

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING
ENGINEERS, INC.**

1791 Tullie Circle, N.E./Atlanta, GA 30329
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TC/TG/TRG MINUTES COVER SHEET

**Minutes of all TC/TG/TRG Meetings are to be distributed to all persons listed below within
60 days following the meeting.**

These minutes have been approved and are the official record.

TC/TG/TRG NO: TC 3.1

DATE: 10 February 2014

TC/TG/TRG TITLE: **REFRIGERANTS AND SECONDARY COOLANTS**

DATE OF MEETING: 20 January 2014

LOCATION New York, NY

MEMBERS PRESENT	TERM	MEMBERS ABSENT	TERM
Debra Kennoy (Chair)-voting	2014	Samuel Sami – voting	2016
Mark McLinden (Vice Chair)-voting	2012		
Kevin Connor (Handbook)-voting	2016		
Chris Seeton (Program) – voting	2016		
Barbara Minor (Research)-voting	2014		
Sean Cunningham (Webmaster)-voting	2015		
Warren Clough–voting	2016		
Sonny. Sundaresan-voting	2017		
Felix Flohr-voting non quorum	2016		
Alice. Reimer-voting non quorum	2016		
Other Officers & Related			
Mark Spatz – Research Liaison			
Stephen Kujak (secretary)			
Liaisons: Alternative Lower Global Warming Potential Refrigerants Barbara Minor (primary) Sean Cunningham (secondary)			

CM'S PRESENT		
Shitong Zha	Marc Scancarello	Jim Lavelle
Dave Wilson	Knut Petry	Robert Richard
Kenji Takizawa	Georgi Kazachki	
GUESTS PRESENT		
Jeff Newel	Sebastian Herrmann	Bianca Hydutsky
Scott Wujek	Drew Welch	Greg Smith
Larry Burns	Jeff Salisbury	Harrison Skye
Gustavo Pottker	Bill Murphy	Mark Spatz
Tom Leck	Tae Kwon	

KEY CONTACTS

Mr William McQuade, TAC Chair	Dr Hassan Bagheri, Handbook Fundamentals
Dr William Murphy, Section Head	Mr Rick Larson, Standards Liaison
Mr Mark Tome, Chapter Technology Transfer	Ms Stephanie Reiniche, Manager of Standards
Mr Mark Spatz, Research Liaison	Mr Michael Vaughn, StaffLiason/Research/Tech Services
Mr Donald Brandt, ALI/PDC	
Mr Francis Mills, Special Publications	

MEETING MINUTES

1 CALL TO ORDER (D Kennoy, Chair)

- A. Introductions of members and guests – Chair called the meeting to order at 4:15 P.M. and attendees introduced themselves.
- B. Agenda Revision/Acceptance

No revisions were proposed to the agenda,

***Motion to approve agenda was made by S. Sundaresan and seconded by W. Clough
Motion passed: 10 / 0 / 0 / 10 (CV) (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]])***

- C. Establishment of a quorum – There were 10 voting members present out of 11, which constitutes a quorum.

Voting members for this meeting: See above table for voting members

- D. ASHRAE Code of Ethics was reviewed (See section 3).

2. APPROVAL OF DENVER, JUNE 2013 MEETING MINUTES

***Motion to approve draft minutes was made by M. McLinden and seconded by K. Connor
Motion passed: 10 / 0 / 0 / 10 (CV). (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]])***

3. ASHRAE ETHICS

As members of ASHRAE or participants in ASHRAE committees, we pledge to act with honesty, fairness, courtesy, competence, integrity and respect for others in our conduct.

- A. Efforts of the Society, its members, and its bodies shall be directed at all times to enhancing the public health, safety and welfare.
- B. Members and organized bodies of the Society shall be good stewards of the world's resources including energy, natural, human and financial resources.
- C. Our products and services shall be offered only in areas where our competence and expertise can satisfy the public need.
- D. We shall act with care and competence in all activities, using and developing up-to-date knowledge and skills.
- E. We shall avoid real or perceived conflicts of interest whenever possible, and disclose them to affected parties when they do exist.
- F. The confidentiality of business affairs, proprietary information, intellectual property, procedures, and restricted Society discussions and materials shall be respected.
- G. Each member is expected and encouraged to be committed to the code of ethics of his or her own professional or trade association in their nation and area of work.

H. Activities crossing national and cultural boundaries shall respect the ethical codes of the seat of the principal activity.

