

Minutes of the Meetings
of the
Executive Committee
of the
International Association for the Properties of Water and Steam
held in
Plzeň, Czech Republic
4-9 September 2011

Plenary Session. Monday, 5th September 2011. 8:30 am

The President of IAPWS, Daucik, welcomed the Executive Committee (EC) and other IAPWS members to Plzeň for the Executive Committee (EC) and Working Group (WG) Meetings of IAPWS. The President officially opened the 2011 EC Meetings by introducing the National Delegates. Each of the Member and Associate Member countries of IAPWS was in attendance with the exception of Argentina/Brazil, France, Greece and Italy.

The President asked the delegate of Czech Republic to provide some opening comments. Hruby welcomed everybody to Plzeň and to the 2011 IAPWS meetings. He provided some background on the Czech National Committee and recognized the sponsors for the meetings: European Social Fund, Ministry of Education Youth and Sports, City of Plzeň, TECHNOPROCUR CZ, STEAG Energy Services, and CEZ Group a.s. He then introduced a few of the events which would take place during the week: the IAPWS Symposium, the IAPWS Dinner and the various working group meetings.

1. Adoption of Agenda

Provisional agendas had been posted on the IAPWS Website for all IAPWS members by the Executive Secretary. There were no further agenda suggestions from the EC. The agenda was then approved by the Heads of all National Delegations and forms Attachment 1 of these minutes.

2. IAPWS Business and Appointment of Committees

2.1 Releases, Advisory Notes, ICRNs and Guidance Documents

The President indicated that three documents had been circulated to the National Committees by the Executive Secretary during the year since the Niagara Falls meeting for final review prior to being approved before or during the current EC Meeting. The Executive Secretary reminded the EC of these documents:

- Technical Guidance Document: *Phosphate and NaOH treatments for the steam-water circuits of drum boilers of fossil and combined cycle/HRSG power plants*. Distributed 16th June 2011. There had been a number of minor comments which had been addressed and the document will be reviewed by the PCC working group during the week prior to approval at the Friday EC.

- Revised Release on *Pressure along the Melting and Sublimation Curves*. Distributed on 5th September 2010. The comments received before 8th October 2010 (BIAPWS) were addressed, and thus the Release was approved at that time.
- ICRN 26. Distributed 31st May 2011. Comments received from BIAPWS and Russia have been addressed. The ICRN will remain available for comment by Postal Ballot up to 1st October 2011.

The respective Working Groups will report to the EC at the Friday meeting on any further changes prior to requesting approval.

2.2 Press Release.

The President asked Bellows to develop a Press Release on the IAPWS proceedings during the week. The Clerks of Minutes from each WG were asked to provide input. The Press Release is discussed in Minute 17.1 and is Attachment 10.

2.3 Evaluation Committee on International Collaboration.

The President indicated that one proposal had been received by the Executive Secretary prior to the meeting, and that any further suggestions from WGs should be given to the Executive Secretary by the end of day. The President then reminded the EC that the Committee to review the proposals would consist of the WG Chairmen, with the President and Executive Secretary as ex. officio members. A chairman would be chosen by the Committee. The discussion of this Committee is reported in Minute 15.1.

2.4 IAPWS Awards Committees

2.4.1 Helmholtz Award Committee

The President indicated that there was a Helmholtz Awardee this year. The Executive Secretary then reminded the EC that the Helmholtz Committee for the 2012 award would consist of a member from Czech Republic, Scandinavia, Germany, Japan and Russia. The President indicated that Czech Republic would provide the committee chairman. The President asked delegate Hruby to organize the committee and to report back to the EC on Friday with the names of the members of this committee (Minute 16.1).

2.4.2 Honorary Fellow Award Committee

The Executive Secretary requested that Rukes remain on the Committee as the Chairman for 2012 and the President requested that Bignold be the other member. The IAPWS President would be ex. Officio.

2.4.3 Gibbs Award Committee

The President reminded the EC that the next Gibbs Award would be conferred at the ICPWS in 2013 and that the selection process needed to be initiated. The Working Group Chairs and Heads of National Committees can provide nominations by May 2012. A Gibbs Award committee should be selected by the Friday EC meeting. Each WG and the SCSW was asked to provide a member for the committee by that time.

2.5 IAPWS Statutes and By-Laws

The President indicated that the US National Committee had made some suggested changes to the By-Laws. These had been circulated by the Executive Secretary to the National Committees on 20th April 2011 for comment prior to the IAPWS meetings. No comments had been received so the President requested Harvey to briefly review the suggestions.

