

ASHRAE 2016 Summer Conference – St. Louis, MO (June 28, 2016)

TC 10.03 – draft meeting minutes

To: Members TC 10.03 – Refrigerant Piping, Controls and Accessories

From: Gordon Struder, Chair

Date: June 28, 2016

I. Preliminaries:

- Called to order at 1:00 pm
- Self-introductions & Attendance Sheet circulated
- Current Vice Chair, Kent Anderson & Secretary, Eric Smith - both present
- Verify Quorum – Voting Members: Quorum established
 - Wayne Borrowman – (07/01/2012 – 06/30/2016) not present
 - Gordon Struder – Chair (07/01/16 – 06/30/17) present
 - Robert Jones – Non-Quorum (07/01/2013 – 06/30/2017) not present
 - James Young – (07/01/2013 – 06/30/2017) present
 - Dan Dettmers- (07/01/2014 – 06/30/2018) present
 - Bill Brayman- (07/01/2014 – 06/30/2018) present
 - Richard Love - (07/01/2014 – 06/30/2018) present
 - Kent Anderson- Vice Chair (07/01/2015 – 06/30/2019) present
 - Lane Loyko - (07/01/2015 – 06/30/2019) not present

II. Additions/Changes to Agenda

Announcement of the passing of George Briley. George was remembered as a brilliant, dedicated and selfless professional in the refrigeration industry.

III. Review and Approval of Draft Minutes (winter meeting, Orlando)

Motion Kent Anderson, 2nd Jim Young

Kent discussed additional work and reporting of research done after the meeting and included in the minutes. Love noted an error of the date. No other changes. 6/0/0

IV. Chair's Report

The most important points from the chair's meeting are:

- ASHRAE would like to have subcommittee meetings held before the annual and winter conferences. Rooms in the conference hotels are costly, and it is often more beneficial to have the meetings ahead of time so that appropriate actions can be taken or planned.
- Program tech paper submittals get priority; Program presentations must be turned in on time or presenter will get bad marks. Three successive bad marks will cause a presenter to be banned from making presentations for some time period.

- Membership – corresponding members who are not responsive should be dropped from the roster.
- Corresponding members can be added via the ASHRAE website.
- Code of ethics distributed at the meeting and can be accessed via the web using the following link: <http://www.ashrae.org/codeofethics>
- Note: Kent Anderson remarked that a remote meeting he conducted went well. It was part in person and part remote. Mike Vaughn can be contacted for a remote meeting set up.

V. Liaison Reports:

- Section 10 Head – Jim Tauby (SH10@ashrae.net)
 - TAC meetings emphasized two things. The first is that the publications department is available and willing to accept new projects, for example new manuals, standards, articles, and etc. Even non-traditional ideas should be submitted. The next major point is that the conference and exposition committee will be amenable to refrigeration programs for the Long Beach meeting, and Jim noted the number of programs for the current conference program. Jim encouraged the TC10.3 to submit our programs and ASHRAE will work to get them scheduled. Jim thanks Gordon, presented a certificate for two years as TC10.03 chair.
- CTTC – Andrew Reilman (CTTC10@ashrae.net)
- Research – H. Ezzat Khalifa (RL10@ashrae.net)
 - This was Mr. Khalifa’s first time to visit this TC. He said that he had recently communicated with Lane Loyko about addition funding and expense for 1569-RP. He also indicated that the RAC tech council would like projects to be more “applied”. TAC approved that the reserve can be accessed for worthy projects. These additional funds can be used to disseminate findings of the research. There was discussion of federal funding of 2L studies. Mr. Khalifa implored the TC to please complete RTARS to the best of our ability, and to include as many voting members as possible when writing and approving research proposals. When voting, TCs must record the reasons for people who abstain, and provide negative votes. Training is available for PMS members. Mr. Khalifa asked if there were concerns about any projects. Kent Anderson noted that the liquid/vapor separation project got dropped and wondered if the TC could re-submit the work statement or take some other action. The answer was that RAC meets 4 times/year and the TC can likely just re-submit. Mr. Khalifa offered any assistance he can provide. It was noted that research documentation and guidance can be found on the ASHRAE website.
- Standards – Arsen Melikov (SL10@ashrae.net) as of 07/01/2016 – no report.
- Mgr. Stds. – Stephanie C. Reiniche (sreiniche@ashrae.org)
- Staff: MORTS – Michael R. Vaughn (mvaughn@ashrae.org)
- Handbook Refrigeration – Harry J Enck (hjenck@cxgbs.com)
 - Handbook Committee Liaison could not make it. Don Fenton graciously substituted. Don mentioned that we have entered a panic phase. Reviews should have been done. Ideally, we should have drafts ready by the time we meet in Las Vegas. Final votes should be done by Long Beach meeting. While these deadlines can slip a bit, his advice is to not let them. He noted that the TC vote must be recorded and checked per a checklist. See ASHRAE handbook section online for checklists etc. Training for the

