Date Distributed: January 20, 2021

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

NATIONAL BOARD SUBGROUP PRESSURE RELIEF DEVICES

MINUTES

Meeting of January 12, 2021
San Antonio, TX

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 8:05 AM on Tuesday January 12, 2021 by Chair Kim Beise
Members and Visitors in attendance can be found on the attendance sheet (Attachments Page 1).

2. **Announcements**

The National Board will be hosting a reception for committee members and their guests at 5:30pm on Wednesday. Snacks and coffee are located on the third floor.

3. **Adoption of the Agenda**

The agenda dated January 4, 2021 was presented. Two items were added to our agenda from Inspection (19-88) and Repairs & Alterations (20-51). A motion was made and seconded to adopt the agenda with the additional items. The motion was unanimously approved.

4. **Approval of Minutes from the July 14, 2020 Meeting**

It was moved and seconded to approve the July 2020 minutes. The motion was unanimously approved with one abstention (A. Renaldo).

5. **Review of the Roster**

a. Nominations

- Mr. Jay Simms is interested in becoming a member of SG PRD. Action will be voted on in Sub-Committee (See Attachments pages 2-6)

b. Reappointments

c. Resignations

6. **Items from Installation for PRD Consideration**

Item Number: 20-41	**NBIC Location: Part 1, Part 4**	**See Attachments page 7**
General Description: Safety and Safety Relief Valves for Steam and Hot Water Heating Boilers.		
Subgroup: SG Installation		
Task Group: E. Wiggins (PM), J. Brockman, G. Tompkins		
Explanation of Need: Incorporation of applicable CSD-1 requirements.		
A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion unanimously passed. It will be forwarded to SC PRD for vote.		

Item Number: 20-43	NBIC Location: Part 1, Part 4	See Attachments page 8

General Description: Safety Relief valve for Hot Water Supply Boilers

Subgroup: SG Installation

Task Group: W. Anderson (PM), E. Wiggins, J. Brockman

Explanation of Need: Incorporation of applicable CSD-1 requirements.

A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and the motion unanimously passed. It will be forwarded to SC PRD for vote.

7. Action Items

Item Number: NB15-0305	NBIC Location: Part 4	No Attachment

General Description: Create Guidelines for Installation of Overpressure Protection by System Design.

Task Group: B. Nutter, A. Renaldo, D. Marek (PM), D. DeMichael, J. Wolf, D. Schirmer

Added Del Schirmer to the task group. Task group meeting scheduled for Feb. Should letter ballot SG between meetings.

Item Number: NB15-0307	NBIC Location: Part 4	No Attachment

General Description: Create Guidelines for Repair of Pin Devices.

Task Group: D. McHugh (PM), A. Renaldo, T. Tarbay, R. McCaffrey, Jay Simms, C. Beair, C. Chernisky

Added Chris Chernisky to task group. Proposal ready to be letter balloted to SG between meetings.

Item Number: NB15-0315	NBIC Location: Part 4, 2.5.6 and 2.6.6 and Part 1, 4.5.6 and 5.3.6	No Attachment

General Description: Review isolation Valve Requirements, and reword to allow installation of pressure relief devices in upstream piping.

Task Group: D. DeMichael (PM), B. Nutter, A. Renaldo, D. Marek

Work continues on this item. Task group meeting scheduled for April. Possible letter ballot to SG between meetings.

Item Number: 17-115	NBIC Location: Part 4, Section 2	No Attachment

General Description: Complete rewrite of Section 2 combining common requirements into a general requirements section for all pressure relief devices and look at combining with 2.4.3, 2.4.4.

Task Group: A. Renaldo (PM), D. McHugh, D. Marek

Item passed SG letter ballot and is ready for SC PRD letter ballot.

Item Number: 17-119	NBIC Location: Part 4, 2.2.5 and Part 1, 2.9.1.4	No Attachment

General Description: States pressure setting may exceed 10% range. Clarify by how much.

Task Group: T. Patel (PM), D. Marek, J. Ball, R. Donaldson

Work continues on this item.

Item Number: 19-1	NBIC Location: Part 4, 4.8.5.4 & 4.8.6.1	No Attachment

General Description: Develop specific content and scope of annual field audits.

Task Group: A. Donaldson (PM), D. Marek, A. Cox, P. Dhobi, M. Brodeur, T. Patel, D. DeMichael

Item was letter balloted between meetings and received several comments and negatives. Denis DeMichael was added to task group. Item will be brought back to task group for more work.

Item Number: 19-37	NBIC Location: Part 4, 4.3.1 c) 4)	No Attachment

General Description: Origin of Replacement Parts for Pressure Relief Devices

Task Group: A. Cox (PM), T. Patel, P. Dhobi, J. Simms

Work continues on this item. Should have proposal ready for letter ballot between meetings.

Item Number: 19-71	NBIC Location: Part 4, 4.9.2 & 4.9.3	See attachments pages 9-10

General Description: Use of Personnel from another VR Certificate Holder to perform VR Repairs.

Task Group: A. Donaldson (PM), A. Cox, B. Donaldson, D. Marek, J. Simms

A motion was made and seconded to accept the attached proposal. After discussion motion unanimously passed. This will be forwarded to SC PRD for vote.

Item Number: 19-83	NBIC Location: Part 4, Part 1	See attachments pages 11-15

General Description: Address alternate pressure relief valve mounting permitted by ASME CC2887-1.

Task Group: D. Marek (PM), T. Patel, J. Ball

A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and unanimously passed. This item will be simultaneously letter balloted to SG/SC Installation and SC PRD between meetings

Item Number: 19-85	NBIC Location: Part 4, 2.3.6 j)	No Attachment

General Description: Thermal fluid heaters with no change of phase are not specifically addressed in 2.3.6 j).

Task Group: T. Patel (PM), B. Nutter

Should have proposal ready for letter ballot between meetings.

8. New Business

Item Number: 20-56	**NBIC Location: Part 4, 3.4**	**No Attachment**

General Description: Review and clarify requirements training program for T/O holders

Subgroup: PRD

Task Group: A. Donaldson (PM), A. Cox, B. Donaldson, D. Marek, J. Simms, P. Dhobi, D. McHugh

Explanation of Need: Need to align the T/O language with the new approved language in Section 4 (Item number 19-2).

Item Number: 20-58	**NBIC Location: Part 4, 3.4 and 3.5**	**See Attachments pages 16-22**

General Description: Correct Paragraph numbers in Section 3 Related to T/O Requirements

Subgroup: PRD

Task Group: T. Beirne (PM)

A motion was made and seconded to accept the attached proposal. After discussion a vote was taken and unanimously passed. This item will be forwarded to SC PRD for vote.

Item Number: 19-88	**NBIC Location: Part 2, 2.2.12.7 c) 2)**	**See attachments pages 23-25**

General Description: At NBIC Part II propose the following be added to Thermal Fluid Heater

Subgroup: Inspection

Task Group: assigned. Scarcella (PM), M. Sansone, T. Bolden, & M. Wadkinson

This item was sent to SG/SC PRD from SG/SC Inspection for review. Revisions were made to the original proposal. A motion was made and seconded to accept the attached revised proposal. After discussion a vote was taken and unanimously passed. This item will be forwarded to SC PRD for vote.

