TC Cover Sheet
TC 6.3, Central Heating and Cooling

June 28, 2005

Attendance (ending year of membership)

**Members Present**
John Andrews (06)
Paul Francisco (06)
Roger Hedrick (05)
Chuck Gaston (05)
Mark Modera
James Cummings (07)
Mark Olsen (06)
William Rittelmann (07)
Bryan Rocky (07)
Jeff Siegel (07)
Steven Tice (07)
Iain Walker
Gary Nelson (07)
Arun Vohra (07)

**Members Absent**
Martin Petchul (06)

**Corresponding Members Present**
Paul Haydock
Erv Bales
Harvey Sachs
Roy Crawford
Jim Crawford
Kamel Haddad
John Proctor
Michael Lubliner
Alex Lekov
Keith Temple

**Guests**
Kevin Weaver
Jim Kubokawa
David Knowles
Bill Walter
Bert Phillips
Bill Thomaston
David Springer
Sunil Nanjundaram
Byron Horak
Jim Lutz
Karim Amrane
John Talbott
Jim Mullin

**Distribution**

All entries shown on committee roster

ASHRAE TC6.3
Central Forced Air Heating and Cooling

Minutes of Meeting
June 28,2005
Denver, Colorado

**Call to Order**

The meeting began at 1:00 p.m. in Plaza Court 1 room of the Adams Mark Hotel. A quorum was present and introductions were made.

**Minutes of Last Meeting**

Minutes of the Orlando meeting were discussed Two minor corrections to member categorization were made. Moved by Chuck Gaston, seconded by Mark Modera to accept the minutes. Motion passed 12-0-0.

**Announcements**

Chair John Andrews discussed various items from the TC Chairs breakfast.

The Research liaison to Section 6 visited briefly and asked for questions or comments. Mike Lubliner complimented the society on its strategic plan.

**Commented [rlh1]:** I did not get the name of the liaison. If someone knows it, we should include it here.

**Subcommittee Reports**

*Handbook*

John Andrews discussed handbook activities. The next due dates for revisions of the TC's chapters are not until 2007, so there was not much activity. Steve Kowalski is planning to rewrite chapter 28 of the HVAC Systems and Equipment handbook, and is looking for people to assist. Mike Lubliner discussed the changes to Chapter 9, and the hope that the changes to Chapter 28 can be tied into that chapter.

*Programs*

Keith Temple distributed a program plan (Attachment 1). The symposium sponsored by the TC was shortened by programs committee to 50 minutes, which only allowed each of the speakers about 15 minutes. The Program Subcommittee recommends that the TC send a formal request to programs that the program committee save time by squeezing seminars with three speakers rather than symposia. Mark Olsen moved, seconded by Bill Rittelmann, that the TC send a letter to Programs regarding progam timing, to be prepared by Keith Temple. Carried 14-0-0.

Chuck Gaston described some of the comments received during the forum, "What Often Ignored Factors Affect Performance of Residential Forced-Air Systems?" There were about 20 attendees.

Mark Modera discussed the seminar, "How Should Thermal Distribution Efficacy be Defined?" The session was chaired by Bill Rittelmann, and had four speakers: Paul Francisco, Mark Modera, Bill Rittelmann, and Jim Cummings. There were about 40 attendees.

Arun Vohra discussed the symposium, "HVAC Systems and Performance in Building America Homes." There were about 50 attendees.

Paul Francisco described the three papers being prepared, currently in peer review, for a symposium to be held in Chicago, "Managing Return Air in Residential and Small Commercial Buildings."

Bryan Rocky described a forum proposed for Chicago, "A Look Forward to 2020 for Small Forced Air Heating and Cooling Systems."

Jeff Siegel described another proposed forum, "The Role of Forced-Air Systems During Extraordinary Events."

Mark Modera moved, seconded by Chuck Gaston, that the TC request the two forums be presented in Chicago in sequential time slots. Passed 13-0-0.

The program plan (appended below) lists sessions planned for future meetings. Keith Temple asked for volunteers who are interested in preparing or reviewing symposium papers.

*Research*

Mike Lubliner discussed the Research Subcommittee meeting. John Andrews distributed a summary of the research plan, (Attachment 2). The subcommittee is actively pursuing cosponsorship of RTARs from other related TCs.