handbook editing program is available via an online portal. Mark Owen and Heather Kennedy are staff persons for the handbook. Don will distribute the password, but it was announced as: User- hndbkhero; Password: hvacrev;

- Jim Young was acknowledged for excellent and dedicated work as the handbook subcommittee chair.

➤ Jason Robbins – REF liaison

- REF meeting updates and reports to be posted.
- REF discussed that the handbook chapter on nuts dried fruits etc. hasn't been updated in a while, so there was a request for contacts. If someone has a contact, please contact Steve Hammerling.
- Many new refrigerants are hitting the market.
- There is an ASHRAE sponsored meeting in Bangkok on fishing transport/vessels. Many issues need to be addressed on these vessels. Kent Anderson mentioned that Zahid Ayub (Isotherm) is someone who would be good to contact about this topic.
- There are many tracks for Long Beach. Jason will submit the topics for REF.
- Mat Ritter rolled off as chair, the incoming chair is Karim Amrane from AHRI.

➤ IIAR - Dave Rule, IIAR President reported.

- Dave mentioned the high points of IIAR's new education program. It will take 3-5 years to develop and will begin with courses on standards beginning with IIAR 2. The current plan is for prospective students to take classes and then sit for an exam at the conference. Certificates will show competence in standards. This education offering is for end users to show competency, also for end users to qualify contractors, and for young engineers to gain understanding.
- IIAR 6 in the works and anticipated to go out for public review within the next two months.
- A new RAGAGEP standard is being developed to help make decision on existing facilities.
- A new CO2 standard is being developed as a comprehensive standard for design, installation, and testing.

VI. Membership Subcommittee Report (Chair – Wayne Borrowman) – Gordon is reporting instead of Wayne Borrowman who had to leave early.

- New Voting Members effective July 1st, 2016: Eric Smith and Steve Sanders
- Welcome new corresponding and provisional corresponding members: Tim Ledden (PCM), Timothy Roberts (PCM), Charlie Petty (PCM), Peter Cheng (PCM), Bill Artis (PCM), Bill Ronca (CM) and Glen Steinkoenig (CM)
- Wayne Borrowman rolls off after this meeting. No more roll offs until after June 2017 meeting. We need to fill two voting slots at next winter meeting to show up on ASHRAE roster in June with July 1st effective date.
- Gordon Struder will take over maintaining membership, and will attempt to do it before upcoming meetings. Electronic membership reports are forthcoming. Gordon feels this should become a function of the chair. Gordon will add provisional corresponding members Christopher Williams and John Davis. Any others are

welcome to drop off their card. Secretary's note: Becoming a provisional corresponding member can be done by individual members on the ASHRAE website.

VII. Handbook Subcommittee Report (Subcommittee Chair – Jim Young)

- Jim's report and the additional discussion is attached herewith.
- Timing goals - final updated chapters by January 2017. **Chapters 1, 2, and 3 must be circulated.**
- **Approval of Chapter 10:** Motion by Jim Young, 2nd by Bill Brayman. Discussion: Dan stated that the chapter looks good. 6/0/0, CV.
- **TASK:** Eric Smith and Kent Anderson MUST get with Andy Pearson to work out the CO2 tables.
- Jason Robbins asked for volunteers to for the SI/imperial units ASHRAE conversion project. **Action item:** Kent Anderson will look at units in the piping chapters and find volunteers for reviewers.

