

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.

**1791 Tullie Circle, NE, Atlanta, Georgia 30329
404-636-8400**

TC/TG/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/TRG No. TC 4.2 DATE: January 30, 2007

TC/TG/TRG TITLE: Climatic Information

DATE OF MEETING: January 30, 2007 LOCATION: Dallas, TX

MEMBERS PRESENT	MEMBERS ABSENT	EX/OFFICIO MEMBERS AND ADD'L ATTENDEES
Chip Barnaby (Chair) Larry Degelman (Vice Chair, CM) Steve Cornick (Secretary) Bryan Becker (Guest) Don Colliver (CM, Webmaster) Dru Crawley (VM, Resrch, Stds) Brain Fricke (Guest) Joe Huang (VM, Honors) Neal Lott (VM) Bob Morris (ALI Coord., Hndbk, VM) Didier Thevenard (VM) Charlie Whitlock (CM) Chris Gueymard	Ron Petersen (VM) Geoff Levermore (IM) Bill Bahnfleth (CM) Constantinos A Balaras (CM) J Patrick Carpenter (CM) Jui-Chen R. Chang (CM) Reda Djebbar (CM) Ken Hubbard (CM) Achilles Karagiozis (CM) Linda Lawrie (CM) David Menicucci (CM) Richard Perez (CM) Oscar Richard (CM) Jack Roberts (CM) Hilda Snelling (CM) Tom Stoffel (CM)	Suzanne LeViseur (TAC Sec. Head) ** Hugh Henderson (RAC Research Liaison) ** ** Did not attend entire meeting

- | | |
|-------------------------------|-----------------------|
| TAC CHAIR | Patricia Thomas Graaf |
| TAC SECTION HEAD | Suzanne LeViseur |
| RAC RESEARCH LIAISON | Michael Brandemuehl |
| SPECIAL PUBS LIAISON | Kimball Ferguson |
| HANDBOOK LIAISON | Douglas C. Hittle |
| CHAP TECH TRANS LIAISON | Stephen V. Abernathy |
| PROGRAM LIAISON | Joseph S. Fredelman |
| PROF DEV COMM (EDUC) | Julian R. De Bullet |
| STANDARDS LIAISON | George Reeves |
| STAFF LIAISON (STANDARDS) | Claire Ramspeck |
| STAFF LIAISON (RESEARCH/TECH) | Mike Vaughn |

Abbreviations: VM = Voting Member, CM = Corresponding Member, IM = International Member

[* NOTE: These draft minutes have not been approved and are not the official, approved record until approved by this committee.]

ASHRAE TC/TG/TRG ACTIVITIES SHEET

DATE: Current as of 30 January 2007.

TC/TG/TRG NO.: TC 4.2

TC/TG/TRG TITLE: Climatic Information

CHAIR: Chip Barnaby **VICE CHAIR:** Larry Degelman **SECRETARY:** Steve Cornick

TC/TG/TRG MEETING SCHEDULE			
Location-Past 12 Months	Date	Location-Planned Next 12 Months	Date
Dallas, TX	2007-01-30	Long Beach, CA	2007-06-26
Quebec City, QC	2006-06-27	New York, NY	2008-01-22
Chicago, IL	2006-01-24	Salt Lake City, UT	2008-06-24

TC/TG/TRG SUBCOMMITTEES	
Function	Chairman
Handbook	Bob Morris
Research & Standards	Drury Crawley

RESEARCH PROJECTS-CURRENT			
Project Title	Contractor	Monitoring Comm.	Report Made At Meeting
1143-RP Reference Procedure to Obtain Typical Solar Spectra for Advanced Solar Heat Gain Calculation (TC 4.5 Lead)	Chris Gueymard, Solar Consulting Service	Joe Huang	Yes, project completed; final review of project held in Dallas.
1309 RP Development of a solar radiation model for tropical climates.	MK Associates, Boulder, CO	Larry Degelman (chair) Chip Barnaby Dru Crawley Steve Cornick	Project complete; Poster session given. (Posters DA-07-057 & DA-07-058)
1325-RP - Environ. Weather loads for hygrothermal analysis and design of buildings (co-spons. TC 4.4 lead).	Syracuse University, NY	Dru Crawley Bob Morris (Andre DesJarlais, chair, Anton TenWolde, Martha VanGeem, Andreas Holm) TC 4.4	Yes, Contractor presented work to date to the PMS.
1363-RP Generation of hourly design-day weather data. (TC 4.1 co-sponsor)	Gard Analytics, Roger Hedrick Principle Investigator.	Charles S. Barnaby (Chair), Dru Crawley, Joe Huang, Steve Bruning (TC 4.1), Willie Dupont (TC 4.5)	Yes, Contractor presented work to date to the PMS.
1453-TRP Updating the ASHRAE Climatic data for Design Standards.	TBD	Dru Crawley (chair), Chip Barnaby, Joe Huang, Bob Morris, and Steve Bruning .	TC voted to recommend a contractor.

LONG RANGE RESEARCH PLAN							
Rank Title	RTAR			Work Statement			RAC Approval for bidding
	Writ-ten	TC Approv-ed	Subm'd to RAC	Writ-ten	TC Approv-ed	Subm'd to RAC	
1. Procedures to Generate Detailed Climate Data from Sparse Data Sets.	Yes						
2. 1413-RTAR, Developing Standard Procedures for Filling Weather Data Gaps During Analysis of Measured Building Energy Use.	Yes	Yes	Yes				
3. Spectral Cloud Modifier Model for Improved Hourly Simulation of Solar Radiation, Fenestration Solar Heat Gains, and Building Energy Performance.	Yes						
4. Characterization of Climate Conditions in Near Ocean Environments (Co-sponsor with TC 4.4)	Yes						

HANDBOOK RESPONSIBILITIES					
Year	Volume	Chapter Title	No.	Deadline	Handbook Sub. Liaison
2009	HOF	Climatic Design Information	28	2009-02	Douglas C. Hittle

STANDARDS ACTIVITIES – List and Describe Subjects
 TC 4.2 is the cognizant TC for Std.169 *Weather Data for ASHRAE Building Standards*. The TC 4.2 HOF data has been incorporated into this proposed standard. Other coordination will be undertaken as needed such as with SPC 160P.

