



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

NATIONAL BOARD SUBCOMMITTEE INSPECTION

MINUTES

Meeting of January 11th, 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
FAX: (614)847-1828

1. Call to Order

The meeting was called to order at 8:00 a.m. on January 11, 2017 by Mr. Mark Mooney.

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 11th. 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 1st, 2017.
- Additional announcements were made by the Secretary, Jodi Metzmaier

4. Adoption of the Agenda

Added NB16-0502 to the agenda. The revised agenda was then adopted unanimously.

5. Approval of the Minutes of July 20th, 2016 Meeting

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

6. Review of Rosters

a. Membership Nominations

- The Subcommittee unanimously voted for Darrel Graf to continue his membership in the Subgroup Inspection.
- The Subcommittee unanimously voted for Bryce Hart to be a member on the Subgroup Inspection.

b. Membership Reappointments

- The Subcommittee unanimously voted to reappoint Mr. Thomas Vandini to Subcommittee Inspection. Any appointments are subject to the approval of the Chairman of the Board of Trustees.
- The Subcommittee unanimously voted to reappoint Mr. Darrell Graf, Mr. Mike Horbaczewski and Mr. Thomas Vandini to Subgroup Inspection. Any appointments are subject to the approval of the Chairman of the Board of Trustees.

7. Interpretations

Item Number: IN16-0501	NBIC Location: Part 2	Attachment Page 3
General Description: Change of service from Ammonia to LP gas		
Subgroup: Inspection		
Task Group: None assigned.		
January 2017 Meeting Action:		
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 SC during this meeting. The Item will be letter balloted to Main Committee.		

8. Action Items – Old Business

Item Number: NB13-0903	NBIC Location: Part 2, S2.14	No Attachment
General Description: Add safety requirements for use of liquid or gaseous fuels to fire a historical boiler		
Subgroup: Historical		
Task Group: D. Rupert (PM), T. Dillon, J. Larson, R. Bryce		
January 2017 Meeting Action: Mr. J. Getter stated to the Subcommittee that this item is being letter balloted to SG Historical.		

Item Number: NB13-1406	NBIC Location: Part 2, S1	No Attachment
General Description: Add requirements for inspection of superheater units		
Subgroup: Locomotive		
Task Group: P. Welch (PM), R. Stone		
January 2017 Meeting Action: P. Welch gave a progress report of no progress.		

Item Number: NB13-1409	NBIC Location: Part 2, S1	No Attachment
General Description: Address method for analyzing bulges created by overheating in stayed boiler surfaces		
Subgroup: Locomotive		
Task Group: P. Welch (PM), M. Mooney, R. Stone		
January 2017 Meeting Action: P. Welch gave a progress report of no progress.		

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

Item Number: NB14-1101	NBIC Location: Part 2	No Attachment
General Description: Diaphragm weld inspection.		
Subgroup: Locomotive		
Task Group: P. Welch (PM), D. Graf, R. Stone		
January 2017 Meeting Action: P. Welch gave a progress report of no progress.		

Item Number: NB14-1801	NBIC Location: Part 2	No Attachment
General Description: Ferrules		
Subgroup: Locomotive		
Task Group: P. Welch (PM), R. Stone		
<u>January 2017 Meeting Action:</u> P. Welch gave a progress report of no progress.		

Item Number: NB14-1802	NBIC Location: Part 2	No Attachment
General Description: Riveted staybolt head dimensions and Figure S1.2.2-c		
Subgroup: Locomotive		
Task Group: P. Welch (PM), R. Stone		
<u>January 2017 Meeting Action:</u> P. Welch gave a progress report of no progress.		

Item Number: NB15-2204	NBIC Location: Part 2, S3	No Attachment
General Description: Describe post construction inspection methods specific to graphite pressure equipment		
Subgroup: Graphite		
Task Group: T. Rudy (PM)		
<u>January 2017 Meeting Action:</u> No one from FRP was in attendance to report on this item. The Subcommittee was notified by B. Besserman that this item was closed at the SG Graphite meeting with no action. The item will be closed at Main Committee.		

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

Item Number: NB16-1401	NBIC Location: Part 2, S10	No Attachment
General Description: Revise and update Supplement 10 on Inspection of CRPVs		
Subgroup: FRP		
Task Group: N. Newhouse (PM)		
<u>January 2017 Meeting Action:</u> No one from FRP was in attendance to report on this item		

9. Action Items – New Business

Item Number: NB16-0502	NBIC Location: Part 2, S2.8.2e&f	No Attachment
General Description: Gage Glass and water level		
Subgroup: Historical		
Task Group: Dennis Rupert (PM), Frank Johnson, Tom Dillon		
January 2017 Action		
Mr. Jim Getter gave a progress Report stating the task group should have something to present to SG Historical in July 2017.		

