

**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: February 2, 2013

TC/TG/TRG TITLE: Climatic Information

DATE OF MEETING: June 26, 2012 LOCATION: San Antonio, TX.

| MEMBERS PRESENT | MEMBERS ABSENT | EX/OFFICIO MEMBERS AND ADDITIONAL ATTENDEES |
|--|--|--|
| Didier Thevenard (Chair, Web, VM) Dru Crawley (VC, Res, Stds, VM) Juan-Carlos Baltazar (Sec, VM) Neal Lott (VM) Philip Jarret (VM) Steve Cornick (VM) Norm Bourassa (VM) Joe Huang (VM) Evyatar Erell (NQ) Chip Barnaby (CM) Larry Degelman (CM) Chris Gueymard (CM) Don Colliver (CM) | J Patrick Carpenter (VM) Geoffrey Levermore (NQ) Stuart Malkin (VM) Ronald Petersen (VM) Anthony Arguez (CM) William Bahnfleth (CM) Constantinos Balaras (CM) Bryan Becker (CM) Jui-Chen Roger (CM) Reda Djebbar (CM) Brian Fricke (CM) Kenneth Hubbard (CM) Achilles Karagiozis (CM) Clayton Lampman (CM) Linda Lawrie (CM) Robert Lucas (CM) Richard Perez (CM) Michael Roth (CM) Thomas Stoffel (CM) Charles Whitlock (CM) | Dave Westberg Chuck Khuen |

| | |
|-------------------------------|----------------------|
| TAC CHAIR | Charles Culp |
| TAC SECTION HEAD | Michael R Bilderbeck |
| RAC RESEARCH LIAISON | Srinivas Garimella |
| SPECIAL PUBS LIAISON | William S Fleming |
| HANDBOOK LIAISON | James Dale Aswegan |
| CHAP TECH TRANS LIAISON | Harris Sheinman |
| PROGRAM LIAISON | Bill Dietrich |
| PROF DEV COMM (ALI) | John H Nix |
| STANDARDS LIAISON | James Tauby |
| STAFF LIAISON (RESEARCH/TECH) | Mike Vaughn |

Abbreviations: VM = Voting Member, CM = Corresponding Member, NQ= Member Non-quorum

ASHRAE TC/TG/TRG ACTIVITIES SHEET**DATE:** Current as of 1st July 2011**TC/TG/TRG NO.:** TC 4.2**TC/TG/TRG TITLE:** Climatic Information**CHAIR:** Steve Cornick **VICE CHAIR:** Didier Thevenard **SECRETARY:** Dru Crawley**TC/TG/TRG MEETING SCHEDULE**

| Location-Past 12 Months | Date | Location-Planned Next 12 Months | Date |
|-------------------------|------------|---------------------------------|------------|
| San Antonio, TX | 2012-06-26 | Dallas, TX | 2013-01-29 |
| Chicago, IL | 2012-01-24 | Denver, CO | 2013-06-22 |
| Montreal, QC, Canada | 2011-06-28 | New York, NY | 2014-01-21 |

TC/TG/TRG SUBCOMMITTEES

| Function | Chairman |
|----------------------|---------------|
| Handbook | Neal Lott |
| Research & Standards | Drury Crawley |
| Program | Joe Huang |
| Honours | Joe Huang |

RESEARCH PROJECTS-CURRENT

| Project Title | Contractor | Monitoring Comm. | Report Made At Meeting |
|---|------------------------|---|---|
| 1413-TRP Developing Standard Procedures for Filling Weather Data-Gaps During Analysis of Measured Building Energy Use | University of Oklahoma | Didier Thevenard (Chair), Chip Barnaby, Steve Cornick, Neal Lott | PMS Chair Thevenard reported that the PMS met with Contractor on Sunday .The contractor presented their work progress since they started in September 2011. This included results of filling short gaps of up to 10 hours with various methods. Project is on track. |
| 1613-RP Update Climatic Design Data in Chapter 14 of the 2013 Handbook of Fundamentals | Numerical Logics | Robert Morris (Chair), Neal Lott, Steve Cornick, Steve Bruning, Dru Crawley | PES met with the contractor, there are 6432 weather stations. The project seems to be on track for completing the handbook and it will be requested a non-cost time extension to the end of February 2013. It is also requested an approval of the handbook chapter.. |

