

Meeting Minutes: Ammonia Committee – Board of HPPS

Date: February 10, 2022
Time: 1 p.m.
Minutes by: Jake Pettit
Location: WebEx Event

Committee Members Present

1. Todd Green – CO’s Designee
2. Jake Pettit – secretary
3. Steve Plieseis
4. Laurent Wickland
5. Mark Worms – Chair

DLI Staff & Visitors

Jeff Lebowski (Gen. Counsel, DLI)
Brittany Wysokinski (Gen. Counsel, DLI)
Lyndy Logan (DLI)
TJ Peterson (DLI)
Chris Savage (Member of the public)

Committee Members Absent

Matt Marquis-Secretary

1. **Call to Order**

- A. Roll Call – the meeting was called to order at 1:05 p.m. by Chair Worms and roll call was completed by Secretary Pettit – a quorum was met with 5 of 6 voting committee members present electronically.
- B. Announcements/Introductions
 - **Remote Meeting Statement from Chair:** Thank you for joining this remote meeting via WebEx. As the committee chair, I have determined today’s meeting is via the WebEx platform due to the COVID-19 pandemic. Per Minnesota Statutes, section 13D.021, of the Open Meeting Law, electronic meetings are acceptable when an in-person meeting is “not practical or prudent because of a health pandemic or an emergency declared under Chapter 12.” It is not practical or prudent to hold an in-person meeting because, consistent with MDH guidance, the usual meeting place is not open to the public due to the COVID-19 pandemic.
 - Committee members and attendees present on this WebEx are able to hear all discussions.
 - All handouts discussed and WebEx instructions are posted on the Committee’s website at: <http://www.dli.mn.gov/about-department/boards-and-councils/ammonia-committee>
 - All votes will be by roll call.
- C. WebEx instruction /procedures were read aloud.

2. **Approval of Meeting Agenda**

A motion was made by Plieseis, seconded by Pettit, to approve the agenda as presented. The roll call vote was unanimous with 5 votes in favor; the motion carried.

3. **Approval of Previous Meeting Minutes**

No previous meeting.

4. Approval of Expense Reports

Electronic expense reports will be sent by Lyndy to Financial Services for payment.

5. Special Business

Minnesota High Pressure Piping Code: Ammonia

- Green—Presented proposed changes to Minn. Rules Section 5230 updating the year of the referenced standard and renumbering the Minnesota-specific amendments in light of renumbering in the standard (**Attachment A**).
- Worms—Asked why renumbered section 13.3.2.9 did not appear in the ANSI/IIAR 2-2021.
- Green—Explained that the Board added the language in 13.3.2.9 and was renumbering the section so that it appeared after all of the related sections in the ANSI/IIAR 2-2021.
- Green—Asked if the new Board members on the committee, Plieseis and Wickland, needed a hardcopy of the ANSI/IIAR 2-2021.
- Plieseis and Wickland—Responded that they would both like a hardcopy of ANSI/IIAR 2-2021,
- Worms—Suggested going through each change identified in the ANSI/IIAR 2-2021, but at minimum announced that he wanted to discuss the inclusion of permanent hoses in ANSI/IIAR 2-2021. Asked Wysokinski to share an email Worms received from Tony Lundell with IIAR (**Attachment B**).
- Pettit—Said that he had never seen flex hoses being used in this manner. Asked whether Worms or Green had seen this type of hose be used, to which both replied that they had not.
- Green—Asked whether DLI inspector TJ Peterson had seen hoses being used in this manner. Peterson replied that he had seen it used years ago in a different state.
- Green—Clarified that hoses were only mentioned in a few places in ANSI/IIAR 2-2021.
- Worms—Expressed that is concern with this new permission to use hoses would result in people making their systems portable rather than fixed.
- Pettit—Suggested that if no one is requesting to use hoses right now, then perhaps it is not necessary to make a Minnesota amendment.
- Wysokinski—Clarified that not making a Minnesota amendment would result in the use of hoses being allowed.
- Worms—Suggested that further discussion about whether to disallow the use of hoses will be saved until the next meeting.
- Worms—Asked about whether the rules should be changed to clarify the definition of “wholly filled with liquid” in the context of liquid lines, in light of other pipes that contain liquid, such as suction lines.
- Pettit—Explained that in his experience people use seamless piping for suction lines as well as liquid lines.

- Savage (member of the public and former Board member) —explained the reasoning behind requiring seamless pipe for liquid lines and how suction lines may not present the same risks, but that regardless his experience is that his organization makes all pipes under 2 inches seamless because they are more likely to be liquid lines, and this reduces confusion in the field.
- Worms— Asked about how stainless-steel piping fit into this discussion.
- Worms— Requested that committee members consider the issues raised at this meeting and the committee will make decisions at the next meeting.