Item Number: 20-51	**NBIC Location: Part 3, 9.1**	**See attachments page 26-27**

General Description: Add practicable and its definition to the glossary

Subgroup: Repairs and Alterations
Task Group: None assigned.

This item was sent to SG/SC PRD from SG/SC Repairs & Alterations for review. Two versions of the proposals were sent to this committee. One was from R&A the other was from Installation. SG/SC PRD chose to vote on Installation's proposal since it fit better with where the term is used in Part 4. A motion was made and seconded to accept the attached revised proposal. After discussion a vote was taken and unanimously passed with the exception of one negative (D. Schirmer). This item will be forwarded to SC PRD for vote.

9. Presentations

There were no presentations made at this meeting.

10. Future Meetings

July 12th-15th, 2021 – Cincinnati, OH
January 10th-13th, 2022 – TBD

11. Adjournment

A motion was made, seconded, voted on, and unanimously passed to adjourn the meeting at approximately 3:50 PM

Respectfully Submitted,

Thomas P. Beirne, P.E.
Secretary, NBIC Subgroup Pressure Relief Devices
pc: J. Amato
B. Weilgozinski
J. Ellis

NBIC Subgroup PRD Attendance - 1/12/2021					
First Last	**Email**	**Company**	**Phone #**	**Signature**	**Attending Reception?**
Kim Beise	kbeise@dowcovalve.com	Dowco Valve Company	651 261-1859	Zoom	
Marianne Brodeur	Marianne@ivicorp.net	International Valve & Instrument Corp.	413 736-3682	San Antonio	Y
J. Alton Cox	alton@jaltoncox.com	JAC Consulting	704 301-8532	Zoom	
Denis DeMichael	Denis.B.DeMichael@chemours.com	Chemours Co.	302 773-3156	Zoom	
Robert Donalson	bob.donalson@emerson.com	Emerson	281 274-4645	Zoom	
Daniel Marek	daniel.t.marek@nasa.gov	Mainthia Technologies	216 433-5494	Zoom	
Raymond McCaffrey	raymond@qualityvalve.com	Quality Valve	251 476-1045	———	
David McHugh	mchughd@alliedvalve.com	Allied Valve	312 520-0235	Zoom	
Brandon Nutter	Brandon.K.Nutter-1@dupont.com	E.I. Dupont	804 383-3570	Zoom	
Thakor Patel	Tpatel@Curtisswright.com	Farris Engineering	440 838-5090	Zoom	
Adam Renaldo	adam_renaldo@praxair.com	Praxair	716 879-2928	Zoom	
Alfred Donaldson	alfred.donaldson@bhge.com	Baker Hughes	832 360-7892	Zoom	
Thomas Beirne	tbeirne@nationalboard.org	The National Board	614 431-3239	Zoom	
Prakash Dhobi	Prakash.dhobi@lakesidecontrols.com	Lakeside Process Controls	519 823-4251	Zoom	
Thomas Tarbay	trtarbay@yahoo.com	TRT Consultants	614 353-0027	San Antonio	Y
Jon Wolf	jon.wolf@zurichna.com	Zurich Services Corporation	920 253-8781	Zoom	
Delton Schirmer	Del.Schirmer@BoilerProperty.com	XL Insurance	651 666-9824	San Antonio	Y
Gabe Salwan	gabe@qualityvalve.com	Quality Valve		Zoom	
Jay Simms	JSimms@Setpoint.com	Setpoint		Zoom	
Chris Chernisky	cchernisky@vsiz.com	Value Sales, Inc.		Zoom	
Joe Ball	Jball@nationalboard.org	National Board		Zoom	

Professional Resume' of:

Jack H. Simms, Jr.

JSimms@SetpointIS.com
34836 Lotts Lane Denham Springs, LA.
(225) 324-0041

Objectives

To obtain Pressure Relief Devices (Part 4) Subgroup/Subcommittee Membership with the NBBI. To present myself transparently, through the use of this resume', as a dedicated and committed team player and leader with proven skills and ability. To clearly demonstrate desire and intention to pursue an opportunity as well as the competency to accomplish the goals outlined by that opportunity.

Education

Epps High School
Graduated May 1987 College Preparatory Diploma

- Graduated with a 3.95 GPA
- President of FFA, FBLA, National Honor Society and 4-H Organizations
- Founder of Local National Honor Society Chapter
- Represented Parish on Governor's Council for Educational Leadership Team

Northeast Louisiana University
Graduated December 1995 BS Degree in Health and Human Performance Education
Biology and General Science Double Minor w/Chemistry Emphasis

- Graduated with a 3.25 GPA
- Multiple Offices with Kappa Alpha Order Fraternity
- Served as Officer in Inter-Fraternity Council (IFC)
- Represented IFC in Student Government Association (SGA)

Experience

Columbia Gulf Transmission Company (Columbia Gas) | Hwy 17S Delhi, LA
Temporary Laborer June 1987 – December 1990

As a temporary employee, my time and training encompassed many duties. Most of these duties were pipeline oriented and included probing, mowing, right-of-way maintenance, heavy equipment operation, valve flushing/greasing, rectifier reading, and casing removal. I also spent time in the station yard performing duties including welding, sandblasting/painting, installation of electrical systems and Halon systems, and assisted repairmen in maintenance and repair of many aspects of Clark TLA-6 natural gas compressor engines. Because my father was an employee of the company, I could not be employed full time and, ultimately, left the organization.

Wedge Dia-Log Wireline Co. | Hwy 90S Lafayette, LA
Operator Trainee/Operator January 1990 - December 1991

As an operator trainee, I was trained on oilwell dynamics, cased-hole and open-hole systems and methodology, explosives handling, hazardous material transport and handling, customer liaison skills and safe wireline practices and procedures. As a trainee and later on as an operator, my job duties included running logs on oil wells (bond, temp, noise-temp, etc.), assisting with downhole stuck pipe indications and impression blocks, cutting pipe and casing, and setting plugs and packers in oil work. This was my first experience with a service company. We worked a 21/7 shift on 24 hr. call. Work locations were both on land in multiple states, and offshore for multiple vendors. It was also my first experience with offshore safety and procedures.

Louisiana Department of Education | West Carroll Parish School Board
Teacher/Coach December 1995-June 1997

As a Science teacher and baseball coach I was directly involved in the preparation of students and student-athletes for future work and academic training and life skills. I taught Biology I, Biology II and Chemistry. I assisted with Varsity Basketball and was a head Baseball Coach for 2 seasons. Working with young people has always been something I have enjoyed. I have taught and led the youth on several occasions in church and am now in my 27th year of baseball/softball coaching in youth leagues, all-stars, and travel ball.

Industrial Valve Sales and Service, Inc. | Bastrop, LA
Safety Valve Technician June 1997-October 1999

As a safety valve technician, I was trained to repair safety, relief, and safety relief valves. I repaired valves in the shop, field, and in-line. I was taught valve theory in operation, troubleshooting procedures and customer relations. Over the course of time, I learned to in-line test and basic parts machinist skills. I was trained in National Board requirements for valve repair.