- | TECHNICAL PAPERS from Sponsored Research-Title, when presented (past 3 yrs. present & planned) |
|---|
| <ul style="list-style-type: none"> • The Development of Typical Weather Years for International Locations (Parts 1 and 2), Honolulu June 2002 (1015-RP) • Web Access to Information on International Weather Data Sources, Honolulu June 2002 (1170-RP) • Integration of ASOS weather data into model-driven solar radiation (1226-RP), Orlando, Feb 2005 • The calculation of climatic design conditions in the 2005 ASHRAE Handbook of Fundamentals (1273-RP), Orlando, Feb 2005 • Sources of uncertainty in calculations of design weather conditions (1171-RP) (4815), Denver, June 2005 • Comparative Analysis of Three Solar Models for Tunisia, (1309-RP) CH-06-05, Chicago, January 2006 • Comparative Analysis of Four Solar Models for Tropical Sites (RP-1309), (Dallas, January 2007) • Impact of Solar Models on Building Energy Analysis for Tropical Sites (1309-RP), (Dallas, January 2007) • Development of Models for Hourly Solar Radiation Prediction (1309-RP), (Long Beach, June 2007) |

TC/TG Sponsored Transactions-Title, when presented (past 3 yrs. present & planned)
<ul style="list-style-type: none"> Recent Developments in the Availability of International Weather Data – Symposium HI-02-16, Honolulu, June 2002.

TC/TG Sponsored Seminars-Title when presented (past 3 yrs. present & planned)
<ul style="list-style-type: none"> Design Applications of Recent ASHRAE Weather Data - Seminar 27, Atlantic City, Jan, 2002. Uses of Weather Data in Building Design and Operation – Seminar 39 Kansas City, June 2003. What Happened to the Weather Tables in the 2005 HOF? - Seminar 50, Orlando, Feb. 2005. New Directions in Climatic Information and Modeling – Seminar 66, Quebec City, June 2006. Climate change and global warming – Long Beach, June 2007. How satellite data can be used to support ground observations – Long Beach June 2007.

TC/TG Sponsored Forums-Title, when presented (past 3 yrs. present & planned)
<ul style="list-style-type: none"> How Can Weather Data Be Made More Useful for ASHRAE Members? – Forum 24, Chicago, January 2003.

JOURNAL PUBLICATIONS, when published (past 3 yrs. present & planned)
None

Attachments:

- TC/TG Activity Feedback Form
- Agenda
- Research Subcommittee Minutes
- PMS 1363-RP Minutes
- Handbook Subcommittee Minutes

**2006 Annual Meeting Schedule and Agenda
TC 4.2 (Climatic Information) and Related Activities
Quebec City, QC**

Time/Date	Meeting/Event	Hotel, Room, Floor
Saturday, 27 January 2007		
3:30 to 5:00 PM	1325-RP PMS <i>Environmental Weather Loads for Hygrothermal Analysis and Design of Buildings (TC 4.4 lead)</i>	Trinity 2 (H3)
Sunday, 28 January 2007		
8:00 to 10:00 AM	1363-RP PMS <i>Generation of hourly design-day weather data</i>	Majestic 9 (H37)
1:00 to 3:00 PM	TC 4.2 Handbook Subcommittee Meeting	Majestic 4 (H37)
Monday, 29 January 2007		
10:30 AM to Noon	<i>Weather Data</i> SSPC 169P <i>Weather Data For Building Design Standards Research</i>	Majestic 2 (H37)
4:15 to 6:30 PM	TC 4.2 Research Subcommittee Meeting	Trinity 3 (H3)
Tuesday, 30 January 2007		
11:00 to 1:00 PM	Comparative Analysis of Four Solar Models for Tropical Sites (RP-1309) (DA-07-057) Impact of Solar Models on Building Energy Analysis for Tropical Sites (RP-1309) (DA-07-058)	Ballroom C (CC/1)
1:00 to 3:30 PM	TC 4.2 Climatic Information	State 3 (C3)
Wednesday, 31 January 2007		
No activities planned for the 31 st .		

2007 Winter Meeting Minutes
ASHRAE Technical Committee 4.2, Climatic Information
Adam's Mark Hotel Conference Center (Ballroom C 1st Floor)
Dallas TX, Tuesday, January 30, 2007, 1:00 - 3:30 PM

Scope: TC 4.2 is concerned with identification, analysis and tabulation of climatic data for use in analysis and design of heating, refrigeration, ventilation and air-conditioning systems. Promotion of effective use of weather information in these applications is also included.

1:00 pm **Call to order:** Chair Barnaby opened the meeting. Roll call and introductions. A voting quorum (7/8 not counting international members) was present (see attached TC/TG Activity Feedback Form).

Approval of agenda: Chair Barnaby asked if there were any changes to the agenda. There were none (see attached). Crawley moved to “*Approve the agenda*,” seconded by Huang. The motion carried unanimously. **(7 for, 0 abstain, 0 against, 2 absent).**

Approval of minutes of Quebec City meeting (27 June 2006): Huang moved to “*Approve the minutes of the 2006 Annual meeting*.” Crawley seconded the motion. The motion carried unanimously. **(7 for, 0 abstain, 0 against, 2 absent).**

Announcements: Chair Barnaby made the following announcements. ASHRAE has announced a change in the policy of waiving registration fees for seminar speakers and chairs. The new policy would require session speakers and chairs to pay the registration fee. Morris moved that “*ASHRAE reinstate the previous policy of providing free registration for presenters and session chairs*.” Crawley seconded the motion. The motion carried unanimously **(7 for, 0 abstain, 0 against, 2 absent)**. The Committee agreed to transmit the motion to Section 4 Head (Suzanne LeViseur).

Membership: The Chair has submitted the revised membership for 2006/2007. There is still some flexibility for setting committee structure for the next roster. It is proposed that Degelman be the incoming Chair after the Long Beach meeting and that Cornick be moved from Secretary to Vice Chair and Program Chair. Thevenard is proposed as Secretary. Levermore will roll off. These changes are proposed to take effect after the Long Beach meeting. Lott suggested that someone from NREL join the Committee but funding might be problematic. Robert Lucas from PNL was suggested as a possible member but Lucas has a potential time conflict with Standard 90.2.

Introduction of liaisons: Research Liaison Hugh Henderson, and Section 4 Head LeViseur (SH4) joined the meeting. It was reported by RL4 that ASHRAE’s research budget will not be entirely spent this year and that the committees were encouraged to get RTARs in as soon as possible for the next funding cycle. Specifically TC 4.2 needs to get 1413-RTAR “*Developing Standard Procedures for Filling Weather Data Gaps During Analysis of Measured Building Energy Use*” turned into a work statement as soon as possible.

