Board of High Pressure Piping Systems
SPECIAL Meeting Minutes
Wednesday June 8, 2016 – 1:00 p.m.

Minnesota Room – Department of Labor and Industry
443 Lafayette Road North, St. Paul, MN 55155

Members Present
Jim Andrie (via teleconference)
Bob Bastianelli (via teleconference)
Marit Brock
Dave Carlson
Tim Daugherty
Mark Geisenhoff (via teleconference)
Todd Green
Mark Kincs
Vicki Sandberg
Russ Scherber
Larry Stevens Jr. (Chair)

Members Absent
Mark Slagle
Chris Savage

DLI Staff & Visitors
Jeff Lebowski (DLI)
Lori Herzog (DLI)
Suzanne Todnem (DLI)
Roger Thein (St. Paul Pipefitters JATC)
Gary Thaden (MMCA)
Sophie Thaden (MMCA)
Jake Dennison (Evapco via teleconference)
Don Hamilton (Evapco via teleconference)

I. Call to Order
The meeting was called to order at 1:00 p.m. and roll call was taken by Chair Stevens; a quorum was declared.

II. Special Business
Request for Variance – Evapco, Inc. (Attachment A)
Dennison said his variance request was regarding the requirement that all stainless steel piping 6" and smaller needed to be schedule 40. He said they have a new product line called Evapcold – a factory assembled refrigeration system that is a fully enclosed machine room with all of the piping self-enclosed. He discussed specific reasons for their variance and explained the drawings shown in Attachment A.

Dennison noted their system is a pre-design/modeled, factory assembled product with a standard model and serial number. He noted that it can be ordered through the Evapco website and there are accessory options available.

Dennison stated that Evapco is a manufacturer of component industrial equipment. Evapco shops are either B31.5 with welding procedures approved annually or ASME Section 8 weld shop and they also do CRN. They have B31.5 quality audits in place.

Stevens said the national code was adopted in 2008 and at that time some changes were made to the carbon steel sizing section. Lebowski referred to the SONAR from the 2008 rulemaking and stated there weren't any controversial issues regarding the provision. Additional safety sections were added to the materials of construction for an ammonia system as clearly stated in the SONAR. Lebowski noted that the justification given by the Board at that time was to increase safety and to ensure mechanical strength in each one

of the subdivisions and subparts of the rule. Lebowski asked for the exact reason for Evapco's variance request. The petition itself wasn't clear as to what the justification was for and the Board has a requirement under statute to make specific findings as to why or why not the variance should be granted.

Dennison said it would be a massive undertaking for Evapco to go back at this point and redesign units with schedule 40 piping. There are only a few feet of schedule 10 piping and it is outside some of the mechanical safety issues that might not be seen in a stick built system. It is Evapco's goal to request the variance to eliminate the need to redesign their line which includes 130 to 140 products. Dennison said he believed Minnesota was the only jurisdiction that required schedule 40 pipe. It is a cost and economic issue.

Dennison referred to Figure #1 of Attachment A and said they are only looking at the yellow piping that is mounted and installed onto a vessel. He then referred to Figure #3 and said it is supported at the vertical and there isn't a lot of vibration in that section; it is isolated away from the compressor. Long term fatigue issues would typically only be seen using smaller piping and tubing. The piping they are looking at is outside the compressor.

Bastianelli asked if Evapco was accounting for mill tolerance and Dennison replied they take an ERW pipe and tip an 85% safety factor and he would pull the number and see what wall thicknesses were used.

Daugherty asked if Evapco's units were made to be sold just in Minnesota or all over the country. Denison said it is a new, national product line and are trying to prepare the design of the units so they will be applicable and sold to all states.

Stevens said he was a bit confused why Minnesota's differences weren't taken into consideration when all of the background checks and design were being taken care of. Dennison stated that they did an extensive code search several years ago to try to evaluate all of the electrical, piping, structural, and seismic and wind loading codes and they thought they had hit everything but at the back end of the project it was brought to their attention that Minnesota's high pressure piping code is slightly different. He noted; however, that their product meets the International Institute of Ammonia Refrigeration current code requirement, version IIAR2-2014.

