



**1791 Tullie Circle, N.E./Atlanta, GA 30329  
404-636-8400**

### 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. 3.4 DATE February 8, 2023

TC/TG/MTG/TRG TITLE Lubrication

DATE OF MEETING February 7, 2023 LOCATION Atlanta and Virtual

MEMBERS PRESENT	YEAR APPTD ENDS	MEMBERS ABSENT	YEAR APPTD ENDS	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Casey Scruggs – Chair/Han	2022	Rob Yost	2023	Scott Wujek – Research
Rashid Zakeri – Vice Chair	2024	Steve Baker	2025	Chris Campo – Programs
Joe Karnaz – Sec/MTG	2024			Tina Brueckner – Section Head
Morgan Leehey	2026			
Chris Seeton	2026			
Sheli Porter - Standards	2025			
Julie Majurin	2023			
Ed Hessel	2023			
Dave Vincent - Webmaster	2025			
Raymond Drost	2024			
Rosine Rohatgi	2026			

#### **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 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 not the official record until approved by the TC.

**Call to Order – Casey Scruggs**

Casey Scruggs called TC 3.4 meeting to order at 1:30 pm EDT on February 7, 2023. Meeting was held in-person at the Omni Hotel Redwood Room in Atlanta and via Virtual Zoom Conference Call. Participates were asked to sign the sign in sheet passed around the room and for those on-line using the Zoom Chat function.

Members and guest introduced themselves.

A quorum was established with 10 of 13 members present.

The Chair reviewed and read the ASHRAE Ethics Statement.

A quick review of the agenda was made.

**Approval of 2023 Atlanta Meeting Agenda and 2022 Toronto Meeting Minutes**

*A motion was made by Morgan Leehey to approve the 2023 Atlanta Meeting agenda as written, the motion was seconded by Sheli Porter, motion carried 10-0-0(CV).*

*A motion was made by Joe Karnaz to approve the 2022 Toronto Meeting minutes as written, the motion was seconded by Julie Majurin, the motion carried 10-0-0(CV).*

**TC Chair Breakfast – Casey Scruggs**

The following are notes from the Chairs Meeting with bold highlighted sections mentioned in the TC meeting.

- Committee Nominations
  - Nominations for elected positions (Councils, RAC, TAC, Standards, and Handbook) are due mid-September.
  - Nominations for appointed committees are due February 17
  - Speak with your committee ExO/CO if your current appointment ends in June and you wish to be nominated for another committee.
  - Technical and Society Level Committees
  - [ashrae.org/committee](https://ashrae.org/committee) nominations
- **Supporting ASHRAE's Mission and Budget**
  - \$3.1M Total Cash Raised
  - \$1M Raised for Endowments
  - \$235,500 Awarded via 65 Scholarships
  - Research Promotion Campaign Total \$2.5M
    - (Research, YEA, ALI, Scholarships, General)
  - Within the RP Campaign
    - \$1.9M Raised for Research
  - \$1.1M Given by ASHRAE
    - Regions, Chapters and Sections

- ***Total Annual RAC expenditures by society year***
  - SY 2019 20 \$5.05M
  - SY 2020 21 \$4.89M
  - SY 2021 22 \$5.05M
  - SY 2022 23 \$5.05M budgeted- funding for research is at or near pre-covid levels and new research is encouraged.
- ASHRAE currently has 42 active research projects with an average cost of about \$150k for a total value of over \$6.2M
- Since 1959, ASHRAE has sponsored 943 projects for a total cost of nearly \$80M.
- ASHRAE members have FREE access to ALL research project final reports.
- ASHRAE provides its members with FREE digital downloads of all four Handbooks, which are the largest beneficiaries of ASHRAE research results.
- All this is on ASHRAE.org, just click on RESEARCH.
- **Renewing ASHRAE's Strategic Plan**
  - Mid-course update approved November 2021.
  - Board approved one year extension until 2025.
  - Added Decarbonization
  - Updates on Initiatives
- **Award Recipients**
  - 2022 – Gemma Kerr
  - 2023 – John Constantinide
- **PC Membership**
  - Approved membership changes become effective February 9, 2023
  - Membership applications due April 7, 2023, for the Summer Annual SPLS Meeting
  - Chair membership recommendations due May 5, 2023
  - Membership balance
    - SPLS will not approve an out of balance roster.
- ***Standards***
  - 80 active project committees
  - 31 published Guidelines
  - 131 published Standards
  - Public Review Documents
    - 101 Standards, Guidelines and addenda posted for public review
    - 257 comments from 106 commenters
  - 51 Addenda published.
  - 14 Standards published.
- **FG (TC/TG/TRG) Activity Form What is New?**
  - There is a new data field requesting a count of International members attending FG meetings.
- ***Major revisions to the TC MOP and separates the Multidisciplinary Task Groups (MTG) into a separate MOP document.***
  - Requires balance for voting membership and known financial interests in other entities (previously passed 8/26/21 and modified 3/1/22)
  - Separates all references to Multidisciplinary Task Groups (MTGs) which will be covered in a separate revised document.

