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404-636-8400

TC/TG/MTG/TRG MINUTES COVER SHEET

(Minutes of all Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/MTG/TRG No. TC 6.06 DATE 7/17/2017

TC/TG/MTG/TRG TITLE Service Water Heating Systems

DATE OF MEETING 6/26/2017 LOCATION Long Beach, CA

| MEMBERS PRESENT | YEAR APPTD | MEMBERS ABSENT | YEAR APPTD | EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE |
|--------------------------------|------------|----------------------------|------------|--|
| William M Healy, Chair | 2016 | Troy Trant, VM, Secretary | 2014 | Raad Bashar |
| Paul E Glanville, VM, Research | 2016 | Dan Snyder, VM, Vice Chair | 2016 | David Desjardins |
| Frank Myers, VM | 2013 | Frederic Goldner, VM | 2016 | Garrett Doss |
| Paul Hikspoors, VM | 2013 | Mr David Seitz, VM | 2016 | Justin Elsatz |
| Carl C Hiller, VM | 2013 | Helen Davis, VM | 2016 | Sean Faltermeier |
| James Lutz, Programs | 2016 | George Kusterer, VM | 2016 | Edwin Huestis |
| Robert Davis | 2009 | Martin Thomas, VM | 2015 | Stan Kutin |
| Louis-Benoit Desroches | 2017 | Amin Delagah, Handbook | 2016 | Rob Janowiak |
| Titu Doctor | 2010 | Devin A Abellon | 2016 | Moamar Mustafa |
| James Earley | 2015 | Rohit Andhare | 2016 | Sun Oung |
| Ronald George | 2015 | Heather L Buckberry | 2016 | Jeff Ramey |
| Russell Johnson | 2013 | Roger W Griffith | 2016 | Catherine Rivest |
| Tim Keane | 2017 | Chris B. Haldiman | 2016 | Matthew Simpson |
| Gary Klein | 2009 | Christopher G Phelan | 2016 | Michael Slater |
| Robert Phillips | 2015 | Ashley Armstrong | 2007 | Judd Smith |
| Harvey Sachs | 2016 | Dane Christensen | 2014 | |
| Ben Schoenbauer | 2016 | Donald J Cleland | 2003 | |
| Lawrence Spielvogel | 2003 | Michael M Collarin | 2010 | |
| Frank Stanonik | 2014 | Mehdi Doura | 2012 | |
| Mike Steinhafel | 2013 | Donald Fisher | 2012 | |

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|---------------|------|------------------------|------|--|
| Kevin Stuart | 2015 | Chris Gray | 2012 | |
| Wayne Webster | 2011 | Alex B Lekov | 2000 | |
| Cory Weiss | 2010 | Lawrence C Markel | 2008 | |
| Aykut Yilmaz | 2016 | Cyrus H Nasser | 2009 | |
| | | Thomas Elmer Neill | 2012 | |
| | | Marc Neufcourt | 2010 | |
| | | John O Richardson, Jr, | 2012 | |
| | | Patrick Riley | 2015 | |
| | | Eric P Rogers | 2012 | |
| | | Kristin Schaefer | 2011 | |
| | | Craig W Selover | 2010 | |
| | | Paul Sohler | 2011 | |
| | | David Springer | 2011 | |
| | | Paul Steffes | 2012 | |
| | | Bodh R Subherwal | 2009 | |
| | | Hessam Taherian | 2014 | |
| | | Greg Towsley | 2011 | |
| | | Alain Trahan | 2012 | |
| | | George Yaeger | 2015 | |

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

| | |
|---|---|
| TAC Section Head: Mark Hegberg | SH06@ashrae.net |
| All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALI, etc.) | See ASHRAE email alias list for needed addresses. |
| Mike Vaughn, Manager Of Research & Technical Services | MORTS@ashrae.net |

1) Call to Order – William Healy, Chair
Self-introductions and determination of quorum

The voting members present were Bill Healy, Paul Glanville, Frank Myers, Paul Hikspoors, and Carl Hiller. That is only 5 of 12 voting members. No quorum at this meeting.

2) Membership/Roster review

The TC roster needs an overhaul. There was discussion of large number of voting members rolling off and several other members whose status needs to be address. David Seitz will no longer be attending ASHRAE conferences and should be asked to step down from TC. There was also discussion of new members and recruitment to replace these positions. Michael Slater was recruited as new web master.

3) Review of Minutes of Las Vegas, January 30, 2017 Meeting

There was discussion of the Las Vegas Minutes. Tim Keane's name was misspelled. No other corrections were necessary. Draft minutes will be mailed out as letter ballot prior to 7/1.