Kincs asked if the packaged assembly was considered a high pressured piping system or not. He asked how the Board viewed the product – is the product, per the definition of 5230, ammonia piping system or something else. If it is considered to be something else, a piece of equipment, then it is outside the purview of the Board.

Andrie asked if (the product) was connected to a coil which would make it a total system not just a compressor room and Dennison replied that yes, it is a complete package system. He noted that the evaporators were not shown on the drawings but would be in its' own self-contained plenum section. Kincs asked if the building and everything in it would be considered a component of a system. Dennison said it is going to be a self-contained package. It lists as one piece that is placed on the roof, a charge is added to it, electricity is provided, you turn it on and it runs.

Kincs said that from the Board's perspective they need to determine what this product is. If it is not a component, and it has high pressure piping within it, then whoever is fabricating the piping needs to be licensed?

Scherber said he would see it as a piping system and Carlson agreed and said it should be under the code.

Green said the department allows skid packages to be factory assembled and shipped if the piping on those skids meets code, and if it is truly a catalogued model. The piping would still have to meet Minnesota's code.

A motion was made by Scherber, seconded by Brock, to deny the variance request by Evapco. The majority vote ruled (Kincs and Green abstained, Geisenhoff voted against); the motion carried.

A motion was made by Scherber, seconded by Carlson, to grant Chair Stevens authority to sign an official letter to Evapco stating the Board's decision. The vote was unanimous; the motion carried [see Attachment B].

III. Announcements

Next regularly scheduled 2016 meetings – 10:00 a.m. Thursdays – Minnesota Room, DLI

1. July 14, 2016
2. October 13, 2016

IV. Adjournment

The meeting adjourned at 1:40 p.m.

Respectfully Submitted,

Robert Bastianelli

Robert Bastianelli
Secretary

April 25, 2016

Jake Denison
Evapco, Inc.
P.O Box 1300
Westminster, MD 21157

Lyndy Lutz
Minnesota Department of Labor and Industry
443 Lafayette Road N.
St. Paul, MN 55155
lyndy.lutz@state.mn.us

Ms. Lutz,

We have inquired about obtaining a variance to the Minnesota Code Chapter 5230 - BOARD OF HIGH PRESSURE PIPING SYSTEMS PIPEFITTERS; POWER PIPING SYSTEMS for our new product line.

The product line is called Evapcold and is a factory assembled, packaged ammonia refrigeration system. Information on the Evapcold product line can be obtained on our website at http://www.evapco.com/. The nomenclature for the product is LCR-Size Code-Temp Code-Condensing Type.

As we discussed, section **5230.5005 Piping, Subpart 3** requires stainless steel piping 6" and smaller to be schedule 40. The Evapcold product line utilizes a schedule 10 wet suction and compressor suction piping in 2 ½", 3", and 4" SST. The items outlined be Minnesota statute 14-056 have been provided at the end of this document.

Table lists the ASME B31.5 calculated wall thickness and safety of Sch 10 SST pipe. The calculations are available upon request.

Table 1 - ASME B31.5 Wall Thickness Calculations at 350 psi MAWP - Sch 10 SST Pipe

Nominal Pipe OD (in)	Pipe Outside Diameter (in)	Wall Thickness (in)	Calculated Wall Thickness (in)	Safety
2 1/2	2 7/8	0.12	0.0356	3.37
3	3 ½	0.12	0.0433	2.77
4	4 ½	0.12	0.0557	2.15

ERW Pipe
200oF Wall Temperature

Factor of safety for the Sch 10 pipe is 2.15 or greater. Table 2 summarizes the pipe diameter for all Evapcold models, based on the operating temperature and refrigeration capacity.

