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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/TRGNO:**        TC2.7                **DATE:** 08/20/15

**TC/TG/TRGTITLE:**    Seismic and Wind Resistant Design

**DATE OF MEETING:**   06/30/15                                **Location:** Atlanta,GA

<b>MEMBERS PRESENT</b>	<b>YEAR APPTD.</b>	<b>MEMBERS ABSENT</b>	<b>YEAR APPTD.</b>	<b>EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE</b>
Robert Simmons	07/01/2013	David Jeltos	07/01/2013	Karl Peterman
Panos Papavizas	07/01/2013	Okan Sever (Non-Quorum)	07/01/2013	Harold Dubensky
Paul Meisel	07/01/2013	Martin Deveci(Non-Quorum)	07/01/2013	Richard Sherren
Jim Tauby	07/01/2013	Don Warick, Jr	07/01/2014	John Giuliano
Pat Marks	07/01/2013	Paul Selman	07/01/2014	Chelsea Welch
Scott Campbell	07/01/2011	Greg Meeuwsen	07/01/2012	Nathaniel Deibler
Matthew Hooti	07/01/2014	Barry Williamson	07/01/2014	Stephen Duda
		Daniel Abbate	07/01/2011	Jim Carlson
				Doug Fitts
				Angela Waters
				David Bloom
				Neil Savory
				Jack Wang
				Philip Caldwell
				John Iacobellis
				Kevin McFaddin

**DISTRIBUTION:**

ALL MEMBERS /CM OF  
 TC/TG/TRG Section 2 Section  
 Head

## TC 2.7 Seismic and Wind Resistant Design

**Committee Scope:** Technical Committee 2.7 is concerned with fundamental scientific and engineering design principles for seismic and wind resistant design of HVACR equipment and building mechanical/electrical service systems.

**Chair:** Robert Simmons, Petra Seismic Design, [rsimmons@petraseismicdesign.com](mailto:rsimmons@petraseismicdesign.com)  
**Vice-chair:** Patrick Marks, Johnson Controls, [patrick.c.marks@jci.com](mailto:patrick.c.marks@jci.com)  
**Secretary:** Matthew Hooti, Vibro-Acoustics, [mhooti@vibro-acoustics.com](mailto:mhooti@vibro-acoustics.com)  
**Website:** <http://www.ashrae.org/technology/page/1727>

1. Meeting was called to order at 3:39 PM.
2. All present members and guests introduced themselves. See summary/cover sheet above.
3. Quorum was established with 7 of 13 quorum voting members present. The non-quorum international members were not present.
4. **Previous minutes from New York were posted to the website.** Minutes from last meeting in Chicago was approved <http://tc27.ashraetcs.org/meeting%20minutes/tc%202-7%20minutes%20Jun%202013.pdf>
5. **TC Chair's Report** (Robert Simmons)
  - In conference CEC, break down of tracks for St. Louis were provided. Advances in Refrigeration Systems and Alternative Refrigerants, Research Summit, Fundamentals and Applications, HVAC Systems and Equipment, Smart Building Systems/Remote Monitoring and Diagnostics, Indoor Environment: Health, Comfort, Productivity, Professional Skills Beyond Engineering and Renewable Energy Systems and Net Zero Buildings are the Tracks for St. Louis. Conference Papers due January 4, 2016 and Seminar, Forum and Workshop proposals are due February 8, 2016. We did not get any programs this year. CEC welcomes suggestions for tracks and putting together an entire track of programs in cooperation with other TC's is also encouraged. Track subjects are typically determined 14-15 months prior to a conference. For more details please review CEC handout in the appendix.
  - Starting at the 2016 Annual Meeting in St. Louis, speakers will be asked to fill out a potential sources bias disclosure document that will note an affiliations/involvement with any organizations with financial or commercial interest in the subject matter to be discussed, in accordance with the ASHRAE code of ethics.
  - Everyone is encouraged to updates their BIOs and add the type of professions. ASHRAE wants to have a data base to link it to TC and balance the TC. There is a new category which is employment discipline that needs to be addressed.
  - Thanks you letters will be send out contact Robert to provide it.
  - TC master calendar available on Google. Works well with TC schedules:
    - <https://www.ashrae.org/standards-research--technology/technical-committees>
  - Code of ethics on the website to be read and agreed by the members

6. **Honors and Awards** (Steve Duda) – Steve discussed the levels of awards.