- By-Law 3.5 indicates that documents can be approved at an annual meeting of the EC provided that a final (or near final) draft has been circulated to the members suitably far in advance (1 or 3 months depending on the document).
- By-Law 6.2 indicates that documents which have been validated by a WG and the Editorial Committee can be distributed for postal ballot. But if the validation occurs at an annual meeting, this By-Law can result in an undue delay in reaching final approval at the next EC meeting.
- The US committee suggested a change to By-Law 6.2 so that documents become official after the postal ballot, and that the date on the document would be the date of the EC meeting where the postal ballot was authorized.
- The US committee further suggested that failure to vote on a postal ballot should be recorded as an “abstain” vote and not a “yes” vote as currently indicated in By-Law 6.2.

The President thanked Harvey and the US committee, and suggested that the presentation should be provided to the National Committees present for further discussion and vote at the Friday EC Meeting. The President also mentioned that if there were other suggestions for Statutes and By-Law changes these should also be raised on Friday and that he would then assign a committee to look at the overall changes so that they can be discussed at the 2012 meetings.

2.6 International Program Committee for the 16th ICPWS

The President requested Cooper to cover this item reminding the EC that the 16th ICPWS would be discussed at the Friday EC meeting. Cooper introduced the topic by showing a draft of possible Symposia topics for the 16th ICPWS and compared this to the actual symposia conducted at the 14th and 15th ICPWS. He then indicated that he would call an International Program Committee meeting later in the week. The President reminded the EC that this committee consists of the WG and Subcommittee Chairs. Cooper requested that Tremaine and Span also join the meetings because of their experience in past ICPWS. The President requested that Cooper provide the draft program to the WG Chairs and that each should come to the meeting with suggestions from their WG of suggested topics to include in the first ICPWS flyer. These could eventually become ICPWS Symposia titles.

2.7 Link on IAPWS Website to Software

The President indicated that Niagara Falls minute 18.2 recorded that Past President Friend had formed a small committee to investigate this topic. Harvey was asked to report on activity during the last year. He first indicated that it is IAPWS policy not to produce software, but that links to outside products, including software, are already allowed if endorsed by a National Committee. The committee suggests that links to software are OK as long as it is made clear that IAPWS is not responsible for the software. The committee also suggests that each link contains a short description and a disclaimer indicating that IAPWS is not responsible for the content of the software or website. A new window will open for the software to clearly indicate that this is not an IAPWS site.

2.8 Cooperation with BIPM/CIPM

The President asked Feistel to report on this item. Feistel indicated that following an August 2011 BIPM meeting in Paris, he had drafted a letter which proposes a close cooperation between IAPWS and BIPM/CIPM. The President suggested that as such a cooperation would involve a number of the IAPWS WGs that a small committee should be formed with Feistel as Chair and Friend, Cooper, Kretschmar, Harvey and Spitzer as members. Feistel was requested to report back to the EC on Friday with a completed letter.

2.9 WG Future Activities and Mission Statements

The President reminded the EC of activities discussed at the last two IAPWS meetings and requested that each WG review their Mission Statement and confirm that it is still applicable and up to date. He suggested that each WG Chairman provide this in the WG reports on Friday.

2.10 Other business Requiring Extensive Discussions

No other business was raised by the EC.

3. EC Mandate to Working Groups and Membership

The President provided the following mandates to the WG Chairmen for action during the week.

3.1 Releases, Guidelines and Certified Research Needs.

The Executive Secretary indicated that seven ICRNs had either expired already or will expire in September 2011 and thus needed attention by the WGs during the week: #10 on pH required rewriting by PCAS, #14 on humid air needed revision by TPWS, #15 on metastable steam needed rewriting by TPWS, #20 on sensors for elevated temperatures which has been revised by PCC and is ready for review, #23 on dew point of flue gases needed revision by IRS, #25 on corrosion mechanisms needed PCC to finalize, and #26 on aluminum has been finalized by PCC and is currently being reviewed by National Committees.

3.2 Working Group Directions.

The President emphasized that each WG Chairmen should only report to the EC on Friday about those activities that need approval or discussion by the EC.

4. Preview by the WG Chairmen of the Week's Activities

President Daucik requested each WG Chairman to review briefly the main topics which would be covered in their WGs during the week. The details of the WG meetings are covered in detail in Minutes 7 to 11 (Attachments 4 to 8).

The President closed the opening session of the EC at 10.03am.

Activities During the Week

The first day activities of the WGs and Executive Committee were followed by the separate and joint WG meetings and symposia on Monday, Tuesday and Thursday.

The full IAPWS program for the week is shown in Attachment 2.

The IAPWS Symposium was held on Wednesday, 7th September 2011. The overall theme was on *Water and Aqueous Mixtures: Research for Future Energy Technologies*, and the Symposium Program is shown in Attachment 3.

