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

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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. 6.8 Date January 24, 2006

TC/TG/TRG TITLE: Geothermal Energy Utilization

DATE OF MEETING: January 24, 2006 LOCATION: Chicago, Illinois

| Members Present | Year APPTD | MEMBERS ABSENT | Year APPTD | EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE |
|----------------------------|------------|-------------------------------|------------|----------------------------------------------|
| Robert Brown | 04 | Signhild Gehlin (Int. Member) | 03 | Carl Huber |
| Doug Cane | 03 | Chris Sharpe | 04 | Pat Kempf |
| David Dinse (Membership) | 03 | Jeff Thornton | 05 | Steve Carlson |
| Steve Kavanaugh (Handbook) | 05 | Steven J. White | 02 | Spencer Morasch |
| Lisa Meline (Program) | 05 | | | Carl Johnson |
| Kirk Mescher | 02 | | | Andrew Chiasson |
| William Murphy | 02 | | | Xiaobing Liu |
| Darin Nutter (Webmaster) | 02 | | | Joel Solis (Secretary) |
| Kevin Rafferty | 05 | | | Michel Bernier |
| Harvey Sachs | 04 | | | Jim MacMillan |
| John Shonder (Chair) | 05 | | | Lynn Stiles |
| J. B. Singh (Vice Chair) | 05 | | | |
| Jeff Spitzer | 05 | | | |
| Kay Thrasher | 04 | | | |
| Cenk Yavuzturk (Research) | 02 | | | |

DISTRIBUTION

ALL MEMBERS OF TC/TG/TRG

TAC Chairman: _____ Eckhard Groll

TAC Section Head: _____ Birol Kilkis

LIAISONS

RAC Research: _____ Lawrence Markel

Chapter Technology Transfer Committee: _____ Robert Linder

Journal: _____ Fred Turner

Special Publications: _____ Micki Geshwiler

Program: _____ Kirk Mescher

Standards: _____ Jay Kohler

Handbook: _____ Ben Sun

MANAGER OF RESEARCH/TECHNICAL SERVICES: _____ Michael Vaughn

MANAGER OF STANDARDS: _____ Claire Ramspeck



Meeting of
TC 6.8 GEOTHERMAL ENERGY UTILIZATION
Palmer House Hilton, Chicago, ILL
Tuesday, 24 January 2006

MINUTES

Pursuant to an announcement sent to all members, ASHRAE Technical Committee TC 6.8, *Geothermal Energy Utilization*, met on Tuesday, 24 January 2006 in the Palmer House Hilton, Chicago, Illinois. The meeting was held in conjunction with the ASHRAE 2006 Winter Meeting.

I. CALL TO ORDER, WELCOME, INTRODUCTIONS

Chairman John Shonder called the meeting to order at approximately 3:35pm. The chairman welcomed everyone. Members, guests, and ASHRAE Committee liaisons then proceeded to introduced themselves.

II. QUORUM CHECK

Fifty percent (50%) of the voting members of the technical committee, present in person, constitutes a quorum for the transaction of business. A roll call was held, twelve (12) of the fifteen (15) members were present, establishing that a quorum was available to conduct committee business.

III. APPROVAL OF MINUTES

The chairman asked members to review the minutes of the 28 June 2005 meeting and to suggest any changes. Hearing none, it was motioned by Mr. Darin Nutter, seconded by Mr. Kirk Mescher, to approve the draft minutes. The motion was carried (11,0,1).

IV. ANNOUNCEMENTS

Mr. Lynn Stiles reported that the tenth international conference on thermal energy storage will be held at the Richard Stockton College of New Jersey from May 31 through June 2, 2006. According to Mr. Stiles, energy conservation through underground energy storage is important to geothermal heat pump system. In preparations for the conference, he announced a call for the submission of papers. To find out more about the conference, he asked members to visit the following website: www.stockton.edu/ecostock.



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V. SUBCOMMITTEE REPORTS

A. HANDBOOK COMMITTEE – KEVIN RAFFERTY

Mr. Kevin Rafferty reported that the committee had approved the revised edition of the Handbook chapter at the ASHRAE 2005 Annual Meeting in Denver. The next step will be the publication of the revised Handbook, completing the revision cycle. Concerning the next revision cycle, Mr. Steve Kavanaugh has agreed to take over the responsibilities of chairman.

B. MEMBERSHIP COMMITTEE - DAVID DINSE

Mr. Dave Dinse reported that the committee was comprised of seventeen (17) members and one (1) international member. He then explained the process for becoming a committee member as follows: (1) a potential member must show up to four consecutive meetings; (2) actively participate in one or more of the committee's activities; and (3) must commit to attending future meetings.

