

**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 July 24, 2011

TC/TG/TRG TITLE Lubrication

DATE OF MEETING June 28, 2011 LOCATION Montreal, Quebec, Canada

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Joe Nigro	2010	Kirsten Ahrenstorf (IM)	2009	Attendance List Attached
Scott Gustafson	2010	Curt Slayton	2009	
Danny Halel	2008	Raymond Thomas	2007	
Sonny Sundaresan	2009			
David Vincent	2009			
Liwen Wei	2009			
Rob Yost	2008			

**DISTRIBUTION**

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

TAC Section Head:	<u>William Murphy</u>
TAC Chair: TAC Vice-Chair:	<u>Charles Culp</u>
All Committee Liaisons As Shown On TC/TG/TRG Rosters:	Ray Cohen – RAC Ramon Ponce – Handbook Douglas Abramson – Standards John A Clark – Special Pubs Randy Schrecengost – Program Jennifer Leach – 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 Nigro**

Joe called the meeting of TC 3.4 to order at 1:30 pm in the Cote Du Lac Room of the Hilton Bonaventure Hotel Montreal, Quebec, Canada.

## **Introductory Comments – Joe Nigro**

Members and guests introduced themselves

## **Establishment of a Quorum – Joe Nigro**

Voting members Joe Nigro, Scott Gustafson, Danny Halel, Dave Vincent, Rob Yost and Sonny Sundaresan were present. Voting members Curt Slayton, Raymond Thomas and Liwen Wei were absent. With six of nine voting members present, a quorum was established. [Secretary's note: Voting member Liwen Wei arrived shortly after the meeting began.]

## **Report of TC Chair's Breakfast – Joe Nigro**

It has been difficult during the past few meetings to get Section Three presentation sessions on the program. Bill Clock came to the breakfast. Our Seminar 51 "New and Improved Lubricants to Accommodate Low Global Warming Refrigerants" was approved for Montreal so we made it onto the Technical Program this time. There are more spaces in Chicago and San Antonio for topics related to our TC. For this meeting 180 sessions were submitted and only 90 were accepted. Slots are available for San Antonio and potentially for Chicago. Something we submit should be accepted.

CEC mentioned that they are going to announce a conference sponsored by NIST at their Gaithersburg, MD location from September 29 through 30, 2012. It will be dedicated to refrigerants and related issues.

The new roster is available. We will cover changes later in this meeting.

ASHRAE has formed multidisciplinary Task groups MTGs. They will have TCs, TGs and other groups work together on areas of common interest. There are two MTGs so far.

The deadline for nominations for the Hightower Award is September 1.

The ASHRAE Website has program dates and timelines for the upcoming meetings in Chicago and San Antonio. Charles Kulp of Texas A&M is the new TAC administrator.

ASHRAE is reconsidering the topic of speakers at the conferences getting free admission. They want to start charge speakers to attend the conference. The possibility of charging students for attendance is also being discussed.

## **Liaison Comments**

[Secretary's note: Liaisons arrived at various times during the meeting. They are collected here for consistency of topics]

## **Standards – Rick Hall**

Rick spoke in the absence of the Standards Liaison. Warren Clough has been approved as Chair on SPC 86 "Method of Testing the Floc Point of Refrigeration Grade Oils". Standard 99 "Refrigeration Oil Description" will also be revised. Chris Seeton will be Chair of SPC 99 and additional members so far are Ed Hessel, Ken Lilje and Dave Vincent.

## Handbook – Ramon Ponce

Ramon discussed the status of our Chapter 7 in the 2014 Refrigeration Handbook. He FAXed the 2010 Chapter to Liwen some days ago as a start point in the revision process. The chapter number in the 2014 handbook will be changed from 7 to 12. We will need to vote for approval of the 2014 chapter before June 8, 2013 so it will be ready for submission to ASHRAE by June 14 of that year.

## Section Head - Bill Murphy

Bill thanked us for our efforts. The TC chairs challenged the Program liaison at the Chairs' breakfast regarding the difficulty in getting our sessions on the Technical Program. Please send any comments or concerns to Bill through Joe Nigro. The Research budget is getting better. TC 10.10 voted to join our TC, and ASHRAE TAC will handle that. We need to make sure the revised Title, Purpose and Scope are adequate. Our target date for combining TC 10.10 into TC 3.4 is the upcoming Winter Meeting in Chicago. Bill doesn't anticipate problems with that time line. Getting the TC 3.4 roster updated to integrate the TC 10.10 members might take more time.