LeViseur discussed program issues, specifically the reduction in benefits for speakers and chairs. The new policy will waive the free registration for session chairs; seminar speakers will get a one-day free registration. Forum moderators will get a one-day free registration. There are no changes for symposium speakers and chairs. Regarding the motion to ASHRAE requesting a reinstatement of the former benefit policy (see above) LeViseur asked the Committee to communicate this motion to her as soon as possible. SH4 reminded the Committee that the rollover roster and activity sheets had to be submitted by the end of the day. SH4 also reported that the George Hightower is no longer limited to activities covering the previous year. Activities extending over more than one year can be taken into account. Cases must include some description of the accomplishments and the biography should be up to date.

1:15 pm **Research (see attach subcommittee minutes)**

Active research projects

1143-RP “Reference Procedure to Obtain Typical Solar Spectra for Advanced Solar Heat Gain Calculation” (TC 4.5 lead) – 1143-RP has been approved and finished. There was an ASHRAE paper on this project presented in Dallas. Another paper for Solar Energy is now in press.

1363-RP “Generation of Hourly Design-Day Weather Data” – The PMS met with the contractor on the 28th of January 2007. The consensus of the PMS was that the project was behind. The PMS agreed to have a conference call meeting with the contractor sometime in April 2007. Barnaby will circulate an initial email containing a draft response of feedback to the contractor for 1363-RP to the PMS, Morris, Thevenard, and Cornick. (See attached minutes)

1453-TRP “Updating the ASHRAE Climatic Data for Design and Standards” – Two responsive bids were received for 1453-TRP. The bids will be discussed in an executive session at the end of the Committee meeting.

RTARs and Work Statements in process

1354-WS “Improved Database of Earth Temperatures and Municipal Water Supply Temperatures for Use with Building Simulations” – There was no progress reported on the WS as well the WS has fallen off ASHRAE’s research plan and needs to be resubmitted. The letters containing the comments from RAC still exists and Haberl will continue to be the lead and restart the WS.

1413-RTAR “Developing Standard Procedures for Filling Weather Data Gaps During Analysis of Measured Building Energy Use” needs to be submitted to RAC by August 15th 2007 or it will be dropped from the list.

Potential research projects

Huang circulated a RTAR on sparse data sets, "Procedures to Generate Detailed Climate Data from Sparse Data Sets". He asked for a quick turn around regarding comments. Comments were due to Huang by March 1st 2007.

Cornick reported on a RTAR proposed by Larry Elkin from TC 4.4 tentatively titled "Characterization of Ocean/Coastal Climates." Cornick agreed to work with TC 4.4 on the development of this RTAR.

There ensued a general discussion on the use of Meso-scale models (MM) for TC 4.2 purposes. Morris and Lott agreed to investigate the issue of weather modeling and will report back to the committee via the research subcommittee. Lott will also talk to NCDC about MMs.

TCs 4.1 and 4.5 want TC 4.2 to take the lead on solar model development. TC 4.5 has submitted to the research subcommittee a RTAR that is a follow on of 1143-RP. The discussion centered on this issue. Essentially the project would further develop the spectral model developed as part of 1143-RP by adding cloud as an input parameter. It was suggested that the proposal in the RTAR to use physics-based spectral modeling is going too far too fast. Consensus of the Committee was to sit on this issue until next meeting (Long Beach). Barnaby and Chris Gueymard proposed to do a small study to check out the impact on building energy use (does it really matter?) and report back to the Committee the results of this spectral study, possibly titled "Load Impact of Spectral Solar Gain Modelling."

Chair Barnaby reported that ASHRAE had not yet received the project completion forms for 1309-RP. Degelman said he would take care this and send the appropriate documentation to Michael Vaughn. Degelman will also send the final report of 1309 to all TC members.

1:50 pm **Handbook (see attach subcommittee minutes)**

Issues with current chapter / data

The issue of whether the enthalpy values in the I-P version of the Std. 169 and the Handbook Plus CD were corrected was raised. Thevenard reported that the correct enthalpy values were in fact in both the Std. 169 and Handbook Plus CDs. He also agreed to have 4 spreadsheets with all 4400 locations put on the CD plus CD. The deadline is Feb 5th 2007.

Web publication of current data

The Committee agreed that the current climate data should be published on-line (on the web). No progress has been made in this regard. Barnaby suggested that John Kennedy may have done a complete XML version of the ASHRAE weather data set and suggested that the Committee should have a look at this to see if this is true. Barnaby, Crawley, Thevenard, and Huang agreed to investigate.

Plans for 2009

The PES for 1453-TRP has reviewed the bids received and is prepared to recommend contractor for 1453-TRP. This will be dealt with at an executive session held of the conclusion of the TC meeting.

A discussion was held in response to member's concern regarding the lack of printed climate data (Print vs. Electronic). The Committee agreed that the printing of climate data is not practical. One suggestion was to pick a subset of stations, a subset of elements, representing locations with sufficient population etc. Since it is unclear at this time as to what data should be published the Committee agreed to continue to look into the possibility of printing some climate data and continue to develop the options of what would be included in the Handbook. A 48-page maximum was suggested however it was reported that Doug Hittle suggested that the Committee shoot for 50 pages of pure data tables. This might lead to a maximum of 500 stations with a subset of elements, roughly 10% of the global stations.

The discussion moved on to the issue of consolidating the various solar models into Chapter 28 of the HOF. Regarding the ASHRAE clear sky model details are published elsewhere in the HOF. Morris agreed to find it in the HOF and move it to Chapter 28 if required. It was noted that for the ASHRAE clear sky model clearness numbers, CN^1 , are only listed for the United States and the *A*, *B*, and *C* coefficients are listed only for the Northern hemisphere and don't appear to give reliable results for the Southern hemisphere. There was a suggestion that there was an extension for the South hemisphere but no one on the Committee was aware of this. Thevenard agreed to investigate. The Committee agreed that this would be a "Plan B" if the results of 1363-RP were late or not applicable.

The Committee then discussed whether a more generalized clear sky model that was more accurate and more applicable and has some sound theoretical basis should be included in the HOF. It was suggested that the HOF use Chris Gueymard's broadband model developed from 1143-RP. Certain technical difficulties were discussed such as the requirement to get the input data for the REST-2 software and recommendations regarding input, whether clear sky represents the maximum clear sky or an average clear sky condition for example. The answer to this question was an average clear sky condition. Gueymard also recommended using fewer aerosols for load calculations. The Committee will ask the contractor for 1453-RP to investigate the issue of what data variables would be required for the REST-2 model as well as to investigate the availability NASA data as the only comprehensive way to achieve global coverage.

With respect to the goals of 1453-TRP the project should investigate whether for the handbook a set of new models should be included or whether the existing content should be corrected and made complete. The 1453-TRP work plan should highlight

¹ The symbol for clearness in the solar radiation literature is K_T .

getting some preliminary data out for evaluation by members and users at an early stage.