The Chairman reported that at the end of the ASHRAE 2006 Annual Meeting there will be a total of five (5) members rolling off the committee's roster. During discussion, Mr. Kavanaugh asked that professional engineers be given priority concerning committee membership.

C. PROGRAMS COMMITTEE – LISA MELINE

Ms. Lisa Meline reported that the program submission deadline for Quebec City is 10 February 2006 and technical papers for Dallas are due by 7 April 2006. Concerning Quebec City, Ms. Meline reported that she has three potential seminars. After a brief discussion, the programs were ranked in order based on priority:

1. Seminar on “**Back to the Basics.**” Chair-Kirk Mescher
 - a. Surface Water Topic, Steve Kavanaugh
 - b. Standing Column, Carl Orio
 - c. Open-loop, Kevin Rafferty
 - d. Closed-loop, Open
2. Symposium on “**Long Term Operating Experiences of Ground Source Heat Pumps.**” Chair-Lisa Meline
3. Seminar, cosponsored with TC9.4 as the lead, concerning the “**Historical Advances with Ground Source and Water Source Heat Pumps.**”

A motion was made by Ms. Meline, seconded by Mr. Mescher, to set the priority for Quebec as discussed. The motioned was carried (14,0,1) CNV.



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The program theme for Dallas is “Energy Consumption in Buildings-How Low Can You Go.” Ms. Meline reported that there are two promised papers for Dallas which are:

1. **Retrofit Project** by Mr. Keith Ritter
2. **Retrofit Applications** by Mr. Doug Cane

In addition, there is a potential for the following symposiums:

1. **Habitat for Humanity** by Jeff Christian
2. **Ice Thermal Storage**, Ed Lorentz
3. **Sound Issues with Ground Source Heat Pumps**, Bob Brown. Mr. Carl Huber reported that TC 9.4, *Applied Heat Pump/Heat Recovery Systems*, would be holding a seminar concerning best practices for dealing with ISO sound standards.
4. Co-sponsorship of a program with TC 6.5, **Radiant and Convective Space Heating & Cooling**.

D. RESEARCH COMMITTEE – CENK YAVUZTURK

Mr. Cenk Yavuzturk reported that a work statement concerning the topic of “Scaling Issues” will need to be reworked and voted on by the committee in time for the 15 May 2006 submission deadline. The revised work statement will need to be consistent with the latest version of the RTAR, which will be sent to members shortly, and with ASHRAE’s Strategic Plan. Working the submission timeline backwards, the research committee should expect to review the revised work statement during March 2006 time frame.

There are currently four research projects lacking RTARs. They are:

1. **Identification of Corrosion in Ground Source Systems** - by Carl Johnson. It has been suggested that if the liquid used in a ground water or ground loop system is conductive, that that could cause corrosion. During discussion, it was suggest to provide the RTAR to the American Society of Metals and ASHRAE Corrosion and Service Water Heating Committees. Mr. Johnson agreed to follow through on the suggestions to determine their level of interest on signing on to the project.
2. **Scaling Issues** – Bill Murphy. Mr. Murphy will develop an RTAR for the project in time for Quebec City.
3. **Design Guide for Ventilation Air for Ground Source Heat Pumps** – Steve Kavanaugh. While the committee approved the development of the guideline at the ASHRAE 2005 Annual Meeting, Mr. Kavanaugh reported on a troubling aspect of this project, which is that it is specific to unitary type systems. During



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discussion it was suggested that Mr. Kavanaugh approach TC 9.4 about how to handle outside air.

4. **Survey of Existing Heat Pump Systems** – Doug Cane. Mr. Cane noted that while the title of the work statement is similar to one that was rejected, he would take another crack at it.

Mr. Yavuzturk concluded that the goal is to have the RTARs ready and distributed to members in time for Quebec City. At which time the committee will need to prioritize the projects for submission to ASHRAE.

The Chairman reported that there would be an executive session at the conclusion of the open meeting to discuss the priority of research projects.

E. SHORT COURSES AND SPECIAL PUBLICATIONS – HARVEY SACHS

Mr. Harvey Sachs reported that AHSRAE's Special Publications department had quickly turned around publication-*HVAC Applications*, which is now available at the ASHRAE Bookstore. He credited Mr. Kavanaugh for getting the draft publication ready for publishing by responding quickly to reviewer comments.

After a brief discussion, it was motion by Mr. Mescher, seconded by Ms. Thrasher, to appoint an ad-hoc committee to review the HVAC Applications publication. The motion was carried (13,0,1) CNV. The Chairman appointed Mr. Raffert to Chair the ad-hoc committee and appointed Messrs. Nutter, Mescher, and Michael Kuk as committee members. The ad-hoc committee is to report its progress on conducting the review at the next meeting of the full committee.

