

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

TC/TG/TRG NO 3.2 DATE January 26, 2016

TC/TG/TRG TITLE System Chemistry

DATE OF MEETING January 25, 2016 LOCATION Orlando, FL

MEMBERS PRESENT	STATUS	MEMBERS PRESENT	STATUS	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Rosine Rohatgi	Chair/VM	Danny Halel	CM	Mark Spatz
Warren Clough	VChair/CM	Amy Paul	CM	Valerie Baish
Chris Reeves	VM			Glen Steinkoenig
Brad Boggess	PSC/VM			Jian Sun Blanks
Rob Yost	SSC/VM			Jay Kohler
Stephen Kujak	VM			Mary Kimlinger
Thomas Leck	VM			Stan Sveen
Greg Smith	HSC/VM			Rick Stock
Chris Seeton	VM			Joe Longo
Sonny Sundaresan	VM			Senthil Kumar
Alice Reimer	NQM			Elaine Leung
Dave Vincent	Web/CM			Lim Shan Chong
Scott Gustafson	ALI/CM			John Withouse
Mark Baker	RSC/CM			Lucas Stoller
Joe Karnaz	SEC/CM			Aykut Yilmaz
Julie Majurin	CM			Ted Li
Marc Scancarello	CM			Eugene Chen
Knut Petry	CM			
Michael Callan	CM			
Alan Cohen	CM			
Elyse Sorenson	CM			
Sarah Kim	CM			
Frank Nagy	CM			
Stephen Spletzer	CM			
Yanwei Chen	CM			
Scott Wujek	CM			
John Senediak	CM			
Roberto Urrego	CM			
Juan Flores	CM			

DISTRIBUTION

All Members of TC/TG/TRG plus the following:

TAC Section Head: Jay Kohler	
All Committee Liaisons As Shown On TC/TG/TRG Rosters: Research Liaison – Mark Spatz	Manager Of Standards – Stephanie Reiniche Manager Of Research & Technical Services – Mike Vaughn
Note: These draft minutes have not been approved and are not the official, approved record until approved by this committee.	

Call to Order

Chair Rosine Rohatgi, called the meeting to order at 2:15 pm on Monday, January 25, 2016. The meeting was held in room Orange E in the Orlando Hilton in Orlando, FL. After the introduction of members and guests, a quorum was confirmed with 10 members present (including chair) 1 International Member with 1 member absent.

ASHRAE Code of Ethics – A mention of the Code was made to remind all members and visitors of the Code and that it should be adhered to whenever at an ASHRAE meeting.

MOTION #1 A motion was made by Rob Yost and seconded by Sonny Sundaresan to approve the Agenda for this meeting as written.

MOTION PASSED 11-0-0 CV

MOTION #2 A motion was made by Sonny Sundaresan and seconded by Danny Harel to approve the Minutes from the meeting in Atlanta in June of 2015.

MOTION PASSED 11-0-0 CV

Report on TC 3.0 Chair Breakfast Meeting

TC Chair Meeting Notes – TC 3.2

- 2015-2016 Hightower Award Recipient is Steve Duda of TC 4.3 and TC 9.1
- No nomination for 2015-2016 Service to ASHRAE Research Award
- Four new multidisciplinary Task Groups : MTG.ASEC (Avoided Source Energy Consumption due to Waste Heat Recovery and Heat Pump Technologies); MTG.IAST (Impact of ASHRAE Standards and Technology on Energy Savings/Performance); MTG.ISPAQE (Indoor Swimming Pool Air Quality and Evaporation); MTG.OBB (Occupant Behavior in Buildings)
- TC Website Template is updated. Any problems or feedback, contact Section Head or MORTS
- TC E-mail Aliases created for TC management team (tc0302@ashrae.net)
- CEC & TAC looking for feedback on ASHRAE's Technical Program submission Process. Send information, suggestions, requests to TAC member Kelley Cramm at TACcoord2@ashrae.net or ASHRAE staff member Tony Giometti (Giometti@ashrae.org) before June 1, 2016 for the Long Beach 2017 meeting and annual winter conferences beyond this date. You can also add your track suggestion in the "Comment" section of the TC Activity form.

