

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

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 draft minutes have been approved by this committee with a couple of minor corrections.**

TC/TG/TRG NO: TC 3.1

DATE: 30 June 2014

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

DATE OF MEETING: 30 June 2014

LOCATION Seattle, Washington

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

<b>CM'S PRESENT</b>		
Shitong Zha	Marc Scancarello	Jim Lavelle
Dave Wilson	Knut Petry	Robert Richard
Kenji Takizawa	Georgi Kazachki	
<b>GUESTS PRESENT</b>		
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	

## FINAL 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 M. McLinden and seconded by S. Sundaresan***

***Motion passed: 6 / 0 / 0 / 7 (CNV) (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]])***

- C. Establishment of a quorum – There were 7 voting members present out of 11, which constitutes a quorum. Absent were Sami, Connor, Flohr, Rimmer

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

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

### 2. APPROVAL OF NEW YORK, JANUARY 2013 MEETING MINUTES

***Motion to approve draft minutes was made by M. McLinden and seconded by S. Cunningham***

***Motion passed: 6 / 0 / 0 / 7 (CNV). (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]])***

No revisions were proposed to the minutes

### 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. Kennoy and Cunningham expressed concern about not having full tracks when they happen and the not having tracks for Seattle that were originally promised
2. 2014 – 2015 Hightower Award Recipient: This recognizes outstanding technical leadership and contributions on a TC / TG / TRG during the past four years excluding research and standards activities.

Due date: 01 SEP 2014

<http://www.ashrae.org/tcs> look at Procedures and Forms

3. Outstanding Technical Committee Award (annual) –  
TAC developed an award to recognize a TC within each section to recognize TCs for behaviors and activities that further the goals of TAC. It is based on a point system.
4. 014 – 2015 Service to ASHRAE Research Award Nomination  
This recognizes TC volunteer efforts in research.  
Due date: 30 SEP 2014
5. Update your ASHRAE Bio by July 1, 2014
6. Interested in volunteering to review technical papers? – let me know (McLinden, Koban)
7. TAC presentation template  
TC members can use these templates when making presentations to local ASHRAE Chapters
8. Future tracks:

January 2015 Chicago	June 2015, Atlanta
Systems and Equipment	HVAC&R Systems and Equipment
Fundamentals and Applications	HVAC&R Fundamentals and Applications
Industrial Facilities	Research Summit
Large Buildings: Mission Critical Facilities and Applications	Refrigeration
Energy Efficiency	Building Operation, Maintenance and Optimization/Commissioning
Life Safety	Indoor Air Quality
Design of Energy and Water Efficient Systems	Modeling throughout the Building Life Cycle
Hospital Design and Codes	High Performance Buildings
	Moving Advanced Energy Design Guidance to the Mainstream

9. Deadlines for Conference submissions:

Dates	January 24 – 28, 2015	June 27-July1 2015
Location	Chicago, IL	Atlanta, GA

Conference website	<a href="http://www.ashrae.org/chicago">www.ashrae.org/chicago</a>	<a href="http://www.ashrae.org/atlanta">www.ashrae.org/atlanta</a>
Website open		
Conference paper abstract due	March 24, 2014	September 22
Conference paper abstract accept / reject notifications	April 14, 2014	October 6, 2014
Conference paper submitted for review	July 7, 2014	January 5, 2015
Final Conference papers due	August 18, 2014	February 13, 2015
Seminar and Forum session proposals due	August 11, 2014	February 13, 2015
Technical paper due	April 14, 2014	September 22, 2014
Technical paper final review due	August 18, 2014	February 13, 2015
Power point presentations due online	January ??, 2015	June ??, 2015

10. ASHRAEXCHANGE - <https://www.ashraexchange.org> *new* online forum / discussion board service

#### B. Roster Review

1. Summary of TC3.1 membership and changes, effective July 1<sup>st</sup> 2014 are;

<b><u>Position</u></b>	<b><u>Voting Members</u></b>
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

2. Add TC. 3.1 Liaison: MTG Update (Minor/Cunningham)

Minor gave an update and she reviews the research ASHRAE is doing to look for potential synergy with other research.