Executive Committee Meeting. Friday, 9th September 2011

President Daucik opened the continuation of the EC Meeting at 8:30 am. Each of the Member and Associate Member countries of IAPWS was in attendance with the exception of Argentina/Brazil, France, Greece and Italy. In total there were 27 people assembled for the EC meeting. Daucik first asked the EC if there were any additional items that should be added to the Agenda. None were suggested. The Executive Secretary showed the latest Agenda with additional items relating from the Monday EC Meeting.

5. Acceptance of Minutes of Previous Meeting

President Daucik asked for comments and changes to the minutes of the EC meeting held in Niagara Falls, Canada in July 2010. No changes were noted, thus the 2010 Minutes were accepted.

6. President's Report

President Daucik opened his report by indicating that IAPWS is a well performing organization. It has excellent technical expertise, rational organization abilities and a sound financial background. Because of these three pillars IAPWS can continue year by year to bring new valuable contributions to the industrial use of water substance and aqueous solutions. Each Working Group (WG) and the Sub-committee on Seawater (SCSW) has produced improvements in their field:

- TPWS – Extension of the latest advanced formulation on thermodynamic properties of water and steam to a broader range of variables and systems.
- SCSW – Preparation of much needed formulations for seawater and a high activity in collaboration with other international organizations and communities.
- PCAS – Transport, hydration, and reactions related to power cycle chemistry are deepened from green chemistry viewpoint.
- PCC – The impressive rate of production of Technical Guidance Documents, which provides the basis for worldwide development of application based on scientific ground.

The WGs have revised their Mission Statements introduced last year. These statements indicate the direction of development of their activities.

The energy industry is at the current time under great pressure from the public. The fossil section is challenged by its contribution to climate change due to carbon dioxide. The nuclear section is under great pressure due to public opinion after the accident in Japan.

The improvement of efficiency is thus even more important than before and the IAPWS work in this aspect is of high importance. Water and steam will continue to be the most important energy transfer media and the products of IAPWS will continue to be appreciated.

The President finished his report by indicating that he wanted to thank the national delegates for the constructive proceedings and good spirit, and all participating members of WGs and guests for the great efforts in the past year.

7. Report and Recommendations of the Thermophysical Properties of Water and Steam (TPWS) and the Industrial Requirements and Solutions (IRS) Working Groups and the Subcommittee on Seawater (SCSW)

TPWS Chairman Kretzschmar opened this item by indicating that he would report on activities within TPWS and IRS during the week, and would also include some of the items from the Subcommittee on Seawater. He then highlighted only those activities from the working sessions during the week which needed action by the EC or which he thought were of interest to the EC. He indicated that all of the WG activities had been conducted jointly with the exception of one separate meeting each for IRS and the Subcommittee on Seawater which are reported in Minutes 8 and 9. Full Minutes and the Agenda for TPWS can be found in Attachment 4.

- 7.1 The WGs had discussed and endorsed a proposed international collaboration between the University of Maryland, USA and the Academy of Sciences of the Czech Republic, on the topic of thermodynamic properties of supercooled water.
- 7.2 The WGs had reviewed the new correlation for the thermal conductivity of ordinary water which was a joint effort with the International Association for Transport Properties. In addition to the correlation for general and scientific use, the release also contains instructions for industrial use. The WGs had also reviewed the evaluation of both the general/scientific formulation and the modification for industrial use. TPWS and IRS voted to approve the Release on the *IAPWS Formulation 2011 for the Thermal Conductivity of Ordinary Water Substance* and now the Chairman recommended that the EC send it out for Postal Ballot following review by the Editorial Committee.
- 7.3 The WGs had reviewed a proposed revision of the supplementary release on the properties of liquid water at 0.1 MPa, which had been changed only to reflect the new thermal conductivity formulation. A favorable test report had been presented. TPWS and IRS voted to approve the Revised Supplementary Release on *Properties of Liquid Water at 0.1 MPa* and now The Chairman recommended that the EC send it out for Postal Ballot following review by the Editorial Committee.
- 7.4 The WGs had discussed the expiring ICRN-15 on thermodynamic properties of metastable steam. A closing statement had been prepared. The WGs also reviewed a draft for a replacement ICRN with a broader scope. The WG Chairman now recommended to the EC (subject to minor editing) that the new ICRN *Thermophysical Properties of Metastable Steam and Homogeneous Nucleation* is sent for postal ballot to the National Committees.
- 7.5 The WGs had discussed a new method to extend the ideal-gas heat capacity formulation that was used in IAPWS-95, making its lower limit 50 K instead of 130 K with no change in IAPWS-95 itself. The WG Chairman now suggested minor editorial changes in the IAPWS-95 document to clarify its use for the low temperature gas. A Task Group (Feistel, Wagner and Weber) has been formed to prepare a Guideline for 2012 on the use of IAPWS-95 from 50 K to 130 K, and to consider if an editorial change is needed for the metastable region of IAPWS-IF97.
- 7.6 A minor modification has been made to the TPWS Mission Statement. The text is within the TPWS minutes (Attachment 4).