- Requires that the Chair, Vice-Chair, and all voting members are also members of ASHRAE.
- Recommendation to conduct virtual meetings between the Annual and Winter meetings.
- TC/TG/TRG referred to as Functional Groups (FG)
- **Existing MTGs**
  - Effective 7/1/23 all existing MTGs will conform with one of the following actions:
  - Disband
  - Merge with an existing FG
  - Constitute as a new FG.
  - Re-submit as a new MTG following the current MOP and Expectations
- **TFBD**
  - Task Force Building Decarbonization
    - Expedite the delivery of technical resources that help design engineers deliver and operate low carbon buildings.
    - Facilitate and oversee the work of Task Force subcommittees to ensure decarbonization goals are accomplished within the established timeframe.
    - Coordinate Task Force work with ASHRAE councils, committees and task forces to align goals and eliminate bottlenecks seek TC liaisons on all operational WGs
    - **A liaison is requested for TC 3.1**
      - **Heat Pump**
      - **Whole Life Carbon**
- **2023 Winter Program Statistics**

Session Type	Proposals Submitted	Proposals Scheduled	Notes
Debate	1	1	
Forum	9	2	
Panel	7	4	
Seminar	132	72	4 AHR Expo Sessions included
Workshop	2	2	
Total	151	81	
Total with Paper Sessions		109	26 in-person Paper Sessions; 2 Virtual Sessions

- **2023 Annual Tampa Deadlines**
  - Friday, January 6, 2023, Website opens for Seminar, Workshop, Panel, Debates and Forums
  - Friday, February 24, 2023, Technical Paper Final Accept/Reject Notifications
  - Monday, February 27, 2023, Debate, Panel, Seminar Form, Workshop Proposals Due
  - Wednesday, March 29, 2023, Extended Abstract Paper Due and Conference Papers Due
  - Friday, April 14, 2023, Debate, Panel, Seminar, Forum Workshop Accept / Reject Notifications
  - Wednesday, April 26, 2023, Conference Paper Abstract Accept / Revise / Reject Notifications
  - Wednesday, May 10, 2023, Revised Conference Papers, Technical Papers Due

- Sunday, May 21, 2023, Conference Paper Accept / Reject Notifications
- **2023 Annual 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](mailto:ahaabdelsalam@gmail.com)
- ASHRAE's Strategic Role in the Globalization of Standards
  - ASHRAE staff serve on TAGs and ISO/TCs
  - ISO and IEC can adopt ASHRAE standards.
  - ASHRAE can adopt international standards.
  - International ASHRAE members can serve on standards and guidelines project committees.
  - Project committees work with international organizations and provide technical assistance to countries adapting ASHRAE standards to their local needs.
- **2024 Winter Track**
  - 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, IAQ, and Energy Efficiency
  - HVAC&R Controls – how to make it all work
  - Design, Bid, Build and Design Build

## **Liaisons**

Tina Brueckner (TAC Section 3 Head)

Just starting as liaison and getting to understand Section 3. Thanked the committee for their work.

Chee Sheng Ow (Research Liaison) – Discussed RTAR 1891, Scott Wujek provided some updates and has a team for the WS, deadline Feb 1, 2024; RP 1879 – needs information which will be discussed during research.