VIII. Research Subcommittee Report (Chair – Open) Todd Jekel graciously substituted for the open position, and offered appreciation to Gordon for not appointing him again as he doesn't have time to dedicate to the work.

- RP-1327 (2-Ph. Flow P.D. thru Suction Risers, PMS chair - Doug Reindl)
 - Revised final report received. PMS recommended that TC10.3 approve it. The subcommittee vote was 3/0/1/1. The following discussion took place: A technical paper will be submitted. Raw data will be compiled. Cross sharing results and data will be shared with IIAR in recognition of IIAR's contribution. We might wish to change tables etc. based on the research for the next handbook publication. The PMS didn't correlate data. Perhaps another project would be to do revisions to the table. The goal of the project was to get the contractor to produce data. Kent noted that the original scope was to get data for 2", 4" and 6" risers. We got data on 2" and 4" risers but the contractor did not have compressor capacity for anything larger. Therefore, the PMS decided to forego the 6", due to a lack of money and because it was not practical considering that there are not many 6" risers. Plots were made, and flood back points were noted in the data.
 - **Acceptance Vote** for the report: Kent Anderson moved to accept the report, Richard Love seconded. Discussion was as provided above. The vote count was 4/0/2, CV. Bill Brayman abstained because he was not familiar with the project; Kent Anderson abstained because of policy.
 - Committee recognized and congratulated Doug Reindl and the rest of the PMS for their efforts on this difficult project.
- RP-1569 (CFD Study of Hydraulic Shock, PMS chair - Lane Loyko (not present) Kent Anderson reported in lieu of Lane)
 - This work is ongoing. Kent Anderson noted that the original scope of work is complete. ASCOMP is the contractor. A history of the project was recounted. The goal is to build a CFD model for predicting hydraulic shock. Sam Martin believes that the data set is very good data, and the model seems to match the empirical data gathered some years ago. The data demonstrates what is largely known - that liquid must be bridged for the slug to develop. The model works well but some cases the model doesn't predict shock. There are about 25 calculations for a single data point.

Model doesn't capture wall condensation, homogenous condensation (like nucleate boiling). A cost extension request of \$90k was approved by the PMS. TAC and RAC approved the recently approved the request. It's great that cost extension was approved. A revised work plan shall be developed, and it is estimated that the project will take about another year. It was discussed that perhaps contractor could visit at the Las Vegas meeting. Other projects could be applicable using this same technology. The results are close to those of RP-970.

- WS-1513 (Liquid/Vapor Separating Velocities, Todd Jekel)
 - The last edit to this work statement was 6 years ago. It was stated that the pushback from RAC was that CFD analysis was not available. However, considering the success of RP-1569, discussed above, there might be a chance that this WS would be approved. Testing will be an issue. The committee brainstormed possible facilities that could be used...no conclusions were made. Todd will send the WS to Eric Smith for distribution with these minutes.

- RTAR- 1703 (Vapor Retarder Systems Used on Mechanical Insulation, co-sponsor with TC 1.8 & TC 4.4, Jim Young)
 - Jim Young provided a history of the project. It has been accepted by RAC. The team that authored the RTAR will be converting it to WS, based on feedback from RAC. **Action item:** The current goal is to resubmit to RAC by December, 2016. Solicit a letter? TC1.8 is the lead TC, TC 10.3 and TC4.4 are cosponsors.

- RTAR 1721 (Oil Return and Retention in Split System Gas Lines (co-sponsor with TC 8.11))
 - RAC accepted this RTAR with minimal comment. The RTAR is sponsored by TC8.11. Gordon is on the PMS. U of Maryland and U of Illinois are potential bidders.