Table 2: Recirculated Suction Line Diameter (in)

	Tons of Refrigeration						
Temp	**40**	**50**	**60**	**70**	**75**	**90**	**100**
-30	2 1/2						
-25							
-20			2 1/2				
-15							
-10							
-5							
0				2 1/2			
5						2 1/2	
10							
15							
20							
25							
28		3			4		4
30							
35							
40							

Due to the nature of the packaged unit, the length of piping is minimized. The pipe is located towards the back of the room, away from the entrance, shown in Figure 1. Figure 2 illustrates that the piping is also located 6 feet off of the ground, and Figure 3 shows the pipe support that limits any unsupported length of piping from exceeding 3 feet. Furthermore, the engine room is a small enclosed area (10.9’ x 14’ x 10’ tall) that will not accommodate heavy machinery.

Could you please review the documentation and determine if a variance for the schedule 10 piping is possible?

If you have any questions, please contact me at (410) 756-2600 or at jdenison@evapco.com.

Thank You,
Jake Denison
Evapco, Inc.

Per Minnesota Statute 14-056, we have addressed the seven petition questions below:

1. Variance Request:
   Evapco, Inc.
   Jake Denison
   5151 Allendale Ln
   Taneytown, MD 21787
2. Description of citation:
   a. No citation has been issued.
   b. Evapco is developing a new product line, called Evapcold. Evapcold is a factory assembled packaged ammonia refrigeration system. The machine room of the unit contains all components of a refrigeration unit, excluding the evaporators, which are located in an adjacent room attached to the unit.
3. Variance Requested to section **5230.5005 Piping, Subpart 3:**
   a. Evapcold has been designed with Sch 10 SST pipe per ASME B31.5
   b. The machine room is a compact design, factory produced piping system.
   c. The duration of the variance would be applied as long as Evapcold is being produced.
4. Reasons justifying variance, including a signed statement attesting to the accuracy of the facts asserted in the petition:
   a. ASME B31.5 calculations provide 2 time safety factors for wall thickness at 350 psi.
   b. The maximum pipe size utilized is 4”, Sch 10 SST pipe.
   c. The pipe is supported or protected by other components in the system.
   d. Pipe runs are very short.
   e. The machine room is small and will not accommodate tow motors or other lifts, so piping is protected.
5. History of the MN HPP Committee to the petitioner, as relates to the variance request: This is a new product line as a variance has not been requested.
6. Information regarding the agency’s treatment of similar cases, if known: N/A
7. Name, address, and telephone number of any person the petitioner knows would be adversely affected by the grant of the petition: N/A

Evapcold Machine Room Renders

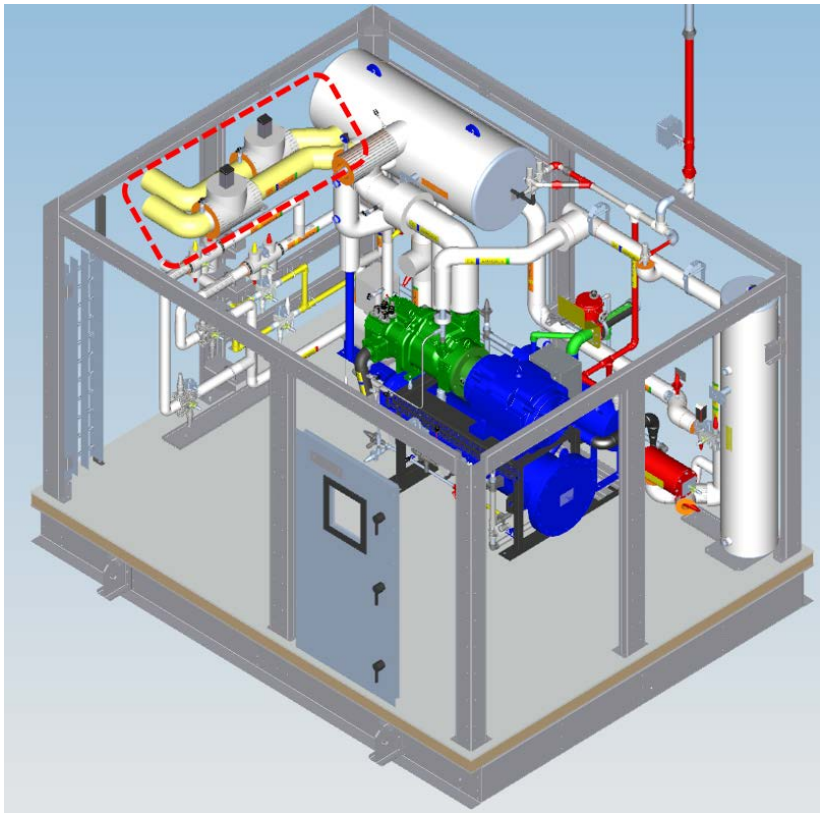

Figure 1: Evapcold machine room isometric view.

