

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

1791 Tullie Circle,
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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.	TC6.1	DATE	August 15, 2011
TC/TG/TRG TITLE	Steam and Hydronic Systems		
DATE OF MEETING	June 28, 2011	LOCATION	Montreal, PQ

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL
Voting		Voting		
Scott Fisher	2009	Steve Anthony	2007	Hooman Daneshmand
Mark Hegberg	2008	Tricia Bruenn	2009	John Dunlap
Trevor Houch	2010	John Glunt	2009	Jaap Hogeling
Julia Keen	2010	Torben Nielsen	2009	Chris Kerback
Michael O'Rourke	2007	Steven Tredinnick	2009	Thomas Neil
Reddy Palicharla	2007			Mick Schwedler
				Christina Walker
Corresponding		Corresponding		David Yuill
Raymond Albrecht	2002	Ramez Afify	2010	
Jason Atkisson	2010	Roy Ahlgren	2009	
Robert Bean	2005	Charles Arnold	2003	
Niels Bidstrup	2009	Gil Avery	2006	
Tom Cappellin	2010	Peter Baade	2008	
William Coad	2007	Donald Bahnfleth	2006	
Fredric Goldner	2009	William Bahnfleth	2007	
Larry Konopacz	2008	David Bixby	1994	
Trace Laux	2010	Albert Black	1987	
Evans Lizardos	2010	Cyrus Blackmore	2007	
Michael McDermott	2010	Jeff Boldt	2010	
Frank Myers	2007	Thomas Butcher	2010	
Drew Overmiller	2008	Michael Collarin	2010	
Donald Prather	2010	Kelly Cramm	2006	
Rex Scare	2010	Kim Cross	2010	
Edward Tsui	2010	Vikram Doshi	1996	
Robert Walker	2010	Farhad Golestan	2010	
		Wilbur Haag Jr.	1995	
		Richard Hegberg	2010	
		Martha Hewett	2009	
		Kevin Hoey	2003	

		Joseph Hoose	2005	
		Chris Jacques	2009	
		Miha Kavcic	2007	
		Jack Kersten	1996	
		Thomas Logan	1996	
		Ken Luther	2010	
		Kenneth Magsam	2010	
		Zoltan Magyar	2005	
		Terrence Moses	2001	
		Mark Mueller	1999	
		Marc Neufcourt	2010	
		Earl Rightmier	1987	
		James Rishel	2005	
		Brent Ross	2009	
		Aniruddh Roy	2008	
		James Schlachter	2006	
		Alexander Sleiman	2003	
		Donald Smiley	2003	
		Harvey Stenger	2010	
		Kevin Stuart	2010	
		Bodh Subherwal	2010	
		Joseph Thuman	1999	
		Greg Towsley	2009	
		David Tree	2001	
		William Trusty	2001	
		Dennis Tuttle	1994	
		George Wallace	1998	

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

T AC Section Head:	John Dunlap, PE
TAC Chair	Donald Brundage
All Committee Liaisons as Shown on TC/TG/TRG Roster	ALI/PDC - Mendy Florention
	Chapter Technology – Corey Metzger Handbook Fundamentals – Forrest Yount Handbook Fundamentals – David Yuill, PE Research - Jaap J Hogeling, ME Standards – James Vallort
Manager of Standards	Stephanie Reiniche
Staff Liason/Research/Tech Services	Michael Vaughn

MEETING MINUTES

TC 6.1 Hydronic and Steam Equipment and Systems

Montreal, PQ

June 28, 2011

1. Call to Order:

Chair Fisher called the meeting to order. The Chair welcomed all in attendance, and self-introductions were made. An attendance sheet was passed and signed by those in attendance. Secretary Walker called the roll of voting members. A quorum was not present with 6 of 11 voting members present, 5 absent, and 1 non-quorum voting member absent.

Technical Committee 6.1 is concerned with all aspects of hydronic and steam systems. This includes the application of boilers, chillers, terminal units, and all accessories and controls making up the total system as well as the design of the integrated system. In addition to comfort applications of both heating and cooling, snow melting systems are included. Cooperation with other TCs is recognized in areas such as control, noise and vibration, refrigeration, pumps and hydronic and service water piping.

2. Setting of the Agenda:

The Chair passed out an updated Agenda and there were no suggested revisions.

3. Approval of Las Vegas Meeting Minutes

No vote was taken due to a lack of a quorum.

