

**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.: 4.1 DATE: February 11, 2005

TC/TG/TRG TITLE: LOAD CALCULATION DATA AND PROCEDURES

DATE OF MEETING: February 7, 2005 LOCATION: Orlando, Florida

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
<b>Voting</b>		<b>Non Voting</b>		John Anderson
Charles S. Barnaby	2003	Raymond Alvine	2003	Andrew Braum
Steven F. Bruning	2003	John Campbell	1998	Larry Degelman
Robert C. Doeffinger, Jr.	2003	Eileen E Chant	1995	Joe Ferdelman
Glenn Friedman		Dragan P Curcija	2003	Larry Lisenbee
Douglas C. Hittle	2004	Paul N Deltz	2003	Janice Means
Robert E Hopper Jr	2004	Richard D Hermans	2003	Arun Veda
Ken-Ichi Kimura	2004	Steve P Kavanaugh	2003	John Wright
Rolando Legarreta	2001	Jason D King	2000	
Curtis O. Pedersen	2003	Thomas B Romine Jr	2003	
Christopher K. Wilkins	2002	James R Rush	2002	
Gary L. Wingfield	2003			
	2003			
<b>Non-Voting</b>				
Branislav B. Todorovic*				
Larry Sun	2003			
Susan LeViseur	2003			
William Fleming	2003			
Lynn G. Bellenger*	2002			
Jeffrey D Spitler	2002			
Brian A Rock	1995			
James H Norman	2003			
Rich Swierczyna	2003			

**DISTRIBUTION:** — ALL MEMBERS OF TC/TG/TRG \*Non Voting Members

TAC SECTION HEAD: Craig P. Wray

TAC CHAIRMAN: William P. Bahnfleth

ASHRAE MANAGER OF RESEARCH/TECHNICAL SERVICES: Michael R. Vaughn

**ALL COMMITTEE LIAISONS AS SHOWN ON TC/TG/TRG ROSTERS:**

Kimball E. Ferguson- Special Publications Michael J. Brandemuehl - RAC Research

George Reeves - Standards Mark Hydeman – Prof. Dev. Committee (ED)

Charles Gullede III – Chapter Technology Transfer

Mohammad Hosni –Programs William S. Fleming - Handbook

Chad B. Dorgan – Journal/Insights

ADDITIONAL DISTRIBUTION:

MANAGER OF STANDARDS: Claire B. Ramspeck

**February 7, 2005**  
**Committee Meeting Minutes**  
**TC4.1 Load Calculations Data and Procedures**  
**Orlando, Florida**

## **General**

The meeting was called to order by Chair Robert Doeffinger at 2:20 pm in the Wyndham Palace Resort Oxford Room

Roll call by Gary Wingfield indicates 11 members present out of 11 total which constitutes a quorum.

Introductions: Chair Robert Doeffinger asked all attendees to introduce themselves and to complete the attendance sheet circulating the room.

***Motion (Bruning/Wilkins) Approve minutes of June 26, 2004 meeting as presented.  
Carried 11/0/0***

## **Liaisons**

TAC Section Head Craig Wray reported that all Technical Committees are required to have an operational website within the next 2 months and that TAC was here to help. He indicated that he concurred with the committee direction and expressed his appreciation for the accomplishments of TC4.1

Handbook Liaison Bill Fleming congratulated the committee on completing revisions to Residential and Non Residential chapters for the 2005 Handbook of Fundamentals. Great job Steve Bruning and Chip Barnaby.

Program Liaison Mo Hoshni reviewed the proposed program plan.

## **Research Subcommittee (Wilkins)**

ASHRAE Research Project 1199-RP, *Updating the ASHRAE/ACCA Residential Heating and Cooling Load Calculation Procedures and Data* developed two new residential loads calculation procedures:

- Residential Heat Balance (RHB), a detailed heat balance method that requires computer implementation; and
- Residential Load Factor (RLF), a simplified procedure that is suitable for hand or spreadsheet use.

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Project has been completed. An update to the Residential Chapter was prepared although it was beyond the scope of the project. Thanks was expressed to Chip Barnaby for his contributions.

ASHRAE Research Project 1326-RP, *Application and Teaching Manual for RTS Load Calculation Method*

RTAR 2004 Application and Teaching Manual for RTS Load Calculation Method. Work statement was approved by mail ballot. Doeffinger appointed Chris Wilkins, Steve Bruning, Curt Pedersen, Glenn Friedman and Lynn Bellenger to the Proposal Evaluation Subcommittee (PES).

*RTAR 1362 UPDATE KITCHEN EQUIPMENT INFORMATION*

TC5.10 has asked TC4.1 to co-sponsor an RTAR that deals with capture, containment, emissions and heat release from kitchen equipment using ASTM protocol. The product would include an update to Table 5 in Chapter 29 and include information on radiant and convective heat transfer. The heat gain rates from typical commercial cooking appliances currently published in the ASHRAE Handbook were obtained in research project 391-RP completed in 1984 (Alereza and Breen 1984). These rates were determined by applying adjustment factors to cataloged appliance energy input ratings. Design engineers have expressed concern with the accuracy of this information. A small number of revisions have been made to the Heat Gain Table 5 via an industry-developed heat gain measurement protocol (Fisher 1998). Hittle and Legareto are representing TC4.1. The work statement needs to be developed.