| LONG RANGE RESEARCH PLAN | | | | | | | |
|---|----------|-------------|---------------|----------------|-------------|---------------|--|
| Rank Title | RTAR | | | Work Statement | | | RAC Approval for bidding |
| | Writ-ten | TC Approved | Subm'd to RAC | Writ-ten | TC Approved | Subm'd to RAC | |
| 1561-WS, Procedures to Adjust Observed Climatic Data for Regional or Microclimatic Variations | Yes | Yes | Yes | Yes. | Yes. | Yes. | Morris made a few corrections to the WS requested by RAC. Crawley will send to MORTS |
| 1610-WS, Development of a Transposition Model for Clear-Sky Solar Irradiance | Yes | Yes | Yes | Yes | Yes | Yes | Sent back with comments |
| 1654-URP Assessing the Potential of Climate Forecast System Reanalysis Data to Provide Local Climate and Weather Profiles in Areas not Currently Covered by Ground Station Data | Yes | Not | | | | | PES submit to the committee its recommendation in executive session |
| Xx-RTAR Moisture Design Reference Years for Hygrothermal Analysis and Design of Buildings (1325-RP Update) | Yes | | | | | | Cornick put a draft RTAR on the TC Google site after the Montreal meeting (see attached). TC requested to provide comments back by March 15, 2012. |

| HANDBOOK RESPONSIBILITIES | | | | | |
|--|--------|-----------------------------|-----|----------|-----------------------|
| Year | Volume | Chapter Title | No. | Deadline | Handbook Sub. Liaison |
| 2013 | HOF | Climatic Design Information | 14 | 2013-02 | James Dale Aswegan |
| STANDARDS ACTIVITIES – List and Describe Subjects | | | | | |
| TC 4.2 is the cognizant TC for Std.169 <i>Weather Data for ASHRAE Building Standards</i> . The TC 4.2 HOF data has been incorporated into this proposed standard. Other coordination will be undertaken as needed such as with SSPC 169. | | | | | |

TECHNICAL PAPERS from Sponsored Research-Title, when presented (past 3 yrs. present & planned)

- Poster Session, Methods for estimating heating and cooling degree-days to any base temperature (1453-RP) (LV-11-021)
- Updating the ASHRAE Climatic Data for Design and Standards (1453-RP) (AB-10-012)
- Impact of Typical Weather Selection Approaches on Energy Analysis of Buildings (RP-1477) (OR-10-042)
- Influence of Long-term Trends and Period of Record Selection on the Calculation of Climatic Design Conditions and Degree-Days (OR-10-045)
- Evaluation of Typical Weather Year Selection Approaches for Energy Analysis of Buildings (1477-RP) (Louisville, June 2009) (LO-09-072)

TC/TG Sponsored Transactions-Title, when presented (past 3 yrs. present & planned)

None currently planned.

TC/TG Sponsored Seminars-Title when presented (past 3 yrs. present & planned)

