

**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 4, 2012

TC/TG/TRG TITLE Lubrication

DATE OF MEETING June 26, 2012 LOCATION San Antonio, TX

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	Liwen Wei	2009	
Danny Halel	2008	Liz Dixon (IM)	2009	
Sonny Sundaresan	2009			
David Vincent	2009			
Curt Slayton	2009			
Rob Yost	2008			

DISTRIBUTION

<i>All Members of TC/TG/TRG plus the following:</i>	
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:	Don Bivens – 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 TC 3.4 meeting to order at 1:30 pm on June 26, 2012 in room 103A of the Gonzales Convention Center in San Antonio, TX. Members and guests introduced themselves.

Confirmation of quorum - Joe Nigro/Ward Wells

Danny Hallel, Joe Nigro, Rob Yost, Curt Slayton, Sonny Sundaresan, Dave Vincent, Ed Hessel, and Jay Field were present. Voting member Liwen Wei was not present and non-quorum voting members Liz Dixon and Kristen Ahrenstorf were also not present. With eight of nine voting members present, the quorum was established.

Liaisons - Bill Murphy, Section 3 Head and Don Bivens, Research Liaison

Bill missed the TAC meeting on Saturday. Keep up the research because that attracts people. Also continue sponsoring programs.

Don Bivens is now Research liaison for Section 3 but he has another assignment coming up as RAC liaison beginning in July. The new research liaison for Section 3 will be Mark Spaatz. From the meetings the research hierarchy has had so far we need to emphasize getting more RTARs and work statements. There has been a downtrend in recent years because of budget constraints. Now we have two million dollars in the budget so we need to get more research work in the pipeline.

Julie Majurin mentioned that Handbook Liaison Ramon Pons would like an update in Dallas on our status with respect to Handbook Chapter 12 lubrication. He needs the draft by June 13, 2013.

Approval of 2012 Winter Meeting Minutes in Chicago - Joe Nigro

Joe Nigro circulated copies of the minutes from the winter meeting in Chicago and asked for possible changes. Rob Yost pointed out that under Standards, John Senediak needs to be shown as a user on SPC 99. Sonny Sundaresan noted that he (Sonny) needs to be added to the cover sheet of the minutes as a member and as being present at the Chicago meeting. Sonny also pointed out that our Research Liaison at Chicago was Don Bivens. The secretary will make these two changes and send the updated Chicago minutes to Webmaster Dave Vincent for posting on the website. Joe Nigro moved to accept the Chicago minutes as amended and Danny Halel seconded. The motion passed unanimously.

TC Chair Breakfast – Joe Nigro

The Chairs' Breakfast notes will be posted on the TC website. ASHRAE will be monitoring a speaker evaluation form and will advise speakers receiving continued low marks on areas of improvements. TAC has approved the formation of two Multi-disciplinary Task Groups (MTGs). TC 3.4 will participate in the Low GWP –Alternative Lower Global Warming Potential Refrigerants MTG with Joe Karnaz as our representative and a voting member.

Hightower Award Nominations are due by September 1, 2012.

ASHRAE is looking for volunteers for Section Heads and to review papers. Sonny Sundaresan and Scott Wujek volunteered.

The Conference and Exhibitions Committee (CEC) has made a ruling that Conference speakers will not longer receive free admission. They will be charged 25% of the conference fee. Conference chairs will also get a discount. A question was raised but not resolved as to whether this 25% rate would apply to the entire conference fee or only to a one-day registration fee.

The Denver meeting will have 25% of the meeting focused on new research. Consider this a call for research papers.

Subcommittees can now officially meet by web conference. ASHRAE is pushing this idea as a cost saver.

ASHRAE's logo is being changed and a new tagline "Shaping Tomorrow's Built Environment Today" is being put in place. Please update your TC website with the new logo and tagline by July 1 of this year.

Subcommittees can meet by the Internet. Call Mike Vaughn MORTS at ashrae.net and he can have it set up for you. Invite your liaison and anyone else on the TC roster. Danny Hallel commented that two TCs tried this in Chicago and concluded that it is probably not a good idea for TC meetings. They suggest doing it only in subcommittee meetings.

Subcommittee Reports

Program – Ed Hessel

We submitted a program for San Antonio with Scott Wujak, Danny Hallel and Yunho Hwang as presenters. Its subject related to Applications and Fundamentals. Its prospects for acceptance looked good. Ed contacted two different track chairs to gather support. The session had been rejected twice before, which usually implies it would get higher priority this time. There were nice comments but we were rejected again. Ed asked for suggestions about how we should proceed now.

The title of the seminar was "Managing Oil Circulation in Refrigeration and Air-conditioning Systems for Comfortable Daily Lives". We have Chris Seeton and either Ken Lilje or someone else from CPI as probable speakers and Scott Gustafson and Eric Shweim as tentative speakers. Ed will try to submit the necessary paperwork in time for the August 13 deadline.

