

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING  
ENGINEERS, INC.  
1791 Tullie Circle, NE / Atlanta, GA 30329  
404-636-8400  
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. TC 1.12

TC/TG/TRG TITLE Moisture Management in Buildings

DATE OF MEETING **Jun 23, 2007**

LOCATION **Long Beach, CA**

| MEMBERS PRESENT               | Term Expires<br>6-30 | MEMBERS ABSENT               | Term Expires<br>6-30 | EX-OFFICIO MEMBERS    |
|-------------------------------|----------------------|------------------------------|----------------------|-----------------------|
| Neil Leslie                   | 2010                 | Elia Sterling                | 2008                 |                       |
| Jeff Traylor                  | 2007                 | Bede Wellford                | 2008                 |                       |
| Mike Hayes                    | 2008                 | Andre O Desjarlais           | 2009                 |                       |
| Ray Patenaude                 | 2007                 | Leonard Damiano              | 2009                 |                       |
| Lewis Harriman                | 2007                 | Achilles Karagiozis          | 2008                 |                       |
| Carl Lawson                   | 2007                 | Paul Shipp                   | 2008                 |                       |
|                               |                      | John Murphy                  | 2011                 |                       |
| CORRESPONDING MEMBERS PRESENT |                      | CORRESPONDING MEMBERS ABSENT |                      | ADDITIONAL ATTENDANCE |
| Hollace Bailey                |                      | Elizabeth Jones              |                      | Alex McGowan          |
| Andras Holm                   |                      | Alberto Sanchez              |                      | Steve Cornick         |
| Anton TenWolde                |                      | Larry Elkin                  |                      | Sam Glass             |
| Rodney Lewis                  |                      | Mark Lentz                   |                      | Wahid Maref           |
| Mark M. Anderson              |                      | Doug Abramson                |                      | Douglas Kosar         |
| Tom Ferdelman                 |                      | Charles Culp                 |                      | Michael Lacasse       |
| Hartwig Kunzel                |                      | Chad Dorgan                  |                      | Michael Colton        |
|                               |                      | Ron Bailey                   |                      |                       |
|                               |                      | Gil Avery                    |                      |                       |
|                               |                      | Stephen Barefoot             |                      |                       |
|                               |                      | Douglas Bibee                |                      |                       |
|                               |                      | Julie Ferguson               |                      |                       |
|                               |                      | Hugo Hens                    |                      |                       |
|                               |                      | Louis Kelter                 |                      |                       |
|                               |                      | Michael Matthews             |                      |                       |
|                               |                      | Chris McDonald               |                      |                       |
|                               |                      | Albert Pucino                |                      |                       |
|                               |                      | Mikael Salonvaara            |                      |                       |
|                               |                      | Davidge Warfield             |                      |                       |
|                               |                      | Theresa Weston               |                      |                       |

**DISTRIBUTION**

*All Members of TC/TG/TRG plus the following:*

|   |                 |
|---|-----------------|
| TAC Section Head:                                     | Charles Wilkin  |
| TAC Chair:  | Patricia Graef  |
| All Committee Liaisons As Shown On TC/TG/TRG Rosters: |                 |
| Manager Of Standards                                  | Claire Ramspeck |

DRAFT - Not Yet Approved

## TC 1.12- Moisture Management in Buildings – Long Beach Jun 23, 2007

1. Call to Order – Self Introductions
  - a. Check for Quorum - no roster – so we don’t know if we have a quorum - but from my list from last time – it looks like we have 6 of 13 voting members – not quite a quorum
  - b. We have 1 international member – Harwig Kunzel – although he is listed as a Corresponding Member instead on the 7-1-07 roster
2. Approval of the Agenda – some minor revisions were made in subcommittee names etc. to correspond to the last meeting’s decisions.
3. Approval of the minutes of the Dallas Meeting - no quorum, so the draft version will be posted on the website for everyone’s review - to be approved next time.
4. Announcements and Chairman’s Report –
  - a) **News from the TC Chair’s meeting: minutes should go out as quick as possible, and should be posted on the website. Agenda for next meeting should go on Website as well.**
  - b) Chuck Wilkins – from TAC was here – he is going to section 2 now and we will be getting someone else as our TAC Section Head. Chuck presented Carl with a certificate of appreciation for his service as a TC chair for the past 2 years.
5. 2 programs going on here – see the Programs Committee list below for details
6. Sub Committee Reports
  - a. Program – Neil Leslie – see attached full report from Neil.