- Seminar 65 - Impacts of Environmental Change on Building Design and Their HVAC Systems – San Antonio, TX
- Seminar 18: New High Quality Solar Data Sources and Analysis Methods for High Resolution Weather Applications: Part 1 – Montreal, June 2011
- Seminar 48: New High Quality Solar Data Sources and Analysis Methods for High Resolution Weather Applications: Part 2 – Montreal, June 2011
- Seminar 16: Climate Change: It's Happening, So Who's Responding? TC 2.5 and TC 4.2 Co-sponsor – Las Vegas, January 2011
- Seminar 11: Background on Load Calculations Methodologies (Past and Present); Current ASHRAE Information (Handbook and Publications), TC 4.1 (TC 4.2 co-sponsor) – Orlando, January 2010
- Seminar 45, Climate Change Update (TC-2.5, Global Climate Change, cosponsor)
- Seminar 50, ASHRAE Handbook: Fundamentals Volume, Load Calculation Improvements (co-organized with TC 4.1 and TC 4.5) – Louisville 2009
- Seminar 42, The Tables Re-loaded: Handbook Rollout, Chapter 28 – Chicago 2009
- Seminar 4, Meso-scale weather modeling for building applications – Chicago 2009
- Seminar 78, Weather Data for Computer Simulation - More accurate tools for a climate change world. – New York January 2008.
- Seminar 48, Climate Change: Modelling the Weather and Its Potential Impacts on Building Performance – Long Beach, June 2007.

TC/TG Sponsored Forums-Title, when presented (past 3 yrs. present & planned)

- Climatic design information in the 2013 Handbook – Montreal, June 2011

JOURNAL PUBLICATIONS, when published (past 3 yrs. present & planned)

Monthly average clear-sky broadband irradiance database for worldwide solar heat gain and building cooling load calculations, by Christian Gueymard & Didier Thevenard. I, Volume 83, Issue 11, November 2009, Pages 1998-2018.

Attachments:

Schedule and Agenda

Minutes

Action Items

TC/TG Activity Feedback Form

Research Subcommittee Agenda

**2012 Annual Meeting Schedule and Agenda, San Antonio
TC 4.2 (Climatic Information) and Related Activities**

| Time/Date | Meeting/Event | Hotel, Room, Floor |
|--------------------------------|---|--|
| Saturday, 23 June 2012 | | |
| <i>No activities planned</i> | | |
| Sunday, 24 June 2012 | | |
| 9:30 a.m. - 10:00 a.m. | 1561-PES | Hyatt Presidio B, Level 3 |
| 10 a.m. - 11:30 a.m. | 1413-RP, <i>“Developing Standard Procedures for Filling Climatic Data Gaps for use in Building Performance Monitoring and Analysis”</i> | Hyatt Presidio B, Level 3 |
| 12:00 a.m. - 1:30 p.m. | 1613-RP, <i>“Update Climatic Design Data in Chapter 14 of the 2013 Handbook of Fundamentals”</i> and TC 4.2 Handbook Subcommittee Meeting | Hyatt Presidio B, Level 3 |
| 1:30 p.m. - 2:30 p.m. | TC 4.2 Program subcommittee | Hyatt Presidio B, Level 3 |
| Monday, 25 June 2012 | | |
| 10:00 a.m. - 12:00 p.m. | Weather Data SSPC 169, <i>Weather Data for Building Design Standards</i> | Convention Centre Room 006A, River Level |
| 4:15 p.m. - 6:00 p.m. | TC 4.2 Research Subcommittee Meeting | Hyatt Travis C, Level 3 |
| Tuesday, 26 June 2012 | | |
| 1:00 p.m. to 3:30 p.m. | TC 4.2, Climatic Information, Full Committee Meeting | Hyatt Bonham D, Level 3 |
| Wednesday, 26 June 2012 | | |
| 11:00 a.m. to 12:30 p.m. | Seminar 65 - Impacts of Environmental Change on Building Design and Their HVAC Systems | Room 103A |