ORLANDO MEETING:

- TC Program Subcommittee Chair Training on Tuesday 1/26 at 11:15 AM in Lake Down B (L)
- Section Head Mailboxes outside ASHRAE Headquarters (Key Largo A -LL)
- Wi-Fi access: ASHRAE2016 is the network, orlando16 is password
- Remote Participation Meetings tested here with 14 TCs

PROGRAM STATISTICS:

- 131 conference paper abstracts approved out of 177 submitted
- 84 conference papers presented out of 87 conference papers received
- 22 conference paper sessions
- 37 technical papers presented out of 41 technical papers received
- 11 technical paper sessions
- 69 seminars presented out of 113 seminars submitted
- 5 workshops presented out of 11 workshops submitted
- 4 forum presented out of 10 forum submitted

UPCOMING DEADLINES

ST-LOUIS:

- Seminar and Forum proposals for St. Louis due by Monday, February 8, 2016.
- Confex opens for presentation uploads May 6, 2016.
- All presentations due on line June 16, 2016. Please upload early for commercialism review. Uploads must be complete, including the AIA Disclaimer and Learning Objectives.
- Starting in St. Louis, CEC Chair, Vice Chair and Conference Program Chair will review submissions and will accept five invited speakers per Annual and Winter meeting (speaker fee waived) based on following criteria: Expert on subject matter, not ASHRAE member and will provide information that is useful to ASHRAE membership.
- Potential Sources Bias Disclosure required of all speakers, noting affiliations/involvement with any organizations with financial or commercial interest in the subject matter
- Speaker ratings: 14 speakers from Atlanta with ratings below 3.5 out of 5.0 were notified that if they receive two additional low ratings, they will be required to provide proof that they have received speaker training before they will be permitted to speak again
- Live Polling available for use in all ASHRAE presentations. Authors should contact CEC or ASHRAE staff when creating their presentation for instructions on including links for use with live polling.

LAS VEGAS:

- Conference Papers due on July 6, 2016
- Seminar, Forum and Workshop proposals due August 8, 2016
- Confex opens for presentation uploads December 2, 2016
- All presentations due on line January 2, 2017

RECENT ANNOUNCEMENTS:

- Provide Section Head after each Society meeting with a list of qualified volunteers for potential Technical Session Chairs and reviewers of session papers for use by CEC
- TAC presentation template for TC members to use with local Chapter: it allows TC members to give a presentation to their local chapter on TAC and the TC in general.
- Employment Discipline added to ASHRAE Bio Online Input Form.
- New ideas needed for practical courses by Professional Development Committee (PDC) and ASHRAE Learning Institute (ALI).

Liaison Reports - TC Liaison - Jay Kohler stopped by and provided some comments on the TC. He also asked if anyone had any issues that he could address or take back to TAC.

No other liaisons were present in the meeting.

Upcoming meetings

St. Louis June 2016	Las Vegas January 2017
Long Beach June 2017	Chicago January 2018

Sub-Committee Reports

Program – Brad Boggess

There was 1 program co-sponsored here at the Orlando meeting.

Seminar 16: *Making the Commercialization of Low GWP Refrigerants a Reality*. Chair - Ed Hessel; The speakers were Laurent Abbas, Arkema; Joe Karnaz, CPI Fluid Engineering; Steve Kujak, Ingersoll Rand. This seminar was well attended with positive feedback from those in attendance. One particular question in the presentation was from a contractor asking about new refrigerants which triggered some discussion about the need for other presentations.

An idea was brought forward about developing a Workshop for St. Louis based on the fact that one of the tracks is about Refrigeration. This workshop would revolve around the changing refrigerant market and target audiences such as engineers, contractors, etc. It was decided that the best approach would be to hold this at the Las Vegas meeting. This discussion was tabled until the summer meeting where TC 3.2, 3.3 and 3.4 Program Chairs (and maybe TC 3.1) will work on developing a plan for the workshop. Potential Topics for the workshop: Change to refrigerants; Retrofit/Drop-in potentials; Lubricant/Material compatibility; Working with higher refrigerant glide.