4) Report on TC Chairman's Breakfast

ASHRAE coming up on their 125 year anniversary in 2020 and are looking for articles/journals/seminars to commemorate the celebration. This would be a good chance for a summary of service water heating history. See Bill Healy if you have any interest in writing or contributing to that work.

Basecamp is available for TCs now. There was a short discussion about its usefulness for TCs.

Some discussion of dial-in meetings. Frank Myers says he had good experience, but there have been some dropped calls so you need to pay attention to it. There may be some limits on the number of voting members on the call vs at the in person meeting. Hardware is limited so you need to send requests early. Bill will look into it the rules and availability of the system.

5) TAC Section Head Report – Not present

6) Committee liaison reports

Connor Barbaree, Assistant Manager of Standards-Codes

Connor came to TC to discuss outreach from ASHRAE on codes and standards. This outreach was part of ASHRAE's desire to increase involvement with standards across the organization. ASHRAE is looking for increased participation including commenting on public reviews and joining list serves.

ASHRAE is now accepting recommended code change proposals directly from TCs for any of the model codes that are out there. Also encourages TCs to track the codes that are most important and directly applicable.

ASHRAE always wants to encourage Tech Advisory Group involvement in international standards. You can be a subject matter reviewer and not be a full time member of a TAG. This role allows you to just review information that is important and relevant to your TC work without being a full member.

See the provided handout for lists on involvement methods and helpful resources. This handout also includes a list of the international standards.

Aside discussion from Raad Bashar (SoCal Gas) and Frank Stanonik about the changing EF procedures (DOE) and the impact on programs and utility savings calculations.

7) Subcommittee Reports

a) Programs – Jim Lutz

There were/are three sessions from TC 6.06 at this conference (Long Beach). There were two conference paper abstracts accepted for the winter meeting (Chicago). Jim is soliciting future papers and sessions. Proposals for Seminars/Forums/etc for the Chicago meeting are due August 1st. Jim has a list of possible topics and presenters, but there is still work to be done and opportunities for new ideas, see Jim Lutz.

Abstracts for Conference Papers and Full Technical Papers are due Aug 28th for Houston (Annual Conference 2018). Jim has a list of several potential papers, but is always looking for more.

Additional discussion: Program sessions should be announced as soon as possible so that TC members can plan appropriately. Bill will take this on.

The current pool for TC 6.06 session chairs is limited. The TC is looking for volunteers. Anyone that is interested should see Jim Lutz.

b) Standards – Frank Myers. For individual Standards liaisons see Agenda. These reports were made by each liaison.

TC 6.06 is the lead committee on SPCs 118.1, 118.2, 124, and 146. TC6.06 is co-cognizant on 188, 191, and 206.

SPC 118.1. MOT for commercial water heaters. SPC is working to include commercial heat pump water heaters. The goal is to vote to go out for public review by September. This will probably include/require a small modification to the scope (which requires public review). SPC also had a lot of discussion about the inclusion or exclusion of oil heaters.

Dave (current 118.1 chair) is retiring from the industry and stepping down as 118.1 chair. Chuck (current vice chair) is planned to take over but needs to be confirmed. This is a standards issue, though TC doesn't need to do anything.

There was some discussion on the scope changes for 118.1 and any potential impact on 118.2. Frank S assumes there will not be any impact or overlap.

SPC 118.2. MOT for residential water heaters. Meeting is Tuesday at 1:00 PM. SPC is currently working on responses to public review. All easy and medium difficulty comments have been addressed, only a couple of hard issues to finish. Significant changes will need to go out for public review. These changes may alter the standard significantly enough to require the entire document to go back out for public review.

SPC124-MOT for Combined space and water heating. Meets on Tuesday at 9:00 AM. SPC is working on splitting the standard into two paths. One path is similar to current standard and will test separate system components while a new path is being developed for packaged systems.

SPC 146. MOT for pool heaters. SPC was close to finishing a draft of the standard at their Long Beach meeting. The SPC plans to vote to go out for public review via letter ballot following this meeting. Public review will contain a revised scope to include all pool heaters (including heat pumps). Some confusion as TPS may have already been sent out and approved by ASHRAE.

SPC188/Guideline 12 – Legionella. 118 is the standard and G12 is the guidance for how to handle issues. Guideline 12 has not been updated since 2000, SPC hopes to have a 2017 edition published, but it may be delayed until 2018. There has been lots of hard work on this document and it represents a huge improvement over the 2000 version. There was also some discussion of language in standard 188 that is not code enforceable. The standard is under continual maintenance, and SPC is aware of some of the language issues and is working to address them.