Industrial Valve Sales and Service, Inc. | Bastrop, LA
Safety Valve Field Leadman October 1999-July 2004

As a lead technician in the field, I supervised crews during routine work and outages. I began supervising entire outage efforts including contract workers. As the direct liaison to customer, I reported all findings and offered solutions to issues. It was during this time that I began conducting plant surveys and consulting on piping and valve scenarios at customer request. I also became familiar with manual and control valve repair procedures and supervision of all IVS personnel while performing repairs and inspections in the field. During this time, I traveled 70-85% of the year.

Jack H. Simms, Jr.

Industrial Valve Sales and Service, Inc. | Bastrop, LA
Job Operations Manager July 2004-May 2009
As job operations manager, I oversaw all inside operations and personnel. I was directly responsible for all quoting and invoicing. As job ops manager, I negotiated major contracts as well and secured contracts with Entergy, Valero, and Occidental Chemical among others. I was the direct supervisor of three clerical secretaries, one assistant job ops person, and one purchasing agent. During this time, I also was responsible for hiring and termination of all office and shop employees. I was trained in accounts payable and receivable techniques and was the direct contact for customers who contacted the shop. My office received all work scopes, researched parts, and put together job packages including logistics, hotel, and manpower requirements for every job.

Industrial Valve Sales and Service, Inc. | Bastrop, LA
Assistant Director of Operations/ Field Service Superintendent May 2009-December 2011
As Assistant Director of Operations, I became more involved with profit/loss margins and budgeting for the Bastrop location. I continued to negotiate contracts through this period including Lafayette Public Utilities, Entergy Fossil Corporate, and others. I retained the human resources aspect of my previous job and also was the direct supervisor of the job operations manager who replaced me. I insured that training was conducted both in the shop and office as well as making decisions regarding personnel changes including raises and promotions. As Field Superintendent, I was the direct supervisor of the other two Field Supervisors insuring that all field operations, field service trailers, and trucks were in order. I also ran field operations and shop operations from the field as I supervised field work, outages, and all new customer introductions. I also conducted company overview presentations, product knowledge presentations and conducted valve training seminars for customers to satisfy professional growth requirements. I was directly supervised by the Director of Operations. I was the Direct Supervisor of the Shop Superintendent, Job Operations Manager, Office Manager, Purchasing Manager, and (2) Field Supervisors.

Industrial Valve Sales and Service, Inc. | Bastrop, LA
Director of Operations December 2011-June 2013
As Director of Operations, I was responsible for insuring compliance on all fronts, conducting outage planning meetings, and conflict resolution. I was directly responsible for monitoring profit/loss margins and revenue generation along with the Regional Sales Director. I traveled with Account Managers and focused on customer interaction as Manager of the Bastrop facility. I was not replaced as Assistant Director of Operations but relinquished most human resources responsibilities to the direct supervisors of personnel both in office and shop. My primary focus was to insure that employees were equipped, motivated and encouraged on a daily basis to stay on task with the direction we needed to go as a service center. Team IVS-Bastrop saw a 13% growth in the first year and was profitable. I was directly supervised by only the General Manager at the corporate office in Mobile, AL.

Jack H. Simms, Jr.

Industrial Valve Sales and Service, Inc. | **Evansville,IN**
Director of Operations July 2013-November 2014

I accepted the challenge to transfer to Evansville, IN almost laterally. Evansville facility acquired its VR certification in September 2012 but, as of June 2013, was still not a stand-alone division. Quoting and Invoicing was still being done remotely from the Cleveland, TN facility. The original Director of Operations had not been able to implement a system that was able to flow and it was somewhat of a chaotic situation. We were able to establish a system of flow by the end of July and, beginning August 1st of 2013, all quoting and invoicing was performed for Evansville in Evansville. Since arriving, I have completed bid proposals, negotiated, and obtained service contracts with SABIC, Duke Energy, Marathon Refinery, and Southern Illinois Power CoOperative. As we have not been afforded the position of job operations manager, I have been tasked with all portions of such and have trained the Shop Superintendent to assist with those duties as well as training positional employees including Field Leadmen, Field Supervisors, and clarify aspects of the Shop Superintendent and Office Manager position. April 2014 was the first financially profitable month. Growth has been incredible and the future is very bright for this division.

Pentair Valves & Controls | **Baton Rouge, LA**
Site Operations Manager November 2014- October 2017

I prayerfully considered and opted to submit my resume' with Pentair at the urging of a former co-worker who was currently employed there. As a Pentair employee, we saw substantial growth in the Service and Distribution Centers. We successfully implemented Pentair's Lean program and have seen growth and waste reduction as a result. It was with a heavy heart that I ended a nearly 20 year career with IVS but was glad to have returned to our home state and are nearer to my family members.

Setpoint Integrated Solutions | **Baton Rouge, LA**
Technical Sales Specialist – Pressure Protection October 2017-Present

Following the Emerson acquisition of Pentair, I was scheduled to go to Emerson and work as Subject Matter Expert (SME) for Quarter Turn and Actuation covering the SE corner of the United States. As my level of expertise was Relief Valves and Service, I sought and acquired this position with Setpoint. In this role, I work alongside local Account Managers to lead presentations of product knowledge as well as Setpoint capabilities and opportunities to provide goods and services. I also work closely with the contract team and advise Operations with procedural questions. I am the point of contact for our relationship with Groth and Continental Disc Corporation and am responsible for sales numbers for all Consolidated relief valves and all service. I work very closely with Consolidated Engineering and Sales teams daily.

Jack H. Simms, Jr.

Skills

Proficient in Microsoft Word, Excel, Outlook, and PowerPoint
Effective Communication Skills both Verbal and Written
Effective Team Building Skills and Strong Desire to Work Within a Team and will Lead
Negotiation and Conflict Resolution Skills
Strong Desire and Ability to Maintain a Drama-Free and Extremely Safe Workplace
Sensitive to the Thoughts and Needs of Others

Personal

Love to Spend Time with my Family (Wife, Son, (2)Daughters, Son-in-Law, (3) Grandsons, and (1) Granddaughter)
Ordained Bi-Vocational Southern Baptist Pastor (2004-2011)
Bi-Vocational Southern Baptist Evangelist (2011-Present)
27 years as a Youth Baseball/Softball Coach
Avid Hunter and Fisherman

Item Number: 20-41

ASME CSD-1 2018 Edition

CW-510 Requirements for Steam and Hot-Water Heating Boilers

The safety and safety relief valves of all steam and hot-water heating boilers shall conform to the ASME Boiler and Pressure Vessel Code, Section I or Section IV, as applicable.

NBIC Part I 2019 Edition

2.9.1 (~~c~~b[TB1]) Pressure relief valve shall be manufactured in accordance with a national or international standard and be certified for capacity ~~or flow resistance~~ [TB2]by the National Board.

3.9.2 ~~(a)~~ [TB3]Pressure Relief Valve requirements for steam heating boilers

(a) Pressure relief valve shall be manufactured in accordance with a national or international standard and be certified for capacity ~~or flow resistance~~ [TB4]by the National Board.