AGENDA, ASHRAE TC 4.2 Climatic Information

1:00 – 3:30 PM, Tuesday, 25 June 2012

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 | <ul style="list-style-type: none"> Call to order Roll call Introductions Approval of agenda Approval of minutes of Chicago meeting (January 2012) Report from the Chair/Announcements Introduction of liaisons (liaison announcements/requests) | Thevenard Baltazar |
| 1:15 PM | Membership Roster Rollovers (for July 2012) | Thevenard |
| 1:20 PM | Review of Action Items and Status | Crawley |
| 1:35 PM | Research Reports on status of current, future and completed research projects: <ul style="list-style-type: none"> ● 1477-RP (Development of Typical-year Weather Files from the ISH Data Base of Historical Weather Data for 2,500 International Locations) ● 1413-RP (Filling of data gaps in climatic records) ● 1561-RP (Mesoscale modeling of climatic data) ● 1610-WS Clear sky transposition model ● 1613-RP (Update Climatic Design Data in Chapter 14 of the 2013 Handbook of Fundamentals) ● RTAR: Moisture Design Reference Years for Hygrothermal Analysis and Design of Buildings (Steve Cornick) ● Long-term research plan ● Other potential research projects | Crawley |
| 2:05 PM | Handbook <ul style="list-style-type: none"> ● 1613-RP Update of Climatic Data for 2013 Handbook of Fundamentals ● Revisions and errata | Morris |
| 2:20 PM | TC-4.2 developments <ul style="list-style-type: none"> ● NASA satellite data | Cornick Cornick |
| 2:40 PM | Program <ul style="list-style-type: none"> ● Dallas, Jan 26-30, 2013 ● Future conferences | Huang |
| 2:55 PM | Standards Report SSPC 169 Weather Data for Building Design Standards | Crawley |
| 3:10 PM | Old business TC Web Site/Google sites FAQ #6 weather years for energy calculations | Cornick/Thevenard |
| 3:20 PM | New business | from floor |
| 3:30 PM | Adjournment | |
| 3:30 PM | Executive Session | |

Next Meeting: Dallas, TX, Tuesday 29th January 2013

AGENDA, ASHRAE TC 4.2 Climatic Information

1:00 – 3:30 PM, Tuesday, 25 June 2012

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 | <p>Call to order <i>Chair Didier Thevenard opened the meeting</i></p> | Thevenard |
| | <p>Roll call and Introduction <i>Roll call and introductions. A voting quorum (9 of 11 voting members) was present</i></p> | Baltazar |
| | <p>Approval of agenda <i>Thevenard move the agenda approval and the motion was second by Crawley. Agenda approved. (Agenda attached).</i></p> <p>Approval of minutes of San Antonio meeting (June 2012) <i>Crawley moved and</i></p> <p>Report from the Chair/Announcements</p> <p>Introduction of liaisons (liaison announcements/requests) <i>Harris M Sheinman, Chapter Technology Transfer Liaison was present, asked to be included in the list distribution of this committee.</i></p> | |
| 1:15 PM | <p>Membership Roster Rollovers (for January 2013)</p> <p>Roster Rollovers <i>Cornick will roll to Corresponding Member, and Barnaby will become Voting Member</i></p> <p>Executive: <i>Neil Lott is the new Handbook Subcommittee Chair</i></p> | Thevenard |
| 1:20 PM | <p>Review of Action Items and Status <i>See action item attachment</i></p> | Crawley |
| 1:35 PM | <p>Research</p> <p><i>Crawley reported on the status of current, future and completed research projects:</i></p> <ul style="list-style-type: none"> ● 1477-RP (Development of Typical-year Weather Files from the ISH Data Base of Historical Weather Data for 2,500 International Locations) <i>Completed and delivered in the past meeting</i> ● 1413-RP (Developing Standard Procedures for Filling Climatic Data Gaps for use in Building Performance Monitoring and Analysis) <i>PMS met the contractor and it seems to be on track</i> | Crawley |

- 1561-RP (Mesoscale modeling of climatic data)
PES met and will make a recommendation to the TC in executive session at the end of this meeting
- 1610-WS Clear sky transposition model
No progress, it has to be submitted by February 2013
- 1613-RP (Update Climatic Design Data in Chapter 14 of the 2013 Handbook of Fundamentals)
PMS met with the contractor, there are 6432 weather stations. The project seems to be on track for completing the handbook and it will be requested a non-cost time extension to the end of February 2013. It is also requested an approval of the handbook chapter.
- RTAR: Moisture Design Reference Years for Hygrothermal Analysis and Design of Buildings (Steve Cornick)
The project was emailed to the members of the committee for review and comments by august 15th 2012.
- Long-term research plan
See attached, it is still open for comments, additions and reviews.

