



**180 Technology Parkway NW, Peachtree Corners, GA
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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 2, 2023

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

DATE OF MEETING Tuesday, February 7, 2023, 3:30-6:00pm (EST) LOCATION Atlanta (Hybrid)

Members Committee and Voting			Participation	
Name	VM	Affiliation	Present	Absent
Joe Karnaz - Chair	Yes	Shrieve	X	
Valerie Lisi – Vice Chair	No	Carrier	X	
Casey Scruggs - Research	Yes	Metalloid	X	
Ivan Rydkin - Handbook	Yes	Daikin	X	
Sheli Porter - Standards	Yes	Stellar Laboratories	X	
Morgan Leehey – Acting Secretary	No	Trane	X	
Shelby Kent - Programs	No	Shrieve		X
Dave Vincent - Webmaster	Yes	BVA	X	
Greg Smith	Yes	Honeywell	X	
Ed Hessell	Yes	Lanxess		X
Julie Majurin	Yes	AHRI	X	
Justin Allemann	Yes	Parker Hannifin	X	
Brad Boggess	Yes	Emerson	X	
Steve Kujak	Yes	Trane	X	
Bob Low	MNQ	Koura		X
Marc Scancarello – MTG Low GWP		Emerson	X	
Chris Campo - ALI		Shrieve	X	
Rashid Zakeri – MTG Sustainable RAC		Circle Proscio	X	
DISTRIBUTION: All Members of TC/TG/MTG/TRG plus the following:				
TAC Section Head: Tina Brueckner		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 Drake Erbe - Handbook		
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

1) Call to Order – Joe Karnaz

Chair Joe Karnaz called the TC 3.2 meeting to order at 3:35 pm on Tuesday, February 7, 2023 held in Atlanta Omni Birch Room and online via Zoom. The chair introduced himself and welcomed those attending in person and online. 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, affiliation, and email address.

2) ASHRAE Code of Ethics – Joe Karnaz

TC 3.2 Chair Joe Karnaz shared with all members and guests the Code of Ethics and that it is to be adhered to whenever at an ASHRAE meeting and directed to the ASHRAE website for additional information.

3) **Confirmation of Quorum** – After a roll call it was determined that 10 members were present, with 1 member and 1 member non-quorum absent. Quorum established with 10 of 11 voting members present.

4) Approval of Agenda – Joe Karnaz

MOTION #1: to approve the 2023 Winter meeting agenda was made by Brad Boggess and seconded by Casey Scruggs. Motion passed 9-0-0 CNV.

5) Approval of 2022 Toronto Annual Hybrid Meeting Minutes – Joe Karnaz

MOTION #2: to approve the 2022 Annual Hybrid meeting minutes for TC3.2 was made by Julie Majurin and seconded by Dave Vincent. Motion passed 9-0-0 CNV.

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

- Hybrid meeting sessions are here to stay. ASHRAE had a virtual meeting in January to discuss.
- ASHRAE Strategic Plan Extended one extra year to 2025 and added Decarbonization language.
- Annual Meeting in Tampa June 24-28, 2023
- Programs submission for Tampa Meeting Due February 27, 2023
<http://www.ashrae.org/conferences/2023-annual-conference-tampa/2023-annual-technical-program>
- Other critical deadlines

Monday, February 27, 2023 | Debate, Panel, Seminar Form, Workshop Proposals Due Wednesday, March 29, 2023 | Extended Abstract Paper Due and Conference Papers Due (submitted for review) • Friday, April 14, 2023 | Debate, Panel, Seminar, Forum Workshop Accept / Reject Notifications • Wednesday, April 26, 2023 | Extended Abstract Paper Accept / Reject and Conference Paper Accept / Revise / Reject Notifications • Wednesday, May 10, 2023 Revised Conference Papers Due • Wednesday, May 24, 2023 | Conference Paper Accept / Reject