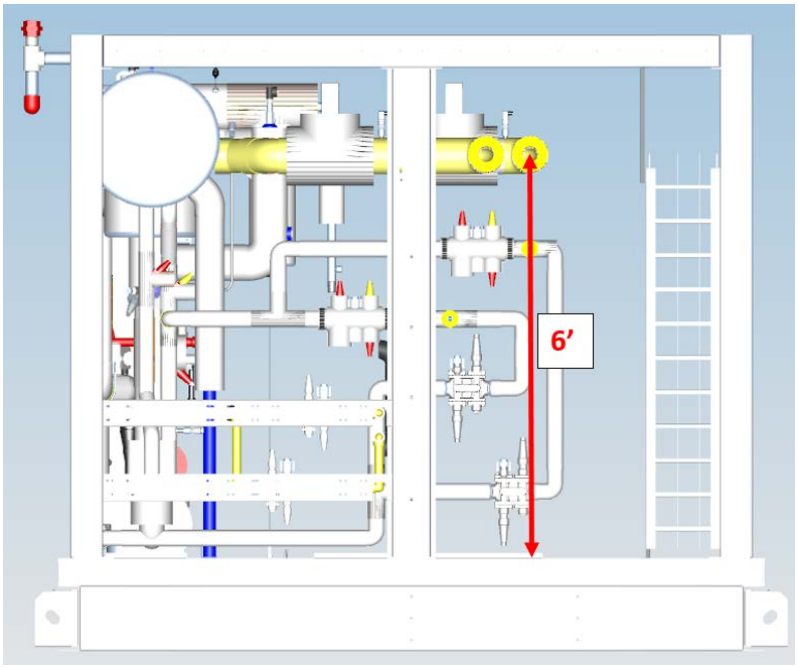

Figure 2: Evapcold LTRS pipe height off of the ground.