**1282 RP LIGHTING HEAT GAIN DISTRIBUTION IN BUILDINGS**

April 2004 - November 2005  
Oklahoma State University  
*Principal Investigator, Daniel E. Fisher*

Lighting is a major contributor to the heat gain in all buildings. The magnitude of the heat gain from a specific fixture is not difficult to determine because wattage of specific lamps is very well documented. The magnitude is not the only factor relevant to the cooling load and energy calculations. Radiant convective split can affect the time and the magnitude of the peak-cooling load. Another important consideration is the amount of heat from the light fixture that is dissipated to the space vs. the amount of heat dissipated to the ceiling plenum. The objective of this research is to better document the interaction of the heat generated by a light fixture and the surrounding space. Data will be developed for the most typical arrangements and presented in tables and graphs to enhance the ability to engineers to perform load calculations and energy evaluations for conventional and under floor air distributions systems.

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Project Monitoring Subcommittee has met. Very little progress has been made by the contractor to date.

1311 RP *IMPROVING LOAD CALCULATIONS FOR FENESTRATIONS WITH SHADING DEVICES*. John Wright of Waterloo University is the principal for this project. Charles Barnaby with Wrightsoft will be working with program development. The contract has been signed. Chairman Robert Doeffinger appointed Robert Hopper to be the TC4.1 representative on the PMS.

Research plan for 2005/2006 is to include study of stratification effects on load calculations. Under floor distribution systems and their effect on loads will be sponsored jointly with TC4.10. The effect of tall buildings on heating and cooling loads is another area requiring research. Larry Sun and Steve Bruning will prepare a draft RTAR. RTAR's are due for submission in August. RTARs must contain an executive summary of 2 to 3 pages with a specific format.

Research Liaison, presented a Strategic Research Plan. The first reaction was that this was a top down approach rather than grass roots up. Bellenger reported that the intent of the Research Advisory Panel was to encourage goal setting by the technical committees.

**Handbook Subcommittee (Bruning)**

Chapter 28 – Residential Load Calculations final draft was approved by email ballot on February 4, 2005 (11,0,0)

Chapter 29 – Non Residential Load Calculations Complete with the exception of example problem.

Handbook Liaison Fleming and TC4.1 members congratulated Bruning and Barnaby for excellent jobs for what was a complete rewrite of both chapters 28 and 29.

Full Handbook report attached.

**Program Subcommittee (Friedman)**

Friedman announced that TC4.1 sponsored or participated in several presentations at this meeting:

Seminar 15 Examples of Load Calculating Methods. 1) Heat balance method (Pederson), 2) RTS method (Bruning) and 3) a comparison (Spitler). Glenn Friedman served as seminar Chair.

Seminar 46 Load and Energy Predictions: Latest International Methods. Brian Rock served as chair

Seminar 54 Ventilation Rate Procedure. (Lynn Bellenger)

Poster Sessions 15 and 16 RP 1199 Residential Research by Barnaby

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Plans for a seminar at the Denver meeting were discussed.

Motion(Friedman/Bruning) that a seminar jointly sponsored by TC 4.1, TC 4.10 and TC 5.3 on the effect of systems on plants sizing for the Denver Meeting. This would include; impact of Std 62, Displacement ventilation, duct leakage. Carried (11-0-0)

Plans for a forum at the Denver meeting were discussed.

Motion(Friedman/Bruning) that a forum jointly by TC 4.1 on “How Does UFAD (Under Floor Air Distribution) Violate The First Law of Thermodynamics?” for the Denver Meeting. Carried (11-0-0)

Topics for future presentations included:

Residential Load methods versus Non-residential load methods

Effect of temperature swing on loads.

Comparison on 1993 building design versus current Std 90.1

Topics proposed for the Chicago meeting 2006 included seminars or forums on RP 1311 fenestration, RP 1282 Lighting loads. A possible Forum on under floor distribution systems.

A Symposium is proposed for the Quebec meeting with 4 papers to be presented.

**New Business (Doeffinger)**

The Hightower Award for contributions to a technical committee has been established.

Doug Hittle will submit a nomination of a TC4.1 member for the award.

Section Heads have asked that the Handbook subcommittee chair be available to respond to questions raised by members concerning TC4.1 Chapters.

Repository of knowledge vs. procedures. Consider preparing a procedure manual with a task oriented table of contents..

Standard on load calculations representative Chris Wilkins announced SPC-183 Draft for public review to be discussed in Islander 2 on February 8, 2005.

Membership promotion representative Joe Ferdelman stated that a recent survey of HVAC engineers (both ASHRAE members and non-members found that 71 percent want ASHRAE to develop a computerized load calculation program. ASHRAE needs to investigate developing and maintaining ASHRAE programs for the retention of members.

Doeffinger recognized Jeff Spittle as a new ASHRAE Fellow Member.

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Motion (Hittle/Hopper) that meeting be adjourned. Carried (11,0,0)

Meeting was adjourned by Doeffinger at 4:10 pm.