At this point in the TPWS report, a short EC discussion on Mission Statements resulted in providing direction to Web Master Harvey to develop a location on the IAPWS website where the Mission Statements can be clearly observed.

- 7.7 Based on an update by CODATA of the fundamental physical constants and some recent new recommendations from IUPAC about molecular weight, a report and recommendations for changes to the IAPWS Fundamental Constants document will be prepared for the 2012 meeting.

- 7.8 The Chairman reported that a few minor editorial revisions are needed for Advisory Note #2 to complete the document approved at the 2010 meeting. The WGs have authorized these revisions to update the document.
- 7.9 Membership and TPWS Officers. Chairman Kretzschmar requested that the following new members are approved:

J. Kalová (University of West Bohemia, Czech Republic)
V. Vinš (Institute of Thermomechanics, Czech Republic)
O. Hellmuth (Leibnitz Institute for Tropospheric Research, Germany)

The EC approved these Membership Changes Unanimously.

Kretzschmar then confirmed his intention to step down as TPWS Chairman at the conclusion of the 2011 meeting after six years. The current Vice-Chair, Harvey, will become Chair at that time. Hruby will remain as Vice-Chair.

The EC approved these TPWS Officer Changes Unanimously.

8. Report and Recommendations of the Industrial Requirements and Solutions (IRS) Working Group

IRS Chairman Weber indicated that many of the activities of IRS during the week had been reported in the TPWS report, but the IRS group had one separate meeting during the week. Minutes for IRS and the Agenda can be found in Attachment 5. He covered the following items with the EC.

- 8.1 Task Group: Industrial Requirements. Chairman Weber indicated that there was no activity to report but that IRS had voted to change the name to New Industrial Requirements Task Group.
- 8.2 Task Group: Industrial Survey. The Chairman informed the EC that there was no activity to report but that the TG will remain active with some membership changes.
- 8.3 Task Group: CFD Steam Property Formulation. The Chairman informed the EC that a new TG had been set up to determine if a steam property formulation using backwards equations to IAPWS-IF97 with different independent parameters would be acceptable for CFD calculations.
- 8.4 Task Group: Advisory Notes. The Chairman informed the EC that there had been no activity of this TG but that it would remain active with membership changes.
- 8.5 Task Group: IAPWS-IF97 Editorial Update. The Chairman informed the EC that a new TG had been set up to prepare a minor editorial change to the IAPWS-IF97 Release.
- 8.6 Weber reported that a minor change had been made to the IRS Mission Statement. The text is within the IRS Minutes (Attachment 5).

- 8.7 ICRN 23 Dew Point of Combustion Gases. IRS suggests a one year extension with possible update in 2012.
- 8.8 ICRN 14 Thermophysical Properties of Humid Air and Combustion Gas Mixtures. A closing statement has been developed. A new ICRN on Thermodynamic Properties of Humid Gases and CO₂-rich Mixtures has been developed and approved by the WG. This is now ready for finalization with the Editorial Committee followed by postal ballot.
- 8.9 IRS WG Membership. Chairman Weber requested that the following new member be approved:

A. Singh (GE, USA)

The EC approved this Membership Change Unanimously.

9 Report and Recommendations of the Subcommittee on Seawater (SCSW)

Subcommittee Chairman Feistel provided a report on the activities of the Subcommittee. Full minutes are in Attachment 6. He covered the following items with the EC.

- 9.1. Collaboration with BIPM. The Chairman reported on the Committee which had been requested by the President on Monday (Minute 2.8). The Committee had met during the week and formulated a draft letter for the President to send to the President of BIPM. This suggests increased cooperation between BIPM and IAPWS, which would be beneficial to both organizations. The Chairman suggested that the letter should be reviewed by the IAPWS President and sent prior to the next meeting of BIPM in October 2011.

Chairman Feistel also suggested that the Committee (Feistel (chair), Friend, Cooper, Harvey, Kretschmar, Spitzer and Hellmuth) remain active during the next year to address any responses from BIPM. The President agreed that this was very sensible.

- 9.2 SCSW Mission Statement. Chairman Feistel reported some minor changes to the Mission Statement which he shared with the EC. The text is within the SCSW minutes (Attachment 6).
- 9.3 Membership and SCSW Officers. Chairman Feistel informed the EC that Vice Chairman McDougall will step down and that SCSW recommends Pawlowicz as a new Vice-Chair for SCSW, effective immediately. As background, Feistel also indicated that Pawlowicz will chair a new SCOR/IAPSO/IAPWS Permanent Group for Thermodynamics of Seawater.

The EC approved this SCSW Officer Change Unanimously.