One RTAR being considered is a project on "High Efficiency Residential Forced-Air Heat Pumps: Laboratory The Effect of Refrigerant Charge on Heat Pump Performance." Larry Palmiter had attended the subcommittee meeting and described some prior research that had been conducted in the Pacific Northwest.

Jim Cummings described an RTAR, "Energy Efficiency and Cost Assessment of Latent Cooling Options," which had been rejected prior to the Orlando meeting. The RTAR was modified based on comments received at that time. There is also an existing research project addressing a similar topic. Jim reviewed the workplan for that project, and made adjustments to the proposed RTAR to minimize overlap. Jim met with the Research Subcommittee of TC 8.11, who wants to work with TC 6.3, but suggested some changes to the research plan. The two groups will work together to develop a revised RTAR.

Neither of the RTARs are finalized at this point, so no vote was taken at the meeting. It is hoped that they will be finished in time for the TC to vote for approval by letter ballot in time to meet the August 1 deadline for ASHRAE's next consideration period.

There was discussion of the relationship between Standard 62.2 and residential HVAC systems. There is some work being done in the area, but it is an area for the TC to be aware of.

A Research Plan Summary was distributed at the meeting; a copy is appended.

*Standards*

Mark Modera reported on the Standards Subcommittee meeting. The subcommittee focused on a possible standard on "Air Handler Performance." The topic was discussed for the entire meeting, but the subcommittee was not able to reach consensus on the need for a standard. Jim Lutz was a

proponent for the standard, and he had submitted a "Form for Proposing Standard/Guideline Project" to ASHRAE, and distributed copies to the TC.

Jim Crawford described activities of other TCs related to standards. These had to do with refrigerant system safety which currently apply to large cooling systems, but perhaps should be extended to smaller systems under the purview of the TC.

John Proctor stated that he had found an equation in Standard 152 that was in error. He asked how an errata sheet would be issued. Mark Modera will take the issue to Standards committee. Several members of the TC requested information from John on the error.

Standard 103 went out for public review and received some comments. An ISC will be going out for public review in September.

*Web Site*

Nothing to report.

*ASHRAE Learning Institute*

Nothing to report.

**New Business**

John Andrews expressed appreciation to everyone who is active on the committee. Iain Walker mentioned that ASHRAE now has a new award, "Service to ASHRAE Research Award." There is a form on the website which can be downloaded to nominate someone for the award.

The "Hightower Award" had no nominees last year, and ASHRAE is encouraging TCs to make nominations. This award is for service to ASHRAE.

**Adjournment**

The meeting adjourned at 2:40 p.m.

**ATTACHMENT 1a**

## TC 6.3 – Program Plan
## June 2005

| Meeting | Symposium | Seminar | Forum |
|---|---|---|---|
| Denver<br><br>June 2005 | HVAC Systems and Performance in Building America Homes (Vohra)<br>50 attendees | How Should Thermal Distribution Efficacy be Defined? (Rittelmann)<br>40 attendees | What Often Ignored Factors Affect Performance of Residential Forced-Air Systems (Gaston)<br>__ attendees |
| Chicago<br>January 2006<br><br>program due 8/5/05 | Managing Return Air in Residential and Small Commercial Buildings (3 authors - Francisco) | | *1. A look forward to 2020 for small forced-air H and C systems (Rocky)* |
| | | | *2. The Role of Forced-Air Systems During Extraordinary Events (Siegel)* |
| Quebec City<br>June 2006<br><br>papers due 9/23/05<br><br>program due 2/10/06 | | *Forced Air Heat Pump Systems – Past, Present and Future (Lubliner)* | *Design Considerations for Multi-zone Residential Forced-Air Systems (Rittelmann)* |
| | | *Lessons about Small Forced-Air Systems from Weatherization Programs (Francisco)* | |
| Dallas<br>February 2007<br><br>papers due 4/06<br><br>program due 8/06 | *HVAC System Improvements in Manufactured Housing (_____)* | | |
| | *Field Degradation of HVAC System Performance (Francisco)* | | |

Other Potential Topics:

Seminar or Symposium: Advanced Air Distribution Systems (Vohra)

Seminar or Symposium: Consequences of Oversizing Forced Air Heating and Cooling Systems (Proctor)