(b) The following general requirements pertain to installing, mounting and connecting pressure relief valves on heating boilers.[TB5]

(Note: certified for capacity or flow resistance by the NB is referenced in 4.5.1(a))[TB6]

NBIC Part 4 2019 Edition

2.2.1b) Pressure relief valves shall be manufactured in accordance with a national or international standard and be certified for capacity by the National Board.

2.4.2 a) Pressure relief valves shall be manufactured in accordance with a national or international standard and be certified for capacity by the National Board.

Item Number: 20-43

ASME CSD-1 2018 Edition

CW-510 Requirements for Hot-Water Supply Boilers

The safety and safety relief valves of all hot-water supply boilers shall conform to the ASME Boiler and Pressure Vessel Code, Section I or Section IV, as applicable.

Part 1, 2019 Ed.

3.9.3 (a) Pressure relief valve shall be manufactured in accordance with a national or international standard and be certified for capacity ~~or flow resistance~~ [TB1] by the National Board.

(Note: certified for capacity or flow resistance by the NB is referenced in Part 1, 4.5.1(a))[TB2]

Part 4, 2019 Ed.

2.4.3 a) Pressure relief valves shall be manufactured in accordance with a national or international standard and be certified for capacity by the National Board.

ITEM 19-71 1-12-21

4.8.6 FIELD REPAIR

Repair organizations may obtain a “VR” Certificate of Authorization for field repair, either as an extension to their in-shop/plant scope, or as a field-only scope, provided that:

a) Technicians qualified by ~~Qualified technicians in the employ of~~ the Certificate Holder in accordance with 4.9.2 perform such repairs;

b) An acceptable quality system covering field repairs, including field audits, is maintained; and

c) Functions affecting the quality of the repaired valves are supervised from the address of record where the “VR” certification is issued.

~~**4.8.6.2 USE OF OWNER OR USER PERSONNEL**~~

~~For the repair of pressure relief valves at an owner or user’s facility for the owner or user’s own use, the “VR” Certificate Holder may utilize owner or user personnel to assist Certificate Holder technician(s) in the performance of repairs provided:~~

~~a) The use of such personnel is addressed in the “VR” Certificate Holder’s quality system;~~

~~b) The owner or user personnel are trained and qualified in accordance with Supplement 3;~~

~~c) Owner or user personnel work under direct supervision and control of the “VR” Certificate Holder’s technician(s) during any stage of the repair when they are utilized;~~

~~d) The “VR” Certificate Holder shall have the authority to assign and remove owner or user personnel at its own discretion; and~~

~~e) The names of the owner or user personnel utilized are recorded on the document as required for a quality system.~~

4.9 COMPETENCY, TRAINING AND QUALIFICATION OF PERSONNEL

4.9.1 COMPETENCY OF PERSONNEL

The repair organization shall establish the skills, knowledge, competencies, and method to evaluate competencies required for each position within the organization having direct effect on the quality of pressure relief repair performed in accordance with the Certificate of Authorization.

4.9.2 CONTENTS OF TRAINING PROGRAM

The repair organization shall establish a documented training program to ensure the defined skills, knowledge and competencies are achieved. As a minimum, training objectives for each position shall include:

a) Applicable ASME Code requirements;
b) Applicable NBIC requirements;
c) Individual responsibilities of each function described within the organization’s quality system;

d) Technical aspects for the applicable position held;
e) Mechanical skills for the applicable position held;
f) Special processes as applicable listed on the Certificate of Authorization.

4.9.3 INITIAL EVALUATION AND ACCEPTANCE OF PERSONNEL

The repair organization shall complete an initial evaluation and acceptance of each individual's skills and competency prior to the individual being assigned to work without direct supervision. This evaluation and acceptance shall be documented.

4.9.4 ANNUAL EVALUATION AND ACCEPTANCE OF PERSONNEL

The repair organization shall complete an annual evaluation and acceptance of each individual's skills and competency to verify proficiency as well as compliance with the certificate Holder's quality system. This evaluation shall include training records, documented evidence of work performed and on-the-job observations to demonstrate competency. The evaluation shall be documented.

Comment [TB1]: Incorporates approved text from 19-2

4.10 Use of Personnel not in the Certificate Holder's employ

The repair organization may use the services of personnel not in their employ to assist the Certificate Holder in the performance of repairs provided:

a) The use of such personnel is addressed in the "VR" Certificate Holder's quality system
b) The personnel are qualified in accordance with 4.9.2. Records of this qualification are to be retained in accordance with 4.8.5.4 (s)
c) The personnel work under direct supervision and control of the 'VR" Certificate Holder
d) The "VR" Certificate Holder shall have the authority to assign and remove personnel at its own discretion
e) The names of the personnel utilized are recorded on the documents as required by the quality system

ITEM 19-83 Proposal 1/7/21

NBIC PART 1

3.9 PRESSURE RELIEF VALVES

See NBIC Part 1, 3.2 for the scope of pressure retaining items covered by these requirements.

3.9.1 PRESSURE RELIEF VALVE REQUIREMENTS – GENERAL

The following general requirements pertain to installing, mounting, and connecting pressure relief valves on heating boilers.

3.9.1.1 INSTALLATION OF PRESSURE RELIEF VALVES FOR STEAM HEATING, HOTWATER HEATING, AND HOT-WATER SUPPLY BOILERS

3.9.1.1.1 PERMISSIBLE INSTALLATION

Pressure relief valves shall be located at the top side of the boiler. The top side of the boiler shall mean the highest practicable part of the boiler proper but in no case shall the safety valves be located below the normal operating level and in no case shall the pressure relief valve be located below the lowest permissible water level. They shall be connected directly to a tapped or flanged opening in the boiler, to a fitting connected to the boiler by a short nipple, to a Y-base, or to a valveless header connecting steam or water outlets on the same boiler. Coil or header type boilers shall have the pressure relief valve located on the steam or hot-water outlet end. Pressure relief valves shall be installed with their spindles vertical. The opening or connection between the boiler and any pressure relief valve shall have at least the area of the valve inlet.

a) For a Low Mass Watertube boiler of 10 gallons or less, the pressure relief valve may be installed below the boiler provided:

1) A UL-353 certified flow sensing device is installed to automatically cut off the fuel supply if circulation through the boiler is interrupted;

2) The pressure relief valve is installed with the spindle in the vertical position;

3) The opening or connection between the boiler and the pressure relief valve shall have an area at least equal to the nominal inside area of a Schedule 80 pipe (as defined by ASME B36.10) and of the same nominal pipe size as the inlet of the valve.