George B. Hightower Award:

- Recognizes excellence in volunteer service in the area of Technical Committee, Technical Group, and Technical Research Group activities, excluding Research & Standards (which have separate awards).
- Our nominee from TC 2.07 last year was Paul Meisel, and his nomination was forwarded to TAC for final selection. Paul has more than the required points and has served TC 2.07 faithfully for a long time, including programs and papers, a tour through the Vice-Chair and Chair positions, and his service to the Seismic Chapter of the Applications Handbook, having contributed in three consecutive editions (2003, 2007, 2011). However, TAC only awards one per year, and they chose a different candidate.
- Action Item: TC 2.7 needs to decide whether to re-submit Paul Meisel or submit another candidate. Nominations for the next award cycle are due September 1, 2015. Desirable qualities include Seminar and Conference Paper programs, Handbook & Program subcommittee work including officer positions, and service as TC officer.

Service to ASHRAE Research Award:

- Recognizes excellence in volunteer service in the area of Society research. Desirable qualities include authorship of RTARs and Work Statements, participation or chairing of multiple PMS and PES, and Research subcommittee work including Research Subcommittee Chair. This award is for a volunteer in support of Research, not a paid researcher and not a donor to ASHRAE Research.
- TC 2.07 did not have a nominee last year. Nominations are due September 30 each year, and Steve would like to submit our strongest candidate each year.

ASHRAE Fellow:

- Recognizes distinction in the arts relating to the sciences of heating, refrigeration, air conditioning or ventilation, or the allied arts and sciences, or in the teaching of major courses in said arts and sciences, or who by reason of invention, research, teaching, design, original work, or as an engineering executive on projects of unusual or important scope, has made substantial contribution to said arts and sciences, and has been in good standing as a full grade Member for at least ten (10) years is eligible for election to the grade of Fellow.
- New nominations are due December 1 of each year. Please help me identify suitable candidates from this TC, including yourself if you feel you are eligible. **Steve has a candidate from TC 2.07 in mind** and will work to obtain the necessary biographical data – he is confident that there are others who also qualify.

Distinguished Service Award:

- Recognizes members who have served ASHRAE faithfully as a member of committees or otherwise giving freely of his/her time and talent on behalf of the Society. Lifetime cumulative points-based system with a minimum of 15 points required.
- The points tally sheet is available on the ASHRAE website or directly from Steve Duda.

- Recipient from TC2.7 this year: Congratulations to **Paul Meisel!** He received his award at the Saturday Plenary of Conference, June 27<sup>th</sup>, 2015.
- On Behalf of TC2.7, Steve formally nominated Greg Meeuwssen this year, and the nomination is pending. If approved, the formal award presentation will be at the plenary session of the 2016 Annual Conference in St. Louis.
- New nominations are due May 1 of each year. Self-nominations are permitted. Please help Steve identify additional suitable candidates from this TC, including yourself if you feel you are eligible and have not yet received this award. There is no quantity limit on nominees.

Exceptional Service Award:

- Recognizes members who have served the Society faithfully and with exemplary effort, far in excess of that required for the Distinguished Service Award. Lifetime cumulative points-based system with a minimum of 45 points required.
- The points tally sheet is available on the ASHRAE website or directly from me.
- New nominations are due May 1 of each year. Self-nominations are permitted. Steve requested from the members to help him identify additional suitable candidates from this TC.

