



1791 Tullie Circle, N.E./Atlanta, GA 30329

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**DRAFT**

**TC/TG/MTG/TRG MINUTES COVER SHEET**

(Minutes of all Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/MTG/TRG No. 3.2 DATE March 21, 2022

TC/TG/MTG/TRG TITLE Refrigerant System Chemistry and Contaminant Control

DATE OF MEETING February 1, 2022 – 3:30 to 6:30pm (PST) LOCATION Las Vegas, NV / Virtual

Name	Affiliation	Participation	
		Present	Absent
<b>Voting Members</b>			
Joe Karnaz - <b>Chair</b>	Shrieve	X	
Valerie Lisi – <b>Vice Chair</b>	Carrier	X	
Brad Boggess - <b>Programs</b>	Emerson	X	
Casey Scruggs - <b>Research</b>	Metalloid	X	
Ivan Rydkin - <b>Handbook</b>	Daikin	X	
Greg Smith	Honeywell	X	
Ed Hessell	Lanxess		X
Julie Majurin	AHRI	X	
Rosine Rohatgi	Spauschus	X	
Jian Sun-Blanks	Chemours	X	
Justin Allemann	Parker Hannifin	X	
John Senediak	Intertek	X	
Sheli Porter	Stellar Laboratories	X	
<b>Non-Voting Members</b>			
Steve Baker - <b>Secretary</b>	Emerson	X	
Rob Yost - <b>Standards</b>	National Refrigerants		X
Dave Vincent - <b>Webmaster</b>	BVA	X	
Marc Scancarello – <b>MTG Low GWP</b>	Emerson	X	
Chris Campo - <b>ALI</b>	Shrieve	X	
Rashid Zakeri – <b>MTG Sustainable RAC</b>	Circle Presco	X	
<b>DISTRIBUTION: All Members of TC/TG/MTG/TRG plus the following:</b>			
TAC Section Head: Stuart Dols	SH3@ashrae.net		
All Committee Liaisons As Shown on the TC/TG/MTG/TRG Rosters (Research, Standards, ALI, etc.)	Chee Sheng Ow – Research Gerald Kettler – Standards		
Mike Vaughn, Manager of Research & Technical Services	MORTS@ashrae.net		

**Note: These draft minutes have not been approved and are not the official, approved record until approved by the TC.**

## Minutes – TC 3.2 Refrigerant System Chemistry and Contaminant Control

*Please note – to accommodate some scheduling overlap of the TC 3.2 seminar (AHR Expo Session 4) and TC 3.4 committee meeting along with timing of the virtual meeting for people on the east coast, the chairs of TC 3.2 and TC 3.4 have met and decided to run a combined meeting for common topics with separate TC related discussions to meet during the previously scheduled TC 3.2 timeslot plus one additional hour. The agenda sent out for TC 3.4 will also reflect this combined meeting.*

### 1) **Call to Order – Joe Karnaz**

Chair Joe Karnaz called the TC 3.2 and 3.4 combined meeting to order at 3:30 pm on Tuesday, February 1, 2022. Chairs Joe Karnaz and Greg Smith (TC 3.4) introduced themselves and welcomed those attending in person and online. This meeting was also held virtually via the Zoom web application to accommodate those that could not attend in person.

A sign-up sheet was circulated among the in-person attendees and online attendees were requested to sign in using the Chat function to provide their name and email address.

### 2) **ASHRAE Code of Ethics – Greg Smith**

TC 3.4 Chair Greg Smith shared with all members and guests the Code of Ethics and that it is to be adhered to whenever at an ASHRAE meeting. Greg Smith also introduced ASHRAE's new Commitment to Care and stated its details are available on the website.

3) **Confirmation of Quorum** – For those present in person, self-introductions were done. Roll call of voting members online was conducted, and quorum was confirmed with 12 of 13 voting members present.

### 4) **Approval of Agenda – Joe Karnaz**

**MOTION #1:** to approve the 2022 Winter meeting agenda was made by Julie Majurin and seconded by Brad Boggess. Motion passed 12-0-0 CV.

### 5) **Approval of 2021 Annual Virtual Meeting Minutes – Joe Karnaz**

**MOTION #2:** to approve the 2021 Summer Annual Virtual meeting minutes for TC3.2 was made by Greg Smith and seconded by Rosine Rohatgi. Motion passed 12-0-0 CV.

