

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 3.4 DATE August 30, 2015

TC/TG/TRG TITLE Lubrication <http://tc34.ashraetcs.org/>

DATE OF MEETING June 30, 2015 LOCATION Atlanta, GA

| MEMBERS PRESENT | YEAR APPTD | MEMBERS ABSENT | YEAR APPTD | EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE |
|------------------|------------|----------------|------------|--|
| Joe Karnaz | 2012 | Dave Vincent | 2014 | |
| Chris Seeton | 2014 | Yunho Hwang | 2012 | |
| Rob Yost | 2014 | Brett Van Horn | 2012 | |
| Ed Hessell | 2011 | Chris Reeves | 2013 | |
| Julie Majurin | 2014 | | | |
| Knut Petry | 2013 | | | |
| Sonny Sundaesan | 2014 | | | |
| Marc Scancarello | 2013 | | | |
| Scott Wujek | 2013 | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

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: | Mark Spatz – RAC Ramon Ponce – Handbook Rick Larson – Standards Francis Mills – Special Pubs Tony Giometti – Program Mark Tome – CTTC |
| Manager Of Standards Manager Of Research & Technical Services | Stephanie Reiniche 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 – Joe Karnaz

Joe Karnaz called TC 3.4 meeting to order at 1:30 pm on June 30th 2015 at the Atlanta Hilton in Salon D (2) in Atlanta, GA. Members and guests introduced themselves. Guests were welcomed and invited to participate. A sign-up sheet circulated. The Chair reviewed the ASHRAE Ethics Statement.

Confirmation of Quorum – Joe Karnaz

Joe Karnaz, Chris Seeton, Ed Hessell, Knut Petry, Julie Majurin, Rob Yost, Marc Scancarello, Sonny Sundaeson and Scott Wujek were present. Voting members Yunho Hwang, Bret Van Horn, Dave Vincent and Chris Reeves were not present. With nine of thirteen voting members present, the quorum was established.

Liaisons - Bill Murphy/Mark Spatz Attended

Jay Kohler – TAC Section 3 Head - Jay urged new ASHRAE TC participants to take advantage of the live training ASHRAE being offered in Atlanta and the ASHRAE website training available 24/7 for all the TC roles such as chair, vice chair, program chair etc. TAC is making a request to all TC's to make a special effort to welcome and reach out to new participants and guests to enhance their ASHRAE experience and urge them to participate in future meeting, tomorrows leaders could be the person you welcomed to your TC today. Jay closed by thanking everyone for their continued participation and efforts to support ASHRAE.

Approval of 2015 Winter Meeting Minutes - Chicago and the Summer Meeting Agenda for Atlanta – Joe Karnaz

A motion was made by Sonny Sundaeson to approve the Chicago minutes, the motioned was seconded by Ed Hessell, and the motion carried 9-0-0 (CV).

A motion was made by Sonny Sundaeson to approve the agenda for today's meeting in Atlanta, the motioned was seconded by Rob Yost, and the motion carried 9-0-0 (CV).

TC Chair Breakfast – Joe Karnaz

TC Chair Meeting Notes – TC 3.4

- Starting in St Louis will be a requirement for Potential Bias Disclosure for Presentation, in accordance with ASHRAE code of ethics.
- Programs for Orlando are due August 10th, 2015.
- St Louis track will include “Advances in Refrigeration Systems and Alternative Refrigerants”.
- Was suggested to CEC this type of track also be available for a Winter Session.
- New process for Provisional Corresponding Members – click on **JOIN A TC** button on the website.
- RAC prioritizing research topics related to the Residential Sector.
- 8th Beta test of Electronic and Presentation (E&P) being implemented at some TC meeting in Atlanta (limited to use and approval).
- Need for reviewers – if interested contact Tiffany Cox (tcox@ashrae.org).
- Upcoming Specialty Conferences particular to Section 3 committees.
 - ICR 2015 Yokohama Japan
 - CLIMA 2016 Aalborg Denmark

Notes from the Chairs Breakfast will be posted on the TC 3.4 Website.