Other Awards on Steve's Radar:

- **Standards Achievement Award.** Recognizes excellence in volunteer service for developing ASHRAE Standards and/or Guidelines. Nominations are due annually on September 30.
- **Pioneers of the Industry Award.** Honors deceased individuals who have made milestone contributions to the growth of HVAC&R. Candidates must have shown evidence of distinction, either technically or academically. This is one of the very few ASHRAE Honors to be awarded posthumously. **ACTION ITEM:** It has been suggested to me that this may be an appropriate vehicle to honor the memory of Marx Ayres, Warren Blazier, or Ted Carnes. Nominations are due December 1 each year, and a maximum of two are awarded per year. Our TC would need to agree on one nominee to submit.
- **Andrew T. Boggs Service Award.** Recognizes a past Exceptional Service Awardee for continued, unselfish, dedicated and distinguished service to the Society.
- **Louise & Bill Holladay Distinguished Fellow Award.** Recognizes a Fellow of the Society who continues preeminence in engineering or research.
- **F. Paul Anderson Award.** Honors a member for notable achievement, outstanding work or service in any field of the Society. This is ASHRAE's highest honor.

7. **Long Range Planning (Matthew Hooti) :**

Since 2014, the following subjects have been considered for Long Term Planning:

- Push, lobby or otherwise pursue an agenda to move Mechanical Engineers into the lead position (or at least an equivalent position to Structural Engineers) with regard to the design, selection and incorporation of seismic and wind restraints for non-structural components. (Robert Simmons and Paul Meisel)

- Improve accountability with regard to the quality of installations (Robert Simmons)
  - Clear definition of Seismic/Wind compliance scope (what components are included and how each impacts conformance)
  - Clear understanding of the load path (what factors need to be included and considered)
  - Improved understanding of issues (what it takes technically to do it right)
  - Inspection Training (how to inspect, what to look for, what is good, what is not)
- Increasing the scope of TC2.7, including standards for HVAC equipment testing and certification (Robert Simmons)
- System Performance approach for Seismic and Wind calculations for HVAC equipment (Scott Campbell)
- Effect of Wind barriers or complex and multi-stage restraints on the load applied to equipment (Panos Papavizas and Rober Simmons)

In Atlanta TC2.7 members decided to move forward with the following topics:

- Improve accountability with regard to the quality of installations (Robert Simmons and Jim Tauby )
  - Contacting PE boards to include an article in their bulletin. We need to discuss with ASHRAE on how it should be preceded (Jim Tauby)
- System Performance approach for Seismic and Wind calculations for HVAC equipment (Scott Campbell)
- Increasing the scope of TC2.7, including standards for HVAC equipment testing and certification (Robert Simmons) :
  - Robert will prepare a proposal on this (Seismic, Wind and Other Extreme Environmental Events) to be review by the members and proposed to ASHRAE

Vote: 7, 0, 0

## 8. Publications Subcommittee (Jim Carlson)

- **Practical Guide (Jim Tauby):** nothing new, the book continues to be a good seller
- **Handbook (Jim Carlson):** We missed the deadline. We have to start all over. Having an electronic version was suggested since hard copy will be prepared in 4 years. There will be some changes on wind that can be incorporated for Electronic versions.
- **Other publications:** Nothing New to report

## 9. Programs Subcommittee (Karl Peterman)

No programs were accepted by ASHRAE for us to present in Atlanta. Orlando January 2016 (submission deadline August 10)

1. Doug Fitts putting together seminar regarding codes, standards and research for wind restraints and design including three speakers:
  - Steve Bassett on new Florida building codes and product requirements
  - Tim Reinhold on upcoming changes in ASCE 7
  - Murray Morrison on current research into wind effects on rooftop equipment
2. Robert Simmons will be working with TC7.2 (Design/Build) to present a session on integrating seismic restraint with building design.

#### St. Louis June 2016 (submission deadline February 8)

1. Robert Simmons will put together a session on Critical Facilities including:
  - A speaker from EGSA regarding on-site power
  - John Giuliano on shake table testing and certification
  - Jim Carlson on FEMA P1019
2. Doug Fitts will put together a session on housekeeping pads hopefully getting someone from ACI and Jim Tauby to discuss the Practical Guide

#### Las Vegas January 2017

1. Possible session on Back to the Basics
2. Possible session on updates to ASCE 7 (Scott Campbell)
3. Possible session on the results of shake table testing changing manufacturer behavior and design

Programs chair will contact ASHRAE personnel to check on possibilities for getting a dedicated program track for the Las Vegas meeting. Suggestions for topics to be covered include cybersecurity, back to basics, something with TC2.6, guidelines on writing specifications.

