ASHRAE Meeting Minutes-Seattle
TC4.10 - Indoor Environmental Modeling
Main Committee Meeting

Monday, June 21, 1999
2:15 pm

1. The meeting was **called to order** at 2:15 pm by Chairman Jianshun Zhang.
2. A **welcome and introduction** by Dr. Zhang was offered, after which the section head, Dr. Byron Jones, presented a certificate of appreciation to Jianshun for running this committee so well during the past two years. Applause ensued, we were all very grateful for his excellent leadership.
3. 9 of 14 voting members were present at the **roll call**. Minutes from the last meeting were approved 9-0-0
4. **Announcements:** First, Dr. Zhang introduced Dr. Kevin Knappmiller as the new chairman of TC4.10; then, Carl Speich, the RAC Research Liaison, reported that the work statement WS 1133, *Guidelines for the use of CFD for Indoor Environmental Flows* (Walter Schwarz), has been approved. Walter was to be commended for his prompt professionalism on this project. Finally, we were reminded that any new work statements are due Sept. 15, 1999.
5. **Membership:** the new roster was presented, however, there seems to be a few errors in the list of voting members and eligibility.
6. **Research:** Jianshun Zhang reported for Dan Clark the following from the Research Sub-committee:
   The research plan was revised at the sub-committee meeting. Since the work statement, WS 1133 has just been approved, the discussion of the next two work statements became the first item on the plan.
   The sub-committee has concluded that *Modeling Low Velocity Large Scale Fluctuating Flows,* and *Determination of Turbulent Length and Time Scales in Ventilated Spaces* are closely related topics that could best be worked together. The determination of scales is actually the first step in modeling unstable ventilation flows. The new title of this item is *Modeling Low Velocity Large Scale Fluctuating Flows in Ventilated Spaces.* Yan Chen and Ray Horstman will work together on the new work statement.
   The second item in priority, was formerly last on the list. The scope was changed and the title changed slightly to *Modeling Environments with Large Heat Loads* (Farzad Baban, Roger Schmidt)
   A new third item was introduced, *Modeling Natural Convection Flows* (Yan Chen). The work statement will be prepared by Dr. Chen.
   The work statement, *Ultra-Low Air Speed Velocimetry for Indoor Air Studies* (Yuanhui Zhang) has had difficulty obtaining co-sponsorship with TC1.2 and dealing with the perception that this is more product development than an appropriate ASHRAE research topic. For these reasons this work statement has been dropped from the research plan.
   Steve Emmerich made a motion to approve the Research Plan, it was seconded by Kevin Knappmiller and approved by the committee 9-0-0.
   After another voting member arrived, Jainshun began the report on active projects:
   RP-903 *"Experimental Validation of Multizone Models for Predicting Air Contaminant Transport in High Rise Buildings"* This long term project has had several delays due to weather conditions, especially the lack of high winds and low temperatures. A second building and grad student have been selected for the project (no funding problems foreseen). Leak tightness measurements and CONTAM code models are underway. All experiments will be completed this summer, except for the one-day cold case, for which a slide in the completion date to March 31, 2000 was requested. The new schedule was voted and approved 10-0-0.
   RP-978 *"Interaction of Room Air Motion and the Human Body in Confined Spaces"* The first phase of this project, which involves PIV measurements around a manikin is nearly complete. The next phase, velocity measurements in an aircraft cabin, will begin with a flow connection to overhead nozzle in the aircraft section. Ray Horstman provided the flow information (566 cfm for the 220 " section). He will begin the process for releasing detailed Boeing information on the geometry for use in follow-on analysis projects (nozzle and compartment dimensions, etc.)

RP-949 *"Displacement Ventilation"* has been completed on schedule. It was co-sponsored by TC5.3. The PMS has approved the final report. The report is large, so only CD versions will be available from Yan Chen after July.
RP-1009 "*Simplified Boundary Conditions for Numerical Simulations*" Three of the eight boundary types have been analyzed. There are two boundary conditions that have been used to simplify diffusers; the box method and the momentum method. The momentum method is simpler to use and for easier for collecting data but the box method gives better results.
RP-1097*"Modeling VOC Sorption of Building Materials and It's Impact on Air Quality"*. The PMS chair is Dan Int-Hout on this joint NRC-MIT project. Preliminary work, including a literature review of approximately 200 papers has begun. A proposal for the testing technique is due in November. Measurements will begin in December using a small scale chamber within a chamber.
The subject of new research ideas was introduced and some discussion began about the new BILDit project, which seeks to provide an integrated tool for building design. Eliott Gordon had conducted a seminar earlier to introduce the program. Of interest to this committee is the interface between the CFD model and the ducting and room network model. The developments in this project may help to steer future research in this committee.

7. **Program:** Steve Emmerich reported the following program status:
   A forum*, "How to Report CFD Modeling Results Right*", moderated by Duncan Phillips, will take place Wednesday June 23, 1999.
   A symposium on VOC modeling is chaired by Gemma Kerr and scheduled for the 2000 annual meeting in Minnesota. She has received 3 papers and would like one more. The abstract is due October 1, 1999 and the final draft is due Jan 24, 2000.
   The seminar on modeling rooms with large heat loads was dropped from the schedule.
   The program plan was proposed as follows, by priority, subject, chair, and scheduled meeting:
   a. Seminar, *Case Studies of Modeling Industrial Environments*, (Walter Schwarz), Winter 2000, Dallas. August 6, 1999 is the deadline for submittals.
   b. Seminar, *Advances in CFD modeling*, (Allan Kirkpatrick), Annual mtg. 2000, Minneapolis.
   c. Symposium, *Building Network Models, CONTAM code and RP903*, Annual mtg. Minneapolis.
   d. Seminar, Application of Indoor Environmental Modeling to Real World Building Airflow Design Problems, Winter 2001, Atlanta.
   e. Symposium, Multizone Models, No date yet
   f. Seminar, *Modeling Natural Convection Flow Ventilation Systems*, (Jianshun Zhang) No date yet
   g. Formal Seminar, *Modeling an Aircraft Passenger Cabin and RP978*, (Walter Schwarz), annual mtg. 2001, Cincinnati.
   The Program plan was voted and approved 9-0-0.
8. **Handbook:** Ray Horstman reported that draft of the chapter has been sent to David Claridge and forwarded to George Reeves for consideration in 2001 Fundamentals. The draft due date is January 2000. Farzad Baban, Jerry Baker, Kevin Knappmiller, Arsen Melikov and Brian Krafthefer (handbook committee) have copies. The nomenclature table is the last item left to complete.
9. **Standards:** Dave Ensor reported that the new filter standard *52.2* is complete.
10. **Activities in other TC's:** The following is the current list of Liaisons to other Technical Committees:
    TC1.2 *Instruments and Measurements*- Arsen Melikov
    TC2.1 *Physiology and Human Environment*- Diotima Von Kempski
    TC2.3 *Gaseous Air Contaminants/Removal Equipment*- Gemma Kerr
    TC2.4 *Particulate Air Contaminants/Removal Equipment*-Dave Ensor
    TC4.7 *Energy Calculations*-. Dan Clark
    TC5.3 *Room Air Distribution*- John Jenssen
    TC5.8 *Industrial Ventilation*-Elliot Gordon
    TC5.10 *Kitchen Ventilation*- Kevin Knappmiller
    TC9.3 *Transportation*Ray Horstman
11. **New business:** Website volunteers are sought, contact Stuart Dols at NIST if interested (wsdols@nist.gov)
12. No **Agenda suggestions for next meeting**.
13. A move to **Adjourn** was made and approved.