Nothing was planned for St. Louis.

Other potential future program ideas:

- CO₂ Seminar; This was a past idea with Danny Halel as the chair. Danny felt this was still a good topic and asked if anyone was willing to make a presentation. No one responded so the idea was tabled.
- Discussion for a presentation on acid number values and what is seen in the industry. No one stepped forward to champion so it was tabled for future discussion.

Handbook – Gregory Smith

The Handbook committee is working on 2018 Refrigeration Chapter 6 *Refrigerant System Chemistry*. The committee had a meeting on Sunday and identified additions to the handbook from recent studies on HFO/HFC material compatibility; R-40 studies and work on unsaturated fluorocarbons.

Committee Members include – Chair – Greg Smith, Rosine Rohatgi, Brad Boggess, Ed Hessel, Warren Clough and Sonny Sundaresan.

Standards –Rob Yost

- GPC 38P – “Metal Pressure Vessel Method to Test Materials Used with Refrigeration Systems”
 - Joe Karnaz – Chair. Committee members are Alan Cohen, Ed Hessel, Brad Boggess, Rosine Rohatgi and Chris Seeton. Standard 175 is now switched to a guideline and the committee is working on revising the standard draft. Timeline is to have the draft completed or near completion to review in St. Louis.
- SPC 97-2007 – “Sealed Glass Tube Method to Test for Chemical Stability of Materials for Use Within Refrigerant Systems”
 - Chris Seeton – Chair. Committee will meet on Tuesday morning at 9:30 in Lake Monroe B. No conflicts so far and updating references. Trying to standardize a more defined approach to what it means when stated, “Tested to ASHRAE 97”.

Research – Mark Baker

- WS 1774 “Effects of System Chemicals Towards the Breakdown of Lubricants and Lower GWP Refrigerants” Authored by Julie Majurin. The work statement has been conditionally approved by RAC, some changes are needed which will be made and resubmitted to RAC by February 14th in order to meet the end of February review deadline. It was decided that since the changes are minor the TC 3.2 committee did not need to review or vote on.
- RTAR 1790 “Distribution of Water Between Vapor and Liquid Phases of Low GWP Refrigerants”. Authored by Brad Boggess – this RTAR proposed investigating 5-6 refrigerants but the RTAR was rejected and requires more justification if resubmitted. It was decided to rewrite as a work statement with more clearly defined objectives.

MOTION #3 A motion was made by Sonny Sundaresan and seconded by Tom Leck to resubmit the RTAR as a more detailed work statement.

MOTION PASSED 11-0-0 CV

- Past Research Ideas
 - Remediation of R-40 System – Steve Kujak and Chris Seeton; tabled for now. A Conference Paper has been submitted for review which has pertinent information and this will be used to gather ideas from a larger group of people for a new research project.
 - Mechanistic Studies of HFO Decomposition – Steve Kujak and Mark Baker; Tabled. Some recent papers will be reviewed to help in direction for the need of this research project.
- New Ideas
 - Odorant research – TC 3.1 has drafted an RTAR but at this time does not need co-sponsorship. It was discussed that once some odorants are identified then system stability/compatibility work might be needed which should be initiated through TC 3.2.
 - Tom Leck, MTG Low GWP liaison for TC 3.2 distributed the current MTG research list. The MTG would like to be considered for co-sponsorship when pertinent research is considered by TC's. This research list will be added as an attachment to the minutes (Exhibit A).
 - Mark Spatz, TC 3 liaison mentioned that RAC is cracking down on the number of co-sponsors on a research request and says that all co-sponsors should have meaningful involvement with the research topic.

Webmaster – Dave Vincent

ASHRAE has dramatically changed the TC websites and standardized the look. The website has more functionality and should be more of an asset and resource for posting information going forward. Please send pertinent information that you want posted on the website to Dave Vincent.