| <b>New York Jan 19-23, ‘08</b>  | <b>Chair</b>   | <b>Participants</b>  | <b>Notes</b> | <b>Pri.</b> |
|---|----------------|--|--------------|-------------|
| Building Envelope Moisture Performance Experiments and Design Analysis Criteria | Carl Lawson    | <i>Neil Leslie</i><br>“Residential Stucco Wall Assembly Moisture Performance Evaluation”<br><i>Anton Tenwolde</i><br>“ASHRAE Standard 160P – Criteria for Moisture Control Design Analysis in Buildings” | Transactions | 2           |
| <b>Salt Lake City June 21-25, ‘08</b>   |                |  |              |             |
| Should ASHRAE Establish Part Load Outside Design Conditions?                    | Lew Harriman   |  | Forum        |             |
| Measuring the Real World: Indoor Climate Measurements                           | Andreas Holmes | 3 papers are planned – titles to be finalized summer ‘07<br>Potentially Anton TenWolde, Achilles Karagiozis and ?  | Transactions |             |
|   |                |  |              |             |
| <b>Chicago Jan 24-28, ‘09</b>   |                |  |              |             |
| how to select equipment –   |                | Lew  | Seminar      |             |

|  |              |  |                                   |  |
|--|--------------|--|-----------------------------------|--|
| part load behavior / design point – software, etc                                    |              |  | Panel – or skit on how to do...   |  |
| ASHRAE Guide for Hot and Humid Climates  | TBD          | Up to 3 papers related to the guide – titles and authors to be finalized by NY | Transactions                      |  |
|  |              |  |                                   |  |
| <b>Louisville, Jun 20-24, 2009</b>   |              |  |                                   |  |
| Nothing specific yet   |              |  |                                   |  |
| <b>POTENTIAL IDEAS</b>   |              |  |                                   |  |
| Construction Sequencing to protect Materials - preventative                          | Dave Shipley |  | drying materials on the site      |  |
| California Mold resistant bldg. materials and practices                              | Neil Leslie  |  | Seminar – to Transactions TC 4.4? |  |
| Investigating moisture problems in bldg. – tales tools and techniques                | Lew          |  | Seminar                           |  |
| Why we care about concrete slab vapor retarders!                                     | Neil Leslie  |  | Seminar or Transaction TC 4.4?    |  |
| Dehumidification equipment for managing moisture in buildings.                       |              | Bede<br>John Murphy<br>Mike Hayes  |                                   |  |
| Monitor the ingress of moisture into the buildings – during construction and beyond? |              | David Voce – from Votec systems - Duncan                                       |                                   |  |
| Moisture load calcs- part load performance why not done?                             | Mike Hayes   | Bede<br>John   |                                   |  |
| So it's a disaster – now what? Fixing moisture problems in buildings.                | Lew          |  | Seminar                           |  |

- b. Handbook – Holly Bailey – see full report attached.
  - i. Holly has developed a plan and begun the implementation.
  - ii. Slightly behind schedule
  - iii. CURRENT Tasks are focused on identifying any ASHRAE materials in handbooks, standards, guidelines, or other documents that address topics of interest to TC 1.12 and for which this TC needs to be tracking the information.
  - iv. Please email Holly Bailey ([holly@baileyeng.com](mailto:holly@baileyeng.com)) with any such references - so that we can create a tracking log and update schedule for these.
- c. Hot and Humid Climates Design Guide – Special Publications TC 1.12 is the cognizant TC for this guide!