6. Board Discussion

7. Announcements

Next meeting – 1 p.m., Tuesday, February 22, 2022 – via WebEx

8. Adjournment

A motion made by Pettit, seconded by Plieseis, to adjourn the meeting at 2:03p.m. The roll call vote was unanimous with 5 votes in favor; the motion carried.

Respectfully Submitted,

Jake Pettit

Committee Secretary

Green meeting practices

The State of Minnesota is committed to minimizing in-person environmental impacts by following green meeting practices. DLI is minimizing the environmental impact of its events by following green meeting practices. DLI encourages you to use electronic copies of handouts or to print them on 100% post-consumer processed chlorine-free paper, double-sided.

CODE FOR AMMONIA REFRIGERATION SYSTEMS

5230.5000 MINIMUM STANDARDS.

Parts 5230.5000 to 5230.5915 form the code for ammonia refrigeration systems and applies to ammonia piping systems used for closed circuit refrigeration systems. Parts 5230.5000 to 5230.5915 are minimum standards.

Statutory Authority: *MS s 326.46; 326B.90; 326B.925*

History: *17 SR 438; L 2007 c 140 art 10 s 11; art 13 s 4; 34 SR 145*

Published Electronically: *September 16, 2009*

5230.5001 INCORPORATIONS BY REFERENCE.

Subpart 1. **ANSI/IIAR 2.** For purposes of this chapter, "ANSI/IIAR 2" means the ~~2014~~ 2021 revision of the standard for Safe Design of Closed-Circuit Ammonia Refrigeration Systems, as approved by the American National Standards Institute and as published by the International Institute of Ammonia Refrigeration, 1001 North Fairfax Street, Suite 503, Alexandria, Virginia 22314. ANSI/IIAR 2 is incorporated by reference and made part of the code for ammonia refrigeration systems, except as amended in this chapter. Portions of this chapter reproduce text from ANSI/IIAR

2. ANSI/IIAR 2 is not subject to frequent change and a copy of ANSI/IIAR 2 is available in the office of the commissioner of labor and industry and at the State Law Library, 25 Rev. Dr. Martin

Commented [WB(1): Year updated to reflect current publication.

Luther King Jr. Blvd., Saint Paul, Minnesota 55155. ANSI/IIAR 2 is copyrighted by the International Institute of Ammonia Refrigeration. All rights reserved.

Subp. 2. **ASME B31.5.** For purposes of this chapter, "ASME B31.5" means the ~~2016~~ [2019](#) revision of the standard for Refrigeration Piping and Heat Transfer Components as approved and published by ASME, Two Park Avenue, New York, New York 10016. ASME B31.5 is incorporated by reference and made part of the code for ammonia refrigeration piping. ASME B31.5 is not subject to frequent change and a copy of ASME B31.5 is available in the office of the commissioner of labor and industry and at the State Law Library, 25 Rev. Dr. Martin Luther King Jr. Blvd., Saint Paul, Minnesota 55155.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 39 SR 1343; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5003 CHAPTER 2, DEFINITIONS.

ANSI/IIAR 2, chapter 2, is amended by adding the following definitions:

brine: Any liquid used for the transmission of heat without a change in its state.

jurisdictional authority: Administrative authority, as defined in Minnesota Rules, part 5230.0005, subpart 2.

liquid line: The parts of the ammonia refrigerating system, at any pressure, intended to be wholly filled with liquid refrigerant.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5005 CHAPTER 13, PIPING.

Subpart 1. **Chapter 13.2.1.1.** ANSI/IIAR 2, chapter 13.2.1.1, is amended to read as follows:

13.2.1.1. Application of materials.

- a. Carbon steel liquid lines must utilize A106 seamless pipe or A333 seamless pipe.
- b. Piping material used in the discharge line of a pressure relief device, when discharging to atmosphere, Type F butt weld pipe is allowed.
- c. Mill test reports must be provided for the inspector at the inspector's discretion to verify heat numbers on the pipe and to verify compliance with this part.

Subp. 2. **Chapter 13.2.2.** ANSI/IIAR 2, chapter 13.2.2, is amended by adding a subsection as follows:

13.2.2.1. Carbon steel, welded.

- a. 1-1/2 inch and smaller - schedule 80.
- b. 2 inch through 10 inch - schedule 40.
- c. 12 inch and larger - standard weight.

Subp. 3. **Chapter 13.2.2.** ANSI/IAR 2, chapter 13.2.2, is amended by adding a subsection as follows:

13.2.2.2. Stainless steel, welded.

- a. 3/4 inch through 6 inch - schedule 40.
- b. 8 inch and larger - schedule 10.