### 10. **Research** (Panos Papavizas)

#### General

1. ASHRAE has 61 active Research Projects with a total value of \$10M.
2. Since July 1, 2014: 11 projects were completed; 11 new projects were approved for funding, including 1692-RP; 13 Tentative Research Projects (TRP's) were released for bid.
3. RAC will be implementing new project funding (i.e., stage funding) and monitoring protocols in order to: 1) improve the process of monitoring projects by incorporating checks and balances in the process; 2) develop a close relationship between deliverables and payments; 3) identify signs of budget overruns; 4) stop projects if necessary and when appropriate to avoid additional costs.
4. Stage funding will be accomplished as follows: 1) all WS and TRPs must have milestone and cost charts; 2) all proposals should have a milestone and cost chart, but bidders may propose different terms; 3) a questionnaire will be sent to the PMS Chair at each milestone to obtain the project status; 4) payments at each milestone level will be made after approval by the PMS.
5. The 2014 ASHRAE Strategic Plan now includes a new initiative titled "ASHRAE's Role in the Residential Sector". The goals of this initiative are to translate science & technology into practical tools that drive effective building design, operation, and management, to perform research into improving the residual built environment, and to have increased residential emphasis in TAC and RAC.
6. RAC is in the process of developing web-based training modules for RTAR writing, WS writing, PES functions and responsibilities, and PMS functions and responsibilities. The target completion date is June, 2016.
7. The current Section 2 research liaison, Harvey Sachs, has moved to Section 6 effective July 1. The new Section 2 liaison is Pawel Wargocki, Associate Professor at the Technical University of Denmark.
8. The Research Subcommittee Chairs' Breakfast Presentation from Monday, June 29 is attached in appendix for reference.
9. As a reminder, research projects up to \$100K require TC and RAC approval. Projects between \$100 and \$200K require TC, RAC, and Technology Council approval. Projects over \$200K require TC, RAC, Technology Council, and Board of Directors approval.

### **1692-URP: Effects of Shielding on the Wind Loads on Roof Mounted Equipment**

- The unsolicited research proposal (1692-URP) from IBHS was approved for funding at the April RAC meeting.
- Contract negotiations for the research project were completed in early June. The project number is 1692-RP.
- The roster of members that will serve on the Project Monitoring Subcommittee (PMS) was finalized at the TC meeting. The PMS members are:
  - Panos Papavizas (Chair)
  - John Giuliano
  - Mike Morby
  - Harold Dubensky
  - Chelsea Welch
- The PMS roster was provided to MORTS and the RAC research liaison on July 2, 2015.
- The project is scheduled to start on September 1, 2015. Some discussions with IBHS will begin before the project start date.
- Dr. Murray Morrison, the principal investigator at IBHS, will prepare of list key topics that require PMS and TC consultation.
- Tentatively, PMS meetings will be held at 8:00 am on the same day as the TC2.07 meetings at the winter and summer conferences. Additional meetings between conferences may be necessary, including a site visit to the IBHS research facility in South Carolina.

### **Other**

- A possible research project to investigate the basis of the seismic restraint exemption for components weighing less than or equal to 75 lb that are in-line with a duct system was suggested by Karl Peterman.
- Robert Simmons and Jim Tauby will prepare an RTAR for the 75 lb exemption investigation. TC5.2 and TC5.3 were suggested as possible partners in the research project.