- Tampa Tracks
 - Fundamentals and Applications Brian Fronk Brian.Fronk@psu.edu
 - HVAC&R Systems and Equipment NgYong Kong nyk@nyk.com.my
 - Research Summit Davide Ziviani dziviani@purdue.edu
 - Pathways to Net Zero Energy and Decarbonization Rafi Karim rkarim@aeieng.com
 - Future-Proofing the Built Environment Scott Peach sp@sp.engineering
 - Building Automation and Control Systems Raul Simonetti raul.simonetti@carel.com
 - Professional Development and Education Ahmed Abdel-Salam ahaabdelsalam@gmail.com
- Chicago Tracks

- Fundamentals and Applications
- HVAC&R Systems and Equipment
- Refrigeration and Refrigerants
- Decarbonization and Climate Change
- Hydronic System Design
- Ventilation, IAQ, and Air Distribution Systems
- Comfort, Indoor Air Quality, and Energy Efficiency
- HVAC&R Controls - how to make it all work.
- Design, Bid, Build and Design Build
- Rollover Rosters are due at this meeting – more discussion during roster section of agenda
- Research Dollars for 2022-2023 society year 5.05 M. Since 1959, 80 million for research
- Standards - 80 active project committees; 31 published Guidelines; 131 published Standards

7) **Liaison Comments:**

- Tina Brueckner, TAC; Tina is the new head of Section 3 and has been involved in ASHRAE for a long time. She is here to help our committee or to find answers and thanked the membership for their active participation.
- Chee Sheng Ow – Research; October 2023 deadline on WS 1886 and discussion on next steps for 1897. Chee will stay to discuss these topics in our research section of the meeting.

8) **Sub-Committee Reports**

Programs – Shelby Kent (Joe Karnaz filling in)

The programs subcommittee meeting was held on January 24th via a web meeting. Ideas generated from that meeting presented in this TC committee meeting.

- TC 3.2 had submitted a program for Atlanta that was rejected but a second program was added under TC 3.2 at a later date and was accepted. Seminar 10 “Low GWP Refrigerants and Lessons Learned from the Past” took place Sunday February 5th at the Convention Center.
- TC 3.2 cosponsored Seminar 30 “Continued Evolution of Lubricants for HVAC” held on Monday February 6th in the Convention Center.
- Both of these programs along with other Section 3 related programs were well attended.
- Program ideas for upcoming conferences
 - Tampa – No ideas generated.
 - Chicago – Suggestion to recycle Atlanta rejected seminar “System Chemistry, Contaminant Control, and Sustainable Metal Working Fluids” The three previous speakers (Casey Scruggs, Rashid Zakeri and Ivan Rydkin along with the session chair Sara Kampfe) all remained committed. More discussion on the subject in Tampa.
 - Other Ideas
 - Review AHRI and ASHRAE research for additional program ideas for Chicago.
 - Proposal for PFAS based session in Chicago.

Handbook – Ivan Rydkin

- No current updates. Plan to convene subcommittee in Tampa.

Standards – Sheli Porter

- GPC 38 – Metal Pressure Vessel Method to Test Materials Used with Refrigeration Systems
 - Joe Karnaz has submitted the paperwork for re-affirmation, no further action required.
- SPC 97 – Sealed Glass Tube Method to Test for Chemical Stability of Materials for Use Within Refrigerant Systems
 - Final draft is complete. Chris Seeton to convene committee for final revision/vote. Targeting within the next month.
- SPC 35 – Method of Testing Desiccants for Refrigerant Drying
 - Mandi Lippard has set a meeting for the final vote on standard revisions.
- SPC 63.2 – Method of Testing Liquid Line Filter Drier Filtration Capacity
 - No update or actions required at this time.
- SPC 78 – Method of Testing Flow Capacity of Suction Line Filters and Filter Driers
 - No update or actions required at this time.
- SPC 219 – Method of Testing Acid Filters
 - Revision approved Feb 2021; no further actions needed.
- No new ideas for Standards or Guidelines.

Research – Casey Scruggs

- Research Chairs Breakfast update –
 - 2022-23: \$5.5M budgeted.
 - Upper limit cap: currently \$250K that RAC can approve without further approval - looking to push up to \$350K.
 - RTAR submission documents - there is discussions to streamline to web-based approach to allow for improved traceability.
 - 42 active projects with average cost of \$150K.
 - Reminder: When submitting an RTRA. do some research first to ensure there is no existing research exists.
 - Suggestion to use 6 initiatives in strategic plan to fit research to one of these.
- **RTAR 1856** – “*Determine the Effect and Allowable Limits of Moisture and Contaminants in CO2 Systems*” The work statement was sent to the voting members prior to the conference for review and vote at this meeting. After some internal discussion a vote was taken.