No other Liaisons presented.

## **Subcommittee Reports**

### **Program – Chris Campo**

Section 3 Programs Subcommittee meeting took place on January 24th via a Zoom virtual meeting. Ideas generated at that meeting will be discussed in individual TC meetings.

For Atlanta TC 3.4 Sponsored Seminar 30 “Continued Evolution of Lubricants for HVAC” on Monday with 3 speakers and Greg Smith as the chair, the program was well attended, about 60 people.

A second seminar submitted for Atlanta “Lubrication Basics for Next Generation Refrigerants” was not accepted and could be used in a future program.

Other seminars of interest attended by committee members; Seminar 10 sponsored by TC 3.2 and Expo Session 1-3 sponsored by TC 3.1.

### **Tampa Program Ideas**

Discussion around presenting on refrigerants below 150-300 GWP, idea for title: Properties of Refrigerants and Lubricants to Comply with the AIM Act

Presenters – Koura, Honeywell, Shrieve

Chair – Morgan Leehey

*Chris Seeton motioned to have a seminar in Tampa titled “Properties of Refrigerants and Lubricants to Comply with the AIM Act” seconded by Julie Majurin; Motion carried 10-0-0 (CV)*

Tampa program submissions due February 27<sup>th</sup>.

### **Chicago Program Ideas**

Will look to use the seminar idea that was rejected for Atlanta. Program chair and potential speakers were still interested in presenting.

Future program ideas will be discussed at the next subcommittee meeting and in Tampa.

### **Handbook – Casey Scruggs**

The handbook committee consists of Casey Scruggs (Chair), Sara Kampfe, Chris Seeton, Dave Vincent and Henna Tangri. Chapters have a lot of tables and figures and could be better suited in digital version or move some information to an appendix. Chair would like to challenge the TC membership to review the chapter to see what can be changed, condensed, and added. Next handbook chapter needs to be finished by 2025.

### **Standards – Sheli Porter**

Standard 86 “Methods of Testing the Floc Points of Refrigeration Grade Oils” – This standard is being revised by the committee being chaired by Brad Boggess. Voted by email and approved by committee to go out for public review. Some committee discussion of future options of obsoleting standard rolling specifics into Standard 172.

GPC 40 “Refrigeration Oil Description” – Scott Wujek is the chair, and the committee has had some meetings and completed an update, will call a meeting to vote on changes.

Standard 172 “Method of Test for Insoluble Materials in Synthetic Lubricants and HFC Refrigerant Systems”. A committee has been established; Ed Hessell (Chair), a revised draft was submitted to the working committee and a date set for review.

SPC 218 “Method of Test for Lubricant and Refrigerant Miscibility Determination” – Up for 5-year review and committee led by Casey Scruggs leading, is reviewing mandatory language.

Ideas for new standards.

Chris Seeton brought up the need for a standard for volume resistivity testing beyond ASTM test methods. After some committee discussion it was decided was a potential need and to table for further discussion in Tampa.

### **Research – Scott Wujek**

The combined Section 3 research subcommittee meeting took place on January 24<sup>th</sup> via a Zoom conference call. Ideas generated at that meeting will be discussed in the individual TC meetings.

- Status of current projects were discussed at the Section 3 research online meeting with the research liaison present at the meeting.

Projects –

**RP 1879** “Foaming Properties of Low GWP Refrigerant and Oil Mixtures” – Ivan Rydkin Chair; the project is underway with Oklahoma State University as the PI. Craig Bradshaw and Kyle Shepard representatives from Oklahoma State are present in the meeting and

provided a PowerPoint update to the committee, some of the dynamics of the project discussed were foam growth and decay, interfacial dynamic surface tension and viscosity for Daniel plots. A project monitoring subcommittee was established with Ivan Rydkin as chair and PMS members Joe Karnaz, Chris Seeton, Sara Kampfe, Sheli Porter, Ray Drost and Henna Tangri

*Chris Seeton motioned to approve the PMS committee as listed above for RP 1879 with Ivan Rydkin as Chair, Julie Majurin seconded. Motion carried 10-0-0 (CV).*

**RP 1721** “Oil Return and Retention in Unitary Split Gas Lines with HFC and HFO Refrigerants”. This is sponsored by TC 8.11 Unitary and Room Air Conditioners and Heat Pumps; TC 3.4 is a co-sponsor with Chris Seeton as our representative and Purdue University is the PI. The project is coming to a close, is 2 years late due to various delays including Covid. The PI gave an update to the PMS at this ASHRAE and have added some additional data. Final report in the next month or two to the PMS and if anyone wants to review let Chris Seeton know. Test matrix and data are impressive.