- i. Lew Harriman has started work and submitted an outline and the 1<sup>st</sup> couple of chapters
- ii. Lew is looking for photos and assistance – if anyone has a specific topic they would like to provide written info and documentation for
- iii. Aggressive schedule - 2 phases,
  - 1. Interim guide (approx. 128 pgs.) ready for sale by Jan '08 (need approved, reviewed text done by Aug. 2007)
  - 2. Final guide (approx. 500 pgs.) ready Jan '09 (need approved, reviewed text done by Aug. 2008)
- iv. Comes out of Terry Townsend's practice and his trips as president to Far East and Middle East... Hot and Humid is a major climate zone that requires guidance – lots of new buildings with AC going up in this climate zone
- v. Focus on explaining ASHRAE standards and their application / assistance in doing design in HHC – nice presentation – quick – readable
- vi. Get AIA buy in
- vii. Co-publishers – Elsevier (will pay for publishing) – not enough funding available from ASHRAE, so Lew got co-sponsors to help fund it already – Still looking to get additional funding from DOE if possible (Pacific Rim areas)
- viii. Will be in English and SI units. English translation to start – then...?potential for translation
- d. PMS H&H Climate Design Guide – Ray Patenaude
  - i. PMS has been fully formed – there is a formal committee and an informal interested parties review group as well.
  - ii. Aggressive schedule – prompt review is necessary
  - iii. Provide suggested language where possible. Address topic direction as early as possible – hard to change direction down the road.
  - iv. PMS has reviewed outline and chapters #2 and #3
  - v. Meeting was held Saturday morning – small turnout – comments had already come in for Chapters #2 and #3 – Lew used the meeting to review the direction of the document and the intent more than to address specific content
  - vi. Chapter #4& #5 forth coming for review shortly
- e. Membership- Paul Shipp not here
- f. Green Buildings – Leonard Damiano – not here
- g. Standards – Elia Sterling – not here
- h. International Members- Hartwig
  - i. Annex 41 Whole Building Heat, Air and Moisture Response Copenhagen June 19, 2008 <http://www.kuleuven.ac.be/bwf/projects/annex41> presented after the Nordic Symposium on Building Physics ([www.nsb2008.org](http://www.nsb2008.org))
  - ii. Related work: [http://www.ibp.fhg.de/literatur/berichte/Wood Focus Final Report.pdf](http://www.ibp.fhg.de/literatur/berichte/Wood%20Focus%20Final%20Report.pdf)
- i. Web Master- John Murphy - not here
- j. Research – Elizabeth Jones - not here
  - i. Anton – updated us on the WS from 4.4 that we voted on in Dallas to co-sponsor. Moisture Transport in Construction Materials and Assemblies at Low Temperatures - TC 4.4's research sub-committee has passed this one on to the full TC for approval (note: at TC 4.4's full committee meeting

which followed our TC 1.12 meeting- the full TC4.4 approved sending this WS to RAC for approval.)

- ii. Anton –informed us about an RTAR from TC 4.4 Investigation of the long term affects of Surfactants on Building papers. TC 4.4 would like our co- sponsorship on this one. TC 4.4’s research committee feels it is a valid project, but the RTAR needs refining and will hopefully be ready for our review before NY.
- iii. FUTURE research topic that may come out of the HHClimate Design Guide – RTAR expected to be ready about Jan 2009 – ASHRAE Part Load Outdoor Design Conditions (for analyzing the behavior of systems and buildings at typical operating conditions rather than at extreme conditions.) Lew Harriman
- k. Unnamed subcommittee –
  - i. In Quebec, we eliminated multiple subcommittees and joined their tasks together into one group.
  - ii. The basic question to be dealt with is: What do we know about moisture management in buildings – and how do we get that info out there to the chapter level?
  - iii. The committee needs a name for that committee
  - iv. Rodney is setting up a time to meet in NY– blending together the other subcommittee meeting times – and aiming for 8am on Sat. in NY.
  - v. Rodney will be contacting TC 1.12 members with info and discussion regarding this subcommittee
- l. Journal And Insights – Larry Elkins – not here

7. Future Meeting Dates- locations

- a. New York, Jan 2008 ‘Reaching New Heights of Zero Energy’
- b. Salt Lake City, June 2008
- c. Chicago Jan 2009

8. Discuss Standards relevant to this Committee –

- a. SPC 62 – Elia – not here
- b. 62.2 Ray – no real news – same issues still being debated
- c. 160P – Anton – hopefully ready for the 2<sup>nd</sup> public review in the fall
- d. GPC 10P Achieving Acceptable Indoor Environment – Holly (nothing particularly new – moving very slowly)

9. Open Discussion

10. Meeting turned over to Rodney Lewis

11. Meeting was adjourned 2:30pm

**Action Items – Jan 2007**

|     |  |        |
|-----|--|--------|
| Ray | position paper on Minimizing Indoor Mold Problems through Management of Moisture in Building Systems – members of our committee wrote.<br>( <a href="http://www.ashrae.org/publications/detail/4300">http://www.ashrae.org/publications/detail/4300</a> ) to start checking the references listed in the table at the end of the document – to update them | ACTIVE |
|-----|--|--------|

**Action Items – Jun 2007**

|             |  |  |
|-------------|--|--|
| Rodney      | Time set aside for subcommittee meeting 8am – 9am on Sat. in New York  |  |
| Rodney      | Time set aside for HH Climate Design Guide Project monitoring subcommittee 8-9   |  |
| Rodney      | Roster corrections – International Member is not listed as such FYI Currently (Jun meeting) we had 13 voting members and did not have a quorum. As of July1, we will have 12 voting members. We had 20 people at the meeting. We have 23 Corresponding Members listed as of July 1,2007. Of the people who attended the meeting, there are another 5 who would like to be Corresponding Members – see my list below. |  |
| All members | Contact Holly Bailey ( <a href="mailto:ASHhbailey@baileyeng.com">ASHhbailey@baileyeng.com</a> ) with ALL references within ASHRAE publications that deal with Moisture Management in Buildings   |  |
| Holly       | Create a tracking list of all topics / references passed on re: Moisture Management in Buildings – to assist in making sure we address these topics in the Handbook, standards, guidelines and any other ASHRAE pubs on a timely basis   |  |