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

Item Number: NB16-2809	NBIC Location: Part 2, S12	Attachment Pages 4-6
General Description: Result of public review comments submitted after deadline, review use of mandatory code language in S12		
Subgroup: Inspection		
Task Group: None assigned		
January 2017 Meeting Action:		
Mr. Mooney presented both documents unanimously approved by the SG Inspection to the Subcommittee. A motion was made to approve these documents. The motion was unanimously approved.		

Item Number: NB17-0201	NBIC Location: Part 2, 2.3.6	Attachment Page 7
General Description: Result of public review comments submitted after deadline, review use of mandatory code language in 2.3.6		
Subgroup: Inspection		
Task Group: M. Mooney (PM), D. Buechel, D. Graf		
January 2017 Meeting Action:		
Mr. Mooney presented the proposed wording which was unanimously approved by SG Inspection. A motion was made and the revised wording was unanimously approved.		

Item Number: NB17-0202	NBIC Location: Part 2, 2.3.6.6 d & 2.3.6.9	Attachment Pages 8-10
General Description: Result of public review comments submitted after deadline, review use of mandatory code language in 2.3.6		
Subgroup: Inspection		
Task Group: M. Mooney (PM), D. Buechel, D. Graf		
January 2017 Meeting Action: Mr. Mooney presented the proposed wording which was unanimously approved by SG Inspection. A motion was made and the revised wording for 2.3.6.6d was unanimously approved. NOTE: it was also unanimously decided that no action needed to be taken to 2.3.6.9.		

Item Number: NB17-0203	NBIC Location: Part 2, S12.5	No Attachment
General Description: Clarification on Calibration of gas detectors		
Subgroup: Inspection		
Task Group: D. Buechel (PM), D. Graf, B. Hart		
January 2017 Meeting Action: Item was opened in SG Inspection. A task group was assigned and no action has been taken at this time.		

10. Future Meetings

July 17-20, 2017 – Columbus, Ohio
 January 8-11, 2018 – Location TBD

11. Adjournment

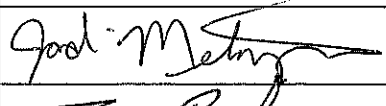
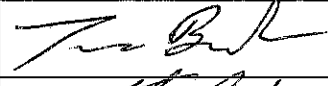
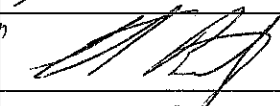

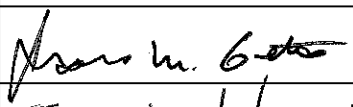
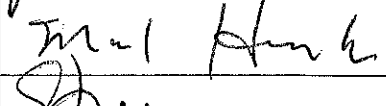
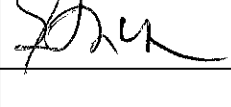
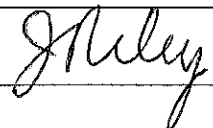
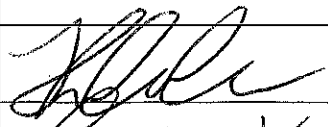
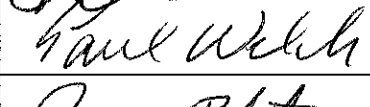
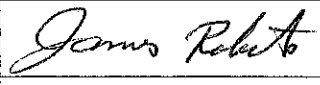

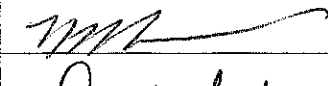
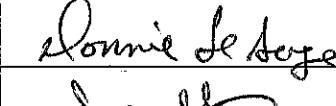
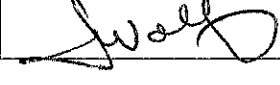
A motion was made and unanimously approved to adjourn the meeting at 8:57 a.m.