### **11. Membership (Robert Simmons)**

- Other new officers:
  - Robert Simmons, Chair
  - Pat Marks, Vice Chair
  - Matthew Hooti, Secretary and long range planning
  - Panos Papavizas, Research Chair
  - Karl Peterman, Programs Chair
  - Jim Tauby, Standards Chair/Web Master
  - Jim Carlson, Publications/Handbook Chair
  - Paul Selman, Code Subcommittee Chair
  - Don Warick – ALI Coordinators
  - Steve Duda – Honor
  - Harold, John G., and Doug Fitts roll on after July
  - Pat, Danie Abbate Scot and Panos to Roll off after July
- Rolling off:
  - Pat Marks, Daniel Abbate, Scott Campbell and Panos Papavizas

- Rolling on:
  - Harold Dubensky, Doug Fitts, John Giuliano
- After July 2015, there will be 11 members and 2 non-quorum members

#### 12. **Standards Subcommittee** (Jim Tauby)

- SPC 171: Met on Tuesday June 30<sup>th</sup> at 8:00 am. We need to make small groups to rewrite the document and have a conference call in Sept. The plan is to be ready for review by Orlando.
- SPC197: (Pat Marks/Jack Wang) Steven Emmerich (SPLS Chair) and John Clark (SPLS Liaison) advised the committee to disband for now, and repurpose when appropriate. The committee, motioned by Patrick Marks, second by Karl Peterman, voted 4-0-0-2 to officially disband the committee. With Regards to David H research, Committee member suggestions: (1) Using a bigger load cell or impedance head as big as the cap; (2) Try symmetric isolators to see if both methods achieve the same IL results. (3) Try different compression load. David expressed appreciation of committee feedback and suggestions on his research, and would like to continue update members in future TC meetings. Future discussions will be conducted in TC2.6 vibration isolation subcommittee, or hot topic section.

13. **Website** (Jim Tauby) - The website is up to date, Jim Tauby sent TC2.7 Chair and Secretary the passwords to log on and change things when necessary.

#### 14. **Liaison Reports:**

- **TG 2. HVAC Security** (Scott Campbell) – Met On Tuesday June 30<sup>th</sup> 2015. TG2 was asked to participate with other TCs in ASHRAE in endorsing an agreement with CIBSE to co-author a document (living-on-line document) on how best to protect HVAC systems and their controls from cyber-attack. TG2 is updating “Guideline 29” and will include cyber security issues. TG2 sees itself as migrating toward being a clearinghouse and an open forum for HVAC security information within ASHRAE. It is not our intention to be the experts on security as it affects the various TCs within ASHRAE, but to be a central committee that will gather information on security issues and techniques from the various committees and other sources and make them available to interested parties inside and outside of ASHRAE.
- **TC 2.6 – Sound and Vibration control** (Pat Marks/Jack Wang)  
Improvement ideas/suggestions on ASHRAE application handbook chapter 48:
  - Steve Wise and Reggie Keith suggested, in Chicago meeting, improving handbook vibration isolation selection by categorizing source equipment types and guidelines rather than current table format. Providing isolator selection examples by equipment type, such as screw chillers.
  - Matthew Hooti suggestion: Mentioning the effect of VFD and variable speed equipment.
  - Paul Meisel comment: For cooling tower applications, some people encountered problems with spring isolators, which were shorted during winter in cold climate when the water was drained out. The water may weigh as much as the cooling tower. This is due to the small clearance of spring deflection, typically about 0.25”, due to installed seismic/wind constraint. Using air spring, while more expensive, would avoid this problem because of self-leveling capability. This would be good to be added as an example.
- **TC5.1 - Fans:** The main item with fans is the proposed DOE fan regulation. Wade Smith with AMCA reported on the Status of negotiations with the US Department of Energy (US DOE) to regulate fans. As of 6/29 there have been 8 meetings of the “Fans and Blowers Working Group” with DOE. Additional meetings are scheduled thru the fall of 2015. Scope is 1 – 200 bhp fans; considering two broad fan categories (sub-



groups by fan utility) 1. Ducted Outlet 2. Not-ducted Outlet. The direction is the DOE Required Efficiency = Target Efficiency \* CFM factor \* Pressure factor