2:10 pm **Program**

Improved procedures

Degelman made the following announcement regarding the procedure for speakers at this meeting and the New York winter meeting. Starting at the current meeting speakers had to upload their presentations one day in advance except for the New York meeting. For this meeting presentations should be uploaded by Dec 1st 2007 to meet the requirements set by the Association of NY Engineers for continuing education credits. Several sessions will be selected for early review for accreditation. Time slots for sessions have been reduced from 2 hours to 1/1/2 hours. The number of speakers for 90 minutes should be 3 or 4, for 60 minutes the maximum number of speakers is 2. Degelman also reported that the deadline for Long Beach sessions is Feb 9th 2007 and that ASHRAE suggested that session topics stick to the theme of the Long Beach meeting namely natural ventilation. The theme for New York is zero energy.

Long Beach Program

Degelman presented the tentative program for Long Beach and New York City.

1. Seminar on "Climate change and global warming." Suggested speakers are Huang, Degelman, and Levermore with Crawley as the seminar chair. Long Beach.
2. Seminar on "How satellite data can be used to support ground observations." Norm Bourassa (staff in the California Energy Commission) seminar chair. Bourassa agreed to provide the speakers as well. Long Beach.
3. Seminar on "Weather data for building standards." Cornick as session chair with Robert Lucas as one speaker. Long Beach.

It was suggested that a Forum to solicit member requests as to what climate data goes in the HOF be held at the New York winter meeting. Barnaby suggested that a detailed presentation be prepared for New York showing exactly what the plan for the 2009 HOF is. Thevenard suggested that this would not be of any benefit.

The suggested plan for Long Beach is to merge items 2 and 3 above with Cornick as chair². Crawley will put together the climate change seminar. There will be no forum in New York City. Instead the possibility of a seminar for New York was discussed that the decision of the Committee was to revisit this at the Long Beach meeting.

² Note that Norm Bourassa has already lined up three speakers for the combined session and he will be session chair for the seminar.

Degelman moved that “*The program outlined above be accepted as the Committee’s program plan.*” Huang seconded the motion. The motion passed unanimously. **(7 for, 0 abstain, 0 against, 2 absent)**

Degelman reminded everyone that there were two posters in the poster session and one paper in Long Beach meeting from 1309-RP.

2:30 pm **Standards**

SSPC 169 Weather Data For Building Design Standards

SSPC 169 is looking into the weather or climate data requirements and requests of other ASHRAE Standards. Crawley reported that SSPC 169 is working with Standard 62.2 to put things in order. The plan for the next revision of Standard 169 is to have global maps to review by the Project Committee for next addendum cycle. Robert Lucas is heading this up.

2:40 pm **Weather Special Pubs: status / recommendations**

The question on the table was should any of the items in the table below be retired or refurbished or left as is?

The following table shows ASHRAE Special Publications produced by TC 4.2 research projects.

<i>Product</i>	<i>Date</i>	<i>Notes</i>
Bin and Degree Hour Weather Data for Simplified Energy Calculations	1995	Diskette
WYEC2 Data and Toolkit CD-ROM	1997	
WYEC2 Software (downloadable version of CD)	1997	
Design Weather Sequence Viewer CD-ROM	1998	
EXTREMES: Weather Sequence Generator CD-ROM	1998	
International Weather for Energy Calculations (IWEC) CD-ROM	2001	
Weather Data Viewer, Version 3.0	2005	Current data

Crawley recommended that the old bin data 1995 be removed and the rest be left as is. Thevenard recommended that we ask ASHRAE for sales data on the rest and transmit information to Crawley. Huang moved “*That TC 4.2 recommends that the 1995 product, Bin and Degree Hour Weather Data for Simplified Energy Calculations, be removed from sale.*” Crawley seconded the motion. **(7 for, 0 abstain, 0 against, 2 absent)**. The result will be communicated to ASHRAE.

2:50 pm **Old business**

TC web site

It was reported that every TC website has been visited and all the problems enumerated, especially with regards to ASHRAE's policy on privacy. Websites with problems have been pulled. It was reported that TC 4.2's website is in compliance with ASHRAE policy.

Cornick will email the approved Quebec City 2007 meeting minutes to the TC Webmaster.

3:00 pm....**New business**

Frequently Asked Questions (FAQ) review

The TC 4.2 FAQ list, available on the TC website, was circulated to the Committee prior to the Dallas meeting. Lott said he would send some new links to Barnaby who will consolidate all comments and send out the revised FAQ list. The Committee will reaffirm the list in 2 weeks. The goal is to have the revised list ready Feb 16th 2007

Chair Barnaby moved "*That the Committee go into executive session.*" Crawley seconded the motion. The motion carried unanimously. **(7 for, 0 abstain, 0 against, 2 absent)**

3:15 pm **Executive session**

DC moves "*That the committee consider the 1453-TRP contractor recommendation.*" Huang seconded the motion. **(6 for, 1 abstain, 0 against, 2 absent)**

The TC recommended a bidder to RAC at a cost of \$137, 000.

3:30 PM **Adjourn**

Barnaby moved "*To adjourn the meeting.*" Cornick second the motioned. The motion carried unanimously. **(6 for, 0 abstain, 0 against, 3 absent)**

Next meeting: June 26, 2007, Long Beach, California

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Minutes prepared by Steve Cornick, TC 4.2 Secretary

ASHRAE TC 4.2 Climatic Information TC 4.2 Action Item Summary

Dallas (January 2007)

<i>Item</i>	<i>Who</i>	<i>Status</i>
Item to investigate the southern hemisphere version of the clear sky model in the HOF	Thevenard	
CD Plus and 4 spreadsheet submittal to ASHRAE for inclusion on updating CD Plus product	Thevenard	
TC 4.2 recommends that the 1995 product, Bin and Degree Hour Weather Data for Simplified Energy Calculations, be removed from sale and this should be communicated to ASHRAE.	Barnaby	
Report back to the Committee the results of a small study to check out the impact on building energy use on this spectral study, possibly titled "Load Impact of Spectral Solar Gain Modeling."	Barnaby and Gueymard	
1413-RTAR "Developing Standard Procedures for Filling Weather Data Gaps During to be submitted to RAC by August 15th	Huang	
Restart the 1354-WS.	Haberl	
Comments are due to Huang by March 1st 2007 on RTAR on sparse data sets, "Procedures to Generate Detailed Climate Data from Sparse Data Sets".	All	
Investigate the issue of weather modeling and will report back to the committee via the research subcommittee.	Morris and Lott	
Investigate whether there already exists a complete XML version of the ASHRAE weather data set.	Barnaby, Crawley, Thevenard, and Huang	

Quebec City (June 2006)