Joe Karnaz is working on putting together a seminar called "Equipment Improvements in Terms of Energy Efficiency Contribution of Lubricants". System manufacturers or compressor manufacturers who would be interested in submitting for Dallas, please call or e-mail Joe Karnaz.

Ed Hessel asked for any other ideas for future programs. One possible idea would be the effect of hydrocarbons on refrigeration system performance. Ed would chair this session and will look for speakers. Send Ed an e-mail if you're interested. If Ed isn't the chair, he still will be the lead in getting it set up. The session is tentatively planned for Dallas.

ASHRAE has given us an option to give a seminar or an informal presentation during our TC meeting. We would need buy-in from authors. The TC discussed this briefly and decided not to do it. Perhaps we could take the session to another venue like the Society of Tribologists and Lubrication Engineers (STLE). Ken Lilje pointed out that if we did, we couldn't claim we were submitting it under the auspices of ASHRAE. Perhaps they would like a session on refrigerant lubricants. The problem with doing a session during a TC meeting is that time for that meeting is so limited. An advantage is that it would be free. TC 8.4 did this for a session on corrosion in heat exchangers. They needed one and a half hours so they asked for a longer research meeting and they had higher attendance than normal. Ed suggested that TC 8.1 might supply two speakers and we could provide one.

We are continuing to try to get the seminar Lubricants for Low-GWP Refrigerants Part II onto the Technical Program in an upcoming ASHRAE conference. Ed Hessel confirms we have sufficient speakers for this to happen in Dallas. It was suggested we try again for time on the Technical Program, with the fallback position of asking for a longer TC 3.4 meeting time slot so it could be presented there if it was once again rejected from the Program.

Danny Hallel pointed out that the more excuses we give ASHRAE not to put us on the schedule, the more they will be willing to reject us from the program. One hundred twenty programs were submitted for the San Antonio meeting, of which only sixty-seven were approved. Seventeen forums were submitted of which only eight were approved.

Joe Nigro moved that we try to get the seminar Low-GWP Refrigerants – Part II approved for Dallas, Dave Vincent seconded and the motion carried unanimously.

Handbook - Julie Majurin

Julie met with Chris Seeton, Mark Scancarello, Amy Shiflett and Rosine Rohatgi and the subcommittee discussed needed revision. Examples in the text still refer to mineral oil lubricants and it would be beneficial to include the POE and PVE lubricants being used with the HFCs as well. Julie went through ASHRAE papers. June of 2013 is the due date.

Standards – Rob Yost

We are the cognizant TC for three Standards, 86, 99 and 172P which is in revision.

Standard 86 “Methods of Testing the Floc Points of Refrigeration Grade Oils” is being chaired by Warren Clough. It is out for public review. If no comments are received, their work is done. Subcommittee members include Brad Bogess, Rosine Rohatgi, Cory Anderson and Rick Hall.

Standard 99 “Refrigeration Oil Description” - Chris Seeton chaired a very productive meeting of the SPCC this morning. They now have to put the information into normative versus informative text.

Standard 172P “Method of Test for Insoluble Materials in Synthetic Lubricants and HFC Refrigerant Systems” In Liwen Wei’s absence Rob Yost discussed progress. The SPC is working on doing round-robin testing. Liwen has agreed to resume the chair position. They will have a meeting after the TC 3.3 meeting this afternoon. Their intent is to add more information about reproducibility and repeatability. They need to check on percentages of member categories. All the text is done. They have agreement from four labs, possibly five, to conduct the round-robin tests. Members are Liwen Wei (Chair), Rob Yost, Joe Karnaz, Alice Riemer, Rosine Rohatgi and John Senediak.

The question was how a new standard gets proposed. The TC decides one is needed and proposes a chair. . The ASHRAE Standards hierarchy takes it from there. Mark Scancarello suggested we consider developing a standard for the Method of Test for miscibility of lubricants and refrigerants.

Sonny Sundaresan proposed another Method of Test, for pressure/viscosity/temperature plots. He volunteered to take the lead on this. A title, purpose and scope are needed as a starting point. Jay Field offered to help Sonny develop his proposal.

Research - Chris Seeton

TC 3.2 has voted to write an RTAR on contamination with R-40 systems. TC 3.4 voted in Chicago to co-sponsor this. A work statement is now being prepared. There is nothing we have to do at this time.

Chris Seeton will submit RTAR 1628 “Physical Property Measurements of HFO/Lubricant Mixtures” to the committee. We have until August 13 to take action or it will roll off onto a longer-term program.

An RTAR has been proposed by Joe Karnaz and Steve Kujak entitled “Physical Property Measurements of R-32/HFO-1234yf and R-32/HFO-1234ze”. The work order is in draft form. It can go forward for approval if it is submitted by August 15.

Another idea came out of the Research Subcommittee meeting. It would be about miscibility of R-32 and blends containing R-32. The general feeling is that it is bordering on pre-competitive research.