- New RTAR – (modeling permeation rates, Gordon Hart)
 - TC10.3 is a co-sponsor with TC 1.8. There was a letter ballot approval by TC 10.3 for co-sponsorship. This will be re-initiated with 3 co-sponsors, and a new RTAR. We will remove from the next agenda but will bring it back on when the RTAR is updated.

- Gordon will be soliciting someone to take over for research subcommittee chair.

IX. Program Subcommittee Report (Chair – Dan Dettmers reported)

- TC10.3 got approval to do the “lightning round” on energy efficiency improvements. Dan requested ideas and volunteers. Bill Brayman volunteered for speaking about insulation. Section 10 will submit these “lightning round” ideas as a whole.
- The idea of Water/Energy nexus was discussed as it applies to refrigeration. No specific ideas were promoted.
- Back to basics session approved for the Las Vegas and Long Beach meetings.
- For the Chicago meeting a paper on non-destructive testing was proposed.
- It was reported that REF pushed for winter meetings because of greater attendance.
- Steve Sanders will consider being the new program sub chair.

X. Standards Subcommittee Report (Chair-Open, Bruce Griffin kindly reported on standards activity)

- Not much to report that would concern this committee.
- SSPC 15 continues to work on the re-write. An effort is being made to structure it in code language.
- The creation of a new standard, 15.2 was approved for residential applications. The scope and purpose are being debated. The 15.2 subcommittee hopes for publication by 2018.
- There were several CM items: Class 2L provisions; small changes on safety valves; and etc.
- There is a 2L ad hoc committee for developing standard language to use 2L refrigerants for human comfort. SSPC 15 wants LFL in STD 34 to help people apply 2L refrigerants.
- IIAR will be submitting a CM to reference IIAR 2 for ammonia refrigeration systems.
- SSPC 34 – the discussion about a re-developed toxicity classification is ongoing. This essentially would be to classify the toxicity of refrigerants based on acute concentration levels rather than continual exposure levels.
- SSPC 34 continues to process new submissions. Relative research projects are ignition potential for 2L refrigerants.
- UL – working on several projects.
- A detailed summary of Bruce’s report is attached herewith.
- Nothing to report on ASME 31.5. It was discussed that perhaps this TC could have a B31.5 liaison. It was suggested that Claire Ramspeck could be questioned about this.

XI. Website Report (Webmaster – Open)

- Eric Smith was appointed webmaster by the chair. Joselyn Ratcliff at ASHRAE will provide a password. Jratcliff@ashrae.org

XII. Old Business

- MBO1: Increase programs.
- MBO2: Update TC10.03 web site: Post draft minutes and agenda.
- MBO3: Review and update all Handbook chapters for the 2014 Refrigeration Handbook.
- Review Action Items from Orlando:
 - #1 – Update roster and activity forms. Good shape. 2 new voting members will be solicited.
 - #2 - All members encouraged to review code of ethics, and update their biographical information on the ASHRAE website.
 - #3 Vote on Chapter 10 rewrite now complete.
 - #4 – Eric Smith and/or Kent Anderson to provide status on coordination with IIAR on CO2 piping tables for ASHRAE Handbook. Potential CO2 piping tables sample status? Some discussion occurred that we should check Andy Pearson’s table submittal against IIAR’s calculator and also Danfoss calculator.
 - #5 – Todd Jekel and Don Fenton, status on WS-1513. See above.
 - #6 Caleb Nelson to comment on Halocarbon section for piping sizes and applications – Caleb says he removed all larger than 4 1/8 OD tube sizes and removed line sizes for some high pressure refrigerants. He noted that some sizes are not appropriate.

- Additional Action Items. Gordon noted that at the next meeting we should examine wet vertical suction riser pipe sizing data. We will pursue forming a subcommittee on how we could put this data in a useable form in the handbook.

XIII. New Business

- TC10.03 chair appointed Research and Standards subcommittee chairs, namely Steve Sanders and Bruce Griffith, respectively.

XIV. Next Meeting: Las Vegas, NV, January 31, 2017, 1:00 – 3:30 p.m.

XV. Motion to adjourn - 1st Jim Young, 2nd Dan Dettmers 3:21...unanimous approval.