<i>Item</i>	<i>Who</i>	<i>Status</i>
Solicit a list of volunteers to serve on the TRG's and forward the list to the Section 4 Head if there are any volunteers.	Barnaby	No action
Look into to developing a plan to move Chapter 28 HOF information to the web for Tech Weekend in coordination with David Banks.	Morris	No action
Submit the bumped Forum on what should appear in 2009 Handbook with respect to climate information for Dallas 2007.	Morris	Missed deadline
Submit a Seminar for Long Beach 2007 on using satellite data to support ground-based data	Bourassa	Seminar submitted
Organize and submit a Seminar for Long Beach related to GIS/Climate zoning/satellite and ground data.	Cornick	Seminar combined with above

Ask the Handbook Committee to strike a committee to decide what climatic data should be in Chapter 28. Thevenard, Barnaby, Steve Bruning, Morris, and Huang will form part of a subcommittee to propose a scheme for the chapter, giving a sample of the weather data tables and list of the locations to be including. This would be sent to TAC September 1 st , 2006. The target publication would be ASHRAE Insights.	Barnaby	Email circulated, will attempt to move forward in Dallas
Contact Mike Collins (TC 4.5) on the topic of whether or not TC 4.2 will take the results of 1143-RP and incorporate them into Chapter 28.	Morris	Delayed until Long Beach
Form working group on looking into developing XML schema and will discuss with John Kennedy as a potential way of publishing the climate/weather data on the web.	Crawley, Morris, Huang	No action
Draft RTAR reviving the RTAR on adjusting climate data for urban climates.	Huang, Erell	No action
Send approved minutes from SSPC 169 and the approved minutes of TC 4.2 (Chicago 2006 Winter Meeting) as well as an updated roster.	Cornick	Done

Chicago (January 2006)

<i>Item</i>	<i>Who</i>	<i>Status</i>
Web site update	Colliver, Cornick (collect material), Degelman (prior minutes)	Barnaby reminded all 5-January-2006
Work with ASHRAE to provide weather data on-line	Huang	Continuing
Investigate possible elevation inconsistency in 2005 data (re psychrometric properties)	Crawley, Morris, Thevenard	No action
Arrange for inclusion of design data spreadsheets on CD+	Morris, Thevenard	Done as part 1453-RP
Write 1413-WS "Developing Standard Procedure for Filling Weather Data Gaps ..."	Huang, Haberl	Done
Comments on RTAR "Evaluating Procedures to Generate Detailed Climate Data from Sparse Data Sets"	TC to send comments to Huang	Continuing
Conference call on data filling and quality control	Lott, Morris	Done
Review of RTAR "Spectral Cloud Modifier for Improved Hourly Simulation of Solar Radiation, Fenestration Solar Heat Gains, and Building Energy Performance"	TC to send comments to Huang	No action

TC/TG Activity Feedback Form

Please provide feedback on your TC/TG activities and return this form to your Section Head by email or drop off a printed copy in the Section Head's mailbox folder outside the ASHRAE Headquarters Room by Tuesday night 9:00 pm.

From TC: 4.2	Committee Name: Climatic Information
	Chair: Charles S. Barnaby

Meeting was Held	(Day) Tuesday	(Date) 30 January 2007
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Membership		
	Number Present	Total Number on Committee
Voting Members	7	9 (incl. International)
International Members	0	1
Corresponding Members	3	17
Visitors and Guests	5	n/a

Handbook Responsibilities *		Standards Responsibilities *	
Volume and Chapter (number only)	Next Revision Due Date	Standards Number (number only)	Next reaffirmation date
Fundamentals 28	2009	169	

Program Activities * at this Meeting		
Symposiums	Seminar	Forum
	2 1309-RP Posters	

Current Research Activities *		FAQs Responsibilities *	
Research Project (number only)	PMS meeting held (yes/no)	FAQ number (number only)	Last time reviewed
1309	Complete	41, 42, 43	2007
1363	Yes		

Does Committee have Web Site on ASHRAE Server? Linked to ASHRAE site (site is at University of Kentucky, Don Colliver, webmaster)

If so, is Web Site up to date? Yes

Any requests of the Technical Activities Committee?

Accomplishments

- Completion of a major revision of the design climatic information for the *2005 Handbook Of Fundamentals* expanding the number of locations to over 4,400 and expanding the number of climatic design parameters.
- Completion of 1309-RP *Development of Solar Radiation Models for Tropical Locations*
- Initiation of 1363-RP *Generation of Hourly Design-Day Weather Data*
- Turning 1453-RTAR submission to 1453 TRP in less than 6 months. *Updating the ASHRAE Climatic Data for Design and Standards* (contractor recommended to ASHRAE)
- Continue programs on integrating weather and climate data and models into HOF design procedures.

Objectives

- Plan for 2009 HOF chapter revision
 - Coordinate with TC 4.1 and TC 4.5 regarding reorganization of solar material
 - Develop coherent design data methodology (1363-RP)
 - Develop preliminary publication format for 2009 climatic data (electronic vs. printed); address member concerns regarding omission of printed tables in 2005 chapter.
 - Complete 1453-RP once recommended contractor is determined by ASHRAE
- Coordinate with Standard 169 (*Weather Data for ASHRAE Building Design Standards*); work toward common publication; avoid duplication of data preparation effort.
- Develop XML schema to facilitate automated exchange of climatic data
- Explore on-line sale of ASHRAE climatic data including review on current climate products currently for sale.

Criteria

- Progress toward 2009 HOF revision
 - Agreement with other TCs re material reorganization
 - 1363-RP progress
 - Successful compromise regarding electronic vs. printed data
 - 1453-RP underway
- Mid-to-long term plan regarding common publication of design and standards climatic data
- Climatic data available for purchase via ASHRAE web site (eventually in XML).
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AGENDA

ASHRAE TC 4.2 Climatic Information

1:00 – 3:30 PM, Tuesday, 30 January 2007 State 3, 3rd Floor, Convention Center, Dallas, TX

Scope: TC 4.2 is concerned with identification, analysis and tabulation of climatic data for use in analysis and design of heating, refrigeration, ventilation and air-conditioning systems. Promotion of effective use of weather information in these applications is also included.

To be added for Dallas: Status of current weather-related special pubs (e.g. 1995 bin data).