Jay Field talked about giving some pure refrigerant/lubricant data and start looking at prospects for us to work on a model to estimate general principles instead of doing extensive testing. Daniel charts would probably be involved. Rather than doing that for all the different blends with all the different lubricants, we could start with one blended refrigerant. The question is whether or not we could do actual measurements on a single components and a lube and combine the results to estimate blend performance via a computer model. That

would be a large project. We could get sponsorship from AHRI or maybe MCLR. The next step is to prepare an RTAR. Julie Majurin, Jay Field, Joe Karnaz and Sonny Sundaresan volunteered to participate.

Chris Seeton asked for any other ideas. Julie suggested a need for understanding variability of different methods of generating PVT charts at different viscosity ranges. Further discussion on this was deferred.

Danny Halel asked if we in the industry know what lubricants to use in CO2 systems that operate in the subcritical or transcritical range? He asked if that is worth a research project? Sonny Sundaresan commented that in lubrication the question is viscosity and that depends on the compressor manufacturer. The important thing is which part of the system is being discussed and whether the system is in equilibrium. Danny suggested that there are a lot of systems that are functioning fine but they don't know why and when those systems fail they also don't know why. CO2 will be part of our future whether we like it or not. We as ASHRAE need to address CO2 lubricants. Sonny said that we need to look at flow regimes, boundary or mixed, and whether we should be concerned with surface lubrication or additives or both. The discussion will be resumed at the next meeting in Dallas.

The question was raised as to whether an MCLR (Materials Compatibility and Lubricants Research – AHRI Program) study ever been done with CO2? Jay Field said it has not.

Webmaster - Dave Vincent

The website is up to date. Let him know anything that needs to be added.

Membership – Joe Nigro

Voting Members in the upcoming 7/2012 to 6/2013 roster will be Curt Slayton, Sonny Sundaresan, Dave Vincent, Dr Yunho Hwang, Scott Gufstason as chair, Joe Karnaz, Brett Van Horn, Ed Hessel and Jay Field for a total of nine voting members. Curt indicated he does not want to be a Voting Member in this roster. Scott will sort this out with Curt outside the meeting.

Danny Halel is rolling off as a voting member as are Joe Nigro, Rob Yost, Liz Dixon and Liwen Wei.

Old Business – Joe Nigro

The Montreal minutes were amended. At the Chicago TC meeting we voted to have Joe Karnaz be the 3.4 representative to the MTG (Multidisciplinary Task Group) with a vote of 8,0,0 chairman voting.

Joe Karnaz updated the status the MTG – it is about alternative lower GWP refrigerants. They had a meeting on Saturday. There are a number of TCs that have members on this TC. The MTG will look for these TCs to coordinate activities and possibly have conference sessions on lower GPW refrigerants. They are planning a webinar in July. The MPG will have a number assigned later on. Right now it is just listed as XXX. Joe asked that this item go forward as an agenda item in future TC 3.4 meetings.

New business – Joe Nigro

Jay field said we should take an opportunity to write a letter to incoming ASHRAE President Tom Watson of Daikin-McQuay to explain to us why we can't get proposed sessions approved for the conference technical program and what they expect we might do as an alternative. Jay moved that the Chair of TC 3.4 write a letter to Tom Watson to this effect. Danny Halel seconded and the motion passed unanimously.

Adjourn – Joe Nigro

With no further business before the committee, Sonny Sundaresan moved to adjourn. Jay Field seconded and the motion passed. Chair Joe Nigro adjourned the meeting at 3:22 pm.

Attendance List

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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
Ward Wells	DuPont Company	Secretary/CM
Rob Yost	National Refrigerants	Standards/VM
Jay Field	Trane	VM
Danny Hallel	Hussmann	VM
Curt Slayton	CSI	VM
Sonny Sundaresan	Sundaresan Consulting	VM
Don Bivens	Bivco	Research Liaison
Ramon Pons	Teleline	Handbook Liaison
Corey Anderson	CPI Engineering	CM
Dale Carr	Chemtura	CM
Warren Clough	Carrier	CM
Alan Cohen	UOP	CM
Joe Karnaz	CPI Engineering	CM
Tom Leck	DuPont Company	CM
Ken Lilje	CPI Engineering	CM
Julie Majurin	Trane	CM
Rosine Rohatgi	Spauschus Associates	CM
Marc Scancarello	Emerson Climate	CM
John Senediak	Intertek	CM
Amy Shiflett	CPI Engineering	CM
Stephen Spletzer	Arkema	CM
Glenn Steinkoenig	Sporlan-Parker-Hannifin	CM
Brett Van Horn	Arkema	CM
Scott Wujek	Creative Thermal Solutions	CM
Eric Anderson	Anderson Engineering	Guest
David Blain	Exxon-Mobil	Guest
Brad Boggess	Emerson	Guest
Chad Bowers	Creative Thermal Solutions	Guest
Patti Conlan	Arkema	Guest
Michael Foster	CPI Engineering	Guest
Pat Gilbane	Sonneborn	Guest