Subcommittee Reports

Program – Ed Hessell

TC 3.4 related programs in Atlanta:

6/29 – Conference Paper 7 – Refrigerant Measurements in Micro-Enhanced Geometries
Conference Paper 11 – Refrigerant Topics

6/30 – Seminar 37 – Lower GWP Alternatives for R-404A in Commercial and Transport Refrigeration
Seminar 44- Safety & Ventilation – methods of flammability modeling

7/1 - Conference Paper 17 – New Refrigerants and Analytics for Refrigeration
Seminar 63 – Retrofit of Not? Life-Cycle Strategy for Systems with R-22 and High-GWP Refrigerants

Future Programs –

Discussion focused on a dual submission strategy for a seminar or conference paper titled: “Making the commercialization of Low GWP Refrigerants a Reality”. The topic will be submitted as a seminar for the 2016 meeting in Orlando and a conference paper for 2016 in St Louis.

The deadline for the abstract is Aug 10th for an Orlando Seminar, September 10 for St Louis Conference paper or February 8th for a St Louis seminar.

Speakers are Steve Kujak, Bret Van Horn, Joe Karnaz and an Emerson speaker TBA. The talk will be cosponsored by TC 3.2, 3.3 and the Low GWP MTG.

A motion was made by Sonny Sundaeson for the program chairs for TC 3.4, 3.3 & 3.4 to ask the CEC for a Refrigeration track for the upcoming Las Vegas meeting, the motioned was seconded by Marc Scancarello, and the motion carried 9-0-0 (CV).

Handbook - Julie Majurin

The next handbook revision is due in 2018. The Handbook working committee includes: Ed Hessell, Scott Wujek and Chris Reeves. The question was raised if digital options were available to compliment the written text. The idea is to include an on-line calculator for certain properties like Daniel Plots. At this time ASHRAE does not have internal expertise in this area and if TC 3.4 wants to include this technology our options are to: 1) develop member written software or 2) reach out to other TC's that included similar items in their handbook.

Standards – Rob Yost

Standard 86 “Methods of Testing the Floc Points of Refrigeration Grade Oils” – chaired by Warren Clough. Reissued in 2013 waiting to hear back from ASHRAE on comments.

Standard 99 “Refrigeration Oil Description” – chaired by Chris Seeton. Currently the standard is being changed into a guideline. The title, purpose and scope have been completed and approved by the committee. The working team will review again, vote and send to the committee as a guideline.

Standard 172P “Method of Test for Insoluble Materials in Synthetic Lubricants and HFC Refrigerant Systems” chaired by Ed Hessell. The draft standard has been completed. A vote was taken and passed. The standard will be submitted to Standards for their approval then move to the 60 day public review period.

SPC 218 “Method of Test for Lubricant and Refrigerant Miscibility Determination” – chaired by Brad Boggess. The standards committee had its first meeting and achieved balance. The title, purpose and scope have been completed. The working group includes: Rosine Rohatgi, Joe Karnaz, Chris Seeton, Scott Wujek and Roberto Urrego. Brad invited other who are interested in joining the committee to see him.

An idea for a new standard arose in the Standard 97 meeting. The standard would address material compatibility issues between refrigerants, lubricants and system materials. The goal would be to create a pathway for users to make good decisions on what to put into a refrigeration system.

It was suggested that a guideline could be created referencing a number of standards to make this decision. The concept of expanding Guideline #6 was suggested from TC 3.1. Sonny Sundaesan urged that material compatibility warrants a standalone document and should not be rolled into Guideline #6.

An ad hoc committee to be made up of members of the Section 3 TC’s to study material compatibility was proposed. The goal would be to develop what’s needed for a guideline to document a road map of the suitability of system materials. Chris Seeton, Sonny Sundaeson, Scott Wujek, Ed Hessell, Rosine Rohatgi, Julie Majurin, Marc Scancarello and Steve Kujak volunteered for the working group.

A motion was made by Sonny Sundaeson to form an ad hoc committee to study the need for a standard or guideline on Suitability of System Materials, the motioned was seconded by Marc Scancarello , and the motion carried 9-0-0 (CV).

Research – Chris Seeton

Old research needs to be finished and submitted in July for the August RAC meeting.

RTAR 1628 “Physical Property Measurements of HFO/Lubricant Mixtures” - this research number has expired. New refrigerants such as R-1234ze(E) will be added, the work statement will be re-submitted and a new number assigned.