Feistel requested that the following new members be approved:

J. Safarov (University of Rostock, Germany)

O. Hellmuth (Leibniz Inst. for Tropospheric Research, Germany)

The EC approved these Membership Additions Unanimously.

10. Report and Recommendations of Physical Chemistry of Aqueous Systems Working Group (PCAS)

Chairman Nakahara provided the PCAS Report to the EC. He indicated that based on the discussions at the EC in 2010, a number of very useful workshops had been held during the week with PCAS members and joint with PCC and with TPWS/SCSW. Full Minutes can be found in Attachment 7. He covered the following items with the EC:

- 10.1 Hydration Project. Chairman Nakahara indicated that discussion had taken place on the joint IAPWS/IUPAC project *Establishing Recommended Data on Thermodynamic Properties of Hydration for Selected Organic Solutes and Gases*. The data collection is now complete and a summary paper is in preparation. This may be submitted to the Journal of Physical and Chemical Reference Data. After the paper is finalized, an IAPWS guideline or a release will be prepared by PCAS.
 - 10.2 ICRN 10 pH Measurements and Potentiometric Studies of Supercritical Aqueous Solutions. The Chairman reported that a closing statement will be prepared and a new ICRN drafted.
- A suggestion was provided from the EC that an expert on pH from the SCSW should be involved in the development of this new ICRN.
- 10.3 PCAS Membership. Chairman Nakahara indicated a desire for PCAS to attract new young members. He will also address during the next year the item of inactive PCAS members and will review with the EC in 2012.
 - 10.4 PCAS Mission Statement. Chairman Nakahara reported some changes had been made to the 2010 Mission Statement to reflect green technologies and hydrogen chemistry. The full Mission Statement is included in the PCAS Minutes (Attachment7).

11. Report and Recommendations of Plant Cycle Chemistry Working Group (PCC)

Chairman Svoboda highlighted those activities that needed action/approval by the EC. A full written report of the PCC WG activities forms Attachment 8. He covered the following items with the EC

- 11.1 Technical Guidance Documents. Chairman Svoboda reminded the EC that the first Guidance Document had been approved in 2008. This was on *The Measurement of Carryover of Boiler Water and Steam*. The second document which is entitled *Instrumentation for Monitoring and Control of Cycle Chemistry in Fossil and Combined Cycle/HRSG Plants* was approved in 2009. The third document entitled *Volatile Treatments for the Steam-Water Circuits of Fossil and Combined Cycle/HRSG Power Plants* was approved in 2010. During the last year the fourth document on *Phosphate and Caustic Treatments for the Steam-Water Circuits of Drum Fossil and Combined Cycle/HRSG Power Plants* was prepared. This document had been circulated to the Task Group, PCC, Editorial Committee and National Committees. Minor clarifying amendments had been reviewed with PCC during the week. Chairmen Svoboda requested that the EC approve this document.

The EC approved the Technical Guidance Document Unanimously

- 11.2 ICRN 20 Sensors for use at Elevated Temperatures. The Chairman reported that a major revision of this ICRN had been undertaken to include fossil and nuclear applications. It had been circulated to PCC and PCAS members and been approved. It is now ready for finalization through the Editorial Committee prior to a postal ballot.
- 11.3 International Collaboration on Sampling Lines. The Chairman informed the EC that there had been a delay in the activities due to the problems in Japan. It should be finished in 2012.
- 11.3 PCC Membership. The Chairman informed the EC that two PCC members had withdrawn from membership:

E. Maughan (Germany). Deceased.
D. Smetanin (Russia)

The Chairmen requested that the following six people are approved for membership in PCC:

K. Thomsen (Denmark)
P. Gotovtsev (Russia)
W. Cook (Canada)
F. de Vos (Netherlands)
G. Joy (Australia)
M. Myszczyzyn (Canada)

The EC approved these Membership Additions Unanimously.

PCC Officers. Chairman Svoboda then announced his intention to step down as PCC Chairman at the conclusion of the 2011 meeting. One of the current Vice-Chairs, Rziha, will become Chair at that time. The PCC WG also suggests that Rudge becomes the second Vice-Chair.

The EC approved these PCC Officer Changes Unanimously.

- 11.4 The PCC Mission Statement developed in 2010 is still up to date and no changes were made during the week. The text is within the PCC minutes (Attachment 8).
- 11.5 PCC Association with Major Conferences. Chairman Svoboda indicated that PCC desires to increase international awareness at major conferences in the areas of PCC activities. As examples he referenced the International Conference of Water Chemistry in Nuclear Reactor Systems (France 2012) and two Conferences on “Flow-accelerated Corrosion” (2013 in USA and France). Svoboda suggested that an association might involve the use of the IAPWS logo on conference documents, and supporting an IAPWS session. He emphasized that no cost to IAPWS would be involved and that there would be mutual benefit.