#### 1. List of Potential Corresponding Members

|                 |  |                             |
|-----------------|--|-----------------------------|
| Sam Glass       | <a href="mailto:svglass@fs.fed.us">svglass@fs.fed.us</a>                     | Forest Products Lab         |
| Doug Kosar      | <a href="mailto:dkosar@vic.edu">dkosar@vic.edu</a>                           | Univ. of Illinois @ Chicago |
| Wahid Maref     | <a href="mailto:Wahid.maref@nrc-cnrc.gc.ca">Wahid.maref@nrc-cnrc.gc.ca</a>   | NRCC                        |
| Michael Coulton | <a href="mailto:mcoulton@benjaminobdyke.com">mcoulton@benjaminobdyke.com</a> | Benjamin Obdyke Inc.        |
| Alex McGowan    | <a href="mailto:amcgowan@levelton.com">amcgowan@levelton.com</a>             | Levelton                    |
|                 |  |                             |

#### Ongoing List of Potential Topics for Research – ANYONE want to develop RTAR????

- Ventilation has been added to Wufi – possible evaluation of the simulation? Larry to write work statement

TC 1.12  
Program Subcommittee Report  
June 23, 2007  
Submitted by: Neil P. Leslie, P.E.

Programs planned for New York, Salt Lake City, and Chicago are as follows:

### **New York Winter 2008**

Priority 1: Seminar entitled “Moisture Management Concerns in Commercial and Residential Buildings

Chair: Holly Bailey

Wahid Marif “Characterization of the Hygrothermal Performance of Wall Systems”

Raymond E. Patenaude “Update on ASHRAE Guide for Hot and Humid Climates”

Lewis G. Harriman III “Practical Aspects of Measuring Moisture in Buildings”

Priority 2: Transaction Session entitled “Building Envelope Moisture Performance Experiments and Design Analysis Criteria”

Chair: Carl Lawson

Neil P. Leslie “Residential Stucco Wall Assembly Moisture Performance Evaluation”

Anton Tenwolde “ASHRAE Standard 160p – Criteria for Moisture Control Design Analysis in Buildings”

### **Salt Lake City Summer 2008**

Transaction Session entitled “Measuring the Real World: Indoor Climate Measurements”

Chair: Andreas Holmes

Three papers are planned, titles to be finalized during Summer 2008.

Forum entitled “Should ASHRAE Establish Part Load Outside Design Conditions?”

Chair: Lewis G. Harriman III

### **Chicago Winter 2009**

Transactions Session on ASHRAE Guide for Hot and Humid Climates.

Chair: TBD

UP to 3 papers are planned related to the guide, titles and authors to be finalized by New York meeting.

Additional sessions for Salt Lake City and Chicago may be considered for committee action at the New York TC meeting based on interactions with committee members and other interested presenters.

## TC 1.12 Handbook Sub-committee Report

Based on conversations with ASHRAE Handbook Committee members and with Mark Owens, Holly Bailey is submitting the following plan for development of a Handbook chapter by TC 1.12.

The TC 1.12 Handbook sub-committee is currently looking for interested participants and if sufficient participants don't volunteer, I will be contacting people to assist in the tasks required. Membership on TC 1.12 is not required to participate.

This is an opportunity to affect the materials that engineers, architects, students and contractors have available to them on a daily basis! Don't miss the opportunity to make the Handbooks really be what they need to be for our membership! Contact Holly Bailey [holly@baileyeng.com](mailto:holly@baileyeng.com) to become part of this effort!

|  |
|--|
| <p>A = active<br/> P=pending<br/> C=complete<br/> H=hold<br/> W=waiting on Society</p> |
|--|