3.9.4 PRESSURE RELIEF VALVE REQUIREMENTS FOR POTABLE WATER HEATERS

a) Each water heater shall have at least one National Board capacity certified temperature and pressure relief valve. No temperature and pressure relief valve shall be smaller than NPS 3/4 (DN 20).

b) The pressure setting shall be less than or equal to the maximum allowable working pressure of the water heater. However, if any of the other components in the hot-water supply system (such as valves, pumps, expansion or storage tanks, or piping) have a lesser working pressure rating than the water heater, the pressure setting for the temperature and pressure relief valve(s) shall be based upon the component with the lowest maximum allowable working pressure rating. If more than one temperature

and pressure relief valve is used, the additional valve(s) may be set within a range not to exceed 10% over the set pressure of the first valve.

c) The required relieving capacity in Btu/hr (W) of the temperature and pressure relief valve shall not be less than the maximum allowable input unless the water heater is marked with the rated burner input capacity of the water heater on the casing in a readily visible location, in which case the rated burner input capacity may be used as a basis for sizing the temperature pressure relief valves. The relieving capacity for electric water heaters shall be 3,500 Btu/hr (1.0 kW) per kW of input. In every case, the following requirements shall be met. Temperature and pressure relief valve capacity for each water heater shall be such that with the fuel burning equipment installed and operated at maximum capacity, the pressure cannot rise more than 10% above the maximum allowable working pressure.
Many temperature and pressure relief valves have a National Board capacity certified rating which was determined according to ASME Code requirements, and a lower Canadian Standards Association (CSA) rating value. Where the ASME Code is the only referenced code of construction the National Board capacity certified rating may be used. If the water heater is not an ASME vessel, or the CSA rating is required by another standard (such as a plumbing or building code) then that rating shall be used.

d) If operating conditions are changed or additional heating surface is installed, the temperature and pressure relief valve capacity shall be increased, if necessary, to meet the new conditions and shall be in accordance with the above provisions. In no case shall the increased input capacity exceed the maximum allowable input capacity. The additional valves required, on account of changed conditions, may be installed on the outlet piping providing there is no intervening valve.

3.9.4.1 INSTALLATION

Temperature and pressure relief valves shall be installed by either the water heater manufacturer or installer before a water heater is placed in operation.

3.9.4.2 PERMISSIBLE INSTALLATIONS

Temperature and pressure relief valves shall be connected directly to a tapped or flanged opening in the top of the water heater or to a fitting connected to the water heater by a short nipple. Temperature and pressure relief valves shall be installed with their spindles upright and vertical with no horizontal connecting pipe, except that, when the temperature and pressure relief valve is installed directly on the water heater vessel with no more than 4 in. (100 mm) maximum interconnecting piping, the valve may be installed in the horizontal position with the outlet pointed down. The center line of the temperature and pressure relief valve connection shall be no lower than 4 in. (100 mm) from the top of the shell. No piping or fitting used to install the temperature and pressure relief valve shall be of nominal pipe size less than that of the valve inlet.

a) For a Low Mass Watertube boiler of 10 gallons or less, the pressure relief valve may be installed below the boiler provided:

1) A UL-353 certified flow sensing device is installed to automatically cut off the fuel supply if circulation through the boiler is interrupted;

2) The pressure relief valve is installed with the spindle in the vertical position;

3) The opening or connection between the boiler and the pressure relief valve shall have an area at least equal to the nominal inside area of a Schedule 80 pipe (as defined by ASME B36.10) and of the same nominal pipe size as the inlet of the valve.

NBIC PART 4

2.4 PRESSURE RELIEF VALVES FOR STEAM HEATING, HOT WATER HEATING, AND HOT WATER SUPPLY BOILERS

See NBIC Part 1, 3.2 for the scope of pressure retaining items covered by Part 4, 2.4.

2.4.1 GENERAL REQUIREMENTS

The following general requirements pertain to the installation of pressure relief valves on heating boilers.

2.4.1.1 INSTALLATION OF PRESSURE RELIEF VALVES FOR HEATING BOILERS

2.4.1.1.1 PERMISSIBLE INSTALLATION

Pressure relief valves shall be located at the top side of the boiler. The top side of the boiler shall mean the highest practicable part of the boiler proper but in no case shall the safety valves be located below the normal operating level and in no case shall the pressure relief valve be located below the lowest permissible water level. They shall be connected directly to a tapped or flanged opening in the boiler, to a fitting connected to the boiler by a short nipple, to a Y-base, or to a valveless header connecting steam or water outlets on the same boiler. Coil or header type boilers shall have the pressure relief valve located on the steam or hot-water outlet end. Pressure relief valves shall be installed with their spindles vertical. The opening or connection between the boiler and any pressure relief valve shall have at least the area of the valve inlet.

a) For a Low Mass Watertube boiler of 10 gallons or less, the pressure relief valve may be installed below the boiler provided:

1) A UL-353 certified flow sensing device is installed to automatically cut off the fuel supply if circulation through the boiler is interrupted;

2) The pressure relief valve is installed with the spindle in the vertical position;

3) The opening or connection between the boiler and the pressure relief valve shall have an area at least equal to the nominal inside area of a Schedule 80 pipe (as defined by ASME B36.10) and of the same nominal pipe size as the inlet of the valve.

2.4.4 PRESSURE RELIEF VALVE REQUIREMENTS FOR POTABLE WATER HEATERS

a) Each water heater shall have at least one National Board capacity certified temperature and pressure relief valve. No temperature and pressure relief valve shall be smaller than NPS 3/4 (DN 20).

b) The pressure setting shall be less than or equal to the maximum allowable working pressure of the water heater. However, if any of the other components in the hot-water supply system (such as valves, pumps, expansion or storage tanks, or piping) have a lesser working pressure rating than the water heater, the pressure setting for the temperature and pressure relief valve(s) shall be based upon the component with the lowest maximum allowable working pressure rating. If more than one temperature and pressure relief valve is used, the additional valve(s) may be set within a range not to exceed 10% over the set pressure of the first valve.

c) The required relieving capacity in Btu/hr (W) of the temperature and pressure relief valve shall not be less than the maximum allowable input unless the water heater is marked with the rated burner input capacity of the water heater on the casing in a readily visible location, in which case the rated burner input capacity may be used as a basis for sizing the temperature pressure relief valves. The relieving capacity for electric water heaters shall be 3,500 Btu/hr (1.0 kW) per kW of input. In every case, the following requirements shall be met. Temperature and pressure relief valve capacity for each water heater shall be such that with the fuel burning equipment installed and operated at maximum capacity, the pressure cannot rise more than 10% above the maximum allowable working pressure.
Many temperature and pressure relief valves have a National Board capacity certified rating which was determined according to ASME Code requirements, and a lower Canadian Standards Association (CSA) rating value. Where the ASME Code is the only referenced code of construction the National Board capacity certified rating may be used. If the water heater is not an ASME vessel, or the CSA rating is required by another standard (such as a plumbing or building code) then that rating shall be used.

d) If operating conditions are changed or additional heating surface is installed, the temperature and pressure relief valve capacity shall be increased, if necessary, to meet the new conditions and shall be in accordance with the above provisions. In no case shall the increased input capacity exceed the maximum allowable input capacity. The additional valves required, on account of changed conditions, may be installed on the outlet piping providing there is no intervening valve.

2.4.4.1 INSTALLATION

Temperature and pressure relief valves shall be installed by either the water heater manufacturer or installer before a water heater is placed in operation.