This item raised some discussion from the EC in terms of the methodology which will be used to accomplish the associations. This resulted in a proposal by the US Delegate:

The PCC Chairman will request the IAPWS President for Approval to be Associated with a Particular Conference.

The EC approved this proposal with one abstention (Czech Republic).

12. Editorial Committee Report

Editorial Committee Chairman Harvey reported that in the preceding year, the Editorial Committee had reviewed the two following documents: Revised Release on Sublimation and Melting of Ice, and the Technical Guidance Document on Phosphate and Caustic Treatments for Drum Units.

At this stage a question was raised on whether the new statement on the front cover of the latest Technical Guidance Document (TGD) concerning the accumulated knowledge of the PCC members, should be also inserted on the previous three documents. After some discussion, two proposals were suggested to the EC:

The Editorial Committee should Insert the Same Statement on each TGD and should Review the Cover Pages of all current IAPWS Documents

The EC Unanimously Approved these two Activities.

13. Membership and Associates

13.1 Members Defaulting on Dues.

The President asked the Executive Secretary to report on the members that are deficient in paying their dues. To the end of July 2011 the following member countries had not paid their 2011 dues: Canada and Greece. The Canadian delegate indicated that the 2011 payment was in process. The Greece National Committee also had not paid their dues from 2008 to 2010.

The EC then discussed the IAPWS Statute 3.2.1f which indicates that Members defaulting on the payment of dues for three years will have their status changed to that of Associate Member. In special circumstances the EC can vote to keep such a Member at the status of Full Member and reexamine the position each year. Following the 2010 EC meeting in Niagara Falls, the Executive Secretary reported that, as instructed by the EC, he had written to the Head of the Greece National Committee. The letter indicated that Greece was in danger of having its status changed to Associate Member if there was no positive response by 31st January, 2011. The Greece Chairman, Kastanaki, responded in August 2010 that because of the severe financial situation in Greece she was having great trouble in continuing to assemble the Greece National Committee. She indicated that they definitely wanted to continue being associated with IAPWS but thought that at the present time it would be best to revert to being an Associate Member of IAPWS. Based on this and after reviewing the Statutes, the US Delegate proposed a motion to change the status of the Greece to that of Associate Member.

The EC Approved this Motion unanimously.

The President then requested if there was any discussion about the Associate Memberships of Argentina/Brazil and Italy. The consensus was to keep them as Associate Members.

13.2 Application of Australia for IAPWS Associate Membership

The Executive Secretary requested that Joy briefly review the activities in Australia. Joy indicated that there was 56,000 MW of installed capacity in Australia with 260 generators covering many plant types (coal, gas, wind, solar, and oxy-fuel). There is already a very strong chemistry network across Australia through the Australian Power Industry (API) and the Australasian HRSG Users Group (AHUG) which will intergrate with a new Australian IAPWS. An Australian wide steering committee has been formed and is already working on By-Laws, Membership and the first meeting. The steering committee wants to engage a wider focus than simply the power industry by involving seawater and thermodynamics and requested any assistance from the EC. Joy indicated that they want to take an aggressive approach and have activities up and running quickly so they can apply for IAPWS Membership at the next ICPWS in 2013.

The EC Unanimously Approved the Application of Australia for IAPWS Associate Membership.

13.3 Application of New Zealand for IAPWS Associate Membership

The Executive Secretary indicated that at the last minute the representative of New Zealand could not travel to Czech Republic. He had provided a few slides to introduce the EC to New Zealand. The Executive Secretary indicated that the country has about 4 million people with an established thermal power industry and is a dynamic and growing world leader in geothermal with about 750 MW installed which represents about 13% of the country's demand. They also have an established natural and environmental sciences sector with a focus on water (fresh, sea and atmospheric). They have formed a Planning Committee of Addison (Thermal Chemistry) and Lovell-Smith (Measurement Standards Laboratory of New Zealand). They intend to hold an initial meeting in late 2011/early 2012.

The EC Unanimously Approved the Application of New Zealand for IAPWS Associate Membership.

13.4 Switzerland as an Associate Member

The Executive Secretary requested the Head of the National Committee of Switzerland, formed in 2007, to say a few words on the advancement of the Swiss National Committee. Svoboda reported that there are 13 members of the Swiss National Committee, but they still have not been able to get any longterm financial commitment because of the financial turmoil in the Country.

13.5 Update on Scandinavian Joint Committee of IAPWS.

The Executive Secretary requested the deputy of the SIAPWS NC to provide an update following the the application in 2010 for a Scandinavian Joint Committee of IAPWS. Hellman reported that SIAPWS had started activities in 2011, had developed Statutes

and By-Laws and had transferred the remaining funds from the previous Danish National Committee after it was dissolved. SIAPWS has decided to exclude Iceland because at this time they couldn't find any members. So SIAPWS now consist of members from Denmark, Sweden, Norway, and Finland.