## Research - Ray Cohen

Ray is rolling off that position at the end of this meeting. Don Bivens will take his place. We have at least one RTAR, 1628 "Properties Measurements of HFO-1234yf/Lubricant mixtures" that needs to be taken care of. We will vote on a work statement during the Research Subcommittee portion of this meeting.

## Approval of Las Vegas TC 3.4 Meeting Minutes – Joe Nigro

Danny Halel moved to accept the Las Vegas Meeting minutes as written, Dave Vincent seconded and the motion carried unanimously.

## Subcommittee Reports

### Program – Ed Hessell

Scott Gustafson submitted a seminar for Montreal but it was rejected. With a renewed effort, we got a submission entered for Seminar 51 "New and Improved Lubricants to Accommodate Low Global Warming Refrigerants". Scott will chair this session in the Westmont room of the Hilton Bonaventure.

Several other topics are on the table. One is to do a follow-up session on lubricants for low GWP refrigerants. Ed will take the lead but we need speakers. Another alternative would be to submit an oil circulation seminar for San Antonio. Pega Hrnjak might provide one or two papers. Junho Hwang and Rob Yost might present as well. The title could be "Managing oil circulation in air-conditioning and refrigeration systems for comfortable daily lives". Sonny Sundaesan moved to cosponsor the seminar with 10.10 and Rob Yost seconded. The motion passed unanimously.

For San Antonio, we have the option to do a second session of lubricants for low GWP refrigerants like tomorrow's seminar. Sonny Sundaesan suggested a seminar on lubrication aspects of low GWP applications. Sonny will target the seminar for Dallas but if progress happens faster, he may try for San Antonio.

Another possible session would be on ways to make lubricant-related improvements in equipment. These improvements could be in terms of EER, reliability, lubricant degradation over time, viscosity effects etc. Joe Karnaz will try to get something organized for San Antonio. Ed Hessell suggested this topic could be combined into something else at a later conference if it doesn't get on the San Antonio program.

Other prospects might be lubricants with CO<sub>2</sub> or the effects of refrigerant/lubricant solubility on microchannel heat exchangers.

Sonny Sundaresan suggested a seminar on the effects of refrigerant glide on refrigeration or air-conditioning systems, considering the effects of enhanced tubing including microchannel heat exchangers, pressure drop and heat transfer. Ed Hessel asked for anyone interested in participating in this seminar to contact him.

### Handbook – Liwen Wei

Liwen is seeking a replacement as Handbook chair. June 2013 is the deadline for the revision of Chapter 7 which will be renamed Chapter 12 in the new Refrigeration handbook. It takes at least a year and a half to gather all the information so we need the new chair up and running right after this meeting.

Collecting the data means confirming the references for all the information that has already been published along with addition of any relevant new information which has become available since the 2010 revision. The first phase is to gather the volunteers and collect all the information. Then the editing starts, after which the Chair will be the person to do final editing and submission of the draft to ASHRAE. The work is typically done at the semi-annual ASHRAE meetings. The interim work is done by e-mail.

Julie Majurin volunteered to become the Handbook chair. Umar Khokar, Rosine Rohatgi, Mark Scancarello, Chris Seeton and Amy Shiflett volunteered to be members.

### Standards – Rob Yost

Standard 86 “Method of Testing the Floc Point of Refrigeration Grade Oils” SPC 86 needs to be revised with updated references. There are five members. Warren Clough is Chair, with additional members Cory Anderson, Brad Boggess, Rick Hall and Rosine Rohatgi. Warren has submitted a request for a Tuesday 10 am time slot.

Standard 99 “Refrigeration Oil Description” is now chaired by Chris Seeton, with members Ken Lilje, Ed Hessel and Rick Hall. The SPC needs one more user, an equipment manufacturing and one general interest member. John Senediak volunteered as a general interest member and now the SPC has balance.

Standard 172P “Method of Test for Insoluble Materials in Synthetic Lubricants in HFC Refrigerants” is being revised. The SPC met on Monday 8 at am. Liwen Wei is SPC Chair, with John Senediak, Rob Yost and Brad Bogess as members. The substance of the task is to change from using R-12 as the refrigerant to R-134a. Figuring out a floc point for R-134a is a far more sensitive determination than doing so for R-12. They have done round-robin testing based on three additives. Additives A and B have known sludging problems. John Senediak and Rosine Rohatgi have done testing. Basically John managed to find a suitable additive. The SPC is working to get the preliminary draft ready for the Chicago meeting and will push back the voting and publication six more months.