2.4.4.2 PERMISSIBLE INSTALLATIONS

Temperature and pressure relief valves shall be connected directly to a tapped or flanged opening in the top of the water heater or to a fitting connected to the water heater by a short nipple. Temperature and pressure relief valves shall be installed with their spindles upright and vertical with no horizontal connecting pipe, except that, when the temperature and pressure relief valve is installed directly on the water heater vessel with no more than 4 in. (100 mm) maximum interconnecting piping, the valve may be installed in the horizontal position with the outlet pointed down. The center line of the temperature and pressure relief valve connection shall be no lower than 4 in. (100 mm) from the top of the shell. No piping or fitting used to install the temperature and pressure relief valve shall be of nominal pipe size less than that of the valve inlet.

a) For a Low Mass Watertube boiler of 10 gallons or less, the pressure relief valve may be installed below the boiler provided:

1) A UL-353 certified flow sensing device is installed to automatically cut off the fuel supply if circulation through the boiler is interrupted;

2) The pressure relief valve is installed with the spindle in the vertical position;

3) The opening or connection between the boiler and the pressure relief valve shall have an area at least equal to the nominal inside area of a Schedule 80 pipe (as defined by ASME B36.10) and of the same nominal pipe size as the inlet of the valve.

NBIC ITEM NO: 19-83
SCOPE: ADDRESS ALTERNATE PRV MOUNTING PERMITTED BY ASME CC 2887-1.

Approval Date: December 12, 2017

Code Cases will remain available for use until annulled by the applicable Standards Committee.

Case 2887-1
Alternate Safety Relief Valve Mounting for Low Mass Watertube Boilers and Water Heaters
Section IV

Inquiry: Under what conditions may safety relief valves be mounted below a low mass watertube boiler or water heater?

Reply: It is the opinion of the Committee that safety relief valves may be mounted below a low mass watertube boiler or water heater, provided the following requirements are met:

(a) Water volume shall be 10 gal (38 L) or less.

(b) A UL-353 certified flow sensing device shall be installed to automatically cut off the fuel supply if circulation through the boiler is interrupted.

(c) The safety relief valve inlet piping is connected to a vertical section of the hot water outlet piping (see Figure 1).

(d) Safety relief valves shall be installed with their spindles vertical.

(e) The opening or connection between the boiler and any safety relief valve shall have an area at least equal to the nominal inside area of a Schedule 80 pipe (as defined by ASME B36.10) and of the same nominal pipe size as the inlet of the valve.

(f) All other requirements of Section IV shall be met.

(g) This Case number shall be recorded on the Manufacturer's Data Report.

TASK GROUP:
D. MAREK (ch)
T. PATEL, J. BALL

ITEM 20-58 Proposal 1-11-21

NBIC Part 4 Table of Contents

from an external inspection or test. Periodic re-establishment of seating surfaces and the replacement of soft goods such as o-rings and diaphragms are also well advised preventive maintenance activities that can prevent future problems. If the valve is serviced, a complete disassembly, internal inspection, and repair as necessary, such that the valve's condition and performance are restored to a like new condition, should be done by a National Board "VR" Certificate Holder.

c) Service records with test results and findings should be maintained for all overpressure protection devices. A service interval of no more than three inspection intervals or ten years, whichever is less, is recommended to maintain device condition. Results of the internal inspection and maintenance findings can then be used to establish future service intervals.

3.3 ACCREDITATION OF "T/O" TEST ONLY ORGANIZATIONS

3.3.1 SCOPE

a) This section provides requirements that must be met for an organization to obtain a National Board *Certificate of Authorization* to use the "T/O" Certification Mark for in-service testing and performing minor adjustments of pressure relief valves constructed in accordance with the requirements of the ASME Code.

b) For administrative requirements to obtain or renew a National Board "T/O" *Certificate of Authorization* and "T/O" Certification Mark, refer to NB-528, Accreditation of "T/O" Test Only Organizations.

c) Authorization to use the official National Board "T/O" Certification Mark as shown in Figure ~~3.5.2~~3.3.6.2-a), will be granted by the National Board provided the requirements of the administrative rules in NB-528 and
the NBIC are met.

3.3.2 JURISDICTIONAL PARTICIPATION

The National Board member Jurisdiction in which the "T/O" organization is located is encouraged to participate in the review and demonstration of the applicant's quality system. The Jurisdiction may require participation in the review of the testing organization and the demonstration and acceptance of the repair organization's quality system manual.

3.3.3 QUALITY SYSTEM

3.3.3.1 GENERAL

Each applicant for a new or renewed "T/O" *Certificate of Authorization* shall have and maintain a quality system which shall establish that all of these rules and administrative procedures and applicable ASME Code requirements, testing, inspection, sealing, and applying the "T/O" Certification Mark will be met.

3.3.3.2 WRITTEN DESCRIPTION

A written description, in the English language, of the system the applicant will use shall be available for review and shall contain, as a minimum, the features set forth in 3.3.3.4. This description may be brief or voluminous, depending upon the projected scope of work, and shall be treated confidentially. In general, the quality system shall describe and explain what documents and procedures the testing firm will use to validate a test and/or minor adjustment.

j) Test Only Nameplates

The quality system shall include a description of a nameplate or a drawing. An effective valve marking system shall be established to ensure proper marking and nameplate attachment for each valve as required by ~~3.5.2~~3.3.6.2. The manual shall include a description of the nameplate or a drawing.

k) Calibration

1) The quality system shall describe a system for the calibration of examination, measuring, and test equipment used in the performance of testing. Documentation of these calibrations shall include the standard used and the results.
2) All calibration standards shall be calibrated against certified equipment having known valid relationships to nationally recognized standards.

l) Manual Control/Procedures
The quality system manual and referenced procedures shall include:

1) Measures to control the issuance of and revisions to the quality system manual;
2) Provisions for a review of the system in order to maintain the manual current with these rules and the applicable sections of the ASME Code and NBIC;

3) The title(s) of the individual(s) responsible for preparation, revision distribution, approval, and implementation of the quality system manual;

4) Provision for a controlled copy of the written quality system manual to be submitted to the National Board for acceptance prior to implementation; and

5) Revisions shall be submitted for acceptance by the National Board prior to being implemented.

m) Nonconformities
The quality system shall establish measures for the identification, documentation, evaluation, segregation, and disposition of nonconformities. A nonconformity is a condition of any material, item, product, or process in which one or more characteristics do not conform to the established requirements. These may include, but are not limited to, data discrepancies, procedural and/or documentation deficiencies, or material defects. Also, the title(s) of the individual(s) involved in this process shall be included.

n) Testing Equipment (See NBIC Part 4, Supplement 5)
The quality system shall include a means to control the development, addition, or modification of testing equipment to ensure the requirements of NBIC Part 4, 4.6.1 b) are met.

o) Field Testing
If field testing is included in the scope of work, the system shall address any differences or additions to the quality system required to properly control this activity, including the following:

1) Provisions for annual audits of field activities shall be included;
2) Provisions for use of owner-user measurement and test equipment, if applicable, shall be addressed.

p) Records Retention
The quality manual shall describe a system for filing, maintaining, and easily retrieving records supporting or substantiating the administration of the Quality System within the scope of the “VR” *Certificate*

b) Pressure Relief Valves with missing or illegible nameplates shall not be tested under the T/O program and shall be referred to a “VR” Certificate Holder or replaced.

c) Pressure Relief Valves shall be tested to confirm that the Set Pressure (defined as the average of at least three consecutive tests) is within the allowable tolerance specified by the applicable ASME Code Section and NBIC. Test Results, including Test Gauge Identification, shall be recorded on the document referred to above. Pressure Relief Valve seals shall not be removed unless required for adjustment or testing using a lift assist device.

d) Testing organizations may obtain a “T/O” *Certificate of Authorization* for field testing, either as an extension to their in-shop/plant scope, or as a field-only scope, provided that the Quality System includes the following provisions:

1) Qualified technicians in the employ of the certificate holder perform such testing;
2) An acceptable quality system covering field testing, including field audits is maintained; and
3) Functions affecting the quality of the tested valves are supervised from the address of record where the “T/O” certification is issued.

