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2. **Establish Quorum Requirement**

Voting members A. Fovargue, K. Starner, S. Moeykens, S. Oza, J. Huber, Z. Ayub, P. Payvar, M. Spatz, and P. Thors (9 of 13) were present.

**3. Review/Approve San Francisco Meeting Minutes**

Item 14 of the minutes from the San Francisco meeting was revised to indicate that A. Fovargue had notified the manager of ASHRAE, Research of the committee vote on project RP-752. The R & T asked that the project be salvaged. Several typographical errors were also corrected. After a motion by P. Payvar, seconded by M. Spatz, the corrected minutes were approved 8-0-0. Revised minutes will be sent to ASHRAE Staff and liaisons.

**4. Chairman's Comments**

At the Chairman's breakfast, it was recommended the committee scope be read at the start of each TC meeting. A. Fovargue read the scope for TC 8.5:

There has been a large turnover in the staff at ASHRAE standards. Jim Heldenbrand retired and was replaced by Claire Ramspeck.

J. Groff, Journal Liaison, has noted that he is still encouraging members to write articles and has information for prospective authors. There has been general discussion on the subject of individual TCs having their own Web site. TC 8.5 discussion was not conclusive. A Web page would be desirable, but ASHRAE would not be providing server space. At the chairman's meeting, A. Fovargue also received Program Subcommittee information, which he was passing on to M. Ohadi. ASHRAE is seeking peer reviewers for three new professional development courses:

Research Work Statements, approved for fall '98, are due at ASHRAE Headquarters by September 15. A copy should be mailed to the Research Liaison by August 15. With the annual Research Plan, the TC needs to submit a one-paragraph Research Strategy.

The TEGA Liaison reported the results of a recent survey of members provided information about communications to the local chapters.

**5. Section Head's Comments**

Not Present.

**6. Comments from Liaisons (Handbook, Standards, Journal, Research, Program, Refrigeration)**

Handbook: B. Gustafson reminded the TC that our approved chapter revisions must be received by the January '99 meeting. He will contact N. Gupte to verify that Neel has all the information he needs.

Standards: J. Pietsch noted that standard 22 has gone out for Public Review for reaffirmation and comments received. The TC must review the comments, and advise Liaison of disposition. The Liaison will pass the TC disposition back to reviewers.

Journal: not present.

Research: G. Yuill inquired if we have any work statements to be submitted for approval at the fall session. A. Fovargue will provide a list if applicable.

Program: not present.

Refrigeration: S. Moody complimented the TC on past work. He noted that the Refrigeration Committee was unable to suggest any means for them to help us with work statements.

**7. Handbook Subcommittee Report**

No report.

**8. Program Subcommittee Report**

The Chicago program is due August 7, 1998 at ASHRAE headquarters.

**9. Membership Sub-Committee Report**

S. Oza had received applications for three new members. After a motion by S. Oza, seconded by Z. Ayub the TC voted unanimously to accept James Bryan as a member. After a motion by K. Starner, seconded by S. Oza the TC voted to accept Joshua Meyer as a member. The application of Jeff Didion was tabled pending future attendance. S. Oza will contact him.

**10. Standards Sub-Committee Report**

S. Moeykens reported that 27 of 28 comments were grammatical revisions. One was the substitution of a reference to IEEE 120-89 for PTC 19.6-55, which is no longer published. After a motion was J. Huber, seconded by Z. Ayub, the TC voted unanimously to recommend Standard 22 for reaffirmation, accepting all comments received in the public reviews.

**11. Journal/Insight Article Subcommittee**

J. Huber reported that Journal/Insight are still seeking authors. Future topics, which might interest TC 8.5 members, are:

- Refrigeration Standards and Codes (November, '98)
- Elements of Ammonia System Design (March, '99)
- Screw Chillers (May '99)
- Centrifugal Chillers (November, '99)

All work can be submitted electronically via the Web.

**12. Research Sub-Committee Report**

K. Starner reported that the Sunday Project review session was well organized and went smoothly. Work statements must be reviewed and approved by the Research liaison before they will be accepted by the RAS (Research Activities Subcommittee). The Work Statement cover sheet should state that this is the TC's #1 priority, or include an explanation of the status of higher rated projects. The long range Research plan for next year will include:

- 1) Effect of Immiscible, Insoluble Oils on Heat Transfer
- 2) Waterside Fouling Inside Smooth and Augmented Condenser Tubes in Cooling Tower Water Applications
- 3) Effect of Long Term EHD Cycling on Boiling and Condensation Heat Transfer Enhancement and Working Fluid Properties

**13. 1089-TRP: Flooded Evaporation Using R410a & R507a**

S. Moeykens reported that one proposal had been received, from Swiss Federal Institute of Technology. G. Yuill commented that having only one proposal was not an obstacle to approval. The Review Subcommittee recommended that proposal be accepted. After a motion by S. Moeykens seconded by M. Spatz, the committee voted 6-0-3 to accept their recommendation. This was less than the 7 of 13 total voting members required to approve the proposal.