4. CHAIRMAN’S ANNOUNCEMENTS (D Kennoy)

A. Section 3 Meeting Report

1. 2013 – 2014 Hightower Award Recipient: G. D. Mathur (TC 5.5 and TC 5.7)
2. Outstanding Technical Committee Award (annual) – *new*
A single TC within each section will be recognized for its performance
3. Interested in volunteering to review technical papers? – let me know (McLinden, Koban)
4. Workshop - a *new* type of program offered during ASHRAE conferences:
One hour duration
2 speakers (short presentations) with discussion time – audience participation
Goal: 1 workshop per track
5. Future tracks:

June 2014 – Seattle, WA	January 2015 – Chicago, IL
Indoor Environment – Health, Comfort and Productivity	Systems and Equipment
Research Summit	Fundamentals and Applications
Ground Source Heat Pumps State of the Art: Design, Performance and Research	Industrial Facilities
HVAC&R Systems and Equipment	Large Buildings: Mission Critical Facilities and Applications
HVAC&R Fundamentals and Applications	Energy Efficiency
Standards, Guidelines and Codes	Life Safety
Refrigeration	Design of Energy and Water Efficient Systems
Installation, Commissioning, Operation, Maintenance of Existing Buildings	Hospital Design and Codes
Professional Skills	

6. The 2nd Annual ASHRAE Research Summit will take place in Seattle.
7. Deadlines for Conference submissions:

Dates	June 28 – July 2, 2014	January 24 – 28, 2015
Location	Seattle, WA	Chicago, IL
Conference website	www.ashrae.org/seattle	www.ashrae.org/chicago
Website open	January 6, 2014	
Conference paper abstract due	September 23, 2013	March 24, 2014
Conference paper abstract accept / reject notifications	October 7, 2013	
Conference paper submitted for review	September 23, 2013	July 7, 2014
Final Conference papers due	January 9, 2014	
Seminar and Forum session	February 13, 2014	

proposals due		
Technical paper due		April 14, 2014
Technical paper final review due	February 25, 2014	
Power point presentations due online	May 6 - June 2, 2014	

8. ASHRAExCHANGE - <https://www.ashraexchange.org> *new* online forum / discussion board service
9. Anyone interested in giving a presentation to a local chapter. New presentation template can be used. Find it on the Technical Committee page of the ASHRAE website.

B. Roster Review

1. Summary of TC3.1 membership and changes, effective July 1st 2014 are;

<u>Position</u>	<u>Voting Members</u>
Chair	Dr Mark O McLinden, PhD
Vice Chair	Mr Stephen Kujak
Secretary	Mr Warren Clough
Research Subcommittee Chair	Mr Stephen Kujak
Standards Subcommittee Chair	Dr David P Wilson, PhD
Program Subcommittee Chair	Dr Christopher J Seeton
Handbook Subcommittee Chair	Mr Kevin C Connor
Webmaster	Mr Sean Cunningham
Member Non-Quorum	Mr Felix Flohr
Member Non-Quorum	Mrs Alice Riemer

4. RESEARCH SUBCOMMITTEE (Barbara Minor)

- A. Report from Research Subcommittee Chairs Meeting. 62 active projects with \$10.8 million in value. Money is available, but they now have a good pipeline of project. New RTAR form is being available to simplify process and limit the submittal detail required.
- B. Ongoing Project Reports

	Project Title	Comments/Status
Current Research ASHRAE	1507-RP: Binary Refrigerant Flame Boundary Concentrations and databank for useful binary pairs in commercial refrigerants. Identify standard flammable mixture for confirming accuracy of data from flame test apparatus. Databank to aid assessment of new refrigerant blends for SSPC34.	Contractor has been non-responsive so committee plans to complete the report. PMS: <u>Bob Richard</u> , Debra Kennoy, Sonny Sundaresan, Xudong Wang and Tom Leck
	1584-RP: Assessment of Alternative Approaches to Predict Burning Velocity of a Refrigerant	Final report has been approved by the TC Next step is to prepare and present tech paper PMS subcommittee: <u>D. Kennoy</u> , B. Minor, R. Richard, S. Cunningham, Xudong Wang, Kenji Takizawa
	1717-WS - Improve Accuracy and Reproducibility of ASTM-E681 Flammability Test Method ofr Flammability Measurement of 2L Flammable Refrigerants	RTAR approved and draft work statement written. Several edits were proposed and will be addressed. AHRI may cosponsor PES subcommittee: D. Kennoy, B. Minor S. Cunningham, Scott MacLeod, Bob Richard PMS add Sonny Sundaresan
AHRTI	9005- Fractionation testing and error analysis for refrigerant blends in support of SSPC34 SPC-177P title is: MOT Fractionation Measurement of Refrigerant Blends	Draft final report is under revision Expect approval and publication in March-April Contractor - Safety Consulting Engineers AHRTI PMS <u>R. Richard</u> , B. Minor S. Kujak, M. Scancerello, X. Wang M. McLinden

717-WS Improve accuracy and Reproducibility of ASTM E681 Test Method for flammability limit measurement of class 2L refrigerants (see attachment 3). New Item.

Debbie reviewed the WS with the committee. Many question from the committee on content and the details around the work statement. Debbie will supply the current WS to the committee members.

Motion to approve 1717-WS was made by B. Minor and seconded by M. McLinden.