- **TC 9.9 – Mission Critical Facilities, Data Centers, Technology Spaces and Electronic Equipment (Jim Carlson)** Nothing New To report
- **TC 9.4 – Justice Facilities** (Doug Fitts) – Nothing New to report. From previous meeting it was noted that TC9.4 is developing design guide for justice facility and security assignment were made there would several chapters on design guide. Seismic would be part of design chapter. Doug to send the design guide to member of TC 2.7 for review and comment on Seismic and wind
- **TC 6.1 – Chilled water plant**, Eric Rogers is writing a chapter and he would like to get some input on TC2.6 and TC2.7
- **ASCE 7 (Panos)** – There is no update regarding ASCE 7-16, Chapter 29. From previous meeting it was noted that in Chapter 29 ASCE 7-10 wind load pressure calculation for roof top equipment, there is no consideration on vertical pressure for equipment on building over 60'. This will be addressed on 2016 and it will be consistence with all building codes
  - **On the seismic side:** (Karl Peterman) nothing new to report - it was noted from the previous meeting that at TC 8 many people are unaware of the supplement of the ASCE-7. Note that there is an Omega-subzero value which has to be used in determining the design loads for attachments to concrete. This results in a factor of 2.5 that need to be applied to the horizontal load. ASCE 7 continues to discuss on this matter. There will be some clarifications and changes coming in the 2016 version which pertains to seismic restraint of non-structural building components.
    - Clarification on 20# , 12" and 75# rules
    - Concern on AHRI Standard on Seismic – Since it allows engineering judgments
- **ICC** (Jim Carlson) - No changes to chapter 17. Phil Caldwell – ASCE is evaluating whether it should acquire the AC-156 standard. ICC will move its HQ after publishing their standards.
- **NFPA** (Jim Tauby) - NFPA voted on approved amendments to the anchor bolt section and the size and design of pipe stands.
- **BSSC** (Robert Simmons) – Nothing new to report.
- **NHERP** (Scott Campbell) – Nothing new to report. Switched to an issue-driven format. Non-structural components were not an issue, so they were not discussed. Caldwell – FEMA has tried to take money from other projects and get non-structural back on the agenda, but they were unable to get the funds.
- **VISCMA** (Don Warick) – Don was not present in Atlanta. John Iacobellis reported on behalf of Don Jr. The new website is updated to give additional guidance to the installing contractor and specifiers. The policy for the free uploads has been placed. FEMA 412, 413 and 414 will be updated and published by VISCMA for free download. VISCMA is working on defining Meta Tags to make it easier for the search engine to find VISCMA. There are new topics the VISCMA is focusing on:
  - Webinar on Wind – VISCMA document on seismic Installations
  - VISCMA & Smart phone
  - Installation videoVISCMA is finalizing a white paper on Wind load to be sent to code official, providing wind requirements for nonstructural components. Going forwards, VISCMA will be sending out monthly Bulletins.

- **SMACNA** (Eli Howard) –Nothing new to report
  - **AHRI** (Pat Marks/Harold D.)
    - AHRI continues to work with ASCE and IBC to get the AHRI standard referenced in the International Building Code.
    - AHRI 1310: As of 5/27/15, Engineering Express, the consultant, is addressing a list of comments from the 1310 standard engineering committee. They are close to finishing the draft. Danny Abbate of AHRI is formatting the standard to AHRI's requirements before creating an SI version and getting the balloting process started.
  - **ATC69** (Jim Carlson) Nothing new to report - FEMA 74 is now online. ATC-58 is under development – approach is performance-based design. A Standard is being prepared for emergency power to critical facilities. Had a meeting in spring and in August to finalized the standard in October 2014 – Standard is still not finalized
  - **ASTM** (Karl Peterman) Task meeting has been arranged to change parameters for seismic – Have standard for ceiling – issues on perimeter angles next ASTM is in April open to make changes
15. **Old Business:** None
16. **New Business:** None. LinkedIn group to have a better communication After SPC 171 time spot would be allocated for Hot topics and Long term planning
17. **Revisit the scope and title to include Extreme Event**  
Robert will prepare a proposal on this (Seismic, Wind and Other Extreme Environmental Events) to be reviewed by the members and proposed to ASHRAE
18. **Next Meetings : Orlando Jan. 2016**
19. **Adjournment: The meeting was adjourned at 5:23 PM**

# Appendix

- **Conferences and Expositions Committee Information Items for Technical Committees Handout – 06/15**
- **Research Subcommittee Chair’s Breakfast Presentation – 06/29/15**