Aside discussion: Lots of the TC6.06 cognizant standards, guides, and conference sessions have overlap. Is there any way to avoid that?

SPC 191 – SPC is working to develop water budgets, which is the same approach 90.1 uses for energy budgets. 191 should be out for public review in the next couple of months.

SPC 206: Has been recently published and should be removed from the list.

90.1: At the TC6.06 meeting in Las Vegas there was discussion about the proposed water flow requirements in 90.1. Those requirements have been approved by 90.1 and should be out for public review in a couple months. The committee is currently working on 2019 version and reviewing user's manual for 2016. The user's manual should be available this year. Frank Stanonik agreed to be liaison officially. Bill will send out a letter ballot and forward results to 90.1 and standards

90.2: The 90.2 committee meets at the same time as TC 6.06 so it is difficult to have a liaison. The version on 90.2 that is currently being worked on has a goal to be 50% better than IECC 2006, which is a 20% improvement on the currently published 90.2.

Gary Klein has made some suggested changes for water distribution requirements in 90.2. There were no major comments from the public review, so the changes are going forward. The proposed change is the same methodology used by HERS to look at the whole DHW system as a system. Distribution, fixtures, water heater choices, etc.

189: Should 189 be added to the list of standard TC6.06 tracks? 189 is an advanced version of 90.1 and should probably be tracked by 6.6. Gary Klein serves on the water committee. Official liaisons get all of the printed documentation that the committee members get (including all official docs). Gary K is willing to do it. Bill will letter ballot. The SPC doesn't have a say if the TC appoints a liaison; they are official.

C) Handbook – Michael Slater sitting in for Amin Delagah

The sub-committee has passed the internal deadline for submitting major change ideas (it was June 1). The next deadline is to have TC to approve the chapter by July 1. Final approved versions are due to ASHRAE July 2018 with preliminary drafts due earlier. Amin and Michael have had some drafts of new text or/and edits on existing text submitted and are incorporating them into the chapter. Michael will send out a copy of the existing handbook chapter.

Ideas/Topics for the new handbook:

Larry S ask if there will be any information on electric heat pump water heaters and guidance on them. The general response was that the current handbook tells people to follow the guidance of the manufacturers for HPWHs and other water heater types.

Should there be a section for pros and cons for all water heater types? Discussion about if this is the right place for that information. It should be guidance for engineers, not consumers. Harvey – lots of the consumer information will be available on the new label. Bill - There is a chapter section on water heating equipment in the chapter that discusses the different types of water heaters. Carl – We don't have applications manuals. Bill – the TC would consider adding this content, if someone drafted it.

As of now the planned changes to the chapter include:

- Geo-thermal water heating
- An update on hotel sizing based on Carl Hiller's research
- An update on the wait times and quantity of water wasted from Gary Klein
- A section of sizing and selection of HPWHs
- Updating UEF vs EF
- pipe sizing and max flow rates based on water sense

- Amin has some commercial kitchen information

The final language needs to be complete by end of summer 2017; to be sure there is enough time for full reviews.

D) Research – Paul Glanville is sub-committee chair

Harvey Sachs will be completing his time as research liaison after this meeting. TC thanks him for his service to the TC and ASHRAE in this role. Harvey gave a report.

- 1) There is currently no delay for approved work statements. They can go out for bid as soon as approved.
- 2) Co-sponsorship with other TCs (with actual commitment) is highly encouraged by ASHRAE.
- 3) Work statements need to give the background for general audience (RAC members) as well as the scoring, deliverables, and work statements (for the responders).
- 4) RAC is starting to move towards project designs with intermediate deliverables.
- 5) Remember that the scoring in the work statement is what the bidders use to decide how they respond to the proposal. Be sure to think about the criteria that the team should have and weight appropriately. This scoring must be used for proposal evaluation.
- 5) Harvey says best practices for commercial water heating distribution and water heater design would be a great proposal.
- 6) Up to 10% of RAC funding is available for transfer docs to turn research into useful docs for practitioners.
- 7) The ASHRAE innovative research grant had 30 pre proposals for things that could substantially change ASHRAE's research and do not fit traditional TCs. The field was narrowed down to 5 full proposals. The winner will be announced in a few weeks. ASHRAE's target is to award 1 per year. Most submissions were university/student based projects for "off the wall" ideas with lots of potential.