Kennoy announced that TC 3.1 is looking for a research liaison

#### 4. RESEARCH SUBCOMMITTEE (Barbara Minor).

##### A. Ongoing Project Reports

ASHRAE Research Projects		
	Project Title	Comments/Status
Current Research ASHRAE	<b>1507-RP: Binary Refrigerant Flame Boundary Concentrations and databank for useful binary pairs in commercial refrigerants.</b> 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
	<b>1584-RP: Assessment of Alternative Approaches to Predict Burning Velocity of a Refrigerant</b>	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
	<b>1717-WS - Improve Accuracy and Reproducibility of ASTM-E681 Flammability Test Method ofr Flammability Measurement of 2L Flammable Refrigerants</b>	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	<b>9005- Fractionation testing and error analysis for refrigerant blends in support of SSPC34</b> <b>SPC-177P title is:</b> 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

B. Proposed RTARs and Co sponsorship.

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

- a. Assessment of alternative approaches to the A/B chronic toxicity classification of refrigerants used by ASHRAE SSPC34. Work statement has been prepared and submitted to RAC.

E. Research Plan (See Above)

**Motion to approve Research Plan was made by S. Sundaresan and seconded by W. Clough**  
**Motion passed: 6/ 0 / 0 /7(CNV) (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]])**

## 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.
- c. Kevin Connor absent and there was no update for Handbook. Handbook liaison gave an update (Sheila Hayter). Good information at the chapter guide on the ASHRAE website. New free online terminology tool available on the website. Use Ashrae terms (one word) to find on ASHRAE website.
- d. Seeton volunteered to help Connor on Chapter 31. McLinden looking for suggestions and feedback on which refrigerants to add and which to delete on Chapter 30. Gus Riotti volunteered to help on Chapter 29

## 6. PROGRAM (Chris Seeton)

- a. Current Program Sessions (Seattle)
  1. Barbara is chair for program "Advances in Low Global Warming Potential (GWP) Refrigerants
  2. Georgi is chair for program "The Road to Success with New Refrigeration Commissioning Guide"
- b. Future Potential Session (Chicago and Beyond)
  1. International codes and standards Practical considerations of 2L refrigerants (8.11, add this material) (get title) Co-sponsor

***Motion to approve co-sponsor plan, was made by McLinden and seconded by B. Minor***

***Motion passed: 6/ 0 / 0 /7(CNV) (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]***

2. Chicago (Refrigeration) – "Retrofit or not, from R-22 or High GWP refrigerant"
  - a. 3.1 to co-sponsor.

***Motion to approve co-sponsor plan, was made by McLinden and seconded by S. Cunningham***

***Motion passed: 6/ 0 / 0 /7(CNV) (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]***

3. Chicago (Refrigeration 8.1) – "Best practices in servicing and maintenance of refrigeration systems for co-sponsoring"
  - a. 3.1 to co-sponsor. No co-sponsorship recommended but 3.3 or 3.8 would be better match.
4. Resubmitting workshop. Bob Richards-Chair. "Codes and Safety Standard Requirements; Working with 2L LGWP Refrigerants

***Motion to submit works statement plan, was made by B. Minor and seconded by C. Seeton***

***Motion passed: 6/ 0 / 0 /7(CNV) (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]])***

c. Future Potential Session (Atlanta and Beyond)

1. "System efficiency impacts of LGWP refrigerants: are we compromising with efficiency?"
2. Leak detection technologies and sensors potential co-sponsor with TC 3.8 Chris to drop a note to Danny Halel to seek sponsorship
3. Seminar on R404A replacements (TC 10.7 is leading and submitting)
4. RP-1584 need to find out if it was submitted for Chicago-Seeton
5. AREP II follow ups
6. Workshop on Toxicity A/B classification work statement. Wait until the work is started and see where it goes and then give an update on progress and get feedback.

**7. STANDARDS (Dave Wilson)**

a. Guideline 6 (S. Kujak)

In the final stages of revisions and update. Plan is to submit to ASHRAE for final clean up and send out for public review by July-August. Please submit any changes to Steve to update the draft before submission.

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

1. 4 refrigerant classification applications were considered for the Seattle 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)

Approved and available

Maintenance agency to be setup with ISO for both standards and there are significant differences. Not details yet on process.

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

Approved and available

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

This standard has been flagged by standard committee. Need to get a product out in the next 6-9 months. Been working on for 10 or so years.

**8 WEB SITE (Sean Cunningham)**

8 New York presentations have been uploaded so far at the website. Meeting minutes and presentations are posted on the ASHRAE website and update. Need to continue to update with the latest presentations <http://tc31.ashraetcs.org/meetings.html>

**9 OLD & NEW BUSINESS**

New

none



Old

Extend thanks to those who will roll off; Kennoy and Minor  
Looking for MTG. Low GWP Liaison. Meet on Wed morning, 10 to 11 am.

**10 MEETING ADJOURNED**

***Motion to adjourn was made by S. Sundaresan and seconded by B. Minor Motion passed: 6 / 0 / 0 / 7  
(CNV) (For / Against / Abstain / Total [Chair Voting [CV] or Chair Not Voting [CNV]***