Membership – Joe Karnaz

The rollover roster is being worked on and needs to be submitted before the end of this ASHRAE meeting. Anyone interested in becoming a corresponding member of the committee was directed to see the chair and secretary after the meeting.

MTG Lower GWP Refrigerants (Tom Leck)

The MTG is meant to serve as a resource to the TC's and is available to support various activities concerned with low GWP refrigerants. The committee will meet on Wednesday at 10am in the Lake George A room. The audience in the room was invited to attend.

Old Business

No old business was brought before the committee.

New Business

No new business was brought before the committee.

Adjournment

The meeting was adjourned at 4:00pm by Chair Rosine Rohatgi thru a Motion made by Danny Hael and seconded by Brad Boggess.

Respectfully submitted,

Joe Karnaz – Secretary

Exhibit A – MTG Low GWP Research List

Phase	Approval	Number	Title	Comments	TC	Lead Author (RTAR/WS)	PI
RP	contract	1717	Improve Accuracy and Reproducibility of ASTM E681 Test Method for Flammability Limit Measurement of 2L Flammable Refrigerants	contract awarded; project started	3.1		UMD, Sunderland
TRP	biids	1740	Hydrogen Fluoride Capacity of Desiccants	proposals due 15-May-2015; PES meet in Atlanta	3.3 (3.2)		
WS	draft	1731	Heat Transfer Performance of Medium Pressure Alternative Lower GWP Refrigerants In Flooded Evaporator Comprising an Enhanced Tube Bundle	1st: WS draft due 15-May-2016	8.5	Justin Kauffman	
WS	draft	1728	Development of Models for Prediction of Oil Refrigerant Mixture Properties of Low GWP Refrigerant and Synthetic Compressor Oils	outside funding; 1st WS draft due 15-May-2016	3.4	Julie (Trane)	
WS	draft	1721	Oil Return and Retention in Unitary Split System Gas Lines	1st: WS draft due 15-Aug-2015	8.11		
WS	?	?	(toxicity)		3.1		
RTAR	?	?	?		8.4		
WS	dropped	1628	Physical Properties Measurements of HFO-1234yf / Lubricant Mixtures	expiored & dropped; going to new RTAR now	3.4	Chris Seeton	
RTAR	draft	new?	Physical Property Measurement of HFO & HFC blends Lubricant Mixtures	RTAR submitted?	3.4	?	
RTAR	draft	1683	Experimental Evaluation of Two-Phase Pressure Drop and Flow in U-Bends with Ammonia	submitted & returned 2012, 2013; pending re-submittal	1.3, (8.4)	Sankar Padhmanabhan	
RTAR	draft	?	(3V MOT rh%)		3.1	Debbie Kennoy, Julie ? (Trane)	
RTAR	draft	?	(HFO issues with semi- and hermetic motor failures)	just idea, RTAR target Atlanta	8.2... 8.1, 3.x	?	
RTAR	draft	?	heat transfer and dP correlations for small diameters (<5mm) with lower GWP blends		8.4	?	
RTAR	draft	?	mass diffusivity of refrigerant in oil	MTG to facilitate discussion between relevant TCs	1.1	?	
RTAR	draft	?	oil retention measurements , beyond 1564 to lower GWP fluids			?	
WS	draft	?	Effect of System Chemicals to breakdown of lubricants in lower GWP refrigerants	continuation of prior work with HFCs	3.2		
RTAR	draft	?	Ignition Potential from Electrical Devices in Commercial and Residential Applications using 2L Refrigerants			?	
FR	complete	1580	Study of Input Parameters for Risk Assessment of 2L Flammable Refrigerants in Residential Air Conditioning and Small Commercial Refrigeration Applications.	ASHRAE technical paper NY-14-039			
FR	complete	1583	Assessment of Burning Velocity Test Methods.				
FR	complete	1584	Assessment of Alternative Approaches to Predicting the Burning Velocity of Refrigerants.				