1:00 PM Call to order Barnaby Roll call Introductions Approval of agenda Approval of minutes of Quebec City meeting (27 June 2006) Announcements Membership Introduction of liaisons

1:15 PM Research Crawley

Active research projects 1143-RP (Reference Procedure to Obtain Typical Solar Spectra for Advanced Solar Heat Gain Calculation) (TC 4.5) 1363-RP (Generation of Hourly Design-Day Weather Data) 1453-TRP (Updating the ASHRAE Climatic Data for Design and Standards

RTAR / WS in process

Potential research projects

1:45 PM Handbook Morris

Issues with current chapter / data

Weather Special Pubs: status / recommendations

Web publication of current data

Plans for 2009 – solar data; print vs. electronic

2:15 PM Program Degelman

Improved procedures

Long Beach

New York

2:40 PM Standards Crawley

- SSPC 169 Weather Data For Building Design Standards

2:50 PM Old business

- TC web site Colliver

3:00 PM New business

3:15 PM Executive session (consider 1453-TRP contractor recommendation)

3:30 PM Adjourn

Next Meeting: June 26, 2007, Long Beach, California

ASHRAE TC 4.2 Climatic Information
Research Subcommittee
Meeting Minutes
4:15-6:00 pm, Monday, January 29, 2007
Trinity 3, 3rd Floor, Adam's Mark Hotel
Dallas, Texas

Present:

Chip Barnaby	Chris Gueymard
Bryan Becker	Jeff Haberl
Steve Cornick	Joe Huang
Dru Crawley, Subc Chair	Geoff Levermore
Hywel Davies	Bob Morris
Larry Degelman	Didier Thevenard
William C Dupont	Charlie Whitlock
Evyatar Erell	

Chair Crawley called the meeting to order at 4:17 pm. Those present introduced themselves. See attached agenda.

Changes to the agenda – proposed to give more some time to Charles Whitlock for the GEOS-4 reanalysis data – there were no other changes

1143-RP Reference Procedure to Obtain Typical Solar Spectra for Advanced Solar Heat Gain Calculation (TC 4.5 lead)

Chris Gueymard reported on 1143-RP – the project is finished – presentation for transactions to be given in Dallas – final presentation to the PMS on Tuesday for final approval. Final report – summary of 1143-RP; calculation the SHG considering the solar spectrum rather than broadband or fixed spectrum; new spectral model for variable spectrum can be applied to many software that calculate SHG coefficients – there were noticeable changes in SHG – the data may become part of TC 4.5 Fundamentals Chapter.

1325-RP Environmental Weather Loads for Hygrothermal Analysis and Design of Buildings (TC 4.4 lead)

Cornick reported that the 1325-RP PMS met on Sat. January 27th, 2007. Cornick attended in lieu of Crawley and Morris (PMS members) who were unable to attend. This was the second meeting of the PMS and first meeting were results were presented. The moisture years will be determined by modeling walls and selected on one or two performance criteria. Contractor recommended that for further investigations 2 orientations and possibly 2 moisture years be selected, one for a North facing orientation and the other modeled wall oriented in the predominant direction of long-term wind-driven rain. The data requirements of TC 4.2 will include T, RH (or some form of atmospheric moisture), wind speed, wind direction, solar (global and diffuse) and precipitation. The work is continuing. The contract is behind schedule due to a late start. Project should be completed by the end of February 2007. TC 4.4 voting for a no cost extension for 12 months.

1363-RP Generation of Hourly Design-Day Weather Data (TC 4.1 cosponsor)

Purpose of the project is to update the methods for single design statistics and generate daily profiles for primarily RTS load calculations –Roger Hedrick of GARD Analytics reported. The two main aspects are temperature characterization and solar data. There has been some progress on temperature profile aspects but less than anticipated – there has been little to no progress on solar. The PMS will confer by email and give contractor some direction. This project is needed for handbook – Barnaby reported that there are fallback positions.

1453-TRP Updating the ASHRAE Climatic Data for Design and Standards

ASHRAE received 2 proposals from bidders, both were responsive. The PMS meet before this meeting and have a recommendation to take to the TC for a recommendation vote. The TC will vote tomorrow. The project is to update HOF data and Std. 169 data.

Draft Work Statements (on Research Plan or submitted)

- **Adjusting Weather Data for Sites Next to Ocean (TC 4.4)**

Larry Elkin from TC 4.4, reported significant differences between coastal areas and further inland – he claims that there is no data for marine environments and near large lakes – what the RTAR seeks to do is characterize the impact of a body water on climate. The questions were whether weather data can be taken from existing stations and interpolated to locations of interest. This is similar to the RTAR that Huang is proposing on adjusting weather stations for near to the ocean. Chip mentioned that the topic of weather data keeps coming up. The TC response to offshore data questions indicates that there is marine data – there is buoy data ISH data for buoys. The question was asked as to what TC 4.4 is interested in this project? Larry noted that there are large dew point differences between airport and the beach data. The subcommittee suggested that perhaps there has been a great deal of work on this topic. Neal also suggested that there is a seasonal effect due to water temperature and there are very regional effects. Most of the studies are used for forecasting– which is related but not composed into a form to address TC 4.4s issues (whatever they might be).

It was also noted that this RTAR calls for ASHRAE to fund measurements, which is not something that has been traditionally done. It was also suggested that the RTARs authors look into power station sighting, lighthouse data, as well as other sources. The discussion began revolving around using meso-scale models such as Calmet and Calpath, MM5. There are meso-scale networks that have varying degrees of quality, another possible data source.

Action: Cornick to work with Elkin on this RTAR.

The discussion on meso-scale modeling continued. There is the possibility of using MM5 RUC data (rapid update cycle) looking at it as well as at back casting data to give TC 4.4 the data they are looking for. Huang discussed Evytar’s urban canyon model, which begins to get at the physics of producing data where we don’t have it. Barnaby said they are considering how they deal with built up areas and how they can extend the applicability into urban areas to create much more globalized data. Chip suggested that perhaps we (the TC?) need a daylong workshop to the building industry to educate them and us.

- **1364-RTAR Improved Database of Earth Temperatures and Municipal Water Supply Temperatures for Use with Building Simulations**

Jeff reported no progress and the RTAR has fallen off the research plan – but we have the letters containing the comments from RAC and we can restart the RTAR. Jeff will continue to be the lead on this.

- **1413-RTAR Developing Standard Procedures for Filling Weather Data Gaps During Analysis of Measured Building Energy Use (TC 4.7 cosponsor)**

There was no progress on this. The RTAR gets the boot unless WS gets produced by August 15th.

Research Topics

- **Develop Procedures to Generate Detailed Data from Sparse Data Sets**

Joe Huang reported on progress on detailed data from sparse data RTAR. Joe circulated what he has to date. The purpose is to generate a synthetic weather file (hourly) – the RTAR concentrates solely on procedures to fill in data and generate a usable hourly weather file – no micro-climate adjustments – Joe noted that the procedure could be used for filling in missing data.