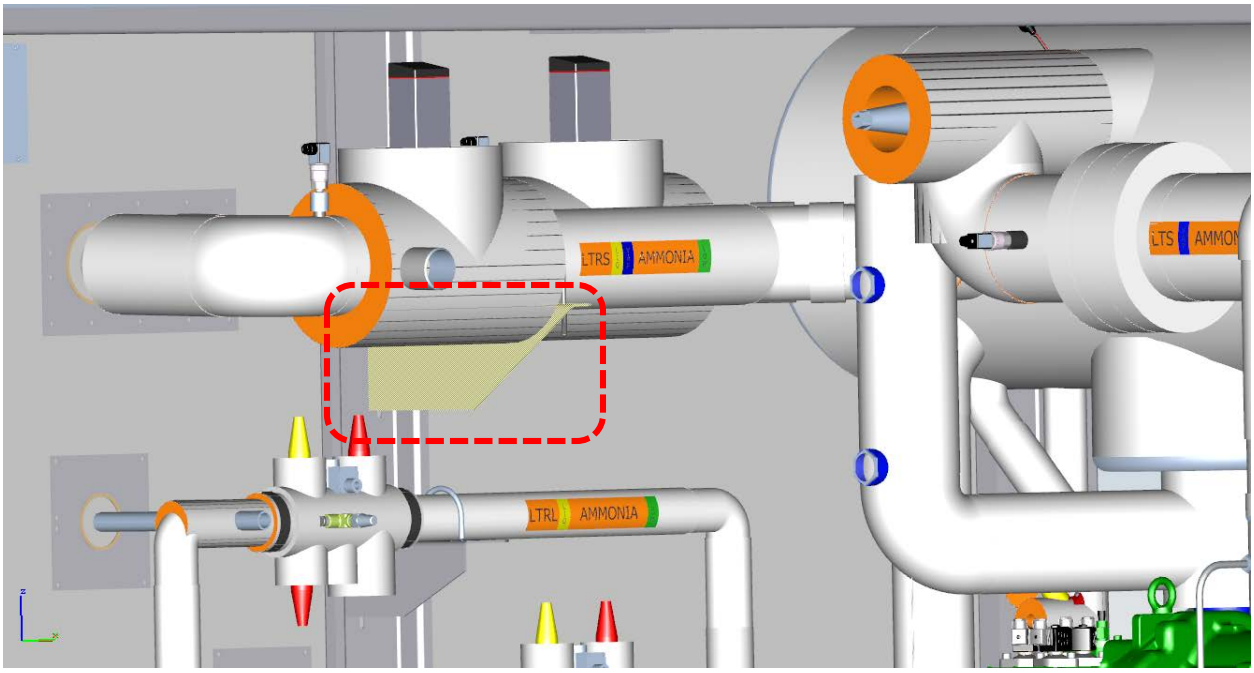

Figure 3: LTRS pipe support location.

MINNESOTA HIGH PRESSURE PIPING SYSTEMS BOARD

ORDER DENYING VARIANCE REQUEST

Pursuant to Minn. Stat. §§ 14.055 and 14.056, Evapco, Inc. ("Evapco"), by and through company representative Jake Dennison, submitted a Petition for Variance dated April 25, 2016 ("Petition"), to the Minnesota High Pressure Piping Systems Board ("Board")(*see* Attachment A). A hearing on the Petition for Variance was conducted by the Board at a special meeting held on June 08, 2016. Representatives for the Petitioner were present at the meeting by telephone and allowed to participate, including Mr. Dennison and Mr. Don Hamilton.

The petition requested a variance from Minnesota Rule Part 5230.5005, subpart 3 (2009), which adopted as modified Section 10.2.2.1 of the American National Standards Institute and the International Institute of Ammonia Refrigeration's 2008 revision of the standards for Equipment, Design, and Installation of Closed-Circuit Ammonia Mechanical Refrigeration Systems ("ANSI/IIAR 2") to require that welded stainless steel piping comply with schedule 40 material thickness requirements if 6 inches in diameter or less and schedule 10 material requirements if 8 inches or larger. According to the petition and Mr. Dennison, Evapco's refrigeration system product line has been designed with 4 inch diameter welded stainless steel piping that complies with the national standard's schedule 10 requirements, but not with Minnesota's modified standard in rule part 5320.5005 that requires compliance with schedule 40 for 4 inch stainless steel piping. As explained by Mr. Dennison, Evapco believes that its product is safe enough since it complies with the national standard; Evapco was not aware of the differences between the national standard and Minnesota rule at the time of their product's development; and that the variance urged by Evapco is being requested to avoid the additional cost of re-design and differential marketing of their product in this state in order to comply with Minnesota Rule Part 5230.5005.

At the June 08, 2016 meeting, the Board voted to deny the variance request. In so doing, the Board acknowledges that Minn. Rule Part 5230.5005 is more restrictive than the national standard, but relies upon the rule's Statement of Need and Reasonableness ("SONAR") which justifies the modification both in terms of additional safety to ensure mechanical strength in ammonia-based mechanical refrigeration systems and in increased material/labor costs for owners/manufacturers of high pressure systems in Minnesota. It is unfortunate that Evapco was not aware of the more restrictive Minnesota requirements for welded stainless steel piping in ammonia systems at the time of their product's development. Nevertheless, the Board does not believe that the additional costs needed for Evapco to comply with Minnesota requirements outweigh the need and reasonableness for additional, heightened and uniform safety standards in ammonia- based piping systems under rule part 5230.5005 adopted for the protection of the public in Minnesota.

NOW, THEREFORE IT IS ORDERED that the April 25, 2016 Request for Variance filed on behalf of Evapco, Inc., by and through Jake Dennison, is hereby **DENIED**.

Larry Stevens, Jr.

Dated: June 9, 2016

Larry Stevens, Jr.
Chairperson,
Minnesota High Pressure
Piping Systems Board