4. Chair's Report

- A. Chair Fisher summarized the key points of the Section 6 Breakfast (notes attached).
- B. Greg Towsley therefore there was no Power Point presentation of the Advanced Water System Design Course
- C. Chair Fisher reported a response was made to the steam lift inquiry in Systems Chapter 10 (page 5). Changes have been made to the Handbook.

5. Sub-Committee Reports

- A. Handbook: Mark Hegberg (Chair)/Tricia Bruenn (Vice Chair). Chair Hegberg said all but Systems Chapter 12 – Hydronic Heating and Cooling Design and Chapter 46 – Valves will be done and ready for review by the end of the week.

Al Black is taking the lead on the Fundamentals Chapter with Scott Fisher assisting.

Vote on Chapters 12 and 46 (Systems) will be done by conference call or letter ballot.

- B. Research: Tom Cappellin (Incoming Chair). Chair Cappellin noted there are no new research proposals. Proposals were given to Research Liaison Jaap Hogelin, however, no action taken by Hogelin. Hegberg to submit old RTARs, with copies to Chair Cappellin, to start this cycle.
- C. Membership: John Glunt (Chair) was absent. Chair Fisher reminded all to verify their current contact information. Chair Fisher reviewed the voting members effective July 1, 2011.
- D. Standards: Mike O'Rourke (Chair) reported Standard 55 is currently in continuous maintenance and working groups. A user's manual for Std 55 is being developed.

Volunteers are being solicited for Standard 152.

90.1 and 189 are asking for volunteers from TC 6.1 for input on Appendix R.

Frank Myers supplied the following update on Standard 155.

Several members expressed concern that 155P was not yet published. The TC was aware there were unresolved issues delaying public review. Some further opined AHRI was blocking publication. Frank Myers stated this was not the case and provided an update, explaining the key unresolved issue was that proposed standard 155 contains both the method of test and the rating conditions. Having both the MOT and rating conditions in an ASHRAE standard is not in compliance with a long standing memorandum of understanding between the two organizations. This MOU formalizes that ASHRAE will write method of test standards and AHRI will write the rating standards. This memorandum has served both ASHRAE and AHRI well for many years and both organizations recognize the resulting mutual benefits. To resolve this situation the AHRI Hydraulics

Section member companies voted at their 2011 annual meeting to jointly sponsor Standard 155. Negotiations between ASHRAE and AHRI staff, toward joint sponsorship, began Monday, June 27, 2011, and were characterized as very positive. These negotiations are now being committed to writing, toward a formal agreement. Mr. Myers was asked how quickly this will result in publication of 155. He responded that since AHRI had been directed by its Hydronics Section members to work toward co-sponsorship, AHRI is working as quickly as possible to come to agreement with ASHRAE.

- E. WEB Site: Rex Scare (Chair) Chair Fisher repeated the positive comments received at the Section Breakfast regarding the web site and thanked Rex for his efforts. Incoming Chair Jason Atkisson stated Google Groups will be added for the website.
- F. Chilled Water Sub Committee : Steve Tredinnick (Chair), absent. Tredinnick has indicated he will be in contact with volunteers for the Chilled Water Plant chapter proposed for the Handbook. No work has been done on this chapter, yet.
- G. Programs: Mike McDermott (Chair). Chair McDermott reported 1 seminar and 1 forum were on the schedule for the Montreal Meeting. Subcommittee meeting minutes and program spreadsheet are attached. Planned programs for Chicago are included on the attached.
- H. ALI. Greg Towley (Chair): Greg Towley (Chair) was absent. Mark Hegberg is in the process of updating SDL 12 - The Fundamentals of Hydronic Systems self directed learning course.

M. Hegberg made a motion to accept the reports of the sub-committees, seconded by J. Keen. Voice vote of 6-0-0 to accept with the chair abstaining.

6. Liason Reports.

- A. Section Head (John Dunlap). Dunlap presented Chair Fisher a Certificate of Appreciation for his service at TC 6.1 Chair.
- B. Liason Subcommittee (Ken Luther). No report as Luther absent.
- C. G. Towsley not present for pump performance certification discussion with AHRI.

7. Approve/Disapprove Research Projects

No Action required.

8. Old Business:

- A. Boiler Efficiency Enhancements. Not discussed as Tom Butcher was absent.
- B. 2013 STD 90.1 revision discussion with Jeff Boldt not discussed as Boldt absent.