2:05 PM

Handbook

Lott

- 1613-RP Update of Climatic Data for 2013 Handbook of Fundamentals
- Revisions and errata

Lott reported the status of the Handbook chapter, and several ideas were mentioned related to be considered for the handbook of 2017. Lott submitted for approval the handbook chapter and second by Thevenard, the handbook chapter was approved for unanimity (9-0)

2:20 PM

TC-4.2 developments

Cornick

- NASA satellite data

Cornick

2:40 PM

Program

Huang

- Dallas, Jan 26-30, 2013

Huang presented a possible seminar:

“New Sources of Climatic Data”, seminar whose speakers could be Crawley on New ASHRAE products, Phil Garret on Environmental Canada products, and Lott on NCDC products. Chaired by Huang

- For Denver 2013

Technical Papers:

Steve Cornick on Weather Zones 169, Huang on a paper of 1477-RP,

Seminar: Speakers on topics on reference to 1477-RP by Huang, CSFR, Chuck Khuen, someone from NREL (possibly Steve Wilcox) to talk about TMY3, and Satellite data by Gueymard.

Seminar topics:

Gueymard and Bourassa on Solar weather short-term for forecast optimal building operation

- For Future Conferences
2 papers from 1613-RP Thevenard and 2 for 1413-RP

Huang submit for approval the seminar for San Antonio, Crawley moved and Huang seconded being approved by unanimity (9-0)

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|---------|--|--------------------------|
| 2:55 PM | Standards Report SSPC 169 Weather Data for Building Design Standards | Crawley |
| | <i>Crawley informed that the SSPC 169 put it to approve an addenda for publication public review and it is in fast track, which means that does not have to go to standards committee because there is not contention.</i> | |
| 3:10 PM | Old business TC Web Site/Google sites FAQ #6 weather years for energy calculations | Cornick/Thevenard |
| | <i>None</i> | |
| 3:20 PM | New business <i>None</i> | from floor |
| 3:30 PM | Adjournment <i>Crawley moved and Cornick seconded to adjourn the meeting. Meeting adjourned at 3:30 PM</i> | |
| 3:30 PM | Executive Session <i>1654-URP (Assessing the Potential of Climate Forecast System Reanalysis Data to Provide Local Climate and Weather Profiles in Areas not Currently Covered by Ground Station Data)</i> <i>Committee accept the propose of the PES recommendation</i> | |

Next Meeting: Dallas, TX, Tuesday 29th January 2013

ASHRAE TC 4.2 Climatic Information TC 4.2 Action Item Summary

San Antonio, TX (June 2012)

| <i>Item</i> | <i>Who</i> | <i>Status</i> |
|---|----------------|---------------|
| TC 4.2 members to review Long-term research plan and provide comments back to Cornick | TC 4.2 Members | Pending |
| Inform ASHRAE Publications that TC 4.2 agrees to remove WYEC2 CD from the bookstore. | Cornick | Completed |
| Request information from ASHRAE Publications on the sales of the Design Weather Sequence Viewer and Extreme Weather Sequence Generator CDs. | Cornick | Completed |
| Work with NASA to link remote sensed data with station data for Standard 169 updates in progress | Cornick | Completed |
| Submit seminar: <i>Impacts of Climate Changes</i> . Chair: Steve Cornick for San Antonio | Cornick | Completed |
| Submit seminar: <i>TDB</i> . Chair: Phil Jarrett for San Antonio. | Huang/Jarrett | Completed |

TC/TG/TRG Activity Feedback Form

Please provide feedback on your TC/TG/TRG 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.

| | |
|---------|--------------------------------------|
| TC# 4.2 | Committee Name: Climatic Information |
| | Chair: Didier Thevenard |