Motion passed: 10 / 0 / 0 /10(CNV). (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]]

C. Proposed RTARs and Co sponsorship.

Non-Prioritized Research		
	Project Title	Comments/Status
RTAR	Distribution of Water Between Vapor and Liquid Phases of Low GWP Refrigerants	RTAR lead is TC 3.3. Asking tC 3.1 to co-sponsor. TC 3.1 Research supports
WS	Revise Toxicity Classification for ASHRAE Standard 34 To Be Based on Acute Toxicity Versus Chronic	Idea came from Std 34 Toxicity Subcommittee Work Statement will be prepared PMS - Steve Kujak - Lead, George Rusch, Gary Jepson, Chris Seeton, Debbie Kennoy
	Ignition potential of Off-Design ignition sources	Ignition sources can change/deteriorate over time. Mark Spatz to check with TC 8.11 to gauge interest

- a. Co-sponsoring of “water solubility” for 3.3.

Motion to approve 3.3 RTAR “Moisture Solubility” was made by S. Sundaresan and seconded by S Cunningham.

Motion passed: 10 / 0 / 0 / 10(CNV). (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]])

- b. Assessment of alternative approaches to the A/B chronic toxicity classification of refrigerants used by ASHRAE SSSPC34. Research project will go to WS lead by Steve Kujak.
- c. Ignition potential for off design ignition sources. Mark to check with 8.11

E. Research Plan (See Above)

Motion to approve Research Plan was made by B. Minor and seconded by S. Sundaresan

Motion passed: 10/ 0 / 0 /10(CNV) (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]])

F. ASHRAE Research Goals Liaisons Reports

Alternative Lower Global Warming Potential Refrigerants Mini Conference. Regular meetings have been held; the next one will be on Wednesday, June 26th. The meetings focus on research and program activities in ASHRAE and AHRI related to lower GWP refrigerants.

5. HANDBOOK SUBCOMMITTEE (Kevin Connor)

- a. The 2013 Fundamentals Handbook has been published. If anyone is interested in working on the 2017 edition, contact Kevin Connor. This TC is responsibility for 3 chapters. Next update is in 2 years (2016). Lead authors are S. Cunningham-Chapter 29, Mark McLinden Chapter 30, K. Connor-Chapter 31. 2017 is the next update.
- b. Next time will be able to update the online version and include other informational type and it is encouraged to have any TC 3.1 members to participate.

6. PROGRAM (Chris Seeton)

- a. Current Program Sessions (Seattle)
 - 1. *MTG Update: Barbara Minor/Sean Cunningham:* Looking to do potentially small or preconference/mini conferenc on Low GWP refrigerants ahead of Seattle.
 - 2. *Workshop for Seattle on 2L refrigerants.* Chris Seeton will pull together.
 - i. Seattle - Workshop “Code requirements needed for working with 2L refrigerants?”
 - ii. Chris Seeton to Chair Recruit Steve Ferguson; Other tentative possibilities Dave Conover, Jeff Shapiro, Phil Johnson
 - 3. *Seattle -Seminar “Advances in LGWP refrigerants”* Barbara to chair, DuPont, Arkema, Honeywell (Gustavo)
 - 4. *Co-sponser REF “Application and practical experiences of the new Refrigeration Commissioning Guide”* Georgi to Chair
 - 5. *RP-1584 Report* -Chris to work with Hameed Metghchi to submit research paper
- b. Future Potential Session (Chicago and Beyond)
 - 1. Practical considerations of 2L refrigerants (Warren to chair)

2. Chicago – “System efficiency impacts of LGWP refrigerants: are we compromising with efficiency?”
3. Leak detection technologies and sensors potential co-sponsor with TC 3.8 Chris to drop a note to Danny Haiel to seek sponsorship
4. TC10.7 Chicago – Seminar R404A replacements (cosponsor)

Motion to approve program plan, was made by B. Minor and seconded by K. Connor

Motion passed: 10/0/0/10(CNV) (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]])

7. STANDARDS (Dave Wilson)

a. Guideline 6

Group met yesterday. Steve Kujak is the new chair with loss of Maryline Rassi. Meeting focused on discussing what the latest state of the draft and a conference call was in scheduled for Feb 11 to discuss the state of the draft. Expect to be ready in time for TC 3.1 to vote on going out for public review by Seattle.

b. ASHRAE Standard 34, Designation and Safety Classification of Refrigerants (D. Wilson)

1. 5 refrigerant classification applications were considered for the New York meeting
2. Standards Committee approved addenda from Denver meeting
3. 3 CM's were submitted and there will be 3 working groups to be developed to consider each CM

c. ISO Standard 817, Refrigerants Designation and Safety Classification (D. Wilson) Another

ballot March 2014.

d. ISO Standard 5149, "Refrigeration Systems and Heat Pumps" (D. Wilson)

All voting is complete and ISO5149 has passed to move on to publication. Final publication will take the remainder of the year because ISO has to conduct a format review and update.

e. SPC-177P, MOT Fractionation Measurement of Refrigerant Blends (R. Richard)

Did not meet in New York because of scheduling conflicts.

8 WEB SITE (Sean Cunningham)

Meeting minutes and presentations are posted on the ASHRAE website. Need to continue to update with the latest presentations <http://tc31.ashraetcs.org/meetings.html>

9 OLD & NEW BUSINESS

None

10 MEETING ADJOURNED

Motion to adjourn was made by S. Sundaresan and seconded by B. Minor Motion passed: 10/0/0/10 (CV) (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]])