3.3.4.1 AUDIT REQUIREMENTS

Upon issuance of a *Certificate of Authorization*, provided field tests are performed, annual audits of the work carried out in the field shall be performed to ensure that the requirements of the certificate holder’s quality system are met. The audit shall include, but not be limited to, performance testing, in accordance with paragraph 4.6, of valve(s) that were tested in the field. The audits shall be documented.

~~3.4~~3.3.5 TRAINING AND QUALIFICATION OF PERSONNEL

~~3.4.1~~3.3.5.1 CONTENTS OF TRAINING PROGRAM

The applicant shall establish a documented in-house training program. This program shall establish training objectives and provide a method of evaluating the training effectiveness. As a minimum, training objectives for knowledge level shall include:

a) Applicable ASME Code and NBIC requirements;
b) Responsibilities within the organization’s quality system;
c) Knowledge of the technical aspects and mechanical skills for making set pressure and/or blowdown adjustments to pressure relief valves;
d) Knowledge of the technical aspects and mechanical skills for marking and sealing of pressure relief valve adjustments.

~~3.5~~3.3.6 MARKING REQUIREMENTS FOR VALVES TESTED UNDER THE T/O PROGRAM

~~3.5.1~~3.3.6.1 NAMEPLATES

Proper marking and identification of tested valves is critical to ensuring acceptance during subsequent inspections, and also provide for traceability and identification to the valve.

~~3.5.2~~3.3.6.2 TEST ONLY NAMEPLATE & VALVE SEALING

When a pressure relief valve is tested, a metal test only nameplate marked with the information required below shall be securely attached to the valve adjacent to the original manufacturer’s stamping or nameplate and/or repair nameplate. If not installed directly on the valve, the nameplate shall be securely attached to the valve independent of the external adjustment seals in a manner that does not interfere with valve operation and sealed in accordance with the quality system.

a) Existing manufacturer/assembler and “VR” nameplates if applicable shall not be removed.

b) Existing manufacturer/assembler, “VR”, and/or “TO” seals shall remain in place unless removal is required to perform testing or adjustment. Following testing, the valve shall be resealed by the responsible “T/O” Certificate Holder.

c) Any previous test only nameplates shall be removed.

d) As a minimum, the information on the “T/O” nameplate (see Figure ~~3.5.2~~3.3.6.2-a) shall include:

1) The name of responsible organization preceded by the words “Tested by” shall be applied.
2) Date of test shall be applied;
3) Set pressure shall be applied;
4) Unique identifier of test shall be applied (eg. shop order number, work order number, job serial number, etc.);
5) The “T/O” Certification Mark as provided by the National Board; and
6) National Board “T/O” certificate number.

FIGURE ~~3.5.2~~3.3.6.2-a REQUIRED MARKINGS FOR TESTING OF ASME/NATIONAL BOARD “V,” “UV,” AND “HV” STAMPED PRESSURE RELIEF VALVES UNDER THE “T/O” PROGRAM

This page is for reference only. No changes on this page.

SUPPLEMENT 7
RECOMMENDED PROCEDURES FOR TEST ONLY OF PRESSURE RELIEF VALVES

S7.1 INTRODUCTION

a) It is essential that the test only organization establish basic, specific procedures for the testing of pressure relief valves. The purpose of these recommended procedures is to provide the test only organization with guidelines for this important aspect of valve testing. It is realized that there are many types of valves and conditions under which they are tested and, for this reason, the specific items in these recommended procedures may not apply, or they may be inadequate for each of those types or for the detailed test procedures that may be required for each valve.

b) If the valve is to be bench tested, ensure that all sources of pressure have been removed from the valve prior to removal from service. If the valve is to be field tested using system pressure, ensure that all sources of pressure are under the control of the person performing the test.

c) S7.2 contains recommended procedures for the test only of spring-loaded and pilot operated pressure relief valves.

S7.2 PRESSURE RELIEF VALVES

a) Visual inspection

1) This information is to be recorded
   a. User (customer) identification number;
   b. Complete original pressure relief valve nameplate data, previous "VR" repair nameplate data, previous "T/O" test only nameplate data plus any important information received from customer.
   c. If nameplate is missing, illegible or has incorrect information, the pressure relief valve shall not be tested. Relief valve should be sent to "VR" repair shop per paragraph 4.7.5

2) Verify external adjustment seals are installed and match manufacturer and/or "VR" - "T/O" nameplate.
3) Check bonnet for venting on bellows type valves.
4) Check appearance for any unusual damage, missing, or misapplied parts. If sufficient damage or other unusual conditions are detected that may pose a safety risk during testing, set aside for review by the Quality Department.

b) Existing Nameplate

1) An existing "VR" Nameplate, if applicable, shall not be removed from the relief valve.
2) An existing "T/O" Nameplate shall be removed from the relief valve.

c) Relief Valve Data

1) “Set Pressure Definition” shall be obtained from National Board Document # NB-18.
2) Manufacturer’s steam to air correction factor, if applicable, shall be obtained from Manufacturer.

d) Set Pressure Test

1) If set pressure test indicates the valves opens within the requirements of the original code of construction, then proceed to Seat Tightness.

2) If set pressure test indicates the valve does not open within the requirements of the original code of construction, but opens within twice the set pressure tolerance allowed per the requirements of the original code of construction and is otherwise in acceptable condition, set pressure restoration (defined as no more than twice the permitted set pressure tolerance) shall be made. Proceed to Seat Tightness.

3) If set pressure test indicates the valve does not open within twice the set pressure tolerance allowed per the requirements of the original code of construction, valve should be sent to a "VR" shop for repair or scrapped.

e) Seat Tightness

1) Seat tightness must be tested at a level which meets the requirements of the end user.

f) Sealing

1) After completion of set pressure test, set pressure restoration (if applicable) and seat tightness testing, all external adjustments shall be sealed in accordance with the original code of construction with a seal providing a means of identification of the organization performing the set pressure test.

g) "T/O" Nameplate

1) The tester shall prepare a "T/O" nameplate for each valve tested.
2) The nameplate shall, as a minimum, meet the requirements of ~~3.5.2~~3.3.6.2 a).
3) Nameplate shall be installed independent of sealing used for external adjustments and/or "VR" nameplate attachment.
4) Nameplate shall receive a safety seal providing a means of identification of the organization performing the set pressure testing.