Concerning the topic of short courses, Ms. Thrasher reported on the translation of a short course on ASHRAE 90.1 to E-Learning. After a brief discussion, it was motion by Ms. Thrasher, seconded by Mr. Sachs, to have the Chairman compose a letter recommending that the Geothermal Short Course be translated to E-Learning. The motion was carried (14,0,1) CNV.

F. JOURNAL – J.B. SINGH

No report.

G. WEBMASTER – DARIN NUTTER

Mr. Darin Nutter reported that the committee's web page was active and can be found at the following address: www.Tc68.ashraetcs.org. He indicated that he intends to add additional content to the site such as the committee roster. The new web page has generated several questions about problems and issues with geothermal systems. While the web site has a web page for "Frequently Asked Questions," it



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currently does not have any content. Mr. Nutter intends to compose a format for adding content to this page. In addition, Mr. Nutter volunteered to remain the web master.

VI. LIAISON REPORTS

A. TC 9.4 - STEVE KAVANAUG, JOHN SOUNDERS

It was decided that TC 9.4 would not merge with TC 6.8.

B. TC 8.11 - DARIN NUTTER

Two research projects: RP1254, *Space Humidity-Phase 2*, and RP1173, *Validation of Unitary Systems at Off Design Conditions*, have been completed and final reports will be made available. The results from the research projects are intended to be used to update test laboratory models. In addition, Perdue's A/C Model will enter into the public domain, making it available to all users.

C. TC 7.8 - JOHN SHONDER

Revised the hand book concerning equipment service life based on research project RP1237. The update will not affect the life or maintenance cost for ground source heat pumps.

D. FEMP - JOHN SHONDER

FEMP is currently working on several geothermal projects.

E. IGSHPA – JEFF SPITLER

IGSHPA has proposed meeting with TC 6.8 to discuss the development of a joint training standard with ASHRAE at the Annual Meeting in Quebec City.

VII. OLD BUSINESS

ASHRAE METHOD OF TEST FOR DIRECT GEO EXCHANGE HEAT PUMPS

Mr. Robert Brown provided the following overview of the development of ARI Standard 870-2005, *Direct Geoexchange Heat Pumps*.

In 1993, the Canadian Standards Association (CSA) began standard develop work on CSA 748-94 (R2005), *Direct-Expansion (DX) Ground-Source Heat Pumps*. Mr. Doug



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Cane participated in the standard development and did most of the work. The standard development worked concluded in 1994 with the publication of CSA 748. Following publication, U.S. manufacturers approached the Air Conditioning & Refrigeration Institute (ARI) to develop an American National Standard based around CSA 748. The project was initiated and in 1999 ARI published its version of CSA 748, called ARI Standard 870. The ARI standard includes both the performance rating conditions as well as the method of test (MOT). While ARI does not typically include a MOT in its rating procedures, it has asked that ASHRAE take on and develop a MOT for direct-expansion systems. The MOT in the ARI standard currently relies on the use of a water bath for the copper heat exchange. A water bath is thought to provide a more stable conductivity medium than soil. Mr. Doug Cane has indicated a willingness to work on the standard project committee (SPC) should the committee agree to take on development and maintenance of the MOT.

After a brief discussion, it was motioned by Mr. Kirk Mescher, seconded by Mr. Brown, to form a SPC responsible for developing a MOT for Direct-Expansion (DX) Ground-Source Heat Pumps. The motion was carried (10,4,1) CNV. It was also motioned by Mr. Brown, seconded by Mr. Steve Kavanaugh, to appoint Mr. Doug Cane as the SPC chairman. The motioned was carried (14,0,2). As an action item, Mr. Cane was asked to fill out the necessary forms for submission to ASHRAE.

Note: Mr. Bill Murphy was present for the last vote.

VIII. NEW BUSINESS

Mr. Joel Solis reported that the local press in the city of DeKalb, Ill, published an article favorable to the use of geothermal systems for heating and cooling in residential applications. An issue identified by city council staff was that there was no city or national code regulating the installation of the ground loop system. While there is a set of guidelines provided by IGSHPA, there is no neutral third party such as International Code Council having similar requirements. After some discussion, the Chairman agreed to raise DeKalb's concern as a topic needing to be discussed with IGSHP.

IX. ADJOURN

The meeting adjourned at approximately 6:20 p.m.

X. EXECUTIVE SESSION

It was reported that the Research Subcommittee had receive bids concerning the research project: "Development of a Design Guideline for Hybrid Ground Source Heat Pump Systems." The research is intended to be incorporated into Chapter 31 of the ASHRAE Handbook-*HVAC Applications*. Following discussion of each of the bids, it was motioned, seconded, for TC 6.8 to accept the recommendation from the PES. The motion was carried (12,0,1) CNV