Action: Comments back to JH by 1st Mar for the whole TC.

- **Development of International Weather for Energy Calculations**

Dru Crawley reported that no progress had been made on drafting an RTAR for this work.

- **Upgrading WdViewer 3.0 to produce more outputs**

Chip suggested the proposed *RTAR updating the WdViewer* is essentially the same as 1453-TRP which will produce WdViewer 4.0 so we should delete this item

Action: Delete RTAR to update WdViewer (3.x) from the research plan.

- **Cloud Modifier (TC 4.4)**

Willie DuPont did not attend – so the cloud modifier to the 1143-RP RTAR was not discussed.

Bob Morris and Neal Lott will report back to subcommittee on the applicability of meso-scale models. Dru will include this on the agenda for the Long Beach meeting.

Action: Morris, Lott and Gueymard will report to the subcommittee on the usage of meso-scale models for data filling at the next meeting in Long Beach.

Old business

- **CEC weather data update**

Nothing to report; Norm Bourassa was going to chair a forum for Long Beach. (Note: Steve will combine this with another proposed seminar and try to get a session together for Long Beach – from the main TC meeting.)

- **XML Definitions for Climatic Data**

GPC 20 is looking at including climate data and design weather data is an identify exchange class of data; process is ongoing. Barnaby asked if the research subcommittee or the TC was interested in being involved.

Charlie Whitlock presented his progress and reported on the GEOS-4 reanalysis data. Charlie did not complete his presentation and will complete it at the full TC meeting.

New Business

Chip Barnaby brought the idea of creating a task force on wind. TC 4.7 uses wind for natural ventilation and several other TCs uses wind data. Joe Huang agreed to form a task group on wind – TCs 4.2, 4.3, 4.7, 4.10, and 5.3 should be involved or consulted. Volunteers Dru, Joe, Bob, Ron.

Action: Joe Huang to investigate forming a task group on wind.

The meeting was adjourned at 5:50 PM.

AGENDA

Research Subcommittee
ASHRAE TC 4.2 Climatic Information
4:15-6:00 pm, Monday, January 29, 2007
Trinity 3, 3rd Floor, Adam's Mark Hotel
Dallas, Texas

4:15 Call to order / introductions / changes to the agenda
Crawley

4:20 **Active Research Projects**

- **1143-RP** Reference Procedure to Obtain Typical Solar Spectra for Huang
Advanced Solar Heat Gain Calculation (**TC 4.5 lead**)
- **1325-RP** Environmental Weather Loads for Hygrothermal Analysis and Morris
Design of Buildings (**TC 4.4 lead**)
- **1363-RP** Generation of Hourly Design-Day Weather Data (**TC 4.1 cosponsor**) Barnaby
- **1453-TRP** Updating the ASHRAE Climatic Data for Design and Standards Barnaby

4:55 **Draft Work Statements (on Research Plan or submitted)**

- **1364-RTAR** Improved Database of Earth Temperatures and Municipal Water Supply Temperatures for Use with Building Simulations
Haberl
- **1413-RTAR** Developing Standard Procedures for Filling Weather Data Gaps
Huang
During Analysis of Measured Building Energy Use (**TC 4.7 cosponsor**)

5:15 **Research Topics**

- Develop Procedures to Generate Detailed Data from Sparse Data Sets
Huang
- Development of International Weather for Energy Calculations
Crawley
- Upgrading WDVviewer 3.0 to produce more outputs
Barnaby
- Cloud modifier RTAR (TC 4.5)
Dupont
- Adjusting Weather Data Sites Close to Ocean (TC 4.4)
Huang
- Other topics?

5:40 **Research Plan 2006 / 2007**
Crawley

- Review TC 4.2 research topics
- RTARs and Ws can now be submitted 3 times a year—six weeks before each meeting and
1 August 2006
- For the items on plan, get Work Statements drafted, reviewed, approved

5:50 **Old Business**

- CEC weather data update
Huang
- GPC 20 XML Definitions / gbXML / Climatic Data Definitions
Barnaby

5:50 **New Business**

-

6:00 **Adjourn**

Next Meeting: June 25, 2007, Long Beach, California

ASHRAE TC 4.2 Climatic Information
Generation of Hourly Design-Day Weather Data (1363-RP) PMS
Meeting Notes
Majestic 9 (37), Adams Mark Dallas, Dallas, TX
28 January 2007, 8 – 10 AM

Attendance

Roger Hedrick, GARD Analytics (contractor)
Steve Cornick, NRC
Drury Crawley, DOE
Robert Morris, EC
Larry Degelman, TAMU
Neal Lott, NOAA
William DuPont, Sunergy
Charles Whitlock, NASA
Chris Gueymard, Solar Consulting Services
Didier Thevnard, Numerical Logics, Inc
Chip Barnaby, Wrightsoft
Jim Pegues, Carrier
Joe Huang, LBL

The meeting started at 8:15.

The contractor, Roger Hedrick (RH), reviewed work to date. A PowerPoint presentation was distributed to all PMS members and interested parties. The presentation is available from the PMS members.

A free-ranging discussion followed, covering the following --

Number of extreme days. For some of the locations investigated some of the months have very few design days using the 0.4% criteria. Chip Barnaby (CB) noted that there is discussion about using 5% instead of 0.4% dry bulb design temperature for each month. The consensus of the group was that more days needed to be included by using less stringent selection criteria.

The contractor was asked to verify that the sites are being used are hourly stations as opposed to three hour data interpolated. RH reported that he has used two sets with mostly three-hour data (Brasilia and Dubai). RH reported that they were using NCDC data and Neal Lott confirmed that there was no interpolation by NCDC. Therefore no interpolated data was used.

The contractor was directed to look into consistently handling the time base for daily profiles. All ISH data is reported in GMT. For comparable profiles, this must be converted to LST or solar time.

CB suggested investigating the mean daily range to the design day daily range – we don't know if the monthly mean is ok or not. Joe Huang (JH) suggested in that in some places it might be good other places way off.

RH asked if PMS wanted to see all the data? There is a lot and he was looking for guidance. The consensus was that the working data sets should be delivered to ASHRAE on CD as a convenience for future researchers.