Aside discussion: ASPE design guide as an option for tech transfer projects. Carl says the guides needed to be fully rewritten.

Omar Abdelaziz will take over for Harvey.

TC6.06 has is considering being a co-sponsor on an RTAR with TC3.6 on Scalding, legionella, and conservation. Tim Keane is an author. The RTAR is in development and it is out for review from sub-committee members. Frank Myers has started to review and stated that he would not support the current work statement – It is inadequate and has lots of unsupported statements and no deliverables. Frank says the that TC voted to support an RTAR that would fund a literature review of historical documents. The current RTAR doesn't support what was voted on by TC 6.06. There was some confusion over the document that was circulated. It may have been an old draft. There will be a letter ballot for the TC to co-sponsor the final version of this RTAR. TC members were concerned about getting a chance to review and comment, even if they were not on the research sub-committee. There was also concern about the voting process as lots of TC 6.6 voting members are rolling off and would at least like an opportunity to read and comment on the RTAR even if they cannot vote. The plan will be for TC3.6 to make some changes and forward to Paul Glanville and Bill Healy. The RTAR will be sent it out to TC voting and non-voting members for comment prior to voting member letter ballot.

Frank Myers reiterated his support of the idea of the project that TC6.6 voted to support in the past (a comprehensive review of the past research and the state of the industry). There was additional support from the TC that the RTAR needs to consider distribution design and system/distribution temperatures as well.

An additional work statement that was first drafted 6 years ago has been reopened. This work statement looks at water use in office buildings and uses a similar methodology to the just completed

hotel project. This project will be submitted as a work statement and will be sent out in letter ballot prior to next meeting.

E) Website: Helen has stepped down from TC and role as webmaster. Michael will take over.

8) Old Business

MTG-OBB: Jim Lutz is a voting member and acting liaison. Water heating is completely an occupant based behavior and should be important to the MTG. The group is still figuring out the various perspectives on occupant behavior and is writing a white paper. This white paper is a scoping of the group and the MTG is looking for people to review and look at it. Any interested parties should talk with Jim.

9) New business

WaterSense program. Jim Lutz was approached by EPA asking for support for EPA WaterSense program. EPA WaterSense is the water version of EnergyStar. The funding for WaterSense is under threat from new administration. They are asking for letters of support from other organizations and hoping ASHRAE would be involved. Jim would like this committee to ask ASHRAE to sign a letter of support. WaterSense is a voluntary program. Manufacturers submit products to get the label, must be tested. The program is a money generator. There was discussion of a TC6.06 letter ballot to gauge committee's support. There was further discussion about if this letter was appropriate for ASHRAE and/or TC 6.06 to support. General agreement that this was a bigger deal within ASHRAE than just TC 6.6 and that EPA and ASHRAE higher up should have the discussion. Jim Scarborough was identified as the ASHRAE person. The plan of action is for Jim Lutz to refer WaterSense to Jim S. at ASHRAE.

Frank Stanonik shared his presentation from the ACEEE hot water forum that shows how the minimum EF rating will change under UEF at various usage bins. Bill Healy will distribute to the TC.

Harvey related discussion from George Chapman at CEE, that the differences from minimum legal efficiencies for most water heaters have not justified a program. The only programs are for high efficiency equipment and those have small participation numbers.

10) Adjourn

Action Items:

1. Membership adjustments. Assess old members rolling off, new additions, and inactive members.
2. Send out Las Vegas minutes for approval via letter ballot
3. Assess the use of dial-in access for TC6.6 in Chicago, both equipment availability and voting rules for in person vs phone.
4. Submit programs (seminars, etc) for Chicago
5. Recruit papers for future conferences
6. Compile list of volunteers for chairing TC 6.06 sessions
7. Remove SPC 206 from the standards portion of the TC6.06 meeting agendas
8. Vote on SPC liaisons via letter ballot. Frank S for 90.1 and Gary K for 90.2.
9. Add SPC 189.1 to the list of Standards the TC tracks
10. Send out a copy of the handbook to TC members.
11. Circulate draft language for new handbook information whenever possible
12. Circulate the most current draft of the co-sponsored (TC 3.6 & TC 6.6) RTAR on Legionella. Get feedback from both voting and non-voting members.
13. Send out RTAR on office building water usage for committee approval via letter ballot
14. Follow up with EPA on the WaterSense program. Put EPA directly in contact with ASHRAE.

15. Share Frank Stanonik's presentation from ACEEE HWF on the EF v UEF