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|------------------|------------------------|---------------|---------------------|
| Meeting was Held | (City) San Antonio, TX | (Day) Tuesday | (Date) 26 June 2012 |
|------------------|------------------------|---------------|---------------------|

| Membership | Quorum was established? (y/n) | y |
|-----------------------|----------------------------------|---------------------------|
| | Number Present | Total Number on Committee |
| Voting Members | 8 | 11 |
| Member Non Quorum | 1 | 2 |
| Corresponding Members | 5 | 27 |
| Visitors and Guests | 2 | |

| Handbook Responsibilities | Standards Responsibilities |
|---|--|
| Volume and Chapter (i.e. A17 Printing Plants) | Standards Number (i.e. SPC 178, Std 90.1, Gdl 2) |
| F14 Climatic Information | SSPC 169 |
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| Program Activities | | | | | | | | | |
|----------------------------|--------------|-------------------|--------------|-------------------------------|--------------|-------------------------|--------------|---------------------|--------------|
| Total # of Poster Sessions | | Total # of Forums | | Total # of Technical Sessions | | Total # of Transactions | | Total # of Seminars | |
| Sponsored | Co-sponsored | Sponsored | Co-sponsored | Sponsored | Co-sponsored | Sponsored | Co-sponsored | Sponsored | Co-sponsored |
| | | | | | | | | 1 | |

| Current Research Activities (active) | | FAQs Responsibilities | |
|--------------------------------------|---|--|-----|
| # of active RTARS | 0 | Total # of FAQ's | 4 |
| # of active Workstatements | 1 | Have FAQ's been updated on a 5 yr cycle? | YES |
| # of active TRP's | 1 | | |
| # of active RP's | 2 | | |
| Total # of active Projects | 4 | TC Website | |
| | | TC has a website? (y/n) | YES |
| | | Website is up to date? (y/n) | YES |
| | | Website is on the ASHRAE Server? (y/n) | YES |
| | | Link to website from www.ashrae.org/technology/page/104 is functional? (y/n) | YES |



AGENDA

ASHRAE TC 4.2 Research Subcommittee
 4:15-6:00 pm, Monday, June 23rd, 2012
 Travis, 3rd Floor, Hyatt
 San Antonio, Texas

- 4:15 Call to order / introductions / changes to the agenda
 Crawley
- 4:20 **Active Research Projects**
- **1413-RP** Developing Standard Procedures for Filling Weather Data-Gaps During Analysis of Measured Building Energy Use
 Thevenard
 - **1561-TRP** Procedures to Adjust Observed Climatic Data for Regional or Microclimatic Variations
 Cornick
 - **1613-RP** Update Climatic Design Data in Chapter 14 of the 2013 Handbook of Fundamentals
 Morris
- 4:50 **Draft Work Statements (on Research Plan or submitted)**
- **1610-WS** Development of a Transposition Model for Clear-Sky Solar Irradiance Thevenard
 (submitted/returned with comments, revise/submit by Feb 2014)
 - **Xx-RTAR** Moisture Design Reference Years for Hygrothermal Analysis and Design of Buildings (1325-RP Update)
 Cornick
- 5:05 **New Research Topics/Research Plan**
- New Research Topics (RTARs and WSs can be submitted 4 times a year—six weeks before Winter and Annual meetings and 1 March/1 August.)
 - Long-term research plan
- 5:20 **Old Business**
- Progress by the NASA Power Team to Generate ASHRAE Climatic Design Conditions and Global Climate Zone Maps using MERRA Data
 Westberg
 - GPC 20 XML Definitions / gbXML / Climatic Data Definitions
 Barnaby
- 5:50 **New Business**

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- **1678-URP** Development and Testing of a Methodology for Future Typical Meteorological Year Data Files Based on Period 2040-2070 Climate Projections Produced by Eight Global/Regional Climate Models
 -

6:00 **Adjourn**

Next Meeting: January 28, 2013 Dallas, Texas