### 6) **Report on TC 3.0 Chair Breakfast Meeting – Joe Karnaz**

- TAC has implemented a few changes over the last 6 months with focus on providing more training on getting TC vice-chairs more prepared for transition to chair
- Introduced 7 one-hour virtual training sessions that has reduced meeting time in Las Vegas by 50%
- “Getting on the ladder” succession planning – develop ways within TC to advance the process of new chairs through involvement in other committees; routes can vary from TC to TC
- Emphasis was placed on maintaining balance within the TCs
- Encouraged to have more interim meetings during the times between meetings
- Face-to-Face meeting planned for Toronto June 25 – 29, 2022;  
<http://www.ashrae.org/conferences/2022-annual-conference-toronto>
- Program tracks and chairs for Toronto announced. Track 1-3 more pertinent to Section 3; Program proposals due February 17, 2022
- Statistics
  - Research - 918 projects since 1960 at \$77 million; ~50 current
  - Standards – 131 Active; 15 Under development
  - Guidelines – 29 Published; 8 Under development

- Handbook – 209 Chapters
- Program Presentations – (Annual) 660

## 7) Liaison Comments:

- Chris Seeton (filling in for Chee Sheng Ow, RAC). \$12M funding expected this year to kickoff Research, 26 projects in queue representing 2+ years of projects ready to go. With this backlog, this indicates a Project Work Statement started today may not have its final report for 4-5 years. Foamability project (Scott Wujek, Chris) with bidder selected will be pushed to have it funded and started; Chris requested Scott to verify bids (due to funding freeze) are still valid and current; or require updating. Requested projects requiring Work Statements to be sent to Chris by March for a RAC vote.
- Stuart Dols, Section 3 Head. Stated the TC Activity and Functional forms are due to him asap, have TAC mtg tomorrow morning (2/2). Requested TC chairs to involve vice-chairs when updating online rosters; rosters are to be complete by 2/15 and saved only, not submitted. Rosters are submitted after approval by Section Head and TAC, due 2/28. Joe acknowledged and thanked Stuart for his support in making the roster changes (emergency) necessary; Joe to remain TC chair for one more year and work with Valerie Lisi (new TC Vice Chair, replaced Elyse Sorenson).
- Chee Sheng Ow, RAC, joined later and had nothing to add to Chris Seeton's liaison report.

## 8) Sub-Committee Reports

### Programs – Brad Boggess

- Two sessions, AHR Expo Session 4 “System and Contaminant Control with Low GWP Refrigerants” and Seminar 18 sponsored by TC 3.4 “Lubricants for New Low GWP Refrigerant Candidates”. Rashid Zakeri chaired Session 4 and reported a good showing, about 70 attendees, and thanked the presenters for delivering well-prepared, data driven presentations. Joe Karnaz thanked Brad for his efforts in organizing Session 4.
- Discussion of Future Programs
  - Toronto Annual 2022. Program tracks are light for TC 3.2 scope and focus. Joe Karnaz suggested focusing on the Atlanta Winter 2023 meeting and have Program ideas ready to review and decide at the Toronto Annual meeting this summer.
  - New ideas
    - Reclaiming refrigerant (contaminant control), AHRI700, HFC/HFO chemistries – Julie Majurin, Joe Karnaz
    - Sustainability initiatives, “greening” of things, hot topic currently – possible relevance to TC3.2? - Marc Scancarello
    - Topics from Upcoming Purdue Conference 2022?
- Joe Karnaz requested an interested volunteer to replace Brad as Programs Chair following the upcoming Toronto Annual meeting.

### Handbook –Ivan Rydkin

- Updates to Chapters 6 and 7 submitted last summer and approved. Revisions to be published in the 2022 Refrigeration Handbook.
- Next review is due in 2026; a Handbook sub-committee will be formed as this date approaches.

## **Standards – Joe Karnaz (Rob Yost, retired)**

- Sheli Porter agreed to be the Standards Chair; thank you Sheli!
- Rob Yost stated he will stay on and assist the committee through the upcoming Toronto Annual mtg.
- GPC 38 – *Metal Pressure Vessel Method to Test Materials Used with Refrigeration Systems*
  - Paperwork submitted to reaffirm standard. ASHRAE requested review of language; Joe will review with Rob.
- SPC 97 – *Sealed Glass Tube Method to Test for Chemical Stability of Materials for Use Within Refrigerant Systems*
  - Chris Seeton completing final changes for submittal. Joe to follow-up with Chris for update.
- SPC 35 – *Method of Testing Desiccants for Refrigerant Drying*
  - John Senediak stated the draft method was out for review, meeting scheduled for next week.
- SPC 63.2 – *Method of Testing Liquid Line Filter Drier Filtration Capacity*
  - No action required.
- SPC 78 – *Method of Testing Flow Capacity of Suction Line Filters and Filter Driers*
  - No action required.
- SPC 219 – *Method of Testing Acid Filters*
  - John Senediak reported the method was approved February 2021. ASHRAE published SPC 219.
- No new ideas for Standards or Guidelines.