**ATTACHMENT 1b**

## TC 6.3 – Past Programs

| Meeting | Symposium | Seminar | Forum |
|---|---|---|---|
| Minneapolis<br>June 2000 | Field Validation of ASHRAE Standard 152P (Andrews) 21 attendees | Depressurization and Venting Issues for Residences (Hemphill) 44 attendees | Residential HVAC in Cold Climates (Jakob) 11 attendees |
| Atlanta<br>January 2001 | | Exploring Alternative Energy Efficiency Factors (Temple) 30 attendees | Residential Cooling and Dehumidification in Hot and Humid Climates (Jakob) 35 attendees |
| Cincinnati<br>June 2001 | | Update on Standards for Residential and Light Commercial Central Systems (Haydock) 50 attendees | Experiences with Residential HVAC in HUD-Code Manufactured Homes (Lubliner) 22 attendees |
| Atlantic City<br>January 2002 | Depressurization and Venting Issues for Residences (Jakob) 37 attendees | | |
| Honolulu<br>June 2002 | | Uncontrolled Airflows in Small Commercial Buildings (Kweller) 50 attendees | |
| Chicago<br>January 2003 | Advances and Issues in Residential Thermal Distribution System Efficiency (5 speakers - Andrews) 35 attendees | | What should the "Design of Small Forced Air Systems" Chapter of the Handbook include on Duct Design? (Temple) 7 attendees |
| Kansas City<br>June 2003 | Advances and Issues in Residential Thermal Distribution Efficiency (5 speakers - Temple) 35 attendees | Impacts of Duct Systems on Indoor Air Quality (5 speakers - Siegel) 50 attendees | |
| Anaheim<br>January 2004 | Factors Influencing the Energy Performance of Forced-Air Systems (3 speakers -Lubliner) 60 attendees | | |
| Nashville<br>June 2004 | Forced Air Distribution System Performance (5 speakers - Andrews) 60 attendees | Best Choice Cooling System Airflow Rates for Different Climates (5 speakers - Cummings) | |
| Orlando<br>February 2005 | | What can ASHRAE Standard 152 Tell Us About Conditioning Our Houses? (4 speakers - Francisco) 20 attendees | |

## ATTACHMENT 2

### RESEARCH PLAN SUMMARY

### TC 6.3 – CENTRAL FORCED-AIR HEATING AND COOLING SYSTEMS

Over the past thirty years, much effort has gone into improving the energy efficiency of space heating and cooling equipment. More recently, the performance of equipment as part of a system has received increasing attention. It is now universally recognized that equipment, thermal distribution, and the building envelope are all intimately connected both in terms of energy efficiency and the degree to which each element serves the purpose for which it is intended.

Despite this renewed focus on systems, however, there is an emerging consensus that equipment and systems, as installed, often do not perform as well as would be expected on the basis of manufacturers' specifications and standardized ratings for individual components. The major issues with regard to system performance group themselves into two broad categories:

1. as-installed energy use relative to what is expected

2. delivered air quality and thermal comfort relative to what is defined as acceptable by applicable codes, standards, and guidelines.

In each of these areas, it is important to achieve greater understanding of which perceived issues are truly significant, which are real but misdiagnosed, and which may not warrant much emphasis.

In recognition of these concerns, the members of TC 6.3, Central Forced Air Heating and Cooling Systems, have selected as an overarching theme for its research plan the need to bring as-installed performance in line with what would be expected on the basis of test data.

Within the theme of "closing the gaps" between expected and as-installed system performance, we have identified several specific areas where we believe ASHRAE research can make an important difference in the coming decades. These fall in two broad subareas, depending on whether the perceived performance deficiency is mainly one of lower-than-expected energy efficiency or suboptimal thermal comfort and air quality.

It is important to note that the performance of properly installed individual components is beyond the scope of this research plan. Instead, the intent of the plan is to address the following:

- ways to encourage appropriate installation practices in the field
- maintenance of post-installation performance levels over time

Performance as used here includes both energy efficiency and delivered health and comfort.

In each of these areas, TC 6.3 recognizes the need to provide industry, government, and the research community with a sound technical basis for raising or lowering the level of concern about any specific issue. The consequences of ignoring a truly significant problem must be weighed against the economic inefficiencies and wasted effort associated with raising false flags of concern. This is a responsibility that the members of this committee take seriously.

**ATTACHMENT 4**

**ATTACHMENT 5**