RTAR 1728 was submitted “Development of a Model for the Prediction of oil/refrigerant mixture Properties of Low GWP Refrigerants and Synthetic Oils” was submitted and approved. Julie Majurin will lead this effort with support from Joe Karnaz, Scott Wujek, Chris Seeton and Roberto Urrego. A work statement needs to be developed. The conference call for mid-July or August will be arranged.

A draft RTAR has been finalized similar to RTAR 1628 by Joe Karnaz, Chris Seeton and Scott Wujek; entitled “Physical Property Measurements of HFC/HFO Lubricant Mixtures”. The team has agreed to look at viscosity, solubility and density. The test matrix has been reduced from 80 candidates to 30. A conference call will be arranged for late July to finalize the test matrix and prepare the work statement for submission.

TC 3.4 was asked to cosponsor - Work Statement 1721 – Jacobs Limits & Oil Return by TC 8.1 and (cosponsor) TC 10.3.

A motion was made by Chris Seeton to cosponsor Work Statement 1721, the motioned was seconded by Julie Majurin, and the motion carried 9-0-0 (CV).

New Research Ideas in need of RTAR authors:

1. The need for an RTAR for the research of lubricant foaming tendencies under low GWP refrigerant pressure. Ivan Rydkin of Carrier volunteered to write this RTAR.
2. TC 3.1 are looking for information on odorants in refrigeration systems. Marc Scancarello and Julie Majurin will collect available data on this topic.
3. Rob Yost and Chris Seeton have drafted an RTAR described below. Consideration will be given to blend these ideas into existing RTAR 1728.

Preferential solubility of High Glide Blends in lubricating oils. Safety and Performance.

- Effect of lube from a leak of Flammable Refrigerants.
- Fractionation of flammable fuel.
- The affect lube has on a refrigerant leak.
- Effect of lube in combination with a Refrigerant Leak.

Webmaster – Dave Vincent (Joe Karnaz filling in)

The website is up to date. The website will include: notes from the TC Chair meeting, research notes and an updated membership section.

Membership – Joe Karnaz

TC 3.4 Management Team and Voting Members for new society year identified as follows:

(V) - designates voting member status

| | |
|---------------------------|----------------------|
| Chair | Joe Karnaz (V) |
| Vice Chair | Chris Seeton (V) |
| Secretary | Joe Nigro |
| Research | Chris Seeton |
| Standards | Rob Yost (V) |
| Program | Ed Hessell |
| Handbook | Julie Majurin (V) |
| Member Non-Quorum | Knut Petry (V) |
| ASHRAE Learning Institute | Scott Gustafson |
| Webmaster | Dave Vincent (V) |
| Member | Marc Scancarello (V) |
| Member | Chris Reeves (V) |
| Member | Scott Wujek (V) |
| Member | Sonny Sundaresan (V) |
| Member | Bret Van Horn (V) |
| Member | Raymond Thomas (V) |
| Member | Roberto Urrego (V) |

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

This is an umbrella group with representatives from all section 3 TC's and other TC. The purpose is to support programs and research on topics related to low GWP refrigerants. The group will meet on Wednesday July 1st. The group is trying to put together a mini conference / presentation for Orlando, St. Louis or Long Beach.

ALI – Update - TC 3.4 Represented by Scott Gustafson

The ASHRAE Learning Institute would like a representative from every TC. Scott Gustafson will represent TC 3.4 and provide ongoing updates at future TC meetings.

Old Business – Joe Karnaz

No old business.

New business – Joe Karnaz

The AHRI Flammable Refrigerant Subcommittee (FRS) is conducting a brief survey on research needs to resolve standing issues and knowledge gaps related to the use of flammable refrigerants. The goal is to determine gaps in existing flammable refrigerant research and develop a roadmap with priorities and a timeline to complete the critical research toward the safe use of flammable refrigerants with a focus on 2L refrigerants. The survey has been distributed to TC 3.4 and should be completed by July 10th.

TC 3.4 recognized Mark Spatz of Honeywell for his years of service to ASHRAE and TC 3.4. Mark will be retiring from Honeywell this summer but will continue with his role on the ASHRAE Research Committee.

TC 3.4 recognized and congratulated Alan Cohen on his ASHRAE Distinguished Service Award!

Adjourn – Joe Karnaz

With no further business before the committee, Sonny Sundaeson moved to adjourn. Rob Yost seconded and the motion passed. Chair Joe Karnaz adjourned the meeting.