Subp. 4. **Chapter 13.3.** ANSI/IAR 2, chapter 13.3, is amended by adding a subsection as follows:

13.3.8.2.9 Operating speed of control valve actuators shall be considered in the system design. Quarter turn valves (ball valves, butterfly valves, etc.) must utilize an actuator that restricts the time from fully open to fully closed, both directions, to a minimum of 60 seconds.

Commented [WB(2): Section number updated due to renumbering in the Standard.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5006 CHAPTER 14, PACKAGED SYSTEMS AND EQUIPMENT.

ANSI/IAR 2, chapter 14.1.2, is amended by adding a subsection as follows:

14.1.2.1. Installers of packaged systems and equipment must submit a copy of the manufacturer's design specifications of each model to the department for evaluation of compliance with the standards in parts 5230.5000 to 5230.5915 and approval prior to installation.

Statutory Authority: *MS s 326B.925*

History: *42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5007 CHAPTER 15, OVERPRESSURE PROTECTION DEVICES.

Subpart 1. **Chapter 15.2.57.** ANSI/IAR 2, chapter 15.2.57, is amended to read as follows:

15.2.57. Relief valves shall not be located in refrigerated spaces unless precautions are taken to prevent moisture migration into the valve body or relief valve vent line. A drip pocket the size of the discharge pipe and at least 24 inches in length must be installed below a vertical riser in the discharge pipe and must be fitted with a drain plug or valve.

Subp. 2. **Chapter 15.2.68.2.** ANSI/IIAR 2, chapter 15.2.68.2, is amended by adding the following paragraph at the end:

Rupture discs may only be used when installed in series with a pressure relief valve.

Subp. 3. **Chapter 15.3.23.** ANSI/IIAR 2, chapter 15.3.23, is amended by adding a subsection as follows:

15.3.23.1. Where the refrigerant inlet and outlet of air-cooled or evaporative condensers can be isolated, they shall be equipped with overpressure protection.

Subp. 4. **Chapter 15.4.3.** ANSI/IIAR 2, chapter 15.4.3, is amended to read as follows:

15.4.3. The discharge piping from pressure relieving devices to atmosphere shall be a minimum schedule 40 steel for all pipe sizes.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 39 SR 1343; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5009 CHAPTER 5, GENERAL SYSTEM DESIGN REQUIREMENTS.

ANSI/IIAR 2, chapter 5.13.1, is amended by adding a subsection to read as follows:

5.13.1.2. Declaration. A dated declaration of test shall be provided for all systems. The declaration shall give the name of the refrigerant and the field test pressure applied to the high side and the low side of the system. The declaration of test shall be signed by the installer or, if permitted by the administrative authority, by the owner's representative. If a representative of the administrative authority is present at the test, that representative shall also sign the declaration.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5010 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5015 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5020 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5025 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5250 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

- 5230.5300** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5350** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5400** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5605** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5610** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5615** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5620** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5625** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5630** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5635** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5640** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5645** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5650** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5655** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5660** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5665** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*
- 5230.5675** [Repealed, 34 SR 145]
Published Electronically: *September 16, 2009*

5230.5680 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5690 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5700 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5705 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5710 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5820 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5825 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5915 PIPING JOINTS.

Subpart 1. **Design standards.** Piping joints must be designed for ammonia service. Joints must be designed for the pressure temperature and mechanical strength requirements of ammonia service and items A and B as follows:

A. Threaded pipe must be American Society for Testing and Materials schedule 80 seamless.

B. Unions must be forged steel ground joint unions, and must be used only for three quarters inch and smaller pipe.

Subp. 2. **Branch, run-outs, laterals, and saddles.** When joining carbon steel to carbon steel material, if the main piping is two inches and smaller, or the branch or run-out is two inches and smaller, branch or lateral connections must be forged steel TEE fitting, forged steel reinforced branch fitting, or engineering equivalent of class 3,000 rating. Engineering equivalency must be based on proper documentation signed by a licensed professional engineer. When joining materials other than carbon steel to carbon steel, ASME standard B31.5 must be followed.

Where the main piping exceeds two inches, branch or lateral connections must be made by forged steel TEE fitting, be forged steel reinforced branch fitting, or in cases where the branch exceeds two inches (further providing that a branch lateral or saddle is two pipe sizes smaller than the main piping it is connected to) the connection may be made by the use of a saddle or lateral connection that complies with the requirements of this part.

Branches or run-outs the same size as the main must be connected using forged steel TEE fittings.

Welding of saddles and laterals must comply with the provisions of ASME standard B31.5.

