

**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.)**

TC/TG/TRG NO 3.4 DATE August 7, 2016

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

DATE OF MEETING June 28, 2016 LOCATION St Louis, MO

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Joe Karnaz	2012	Raymond Thomas	2012	Attendance List Attached
Chris Seeton	2014	Bret Van Horn	2015	
Rob Yost	2014			
Roberto Urrego	2015			
Julie Majurin	2014			
Knut Petry	2013			
Dave Vincent	2014			
Sonny Sundaresan	2014			
Marc Scancarello	2013			
Chris Reeves	2013			
Scott Wujek	2013			

**DISTRIBUTION**

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

TAC Section Head:	<b><u>Jay Kohler</u></b>
TAC Chair: TAC Vice-Chair:	<b><u>Michael Bilderbeck</u></b>
All Committee Liaisons As Shown On TC/TG/TRG Rosters:	Steve Kujak – RAC Roberto Aguilo – Handbook Neils Bidstrup – Standards Francis Mills – Special Pubs Tony Giometti – CEC Tracey Jumper – 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 28<sup>th</sup>, 2016 in St Louis at Americas Convention Center Room 122. Members and guests introduced themselves. Guests were welcomed and invited to participate. A sign-up sheet was circulated. The Chair reviewed the ASHRAE Ethics Statement.

### **Confirmation of Quorum – Joe Karnaz**

Joe Karnaz, Chris Seeton, Julie Majurin, Rob Yost, Knut Petry, Dave Vincent, Chris Reeves, Marc Scancarello, Sonny Sundaresan, Scott Wujek and Roberto Urrego were present. Voting members Ray Thomas and Bret Van Horn were not present. With 11 of 13 voting members present a quorum was established.

### **Approval of 2016 Winter Meeting Minutes and 2016 Summer Meeting Agenda - Joe Karnaz**

*A motion was made by Sonny Sundaresan to approve the Orlando minutes, the motioned was seconded by Roberto Urrego, and the motion carried 11-0-0 (CV).*

*A motion was made by Sonny Sundaresan to approve the agenda for today's meeting in St Louis, the motioned was seconded by Dave Vincent, and the motion carried 11-0-0 (CV).*

### **Liaisons – Jay Kohler, Don Fenton, Dr. Niels Bidstrup, Mark Spatz Attended**

Jay Kohler – TAC Section 3 Head – Jay thanked all the attendees for their efforts in support of ASHRAE and reminded people that he was available to help where needed in support of TC section 3 initiatives. Jay reminded the TC chairs to submit their activity sheets before the end of the day. In recognition that this is the last meeting before the roll over roster takes effect, Jay thanked Joe Karnaz for his chairmanship of TC 3.4 over the past few years.

Don Fenton – Handbook – Don reminded the TC that the chapter review should be in progress and that chapter revisions should be in 1<sup>st</sup> draft form by Las Vegas. The next goal is for the TC to vote on the revisions in Long beach next summer. ASHRAE handbook training is available on Sunday at the annual and summer meetings. Training is also available online; Don recommends the handbook team attend training. In the near future handbook updates can be made via an on-line portal – additional information will be available soon.

Dr. Niels Bidstrup- Standards - Standard 86 “Methods of Testing the Floc Points of Refrigeration Grade Oils”- TC 3.4 needs to submit a revision plan for Standard 86 before the end of the day. Niels and Rob Yost discussed the situation with the TC, a vote will be taken at this meeting and the appropriate paperwork will be submitted before the deadline.

Mark Spatz – RAC – ASHRAE is spending over \$1MM on a total \$5MM study of flammable refrigerants. Mark wants the TC members to know that other money is still available through RAC for research projects at this time – if you don't ask you will not receive!

Joe Karnaz and TC 3.4 thanked Mark Spatz for his excellent service as our RAC representative over the past few years – Thanks Again Mark!