**14. 751-RP: Effect of Oil on Heat Transfer in Flooded Evaporators**

A. Fovargue reported that P. Payvar had completed all required data as of the San Francisco meeting. The R134a data for pure refrigerant was inconsistent. He has since reviewed all data. A re-test of a single tube produced a higher heat transfer coefficient, consistent with expected results. He thinks that traces of oil from earlier testing remained in the test section resulting in the lower heat transfer coefficient. He will repeat the small bundle tests. P. Payvar is also writing the final report, and will insert this new data when it is available.

**15. 752-RP: Heat Transfer - Brazed Plate HX's**

A. Fovargue reported that after the San Francisco meeting, the experimental work was to be repeated. An interim report covering the R22 work was to be issued in March. A series of system problems (leaks, transducer calibration, hot-gas-bypass, compressor overheating) prevented that work from being completed on schedule. A progress report including 19 data points for R22 was sent to the PMS prior to the Toronto meeting. A substitute for the PI attended the PMS meeting. The reviewed 23 R22 data points. Some of the data trends with superheat were questionable, and the PMS requested the raw data for further review. The PI hopes to complete the required testing by August 1998.

**16. 857-RP: EHD Enhancement in Evaporating Refrigerants**

J. Larson reported that pool boiling experiments are complete. An EHD pool boiling design tool is being developed. The approach is to add dimensionless EHD parameters to a nucleate boiling correlation. Data from the literature is being included along with the data from this project. Current work is directed at determining a relationship between the type of boiling surface and the electrode design. A relationship for the enhanced surface geometry will also be needed.

Convective boiling experiments with pure refrigerants are complete. The data with enhanced tube is being analyzed. Experiments with R134a including 0.5% oil will be completed by August 1. Results of the long term testing were inconclusive. After EHD operation, a sample of the R134a and oil had a measured electrical conductivity that varied with time.

The final report is being prepared, and should be completed in August and will include detailed guidelines for future long term testing, based on this experience.

**17. 922-RP: EHD Enhancement in Condensing Refrigerants**

P. Thors reported that the in-tube condensation work with 3 refrigerants is complete for smooth and corrugated tubes. Condensation in Microfin tubes remains to be completed. Trends are for enhancement and pressure drop ratios to decrease with increasing mass flux and quality, and increase with increasing saturation temperatures. The modeling effort is continuing, but is hindered somewhat by the small amount of data available. The data will be correlated for tests with no electrode; tests with the electrode in place, but inactive; and tests with EHD active.

External condensation of R134a on smooth and enhanced tubes has been completed. Enhancement ratios ranging from 2 to 12 were measured on smooth tubes and 2 to 3 on an enhanced tube. The enhanced tube is not representative of tubes currently used in the industry. P. Thors will review the details with the PMS and determine if data from another enhanced tube is needed. Work is expected to be complete by August 1998.

**18. 984-RP: Effects of Inundation and Oil on Condensing R-134a**

J. Huber reported that papers from the literature search are in hand and being reviewed as time permits. The Wilson plots have been repeated and the data is consistent with earlier data. Single

tube testing will begin the week of June 29, 1998. The tube joints in the large bundle test section passed the leak test, the water piping is being revised, and work on that facility is nearly complete. ISO 68 grade oil has been selected. They also want to test 100 and 32 grades with similar additives, if such oils can be found. Inundation liquid will be supplied with no more than 1°F subcooling. A compressor will be used to generate the oil fog. The investigators will review the pressure drop range of the liquid supply distributor

**19. New Business**

Z. Ayub will arrange the next PMS meeting.

Some dissatisfaction was expressed with the revised method for handling Requests for Proposals. A. Fovargue will seek B. Seaton's comments.

M. Spatz expressed the Committee's appreciation of A. Fovargue's service as chairman.

**20. Schedule Next Meeting and Adjourn**

The next meeting will be in Chicago on Monday, January 25, 1999, at 4:15 PM. A motion was made by M. Spatz, seconded by P. Payvar, and unanimously approved, to adjourn.