14. Executive Secretary's Report

14.1 Financial, Auditors and IAPWS Dues

The Executive Secretary reported that IAPWS remained on a sound financial footing with currently over \$96,000 in the US bank account. The status as at 31st July 2011 in the bank account had been provided to each National Delegate present at the EC meeting.

The Executive Secretary next reported that the 2010 financial statements had been forwarded to the IAPWS Auditors in January 2011. Both VDI in Germany and Professor Savarik in Czech Republic had reviewed and approved the financial statements. The Auditors' reports had also been provided to all the National Delegates present.

The Executive Secretary proposed that these organizations continue to act as auditors.

The EC Approved this Unanimously.

The Executive Secretary proposed to the EC that the dues structure for member countries remain unchanged for 2012.

The EC Unanimously Agreed to this Proposal.

The Executive Secretary also provided a rough estimate of the income and known planned expenditures for 2011/2012.

14.2 Time and Place of the 2012, 2013 and 2014 Meetings

The Executive Secretary indicated that there had not been any esponse from the UAE to hold the 2012 meetings in Abu Dhabi. The US National Committee has agreed to host the meetings. The Executive Secretary requested that the US provide a few details. Harvey indicated that the meetings would be Boulder, Colorado and suggested dates 23-28 September 2012. These dates initiated EC discussion because of an exact overlap with a major Nuclear Water Chemistry Conference in Paris which will involve a number of PCC members. This resulted in suggestions for two other dates in mid-August or late-September. The US NC will confirm the dates within the next month. There will be a joint symposium with ASME on Energy/Water Issues, and a tour of the NIST laboratories.

The Head of the Russian NC indicated that the 2014 meetings will be held in Moscow.

The 16th ICPWS will be held in England and is being arranged by BIAPWS. The BIAPWS deputy, Cooper, indicated that BIAPWS has concluded an agreement with the Institution of Mechanical Engineers (IMechE) to act as co-hosts of ICPWS 16 and as conference administrators. BIAPWS has also identified a preferred date for the

conference of Sunday September 1st to Thursday September 5th 2013 and a preferred university location in the London area.

Cooper next reported on the International Program Committee for the 16th ICPWS which had been formed by the President on Monday (Minute 2.6). During the week the Chairs of each of the WGs and the SCSW had discussed with their members possible topics which will become Symposia Sessions at ICPWS. Each of the WG Reports (Minutes 7-11) had included a listing of these topics which are included in their minutes (Attachments 4-8). Cooper indicated that he will quickly develop this list of topics and share them with the BIAPWS/IMEchE Local Organizing Committee. They will use this same list to develop the first flyer for the 16th ICPWS which will be issued towards the end of 2011. Cooper highlighted that PCC has included a separate Workshop on the Technical Guidance Documents which could be included within the timeframe of the ICPWS or on the day following. The President asked Cooper to thank BIAPWS for the work already conducted and requested that a revised timeline be issued soon to indicate the various important dates which involved IAPWS and the International Program Committee. Particular interest concerns the call for abstracts and review of these abstracts to develop the ICPWS program. This will involve a meeting of the Local Organizing Committee with the International Program Committee in England in early 2013.

15. Guidelines, Releases, Certified Research Needs, and International Collaborations

The President indicated that the Releases and ICRNs had been discussed within the WG Reports so no further action was required by the EC.

15.1 International Collaborative Projects.

The President requested the Chairman of the 2011 International Collaboration Committee (WG and SC Chairs) to report on the findings of that committee during the week. Rziha reported that one collaborative project had been proposed. The following is an overview of the proposed project. The details are provided in Attachments 9:

- *Towards an IAPWS Guideline for the Thermodynamic Properties of Supercooled Water.* The IAPWS sponsors are Anisimov and Sengers (USA) and Hruby (Czech Republic). The young scientist is Vincent Holten currently working as a Visting Assistant Research Scholar at the University of Maryland. It is proposed that the IAPWS funding of \$19,200 will cover subsistence for 6 months (1st January to 30th June 2012) at the University of Maryland. A report on the research will be presented at the 2012 IAPWS meetings in the USA.

Rziha indicated that the Evaluation Committee supported the proposal and recommended to the EC that it is funded. This lead to review of the IAPWS Guidelines for Spending of IAPWS Funds (Toronto, September 1999) in relation to the expenditures projected over the next year.

The EC approved the proposal to fund the project with the delegates from Czech Republic and the US abstaining because of their involvement in the proposal.

16. IAPWS Awards

16.1 IAPWS Helmholtz Award

The President reported that the 2010 Helmholtz Award had been presented to Hertanto Adidharma from University of Wyoming at the IAPWS Symposium on Wednesday.