Respectfully submitted,



Jodi Metzmaier
 SC Inspection Secretary

SC Inspection Attendance Sheet - 1/11/17

Name	Company	Phone Number	Email	Signature	Attend Rec.?	Guest?
Mark Mooney	Liberty Mutual	(781) 891-8900	mark.mooney@libertymutual.com			
Stanley Staniszewski	U.S. DOT	(202) 366-4545	stanley.staniszewski@dot.gov			
Jodi Metzmaier	National Board	(614) 888-8320	jmetzmaier@nationalboard.org		X	
Timothy Barker	Factory Mutual FM GLOBAL	(781) 255-4784 360 801-3790	timothy.barker@fmglobal.com		X	
Ernest Brantley	XL Insurance	(337) 842-7044	ernest.brantley@xellcga.com BPC LLC GA. Com		✓	
David Buechel	Hartford Steam Boiler	(412) 310-7740	david_buechel@hsb.com		✓	
Domenic Canonico	Canonico & Assoc.	(423) 886-1008	canonicod@ehoff.com			
David Ford	U.S. DOT	(202) 366-4545	david.ford@dot.gov			
Jim Getter	Worthington Industries	(614) 840-3087	jim.getter@worthingtonindustries.com		X	
Mark Horbaczewski	Diamond Technical Services	(630) 799-8162	mhorbaczewski@diamondtechnicalservices.com		X	
Greg McRae	Trinity Industries	(214) 589-8559	greg.mcrae@trin.net		✓	
Venus Newton	Boiler & Property Insurance	(770) 614-3111	venus.newton@boilerproperty.com			
Jim Riley	Phillips 66	(510) 245-5895	jim.riley@p66.com		NO	
Mike Schwartzwalder	AEP	(614) 581-6456	mschwartzwalder@aep.com			
Thomas Vandini	Quality Steel Corporation	(419) 334-2664	tvandini@propanetank.com		✓	
Paul Welch	Arise	(678) 446-5290	paul.welch@ariseinc.com		X	
JAMES ROBERTS	TRINITY CONTAINERS	214 589 8344	JAMES.ROBERTS@TRIN.NET		✓	✓
DARREN GRAY	AIR PRODUCTS	601 569 0534	AIR PRODUCTS + CHEMICALS GRAYD@AIRPRODUCTS.COM			
Matthew Sansone	NYS	585 303 1316	MATTHEWS@LABOR.NY.GOV		✓	✓
Donnie LeSage	LA SFM	268-5544 225 920	Donnie.LeSage@LASFM.com		✓	
Jon Wolf	ZURICH	253-8781	jon.wolf@zurichna.com			✓

Interpretation IN16-0501**Proposed Interpretation**

Inquiry:	IN16-0501
Source:	Chris Heichel
Subject:	Change of service – LPG & ammonia
Edition:	2015 NBIC
Question 1:	Can pressure vessels that were previously used in anhydrous ammonia service be converted to LPG service?
Reply 1:	<p>No, except for the following:</p> <p><i>ASME containers of 3000 gal (11.4 m³) water capacity or less used to store anhydrous ammonia, except for containers used in cargo tank vehicle service, shall not be converted to LP-Gas service.</i></p> <p>The above paragraph is proposed to be included in the 2017 NBIC (Part 2, S7.8.6)</p>
SC Vote	Passed – Unanimous
NBIC Vote	

NB16-2809
Part 2 Supplement 12

INSPECTION OF LIQUID CARBON DIOXIDE STORAGE VESSELS

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 (CO₂) 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~~ low level alarm shall not exceed a carbon dioxide concentration of 5,000 ppm (9,000 mg/m³) 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/m³). 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 **GENERAL REQUIREMENTS (ENCLOSED AND UNENCLOSED AREAS)**

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 (From NB16-2808)

2.3.6.6 c1 **INSPECTION OF WIRE WOUND PRESSURE VESSELS**

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.

REFERENCE:

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 c1

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

Vessels having no operating record shall not be used for service until such time previous operating history can be determined.

Replace "shall" with "should". This section is a guideline and should not contain mandatory language.

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 EEHVHUPDQ#QDWLRQDOERDUG RUJ

NB Use Only
Commenter No. Issued: _____ Project Committee Referred To: _____
Comment No. Issued: _____

Part 2 Section 2.3.6.6 d

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 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 ~~might may~~ adversely impact vessel integrity.
- 2) ~~Review the vessel manufacturer's~~ Manufacturer's inspection recommendations for vessel, 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. ~~It should be, therefore, the closure mechanism should be~~ closely inspected for freedom of movement and proper contact with its locking elements. ~~Wire wound vessels must have~~ ~~The presence of~~ yoke-type closures ~~should be verified and so the yoke frame will need to be~~ 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 ~~s 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.