## **TC Chair Breakfast – Joe Karnaz**

### TC Chair Meeting Notes – TC 3.4

- New TC membership roster goes into effect after this meeting.
- New TC Website template has been implemented in 93 out of 95 TCs. Please provide and feedback or suggested improvements on this new process.
- Additional E-mail aliases have been created for other positions within the TC such as secretary, program, standards, handbook and webmaster.
- For St Louis 15 TCs are participating in the Remote Participation Meeting (RPM) resulting in 38 total remote meetings. This number is up from the Orlando meeting.
- CEC related discussions:
  - Issues still exist with getting presentations uploaded in a timely manner which is resulting in CEC staff to scramble at the last minute. A three strike rule will be implemented starting in Las Vegas.
  - For St Louis total of 64 seminars; 22 Conference Paper Sessions; 9 Technical Paper Sessions; 8 Workshops and 4 Forums.
  - Seminar and Forum proposal forms for Las Vegas are due August 8<sup>th</sup>.
  - Tracks for Las Vegas and Long Beach are set.
  - Two new program types starting in Long Beach: Panel Discussion and Debate.
  - Mini-Track Options are also available.

## **Subcommittee Reports**

### **Program – Ed Hessel**

#### **TC 3.4 related programs in St Louis:**

TC 3.4 Sponsored Program: Seminar 43 “Lubrication Effects Beyond the Compressor” Tuesday, 11am (225) – great concept with four speakers with different views on a topic – a model for the future. The seminar was well attended.

Technical Paper Session 2. “Challenges and Opportunities with Refrigerants” Monday, 8am (224).

Seminar 55 “System Efficiency Impacts of Low GWP Refrigerants” Wednesday 8am (221)

Conference Paper Session 21 “Experience with Alternative Refrigerants” Wednesday 11am (224).

### **Current Potential Submissions**

1. Seminar “Lower GWP Alternative Refrigerant Evaluations for Centrifugal Compressors”  
Sponsorship: MTG LGWP. Cosponsor 3.2 (and others?).

Potential course of actions:

- a) 3.2, 3.3, 3.4 program chairs to work with MTG and authors to resubmit for Las Vegas.
- b) Role these presentations into a seminar containing other presenters from 3.2, 3.3, 3.4.

## 2. Technical Session (sponsored by 3.2) : "Systems Material and Chemical Compatibility with Low GWP Refrigerants"

Two already accepted technical papers for Las Vegas (Julie Majurin and Elyse Sorenson)

Actions:

- a) Steve Kujak to check with CEC to request that TC 3.2 have permission to incorporate into a technical session.
- b) Ed Hessell to chair.
- c) E. Hessell (TC 3.4), Greg Smith (TC 3.2) to work with authors to generate an abstract and do the submission for Las Vegas

TC 3.4 voted to co-sponsor this technical session. A motion was made by Sonny Sundaresan to co-sponsor this technical session, the motioned was seconded by Scott Wujek, and the motion carried 11-0-0 (CV).

Future Suggestions:

The idea of a refrigeration mini track was discussed at the chairs breakfast. A mini track needs to be submitted 1.5 years in advance and contain at least six sections in the format of a seminar, workshop or forum. CEC will place the sections back to back in the program if accepted. The idea of TC 3.2, 3.4 and 3.3 working together to submit two tracks each was discussed. Other refrigeration compressor and system related TC's could also be asked to contribute.

- A mini track or something smaller will require a unifying topic. Suggestions were as follow:
- Lubrication Considerations for Component Design
- Lubes and Oil Separation / Heat Exchange
- Retrofit: Line Sizing and Oil Return in R404A Retrofits
- Why Lubrication, System Chemistry, and Contaminate Control is Important

### **Handbook - Julie Majurin**

A meeting was held to discuss the 2018 handbook revision. The handbook team is on track to meet the 2018 Revision target dates mentioned above. Chapter revisions will include sections on: Lubricants for HFO refrigerants, lubrication calculations i.e. film thickness, lubrication outside the system / in system / in the TXV. If TC members have suggestions for chapter revisions or additions please forward the ideas to Julie Majurin.

### **Standards – Rob Yost**

Standard 86 "Methods of Testing the Flocc Points of Refrigeration Grade Oils" – chaired by Warren Clough. *A motion for a vote to reauthorize Standard 86 was made by Rob Yost and seconded by Joe Karnaz. The motion carried 11-0-0 (CV).* Appropriate paperwork was submitted before the deadline. It was agreed that Standard 86 remains relevant due to the use of mineral oils in current refrigeration systems. Looking at the next revision cycle Standard 86 needs to have a language update. The committee will look the possibility of revising vs replacing Standard 86. Standard 172 may be able to absorb Standard 86 with a new title.

Standard 99 “Refrigeration Oil Description” – chaired by Chris Seeton. It was agreed to change this standard to a guideline. The new name is Guideline 40 and the guideline is out for public review.