The discussion moved on to solar models. It was suggested that more comparisons between solar models be done from those reported by the contractor. Dupont (WD) from TC 4.5 suggested that this job was done as part of 1143 RP and that we make use of the results from this project. Didier Thevnard (DT) would like to see which models are practical for areas all over the world. Chris Gueymard (CG) suggested that we make use of his 1143-RP final report. There was discussion on how can we use REST2, a broadband model. The job would involve of coming up with parameters to provide users with the inputs for the cities for the broadband model developed as part of 1143-RP. The problem is that 4500 locations worldwide are to be done. It was suggested that the HOF could tabulate peak solar values generated using REST2 and applied with profiles. WD noted that we do not need tabulated data at all that we can just the models and electronic inputs. According to CB the issue for this project is whether or not it is practical to run REST2. Should the parameters be published or do we pre-calculate using the model and publish some derived numbers for the users? How would we tabulate and how would we format the results? Contractor should select a model with an eye to practically. WRT data consumers – we should try to make data etc. in the handbook so it can go directly into the RTS design load calculation procedure – CB suggests that similar to temperature we could do the same for a few simple solar parameters to generate design day solar profile. The PMS felt that Handbook users are conservative and that tabulated values are likely to remain a feature of the Handbook for the foreseeable future.

CB suggested that it would be useful from the project point of view to develop a few flowcharts to show how the entire process would work to identify any potential problems, such as unavailable data to calculate input parameters.

CB reminded the committee that the Handbook data must be approved by summer of 2008, thus there was not excessive time for investigations.

JH asked whether REST2 practical for the contractor to use for the rest of the contract – we shouldn't waste any time evaluating current models since this has been as part of 1143-RP. CB asked Charlie Whitlock (CW) whether we rely on NASA's help on getting broadband seven parameters for REST2. CW said he would investigate.

The need to generate a data flow chart from end-to-end as to how the process works was reiterated. At this point it was suggested that the PMS should discuss as to how the contractor should proceed.

Returning to temperature profiles, there was additional discussion on the dew point profile based on a constant dew point limited by saturation. How does the profile presented by the contractor compare to the ASHRAE profile? Contractor suggests that constant dew point might be appropriate and will look at average maximum values. JH suggested that perhaps contractor should be looking the normalized dew point profile throughout the day. CB suggested that perhaps contractor assume a model and see how good the fit is– using regression statistics or some statistical tests. CB would like some statistical backing on any conclusions reached.

There was suggestion that contractor perhaps to do some literature investigations to answer some of the questions raised regarding profiles.

PMS will carry on further discussions via email and send contractor some instructions on how to proceed.

[Note: Comments were sent to the contractor on Feb. 15, 2007.]

Meeting adjourned 10:03.

ASHRAE TC 4.2 Climatic Information

TC 4.2 HANDBOOK SUBCOMMITTEE MEETING MINUTES

SUNDAY, JANUARY 28, 2007 1:00 - 3:00 PM

**Majestic 4, 37th Floor, Adam's Mark Hotel
Dallas, TX**

In Attendance:

Charles Whitlock, Steve Cornick, Neal Lott, Bob Morris (Chair), Larry Degelman, Chris Gueymard, Steve Bruning, Didier Thevenard, Chip Barnaby, Dru Crawley, Jim Pegues, Joe Huang

Current Handbook Issues

With respect to issues with existing data, enthalpy was corrected via errata, and republished correctly in ASHRAE Standard 169. But the spreadsheet files with reasonable electronic access to the Handbook design data is not on the current Handbook CD plus. ACTION R. Morris, D. Thevenard to arrange for the spreadsheets to be added to the Handbook CD-PLUS – Needs to be done by Feb 5, 2007.

Status of Special Publications

The issue of the recommendation to retain or withdraw current special publications e.g. binned data will be reviewed at main TC 4.2 committee meeting.

Print Format Issues

With respect to the print format for the HOF the suggestion was made to provide a subset of the current list of stations and elements to the printed version. Barnaby and Thevenard have suggested subsets.

The issue of appropriate monthly percentiles was raised. For example 1, 5, and 10% values for monthly percentiles, based in input from some practitioners may be more useful because the annual percentiles, applied to the monthly data are generally too extreme. The point was made that the monthly data is now used more and annual percentile is not used very much. This issue will be addressed as we develop the new data for the next HOF.

There was general and strong agreement to use the Internet for dissemination of the HOF data. One advantage is that Internet mapping services could be used to find stations. For example, KML files with GIS services might be a good first step.

Other suggestions included representing stations evenly by climate zone, or by population, or mainly North America with major capitals elsewhere in the world. This will be part of the discussions with the to have with the RP-1453 contractor.

Holding a Forum at an ASHRAE meeting was suggested to consult with users was suggested, although it was pointed out that this was not very successful in the past owing to very low attendance.

Planning for the 2009 HOF

This discussion centred mainly on the issue of providing the clear sky solar data, both moving this from where it exists now, and updating with new information. Most new information will be generated through the results of 1363-RP and 1453-RP.

The simplest approach will be to move the clearness map from the Applications Handbook, and the clear sky model from TC 4.5 and 4.1's chapters in the HOF. This would result in the information in one place but with the same restrictions e.g. it only applies to the northern hemisphere, and further the model is questionable will remain.

There ensued considerable discussion and suggestions e.g. use 8 input values per month per location with REST2 model to support clear sky broadband and spectral for fenestration. The 8 parameters would have to be developed with some prospect that NASA can provide them on a grid. A single clear condition per location per month is needed.

Another suggestion involved publishing the two (peak direct normal and diffuse on a horizontal surface) numbers along with a model to distribute to surface and hour of day, regardless of the model used to generate it. The parameters of the model could also be published for more detailed studies. There was further discussion on how clear the clear sky should be to be representative e.g. the clearest day or average clear day. This is a significant issue since the aerosol loading in the atmosphere affects scattering and hence the proportion of solar energy in the direct and diffuse components.

There was general agreement to hold teleconferences regularly (once per month was suggested) to work through these issues, incorporating the work and results of 1363-RP and 1453-RP into the approach.

The meeting adjourned at 3PM.

**AGENDA FOR TC 4.2 HANDBOOK SUBCOMMITTEE MEETING
SUNDAY, JANUARY 28, 2007 1:00 - 3:00 PM
Majestic 4, 37th Floor, Adam's Mark Hotel
Dallas, TX**

1. Roll call and introduction of ASHRAE Handbook Liaison
2. Changes to agenda
3. Issues with 2005 data and chapter
4. Current Special Publications (discussion to prepare for TC vote)
5. Issues with HOF CD format, HOF CD plus, etc.
6. Planning and requirements for future work including 2009 Handbook of Fundamentals
 - 6.1. Clear Sky Model and 1363-RP
 - 6.2. Planning for 1453-RP kick-off
 - 6.3. Coordination with TC 4.1 and TC 4.5
7. Requirements and coordination with SSPC 169
8. Other

**AGENDA FOR TC 4.2 HANDBOOK SUBCOMMITTEE MEETING
SUNDAY, JANUARY 28, 2007 1:00 - 3:00 PM
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- 7 Other