| Date       | Goal   | Task   | Volunteer | Status |
|------------|--|--|-----------|--------|
| Winter '07 | Get a plan                                     | Contact Handbook and get the latest schedule info and instructions   | Holly     | C      |
|            |  | Develop a basic schedule and overview of tasks   | Holly     | C      |
| Summer '07 | Build Subcommittee                             | Contact all TC 1.12 members and interested parties and solicit participation   | Holly     | P      |
|            |  | Establish a contact list of handbook sub-com. Members and potential contributor and reviewers  | Holly     | P      |
|            |  | Recruit!   | Holly     | P      |
|            | Identify topic areas                           | Identify all existing H chapters that address topics of interest re: Management of Moisture in Bldgs.  |           | P      |
|            |  | Identify all existing and 'in-progress' standards and guidelines that address topics of interest re: Management of Moisture in Bldgs.  |           | P      |
|            |  | Identify all programs, research and symposia papers from our committee and other TC's that address these topics  |           | P      |
|            | Gather info                                    | Gather copies of all the above info  |           | P      |
|            | Define topics to be covered in our chapter     | List all existing topics covered (from the info gathered)  |           | P      |
|            |  | Indicate the ones already in the handbook  |           | P      |
| Nov '07    |  | From the topics that are NOT currently in the Handbook, make an outline  |           | P      |
|            |  | Add missing topics that are mandatory for 1 <sup>st</sup> time chapter   |           | P      |
| Jan '08    | Evaluate what has been gathered and –          | Sub-committee meeting Sat. 10am<br>Determine whether we should focus on a new chapter for the Handbook, or whether we should devote our time to updating the existing info. In the handbooks |           | P      |
| Jan '08    | Determine character and content of chapter (s) | Sub-committee meeting Sat. 10am-1pm<br>Create Section names and group topics under section, etc.   |           | P      |

|           |                     |   |  |   |
|-----------|---------------------|---|--|---|
|           |                     | Determine which sections should go in what volume of the Handbook   |  | P |
|           |                     | 2 chapters or only 1?   |  | P |
|           |                     | Finalize Section names and grouping in chapters   |  |   |
|           |                     | Which volume would be most appropriate?   |  | P |
| Dec '07   | Get ASHRAE approval | Submit a proposal for each chapter to Handbook Committee  |  |   |
| Jan '08   |                     | Attend Handbook meeting in NY (Sun. 9:45-1:00pm meeting) – to answer questions and get assigned a liaison   |  |   |
| Jan '08   | Revise plan         | Based on volume assignments, revise plan and writing assignments  |  |   |
| Jan '08   | Assignments         | Assign Writers  |  |   |
|           |                     | Assign Section Editor and Chapter Editor  |  |   |
|           |                     | Assign Reviewers (internal and external)  |  |   |
|           |                     | Assign schedule – for submittals, collating, and review   |  |   |
| May '08   | Production          | Collate ALL current content and submit to full committee as well as sub-committee and reviewers.            |  |   |
| June '08  |                     | Sub-committee meeting Sat. 10am-1pm to review, hear comments, revise plan and redirect chapters or sections |  |   |
| Dec '08   |                     | Collate ALL current content and submit to full committee as well as sub-committee and reviewers.            |  |   |
| Jan '09   |                     | Sub-committee meeting Sat. 10am-1pm to review, hear comments, revise plan and redirect chapters or sections |  |   |
| May '09   |                     | Collate ALL current content and submit to full committee as well as sub-committee and reviewers.            |  |   |
|           |                     | Eliminate topics insufficiently covered   |  |   |
|           |                     | Resubmit chapter content though Handbook Liaison for comments on content and length, etc.                   |  |   |
| Jun '09   |                     | Sub-committee meeting Sat. 10am-1pm to review, hear comments, revise plan and redirect chapters or sections |  |   |
| Sept '09  |                     | Start email and conference call working sessions to prepare for Jan '10 meeting                             |  |   |
| Nov '09   |                     | Collate ALL -   |  |   |
|           |                     | Edit!   |  |   |
|           |                     | Create Index items  |  |   |
|           |                     | Create Reference List   |  |   |
| Dec '09   |                     | Submit ALL to full committee and reviewers  |  |   |
| Jan '10   |                     | Sub-committee meeting Sat. 10am-1pm to hash out edits   |  |   |
|           |                     | Assign sections to be revised and missing info  |  |   |
| Feb. '10  |                     | Collate edits and new info  |  |   |
| Mar '10   |                     | Submit everything back to reviewers   |  |   |
| April '10 |                     | Address comments and get resolution   |  |   |
| May '10   |                     | Address final comments and get resolution   |  |   |

|                     |          |   |  |  |
|---------------------|----------|---|--|--|
|                     |          | Get TC sub-com. ballot vote of FINAL version                |  |  |
|                     |          | Submit final copy to all committee members                  |  |  |
| June '10            |          | Final TC vote   |  |  |
| June '10            | Printing | Submit Final Chapter text to Handbook liaison               |  |  |
| Aug '10-<br>Jan '11 |          | Review the proof version from HQ                            |  |  |
| May '11             |          | Application Volume mailed out with TC 1.12's chapter in it. |  |  |

DRAFT - Not Yet Approved