9. New Business/Industry Update

- A. RP1035 only the addendum is viewable on line. T. Cappellin to check status of RP1035.
- B. Robert Bean reported he has submitted two courses to the Energy Center in Wisconsin and Illinois on combo systems which have received verbal, but not formal approval.
- C. William Coad stated he believes hydronic systems for unitary heat pumps has not been addressed in the Handbook. This to be addressed in the next Handbook meeting.

10. Meeting Adjournment:

Chair Fisher adjourned the meeting at 3:38pm.

Submitted by,
Bob Walker.
TC 6.1 Secretary

Year	2012		
Date	June 25-29	Jan 21-25	June 23-27
City	Montreal	Chicago	San Antonio
Theme	Net-Zero Buildings	High Performance Buildings	
Tracks	www.ashrae.org/montreal/ Refrigeration HVAC Systems Net Zero Applications & Fundamentals Professional Skills Eng Tools Commissioning Alternative Technology	www.ashrae.org/chicago/ Energy Efficiency - New Technologies and Applications - Kelly Cramm Integrated Design Specialized Applications - Healthcare, Laboratories and Data Center Energy Modeling Applications Installation, Operation & Maintenance of HVAC Systems High Performance Buildings - Mike McDermott HVAC & R Systems and Equipment Professional Skills HVAC & R Fundamentals and Applications - Julia Keen Refrigeration	www.ashare.org/sanantonio/ HVAC & R Systems and Equipment HVAC&R Fundamentals and Applications Intrgrated Energy Systems Building Modeling Applications Refrigeration Applications Indoor Environmental Appliactions Integrated Building Conytrols
Technical Paper	Paper: September 17, 2010	Paper: April 18, 2011	Paper: Sept 26, 2011
Title			
Session			
Conference Paper	Abstract: Oct. 9, 2011; Paper: Jan. 9, 2011	Abstract: April 18, 2011; Paper: July 8, 2011	Abstract: Sept 26, 2011; Paper: March 9, 2012
Title		Anchor Force -	Classic control valve selection for water systems
Name		Scott Fisher	Mark Hegberg
Abstract (Accepted: Yes/No)		Yes	
Paper			
Session			
Title		A new Analysis of Pressure Indepent control Valves - Abstract Accepted	
Name		Bob Walker	
Abstract (Accepted: Yes/No)		Yes	
Paper			
Session			
Title			
Name			
Abstract (Accepted: Yes/No)			
Paper			
Session			
Seminar	Proposal: February 14, 2011	Proposal: August 12, 2011	Proposal: February 13, 2012
		Steam Applications - Jason Atkisson (jackisson@rossbar.com)	Building Accessments of Hydronic Systems- Greg Townley
		Steam Basics - Rex Scare (rex@armstronginternational.com)	Pump Basics-Niels Bidstrup (nbidstrup@grundfos.com)
	High Temp Chilled Water and Low Temp Heat - Mike McD (complete)	Impact of ASHRAE Stds on Hydronic Design - Jason Atkisson (jackisson@rossbar.com)	
		Emily Smith-operation, Drew Overmiller-design and Mick Schwedler- st90 are speakers	
Forum	Proposal: February 14, 2011	Proposal: August 12, 2011	Proposal: February 13, 2012
	How Do ASHRAE Standards Impact Hydronic Design? - Mike (complete)	Are steam heating systems sustaniable or prehistoric? Bill Coad (Trace)	
Submittal Deadline		Trace Laux (laux@nibco.com)	

Future Topics Ideas:

RP1196 Software Development of Boilers
Vacuum Steam Systems

Exploring The Energy Conservation Benfits of Combining Hydronic and Variable Flow Refrigerant Hvac Sytsems 

Energy Efficiency and IAQ Retrofit Case Studies of Historic University Buildings served by Campus Central Heating and Cooling
Energy Efficiency Retrofit Case Studies of Central Steam Heating Plants in Cold Climates
System Selection Design for Commercial, Industrial and Health Care Applications
Part Load Performance of Chilled Water Coils
Will piping Insulation failures eliminate low Temp CHW?
What are the effects of valve leakage?