Standard 172P “Method of Test for Insoluble Materials in Synthetic Lubricants and HFC Refrigerant Systems” chaired by Ed Hessel. No change, the standard remains out for public review.

SPC 218 “Method of Test for Lubricant and Refrigerant Miscibility Determination” – chaired by Brad Boggess. The committee met and is moving forward with round robin testing.

An idea for a new standard arose in a subsequent meeting. The standard would address material compatibility issues between refrigerants, lubricants and system materials. Marc and Rosine will work on gathering information to determine if this should be a standard.

At the last meeting it was agreed to form an ad hoc committee to study the need for a standard or guideline on Suitability of System Materials. Sonny Sundaresan will lead this group. TC 3.4 agreed that it would be better for TC 3.2 to handle this project and the move has been suggested to TC 3.2, those members will be informed. This idea will be removed from further TC 3.4 discussion.

### **Research – Chris Seeton**

RTAR XXXX (previously known as RTAR 1628) “Physical Property Measurements of HFO/Lubricant Mixtures” – this RTAR is waiting for a new number to be assigned. A meeting was held and 45 HFO/Lube combinations were defined for the study. The estimated time of completion will be at least 45 weeks at a cost of \$150K. It was decided that this list will need to be paired down. A committee of Chris Seeton, Scott Wujek and Joe Karnaz will continue working on development of a work statement.

RTAR 1728 was submitted “Development of a Model for the Prediction of oil/refrigerant mixture Properties of Low GWP Refrigerants and Synthetic Oils”. Julie Majurin and team is working on a work statement with an estimated completion date of December 2016.

Work Statement 1721 – Oil Return and Retention in Unitary Split Systems Gas Lines with HFC and HFO refrigerants. This is sponsored by TC 8.11 and was conditionally approved by them. Previously TC 3.4 voted along with TC 10.3 to cosponsor. Scott Wujek is our contact on this project.

A RTAR has been proposed named “Foaming Properties of Low GWP Refrigerant and Oil Mixtures”. The work statement was submitted and returned with comments. Mark Spatz offered suggestions on how to proceed. **Ivan Rydkin and Julie Majurin will prepare a re-write and submit it for letter ballot.**

New Research Ideas in need of RTAR authors:

1. Preferential Solubility –

A proposed title is: “Preferential solubility of High Glide Blends in Lubricating oils System Effect on Fractionation”

Marc Scancarello (via Oliver Newton) will make an RTAR recommendation in Las Vegas.

1. TC 8.4 is working on a RTAR on “The effect of oil and refrigerant charge modeling in heat exchangers” – they are considering asking TC 3.4 to co-sponsor this work.
2. Idea proposed to study based on the TC 3.4 seminar presented in St Louis “The Effect of oil drop size on separator efficiency” – Danny Halel, Chris Reeves and Kok-Hiong Kee (all who presented at the seminar) was asked if they would help formulate an RTAR for consideration.

**Webmaster – Dave Vincent**

The website is up to date. The roster will be included on the website if provided.

**Membership – Joe Karnaz**

Management Team

Chair	Chris Seeton
Vice-Chair	Scott Wujek
Secretary	Joe Karnaz
Programs	Ed Hessell
Standards	Rob Yost
Research	Greg Smith
Webmaster	Dave Vincent
ALI Coordinator	Scott Gustafson
MTG Low GWP Liaison	Joe Karnaz

Voting Members

Chris Seeton  
 Scott Wujek  
 Roberto Urrego  
 Dave Vincent  
 Rob Yost  
 Sonny Sundaesan  
 Julie Majurin  
 Knut Petry  
 Chris Reeves  
 Marc Scancarello  
 Joe Nigro  
 John Senediak  
 Steve Spletzer

**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 TCs. The purpose is to support programs and research on topics related to low GWP refrigerants. A meeting update will follow the scheduled June 29th meeting. The big topic of discussion will be the ASHRAE’s decision to spend \$1MM as part of the study on flammable refrigerants in conjunction with AHRI, DOE and others.

**Old Business – Joe Karnaz**

None

**New business – Joe Karnaz**

The TC recognized Joe Karnaz for his service as chair for TC 3.4. – Thanks for a Job Well Done!

**Adjourn – Joe Karnaz**

With no further business before the committee, Chris Seeton moved to adjourn. Rob Yost seconded. Chair Joe Karnaz adjourned the meeting.