### Research – Chris Seeton

The Research Subcommittee Chairs’ Breakfast was held on Sunday morning. There is a new grant arrangement with the Greater Philadelphia Energy Innovation Hub. Fifty thousand dollars per year for two years can be made available for research with the possibility of another twenty-five thousand dollars added if matching funds are available. These grants are available for novel research.

RTAR 1628 “Physical Properties Measurements of HFO-1234yf/Lubricant Mixtures” passed the RTAR stage at the last RAC meeting and is now on its way to becoming a work statement. RAC will take a vote on this RTAR on August 12 and in all probability will reject it as they typically do. Then we will make changes and will resubmit it in Chicago.

Another possible idea is to investigate physical property measurements for R-32/R-152a and R-1234ze mixtures with some lubricant mixtures. Joe Karnaz volunteered to author the RTAR with Steve Kujak.

Another proposal is to start investigating ultra-high pressure viscosity. Chris Seeton volunteered to draft an RTAR. Ed Hessel and Ted Li volunteered to assist.

### Webmaster – Dave Vincent

Dave has transferred everything on to the TC 3.4 website to the ASHRAE server. Now that we're on the ASHRAE server, there is a space for TC 3.4 published papers where we can post presentations provided we have the speaker's approval.

### Membership – Joe Nigro

The new roster has been issued. It is in the membership section of the website. Effective July 1, Scott Gustafson and Raymond Thomas will move from voting members to corresponding members. Also on that date, Ed Hessel and Jay Field will become voting members.

### Old business – Joe Nigro

No old business was brought before the committee.

### New business – Joe Nigro

We need to work with members of TC 10.10 to change the scope of TC 3.4 to incorporate the responsibilities of TC 10.10, "Management of Lubricant in Circulation". Then we need TC 10.10 to approve the rewritten scope followed by TC 3.4 approving that rewritten scope. Then we will forward the scope to TCLS for approval.

TC 10.10 focused on oil return issues, mostly on oil retention outside the compressor. The activity level on TC 10.10 was very low so they have voted to ask TC 3.4 to let them merge into 3.4 and we accepted. We expect to get this done by the annual meeting in January.

We need a revised Title, Purpose and Scope (TPS) to Rick Hall by the end of July so it can be submitted to the Tech Council before their next (October) meeting. Joe Karnaz, Rob Yost and Chris Seeton are the ad hoc committee for the above work. Charles Kulp will replace Bill Murphy as TAC Chair at the close of the Montreal meeting.

### Adjourn – Joe Nigro

With no further business before the committee, Danny Hael moved to adjourn, Sonny Sundaresan seconded and the motion carried. Joe Nigro adjourned the meeting at 3:10 pm.

Attendance List

TC 8.1 Attendance List – Montreal

Name	Company	Status
Joe Nigro	CPI Engineering	Chair/VM
Scott Gustafson	Shrieve Chemical	V Chair/CM
Ed Hessell	Chemtura	Prog Chair/VM
Chris Seeton	Honeywell	Research/CM
David Vincent	BVA Oils	Webmaster/VM
Liwen Wei	Novitas Chem Solutions	Handbook/VM
Ward Wells	DuPont Company	Secretary/CM
Rob Yost	National Refrigerants	Standards/VM
Liz Dixon	Shrieve Chemical	Mbr Non-Quorum
Danny Halel	Hussmann	VM
Sonny Sundaresan	Sundaresan Consulting	VM
Ray Cohen	Purdue	Research Liaison
Ramon Pons	Teleline	Handbk Liaison
Corey Anderson	CPI Engineering	CM
Dale Carr	Chemtura	CM
Warren Clough	Carrier	CM
Alan Cohen	UOP	CM
Matt Irons	Emerson	CM
Joe Karnaz	CPI Engineering	CM
Umar Khokhar	National Refrigerants	CM
Tom Leck	DuPont Company	CM
Julie Majurin	Trane	CM
John Senediak	Intertek	CM
Amy Shiflett	CPI Engineering	CM
Stephen Spletzer	Arkema	CM
Brad Boggess	Emerson	Guest
Hewitt Gaudin	Mexichem	Guest
Pat Gilbane	Sonneborn	Guest
Yunho Wang	University of Maryland	Guest
Richard Kelley	Chemtura	Guest
Ted Li	Shrieve Chemical	Guest
Knut Petry	Carrier	Guest
Chris Reeves	Parker	Guest