MOTION #3: to approve the work statement for 1856 as submitted to the committee was made by Casey Scruggs and seconded by Ivan Rydkin. Motion passed 10-0-0 CV. These results will be communicated to RAC and it was noted that TC 10.6 will also still need to vote.

- **RTAR 1886** – “*Kinetic and Mechanistic Studies of the Breakdown of HFO Refrigerants*”. Still have some time to make decision on progressing this idea. Will regroup with team members and try to find a champion to carry this forward.
- **WS 1790** – “*Distribution of Water between Vapor and Liquid Phases of Low GWP Refrigerants*”. This is fourth failed attempt at trying to find bidders for this project and after discussion it was decided to drop this project and remove from our agenda.

MOTION #4: to drop WS 1790 from research was made by Brad Boggess and seconded by Greg Smith. Motion passed 10-0-0 CV.

- **RTAR 1897 – HFO Refrigerant Compatibility with AGED Lubricants and Contaminants**” this idea has been discussed several times without solid backing to push to developing a work statement, so motion was made to drop from research.

MOTION #5: to drop RTAR 1897 from research was made by Julie Majurin and seconded by Greg Smith. Motion passed 10-0-0 CV.

- **New ideas for Research**

1. Marc Scancarello - Review of legislation/policy affecting HVACR - white paper study.
 - a. In 3.1, there was an idea to bring someone in for a seminar which may cover this topic.
 - b. After discussion committee decided to be removed from list of research ideas
2. Marc Scancarello - Bill of materials and cross references against legislation to address chemicals that may be limited in the future - start of database of approved materials.
 - a. After discussion this was considered to be pre-competitive and to be removed from the list of research ideas.
3. Chris Seeton - Review of new alloys for compatibility testing of storage vessels
 - a. Looking at items to be used in tanks/cylinders, but there is also an AHRTI research project occurring that is looking for a variety of materials.
 - b. Review AHRTI 9016 Phase 2 to identify other metal components before proceeding.

Webmaster TC 3.2 – Dave Vincent

- Website is up to date.
- Group discussion on what content should be placed on the TC website versus Basecamp.

9) MTG Lower GWP Refrigerants TC 3.2 - Marc Scancarello

- Marc shared an overview of the codes/standards progress.
 - Overall standards are progressing well regarding to safe use of Low GWP refrigerants, most complete. Building codes are lagging behind.
 - States can have own adoption of different codes (and do), but generally speaking 22 states through some legislation allows A2Ls. 5 partial, 2 in progress.
 - Marc can provide more documented detail to those who want to see it.

10) MTG Sustainable RAC – Rashid Zakeri

- No movement in the last 8 months due to retirement to committee chair.
- Where it left off: All chapters were complete and in final editing. Plan was to make available at ASHRAE bookstore for Atlanta, but editor indicated it would not go to the bookstore because it was a UNEP project.

11) Membership – Joe Karnaz

- Rollover Rosters are due shortly after the Winter meeting that will go into effect after the Summer meeting. Three voting members will be rolling off along with the chair and vice chair after Tampa meeting. Julie Majurin will be the new chair, Morgan Leehey the vice chair and Steve Kujak the secretary; all other committee members will remain in their positions.

12) Old Business – Joe Karnaz

- Sending out of meeting invites for on-line subcommittee meetings and other committees was considered helpful and was suggested that process continue.

13) New Business – Joe Karnaz

- Every Winter meeting ASHRAE procedures requires the TC to discuss maintaining as a committee and TC 3.2 will continue based on discussion and straw vote.
- The committee remembered Ken Lilje, former member and chair of TC 3.2, in his passing with a moment of silence.

14) Adjournment – Joe Karnaz

The meeting was adjourned at 5:45 pm through a motion by Brad Boggess.