MONTREAL MEETING MINUTES
PROGRAMS SUBCOMMITTEE
ASHRAE TC 6.1 “HYDRONICS AND STEAM HEATING EQUIPMENT AND SYSTEMS”

- A. Meeting called to order at 2:15 pm, 27 June 2011 at the Fairmont Youville (3), by Mike McDermott
- B. Members and Visitors in attendance

	Name	Position
1.	Mike McDermott	Programs Subcommittee Chair
2.	Julia Keen	Vice Chair
3.	Rex Scare	Web Master
4.	Jason Atkisson	Member
5.	Niels Bidstrup	Member
6.	Scott Fisher	Chair
7.	Bob Walker	Secretary
8.	Rex Scare	Web Master
9.	Hans Brink Hanson	Visitor-Observer
10.	Edward Tsui	Member
11.	Trace Laux	Visitor-Observer

- C. Current and future programs were discussed.
 - 1. Feedback from CEC on program submittal worked
 - a. We have two (2) programs for Montreal and Two (2) conference papers in process!
 - b. Connect with hot topic track and add WOW factor
 - c. Add more detail to abstract
 - d. Focus on our strength – Seminars for Practitioners
 - 2. Programs are now classified in the following formats with typical sources of program:
 - a. Technical Papers – 30 pages - Academia
 - b. Conference Papers – 8 pages - Academia and Practitioners
 - c. Seminars – PowerPoint - Practitioners
 - d. Forums - Practitioners
 - 3. For detailed information on how the above programs as to be assembled and submitted visit ASHRAE’s web site for information and direction. See example Forum submitted:
www.ashrae.org/chicago/
<http://ashraem.confex.com/ashraem/s11/cfp.cgi>

Title:

How will ASHRAE Standards affect Future Hydronic System Design?

Overview:

The purpose of this forum is to explore how the ASHRAE Standards 189.1 and 90.1 affect hydronic system design. We seek input from HVAC designers to determine best practices to meet the goals for the design of high performance green buildings. Early hot water systems used very large pipes because it was thought this was necessary to ensure adequate

circulation and heat retention. We then moved to high temperature hot water and steam to minimize pipe size and project costs. Do we go now back to low temperature hot water systems with the larger pipe size? Have we hit an energy reduction plateau at 25 KBTU/sq ft annually with our current technologies or can we go lower?

Technical Committee:

06.01 Hydronic and Steam Equipment and Systems

Expected Attendance:

50

Program Track:

HVAC Systems and Equipment

Program Level:

Intermediate

Program Type:

Forum

Length:

60

Special Request or Comment:

Please coordinate time slot with TC-6.1 committee meetings.

A. Chair

Bill Coad, P.E.

Coad Engineering Enterprises

St Louis, MO

Email: wjcoad@coadengineering.com

Member Grade(s):Presidential Fellow Life Member

Experience: William J. Coad, President of Coad Engineering Enterprises is a consulting principal and past Chairman/CEO of The McClure Corporation (dba McClure Engineering Associates). Mr. Coad was President of the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) in 2001-2002. He received his degree in Mechanical Engineering from Washington University in 1957. Prior to forming Coad Engineering Enterprises, Inc., he had been with McClure Engineering Associates, a Mechanical/Electrical Consulting Firm, for 40 years (following five years as a design engineer, estimator, and corporate officer of a mechanical contracting company). He is a registered professional engineer in 38 states. He is a member of the Board of Directors of Mestek Corporation of Pittsburgh, Pennsylvania, Exergen Corporation of Watertown, Massachusetts, and the National Institute of Building Sciences (NIBS) of Washington D.C. As an educator, Mr. Coad served as a Lecturer in Mechanical Engineering for 12 years at Washington University in St. Louis. For 17 years he was an Affiliate Professor at Washington University, teaching graduate courses in Mechanical Engineering and serving as a thesis advisor in building environmental systems design. Mr. Coad is a member of the Consulting Engineer's Council, the American Society of Mechanical Engineers (ASME) and a Fellow in the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE). His positions in ASHRAE have included terms as President (2001-2002), Vice President, Treasurer, and member of the Society's Board of Directors. He has also served on numerous Technical Committees and Task Groups, on the Nominating