Daucik then asked the Czech Republic Delegate, Hruby, for the names of the 2012 Helmholtz Award Committee. The 2012 Helmholtz Committee will consist of: Chairman Hruby (Czech Republic), Hellman (SIAPWS), Span (Germany), Uchida (Japan) and Orlov (Russia). Nominations will be due to the Executive Secretary by 31st January 2012.

16.2 IAPWS Honorary Fellowships

The President reported that Mares (Czech Republic) had been elected Honorary IAPWS Fellow, following the established procedures and after unanimous approval through the postal ballot conducted by the Executive Secretary. The Fellowship Award had been presented at the IAPWS Dinner on Thursday evening by the IAPWS President. He reminded the EC of the Awards Committee for 2012 with Rukes as Chairman and Bignold as member with the IAPWS President as ex.-officio member. Nominations are due to the Executive Secretary by 31st January 2012.

16.3 Gibbs Award

The President had requested each of the WGs and SCSW on Monday to nominate a person to serve on this committee. During the WG/SC Reports (Minutes 7-11) the Chairs had provided the following names: Watanabe (TPWS), Cooper (IRS), Feistel (SCSW), Anderko (PCAS) and Rziha (PCC). The President requested that Watanabe be the chair of this group. The Executive Secretary will issue the nomination documents following the IAPWS meetings, but as reported on Monday, proposals will be due from WG/SC Chairs and Heads of NCs by May 2012. The selection process will take place at the IAPWS meetings in the USA in 2012.

17. New Business

17.1 Press Release

The President mentioned that Bellows had been asked on Monday to develop a Press Release. Bellows had written a “Highlights” with input provided by each WG and SC. The President asked him to circulate it to the WG/SC heads to finalize it. The final version is contained in Attachment 10.

17.2 IAPWS Statutes and By-Laws

Each of the WGs and SCSW had reviewed the suggestions made by the US committee on Monday (Minute 2.5). Each agreed with the suggestions made concerning changing By-Law 6.2. The President asked the EC to approve this By-Law suggested change.

The EC approved the change with one abstention (Russia).

The President next turned to discussion of the Statutes. There are a number of Statutes which need to be addressed:

- Statute 2 on Major Activities of IAPWS and By-Law 3 on Documents Issued by IAPWS.
- Statute 11 on currency of IAPWS and the bank accounts. Relates to By-Law 8.
- Statute 3.3 on Associate Members.

The President indicated that the EC needs to be prepared to present any suggested Statute changes to the General Meeting at the next ICPWS. He requested that a small committee be formed to review the Statutes mentioned above and any other items which might need change. He proposed that the committee consisting of Harvey (Chair), Svoboda and Watanabe develop a draft of the revised Statutes and By-Laws two months prior to the next IAPWS EC meeting in 2012. The Executive Secretary will circulate this to NCs and discussion will take place during the EC meeting.

The EC Unanimously Approved this Proposal.

17.3 Links on IAPWS Website to Software

Each of the WGs and SCSW had reviewed the proposal presented on Monday to link software to the IAPWS website (Minute 2.7). Discussion can be found in the minutes of the WGs and SCSW (Attachments 4-8). President Daucik requested a proposal for the EC on this matter. The US Delegate, Friend, suggested that the EC approves the general principle of links from the IAPWS website to software, which is supported by a National Committee and is associated with IAPWS Releases and Guidelines, and has approval of the appropriate WG. This link should contain a disclaimer that IAPWS is not responsible for the content of the software.

The EC approved this proposal unanimously

The Chair of the SCSW then proposed that the EC allows a similar link to TEOS-10 with a similar disclaimer.

The EC approved this proposal unanimously

17.4 Other New Business

President Daucik asked the EC if there was any further business. No other business was raised.

17.5 Reports from National Committees.

Written reports on progress in member countries were not reported to the EC but were either distributed to other members and the Executive Secretary during the IAPWS week, or sent to the Executive Secretary after the meetings. They are attached to these minutes as follows:

Czech Republic	Attachment 11
Germany	Attachment 12
Japan	Attachment 13
Russia	Attachment 14
USA	Attachment 15

17.6 Participants

Attachment 16 provides a list of participants at the IAPWS EC and WG Meetings and at the Symposium in Plzeň, Czech Republic in September 2011.

17.7 List of Members

An up-dated list of members of the Executive Committee, Working Groups, and Honorary Fellows will be developed by the Executive Secretary following the Plzeň Meetings. This will be forwarded electronically to the Head of each National Committee.

18. Closing Remarks and Adjournment

The President thanked Hruby and his Czech Republic NC colleagues for hosting the IAPWS Plzeň Meetings. He also thanked everybody for participating at this EC meeting. Then he formally closed the 2011 EC meeting at 11:42 am.