Subp. 3. [Repealed, 34 SR 145]

Subp. 4. [Repealed, 34 SR 145]

Subp. 5. **Components.** The assembly of the various components, whether done in a shop or as a field erection, must be done so that the completely erected piping and equipment conform with the requirements of this chapter.

Subp. 6. **Examination of welded pipe joints.** All welds on ammonia piping systems must comply with the visual examination acceptance standards in section 536.4.1 of ASME B31.5. When nondestructive examination other than visual examination is required by job specification or by the administrative authority, the welds must comply with the acceptance standards in sections 536.6.2 to 536.6.4 of ASME B31.5 for each type of nondestructive examination required. All costs of nondestructive testing shall be paid by the installing contractor. The contractor shall provide a copy of all examination results to the administrative authority upon request.

Statutory Authority: *MS s 326.46; 326B.90; 326B.925*

History: *17 SR 438; L 2007 c 140 art 10 s 11; art 13 s 4; 34 SR 145; 42 SR 1423*

Published Electronically: *May 15, 2018*

From: [Mark Worms](#)
Cc: [Wysokinski, Brittany \(DLI\)](#)
Subject: RE: Ammonia Committee - Board of High Pressure Piping Meeting - Feb. 10 @ 1 p.m.
Date: Thursday, February 10, 2022 12:20:10 PM
Attachments: [image002.png](#)

This message may be from an external email source.

Do not select links or open attachments unless verified. Report all suspicious emails to Minnesota IT Services Security Operations Center.

Brittany,

Can I pass this along to the group or is that not allowed? I think this will come up in meeting and would like to provide this information as a discussion point.

I think one of the changes made in the IIAR2 Section 13.2.5 in reference to permanent hoses may be discussed. This is more background on that topic. I look forward to our meeting.

There are some plate-and-frame chillers that use permanent hoses for the ammonia side and secondary coolant side of the heat exchanger installed in Machinery Room or satellite/pilot type Machinery Rooms.

In regards to seasonal harvesting, where flatbed trucks that have a closed-circuit refrigeration system on it that is used for full season harvesting of vegetables and/or fruits has used permanent hoses.

Once the truck is parked at a stationary location, the hoses that are part of the closed-circuit ammonia refrigeration system and/or the secondary coolant side connecting to a heat exchanger (on the flatbed truck) are considered permanent.

IIAR 1 (latest in revision added "(system)" defines stationary (system) as follows:

stationary (system): A closed-circuit refrigeration system that operates in a fixed location.

A hose used for a closed-circuit refrigeration system that operates in a fixed location is not considered a transfer hose used for maintenance service.

ANSI/IIAR 6-2019, Chapter II consider a permanent hose a non-transfer hose and is not subject to a hydrostatic pressure test (like a transfer hose is).

These permanent (non-transfer) hoses are replaced once they reach the manufacturer's expiration date.

Thanks,
Mark Worms P.E.

Cool Air Mechanical, Inc.
763.205.0825

Follow Cool Air Mechanical, Inc. on LinkedIn



From: Logan, Lyndy (DLI) [mailto:lyndy.logan@state.mn.us]
Sent: Thursday, February 10, 2022 9:32 AM
To: Laurent Wickland; Mark Worms; Matt Marquis; Steve Plieseis; Green, Todd (DLI); Peterson, Theodore (DLI)
Cc: Wysokinski, Brittany (DLI); Lebowski, Jeffrey F (DLI); Logan, Lyndy (DLI)
Subject: Ammonia Committee - Board of High Pressure Piping Meeting - Feb. 10 @ 1 p.m.

Hello Ammonia Committee members,

Please see attached for today's 1:00 p.m. meeting.

Dear Ammonia Committee members (Board of High Pressure Piping Systems),
The Ammonia Committee for the Board of HPPS will hold a special **VIRTUAL public** meeting on **Thursday, Feb. 10, 2022 @ 1 p.m.** The agenda and current member list are attached. **You were sent a separate Panelist invitation from WebEx – please let me know if you did not receive.**

- If you have any issues joining as a Panelist, please join as an [Attendee](#) and I can change your role to Panelist.
 - **If you join the meeting as an attendee, please send me a “chat” after joining the meeting or email me.**
 - The Attendee registration link can also be found on the Agenda and on the [Committee's website](#).
- To participate by telephone, at the date and time listed above, call 1-415-655-0003 or 1-855-282-6330 and enter access code: **2480 373 2216**.

Please email me if you CANNOT attend the meeting.

Thank you,

Lyndy Logan
Executive Secretary, Boards of HPPS, Electricity, and Plumbing
Construction Codes and Licensing Division

Minnesota Department of Labor and Industry
443 Lafayette Road N., St. Paul, MN 55155

Phone: 651-284-5912 | Web: www.dli.mn.gov