Committee, the Presidential Committee on Energy Resource Evaluation, Panel 12 Standard 90-75, Finance Committee, Energy Council, Technology Council, Members Council, Publishing Council, Research & Technical Committee, Education Committee, and the Continuing Education Committee. (Often, he has served as Chairman or Vice Chairman of the above committees and councils). He served in all offices of the St. Louis Chapter of ASHRAE, (President, 1971-72). Mr. Coad received the Society's Distinguished Service Award in 1980, the Crosby Field Award for the best paper published by ASHRAE in 1985, the Louise & Bill Holladay Distinguished Fellow Award in 1989, the award for Best Journal Article (1991), ASHRAE's highest award for technical achievement, the F. Paul Anderson Award in 1996, the Exceptional Service Award in 2001, and the Andrew T. Boggs Service Award in 2002. Mr. Coad is an Honorary Member of Pi Tau Sigma (Mechanical Engineering Honorary Society), a (1992) recipient of the Washington University Alumni Achievement Award, and the (2001) recipient of the Donald Julius Groen Prize of the British Institute of Mechanical Engineers (ImechE). He has published several Symposium Papers and has authored numerous articles on Engineering Philosophy and Building Environmental Systems (including, for 15 years, a monthly column entitled "Fundamentals to Frontiers" in HPAC Engineering Magazine). William Coad authored "Energy Engineering and Management for Building Systems," published by Van Nostrand Reinhold, and is a co-author of "Principles of Heating, Ventilating, and Air Conditioning" published by ASHRAE. He is a member of the Editorial Advisory Board of HPAC Engineering Magazine He has served on the St. Louis Professional Code Committee, and the Missouri State Building Code Steering Committee. Mr. Coad has been Chairman of the Building Technology Advisory Committee to the Missouri Energy Agency, a member of the Building and Grounds Committee of the Washington University Board of Trustees, the Board of Directors of St. Elizabeth Academy in St. Louis, and the Energy Conservation Committee of the American Consulting Engineer's Council.

B. Presentations

Presentation	Speakers	Status
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If necessary, you can make changes to your session between now and the deadline of

- To access your submission in the future, use the direct link to your session submission from one of the automatic confirmation emails that were sent to you during the submission.
- *Or* point your browser to <http://ashraem.confex.com/ashraem/reminder.cgi> to have that URL mailed to you again. Your username/password are 4664/738050.

Any changes that you make will be reflected instantly in what is seen by the reviewers. You DO NOT need to go through all of the submission steps in order to change one thing. If you want to change the title, for example, just click "Title" in the session control panel and submit the new title.

When you have completed your submission, you may close this browser window.

4. The program schedule for Chicago is as shown below:

2011 ASHRAE Winter Conference

January 28-February 1, 2011

Chicago, Illinois

www.ashrae.org/chicago<http://www.ashrae.org/events/page/2650>

June 3	Web Site Opens for Seminar, Forum, TPS and CPS Proposals
July 8	Conference Papers Submitted for Review
Aug. 12	Seminar, Forum, TPS and CPS Program Proposals Due
Aug. 12	Technical Papers Final Reviews
Aug. 19	Revised Conference Papers due
Sept. 2	Conference Papers Accept/Reject Notifications
Sept. 7	Final Technical Papers Due/Final Conference Papers Due
Sept. 16	Notifications of Seminar and Forum Accept/Reject Distributed
Dec. 9	Upload of PPTs Begin
Jan. 6	All PPTs Due Online
January 21, 2012	Speaker's Lounge Opens

2012 ASHRAE Annual Conference

June 23 - 27, 2012

San Antonio, TX, USA

www.ashrae.org/sanantonio

September 26, 2011	Technical Papers Due for Review
September 26	Conference Paper Abstracts Due
September 26	Conference Paper Session Request
October 7	Conference Paper Abstract Accept/Reject Notifications
January 9, 2012	Conference Papers Submitted for Review
January 13	Web Site Opens for Seminar, Forum, TPS and CPS Proposals
February 13	Seminar, Forum, TPS and CPS Program Proposals Due
February 13	Technical Papers Final Reviews
March 7	Final Technical Papers Due

March 9	Revised Conference Papers Due
March 16	Notifications of Seminar and Forum Accept/Reject Distributed
March 30	Conference Papers Accept/Reject Notifications
April 5	Final Conference Papers Due
May 4	Upload of PPTs Begin
June 4	All PPTs Due Online
June 23	Speaker's Lounge Opens

5. Persons wishing to organize and submit program requests need to review ASHRAE web site information and submit in accordance with the instructions provided. Once submitted, the information should be sent to the Program Sub-chair for inclusion in future committee meeting agendas.
- D. General issues concerning program activities and concerns were discussed
- E. Adjournment of subcommittee at 4:15 pm.