## **Research – Casey Scruggs**

- **RTAR 1856** – “*Determine the Effect and Allowable Limits of Moisture and Contaminants in CO2 Systems*” Ivan Rydkin reported the Work Statement is complete and being reviewed by the subcommittee and TC 10.6 (co-sponsor). Will attempt to submit WS to RAC for their March meeting.
- **RTAR 1886** – “*Kinetic and Mechanistic Studies of the Breakdown of HFO Refrigerants*”. Casey reported Elyse Sorenson was working on a Work Statement draft. Steve Kujak reported proposing a next phase for the AHRTI 9016 project for this subject; suggesting this RTAR may not be necessary. Further discussions at AHRTI regarding this subject as a potential next test phase are underway.
- **WS 1790** – “*Distribution of Water between Vapor and Liquid Phases of Low GWP Refrigerants*”. Brad Boggess reported discussion between himself, Chee Sheng Ow, and Chris Seeton resulted in one more review of WS.
- **RTAR 1897** – *HFO Refrigerant Compatibility with AGED Lubricants and Contaminants*” Casey reported the comments from RAC regarding the Work Statement are being reviewed and addressed; plan to see what comes out RAC March meeting and have Work Statement ready for review at Toronto Annual meeting. Julie Majurin raised the question whether this research has value – are users/contractors directed to change oil when refrigerant is changed? Standards for A2L refrigerants may require the oil to be changed when refrigerant is changed. Joe Karnaz proposed this be reviewed for discussion and decision at the Toronto meeting.
- **New ideas for Research**

- White Paper/Treatise on potential threats/risks on oils/additives/refrigerants/etc. posed by potential EPA/REACH regulatory actions, i.e., PFAS? Interest – determine what TC(s) may be best positioned to take this on; TC3.1, 3.2, 3.4 or joint.

#### **Webmaster TC 3.2 and TC 3.4 – Dave Vincent**

- Website is up to date.
- TC 3.2 Chair Joe Karnaz and TC 3.4 Chair Greg Smith recognized and thanked Dave for his outstanding job maintaining each TC website.

#### **9) MTG Lower GWP Refrigerants TC 3.2 and TC 3.4- Marc Scancarello**

- Full committee meeting planned for tomorrow, 2/2.
- Research
  - RP1884 - *Incorporation of Odorants in Flammable Refrigerants*. Research CPSC (Consumer Product Safety Commission) sponsored is complete. Seminar held today, 2/1, where results were presented. Research involved 7 odorants, 3 lubricants, 3 refrigerants; ASHRAE97 compatibility testing performed; odorant found for each refrigerant tested, however, not the same odorant for each refrigerant. Next phase/funding with ASHRAE to be determined.
  - RP1806 - *Flammable Refrigerants Post Ignition Simulation and Risk Assessment*. Pilot study is nearing completion,
  - RP1855 - *Determination of the Impact of Combustion Byproducts Hydrogen Fluoride (HF) and Carbonyl Fluoride (COF<sub>2</sub>) on the Safe Use of Flammable Fluorinated Refrigerants*. Report is in progress.
  - RP1879 – MTG appears to be co-sponsoring this project.
- Standards
  - A2L code changes proposed and approved during 2021 Group A development cycle. Incorporation of A2L refrigerants in 2024 appears to be on track.

#### **10) MTG Sustainable RAC TC 3.2 and TC 3.4 – Rashid Zakeri**

- Guide for Developing Markets for Refrigeration and Air Conditioning Plant Assessments
- All 9 chapters are complete and undergoing final edit.
- Meeting rescheduled for 2/12.

#### **11) Membership – Joe Karnaz**

- Rollover Roster Discussion
  - Roster due to Section Head by 2/15.
  - 6 voting members rolling off. Joe Karnaz staying on 1 more year, 5 new voting members added. Voting roster is balanced.
- Sheli Porter will chair the Standards Committee. Thank you!
- Shelby Kent will chair the Programs Committee. Thank you!
- For those interested in becoming a member, visit the TC website and sign up as Provisional Member. Provisional Members move to Corresponding Members.

#### **12) Old Business – Joe Karnaz, Greg Smith**

No new business was brought before the committee.

#### **13) New Business – Joe Karnaz, Greg Smith**

- New idea – Consider having combined TC 3.2 and 3.4 meetings in the future.
- Greg Smith reaffirmed the scopes of TC 3.2 and TC 3.4 with the meeting attendees. The scope was read to the meeting attendees

**MOTION #3:** to confirm the relevance of TC 3.2 and to reaffirm its scope was made by Greg Smith and seconded by Brad Boggess. Motion passed 12-0-0 CV.

#### **14) Adjournment – Joe Karnaz**

The meeting was adjourned at 5:30pm through a motion by Joe Karnaz.

Respectfully submitted,

Steven Baker – Secretary