2.2.12.7 THERMAL FLUID HEATERS

a) Design and Operating Features

1) Many thermal fluid heaters are pressure vessels in which a synthetic or organic fluid is heated or vaporized. Some thermal fluid heaters operate at atmospheric pressure. The fluids are typically flammable, are heated above the liquid flash point, and may be heated above the liquid boiling point. The heaters are commonly direct-fired by combustion of a fuel or by electric resistance elements. Heater design may be similar to an electric resistance heated boiler, to a firetube boiler or, more commonly, to a watertube boiler. Depending on process heating requirements, the fluid may be vaporized with a natural circulation, but more often, the fluid is heated and circulated by pumping the liquid. Use of thermal fluid heating permits heating at a high temperature with a low system pressure (600°F to 700°F [316°C to 371°C] at pressures just above atmospheric). To heat water to those temperatures would require pressures of at least 1,530 psig (10.6 MPa).

2) Nearly all thermal heating fluids are flammable. Leaks within a fired heater can result in destruction of the heater. Leaks in external piping can result in fire and may result in an explosion. Water accumulation in a thermal heating system may cause upsets and possible fluid release from the system if the water contacts heated fluid (remember, flashing water expands approximately 1,600 times). It is essential for safe system operation to have installed and to maintain appropriate fluid level, temperature and flow controls for liquid systems, and level, temperature, and pressure controls for vapor systems. Expansion tanks used in thermal heater systems, including vented systems, should be designed and constructed to a recognized standard such as ASME Section VIII, Div. 1, to withstand pressure surges that may occur during process upsets. This is due to the rapid expansion of water exceeding the venting capability.

3) Because heat transfer fluids contract and become more viscous when cooled, proper controls and expansion tank venting are required to prevent low fluid level and collapse of the tank. Some commonly used fluids will solidify at temperatures as high as 54°F (12°C). Others do not become solid until -40°F (-40°C) or even lower. The fluids that become viscous will also become difficult to pump when cooled. Increased viscosity could cause low flow rates through the heater. The heater manufacturer recommendations and the fluid manufacturer's Material Safety Data Sheets (MSDS) should be reviewed for heat tracing requirements.

4) Verify the thermal fluid heaters have stack gas temperature indicators, alarms and safety shut down devices. Stack gas temperatures shall be monitored and recorded daily while in operation.

Need to present to NBIC Part 1 that the installation of high stack temperature indicator with a safety shut down be mandatory. See Supplement 5.5.7 3 a change "may" to "shall"))

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b) Industrial Applications

Thermal fluid heaters, often called boilers, are used in a variety of industrial applications such as solid wood products manufacturing, resins, turpentines, and various types of chemicals, drugs, plastics, corrugating plants, and wherever high temperatures are required. They are also frequently found in asphalt plants for heating of oils, tars, asphalt pitches, and other viscous materials. Many chemical plants use this type of heater in jacketed reactors or other types of heat exchangers.

c) Inspection

~~1) Inspection of thermal fluid heaters typically is done in either the operating mode or the shutdown mode. Internal inspections, however, are rarely possible due to the characteristics of the fluids and the need to drain and store the fluid. Reliable and safe operation of a heater requires frequent analysis of the fluid to determine that its condition is satisfactory for continued operation. If the fluid begins to break down, carbon will form and collect on heat transfer surfaces within the heater. Overheating and pressure boundary failure may result. Review of fluid test results and control and safety device maintenance records are essential in determining satisfactory conditions for continued safe heater operation.~~

~~2)~~1) Due to the unique design and material considerations of thermal fluid heaters and vaporizers, common areas of inspection are:

a. Design — Specific requirements outlined in construction codes must be met. Some jurisdictions may require ASME Section I or Section VIII construction. Code requirements for the particular Jurisdiction should be reviewed for specific design criteria;

b. Materials — For some thermal fluids, the use of aluminum or zinc anywhere in the system is not advisable. Aluminum acts as a catalyst that will hasten decomposition of the fluid. In addition, some fluids when hot will cause aluminum to corrode rapidly or will dissolve zinc. The zinc will then form a precipitate that can cause localized corrosion or plug instrumentation, valves, or even piping in extreme cases. These fluids should not be used in systems containing aluminum or galvanized pipe. The fluid specifications will list such restrictions;

Note: Some manufacturers of these fluids recommend not using aluminum paint on valves or fittings in the heat transfer system.

c. Corrosion — When used in applications and installations recommended by fluid manufacturer, heat transfer fluids are typically noncorrosive. However, some fluids, if used at temperatures above 150°F (65°C) in systems containing aluminum or zinc, can cause rapid corrosion;

d. Leakage — Any sign of leakage could signify problems since the fluid or its vapors can be hazardous as well as flammable. Areas for potential leaks include cracks at weld attachment points and tube thinning in areas where tubes are near soot blowers. The thermal fluid manufacturer specifications will list the potential hazards;

e. Solidification of the fluid — Determine that no conditions exist that would allow solidification of the thermal fluid. When heat tracing or insulation on piping is recommended by the heater manufacturer, the heat tracing and insulation should be checked for proper operation and installation;

f. Pressure relief ~~devices~~ valves — Pressure relief valves shall be a closed bonnet design with no manual lift lever. Pressure relief valves shall be periodically tested by a VR or T/O Certificate Holder with a frequency in accordance with jurisdictional

requirements or an initial frequency of 1 year or less. Testing intervals shall be evaluated and may be adjusted based on inspection history up to a maximum of 3 years. ~~must be tested by a qualified repair organization every 12 to 36 months, depending on conditions, unless otherwise directed by the jurisdiction.~~ The pressure relief valve ~~discharge~~ installation ~~should~~ shall meet the requirements of NBIC Part 4, 2.3. Inspection and testing of the pressure relief ~~device~~valve shall meet the requirements of NBIC Part 4, 3.0.~~be connected to a closed, vented storage tank or blowdown tank with solid piping (no drip pan elbow or other air gap). When outdoor discharge is used, the following should be considered for discharge piping at the point of discharge:~~

~~1. Both thermal and chemical reactions (personnel hazard);~~

~~2. Combustible materials (fire hazard);~~

~~3. Surface drains (pollution and fire hazard);~~

~~4. Loop seal or rain cap on the discharge (keep both air and water out of the system);~~

~~5. Drip leg near device (prevent liquid collection); and~~

~~6. Heat tracing for systems using high freeze point fluids (prevent blockage).~~

g. Inspection of thermal fluid heaters shall include verifying that fluid testing is conducted annually and that results are compared to the fluid manufacturer's standard. The inspector shall annually verify the documentation of testing of controls and safety devices.

((Need to consult manufacturer on internals))

h. Vapor phase systems must have a documented vessel and piping risk based inspection assessment program in accordance with NBIC Part 2, 4.5.

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Item Number: 20-51 NBIC Location: Part 3, 9.1

General Description: Add practicable and its definition to the glossary

Subgroup: Repairs and Alterations

Task Group: Kathy Moore (PM)

Explanation of Need: This is not a commonly used term in everyday language.

Proposed Definition:

Practicable – capable of being accomplished based on technical consideration of the nature and scope of activities, design or arrangement.

Practicable
Del Schirmer to: TBeirne 01/12/2021 03:49 PM

History: This message has been replied to.

Hi Tom,
I voted no because I didn't see the need to define a word that is described in many dictionaries

Del Schirmer
Central Region Supervisor

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