unprotected platform ledges or other areas where falling would result in dropping distances exceeding half the container height;
- b) installed with clearance to satisfactorily allow for filling, operation, maintenance, inspection and replacement of the vessel parts or appurtenances;
- c) not located on roofs;
- d) adequately supported to prevent the vessel from tipping or falling, ~~and to meet seismic requirements as required by design;~~
- e) not located within 36 in. (915 mm) of electrical panels; and
- f) located outdoors in areas in the vicinity of vehicular traffic are protected with barriers designed to prevent accidental impact by vehicles.

NB17-0201

Part 2, 2.3.6.6 c1

c) Record keeping

- 1) Since these vessels have a finite fatigue life, ~~it is essential~~ a record shall be maintained of each operating cycle, recording both temperature and pressure. Deviation beyond design limits is cause for suspending operation and reevaluation of remaining fatigue life. Vessels having no operating record ~~should shall~~ be inspected and a fracture mechanics evaluation with a fatigue analysis test be performed to establish remaining life before resuming operation. Vessels having no operating record shall not be used for service until such time as previous operating history can be determined.

**National Board of Boiler and Pressure Vessel Inspectors  
National Board Inspection Code  
Submission of Public Review Comment  
201 Draft Edition**

PLEASE SUBMIT ONLY ONE COMMENT/RECOMMENDATION PER PAGE  
Make additional copies as needed

Comments **Must** be Received No Later Than: **October 1 , 201**

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

Date: September 20, 2016

Commenter Name: Brian W. Moore

Commenter Address: Hartford Steam Boiler, One State Street

P.O. Box 5024, Hartford, CT 06102-5024

Commenter Phone: 860-722-5657

Commenter Fax: 860-722-5530

Commenter Email: brian\_moore@hsb.com

Section/Subsection Referenced: Part 2 2.3.6.6 d

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

This section is a guideline and should not contain mandatory language.  
  
Replace all commend-type verbs, such as "verify", "review", and "conduct", with language using "should be". See attached markup.

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

**Submit Form To:** %UDGOH\%HVVHUPDQ 1%,&6HFUHWDU\ The National Board of Boiler & Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229 HPDLO EEHVVHUPDQ#QDWLRQDOERDUG RUJ

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Commenter No. Issued: \_\_\_\_\_ Project Committee Referred To: \_\_\_\_\_  
Comment No. Issued: \_\_\_\_\_

### **Part 2 Section 2.3.6.6**

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

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

As part of this inspection guideline for wire wound pressure vessels, ~~periodic~~ frequent inspection of the following items should include ~~be reviewed~~:

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

- b. The closure mechanism of the vessel end-closure ~~is~~ may be opened and closed frequently during operation. ~~Therefore, the closure mechanism~~ should be closely inspected for freedom of movement and proper contact with its locking elements. ~~Wire-wound vessels must have yoke~~ The presence of yoke-type closures should be verified so the yoke frame will need to be and closely inspected on a regular basis.

6) Gages, Safety Devices, and Controls

- a. ~~Verify that the~~ The vessel ~~is~~ should be provided with control and monitoring of pressure, temperature, the electrical system, fluid flow, liquid levels, and all variables that are essential for the safe operation of the system. If the vessel is automatically controlled, manual override should be available. Also, safety interlocks should be provided on the vessel closure to prevent vessel pressurization if the vessel closure is not complete and locked.
- b. ~~Verify that all~~ All safety device isolation valves ~~are~~ should be locked open if used.
- c. ~~Verify appropriate~~ Appropriate pressure relief devices ~~is~~ should be installed with the setpoint at the lowest pressure possible, consistent with the normal operating pressure, but in no case higher than the design operating pressure of the vessel. Rupture discs are normally considered more suitable for these types of applications, since pressure relief devices operating at pressures above 14,500 psi may tend to leak by their seat.
- d. ~~Verify that pressure~~ Pressure and temperature of the vessel coolant and vessel wall ~~is~~ should be controlled and monitored. Interlock devices should be installed that will de-energize or depressurize the vessel at established setpoints.
- e. ~~Verify audible~~ Audible and visual alarms ~~are~~ should be installed to indicate unsafe conditions.