**RTAR 1891** “Tribological Interaction Data with Lubricants and Refrigerants”. This project was still considered important and a new Chair, Scott Wujek volunteered with help from Morgan Leehey, Casey Scruggs, Marc Scancarello and Rashid Zakeri to write the work statement which needs to be completed and submitted by February 2024.

Some ideas from subcommittee meeting

- Preferential solubility of high glide refrigerants – some discussion in the meeting for work needed based on some seminar presentations made, not sure if need to write an RTAR, will be tabled for Tampa.
- Electrical properties extension of TC 3.1 work, but with lubricants would relate back to what was discussed during standards.
- Research on how lubricants effect some of the current refrigerant leak sensors based on oil spray; not sure if TC 3.4 is correct venue for this; will table (based on Std 15 work).
- End of Life discussion on lubricants and environmental effect, suggestion was for some in the room who have this understanding review SAE procedure to see if any type of information can help make a decision if research is needed.

No other research ideas were communicated, and further discussion was tabled until the next subcommittee and TC meeting in Tampa.

**MTG Update –Low GWP Lower Alternative Refrigerants – TC 3.4 Represented by Joe Karnaz**

- Two main meetings are on Sunday evening and Wednesday morning.
- TRP-1884 “The incorporation of odorants in flammable refrigerants to improve leak detection (Experimental Phase)”
  - HVACR systems testing to determine endurance of odorant over time and if they segregate to liquid or vapor
  - 3 odorants (two sulfides and TMA) and three refrigerants (290, 1234yf and 32)



- Contractor was approved by the PES and by TC 3.1 yesterday (2/6) in executive session. Work should start in the Spring.
- RP-1806 “Flammable Refrigerants Post-Ignition Simulation and Risk Assessment Update”
  - Pilot risk assessment (Task 1) complete, report written. PMS will need to meet to discuss results and decide whether to proceed with Tasks 2 and 3. Six months estimated for Tasks 2 and 3.
- RP-1855 “Determination of the Impact of Combustion Byproducts on the Safe Use of Flammable Fluorinated Refrigerants”
  - MTG.Low GWP voted Sunday to conditionally approve the final report, where the contingency is that the contractor implement the final round of revisions recently decided by the PMS. So, pending some time for the contractor to make those updates, it should go through the process and be published in the next month or two.
- TRP-1879-C “Foamability Properties of LGWP Refrigerant and Oil Mixtures”, Responsible Committee: TC 3.4, Co-Sponsors: TC 8.1 (Positive Displacement Compressors), information already provided in research section of these minutes.
- Overall, the standards for the safe use of LGWP refrigerants are mostly complete, but the building codes are still a work-in-progress.

#### **Webmaster – Dave Vincent**

The website is up to date. Dave can upload any pertinent information the committee wants to share on the site. There was some discussion on what data can be placed on the TC website that is not have restricted viewing and some discussion was on using Basecamp for particular information.

#### **Old Business – Casey Scruggs**

Greg Smith said he didn't have a good chance to thank his committee members after rolling off after the annual meeting last year and made thanked the committee at this meeting and the committee reciprocated their appreciation for his work.

#### **New business – Casey Scruggs**

The Chair discussed with the committee the membership roster rollover – discussion of current roster and next roster cycle, 3 voting members will be rolling off after the June meeting.

#### **Next meeting**

2023 ASHRAE Annual Meeting in Tampa

#### **Adjourn – Casey Scruggs**

The chair closed the meeting at 3:15 pm through a motion to adjourn.