

Minutes of the Meetings
of the
Executive Committee
of the
International Association for the Properties of Water and Steam
held in
Moscow, Russia
23rd – 27th June 2014

Plenary Session. Monday, 23rd June 2014. 9:00am

The President of IAPWS, Professor Tamara Petrova, welcomed the Executive Committee (EC) and other IAPWS members to Moscow and to the Moscow Power Engineering Institute (MPEI) for the Executive Committee (EC) and Working Group (WG) Meetings of IAPWS. The President officially opened the 2014 EC Meetings by introducing the National Delegates. Each of the Member countries of IAPWS was in attendance as well as Associate Member, New Zealand.

The President asked the MPEI Rector, Professor Nikolai Rogalev, to welcome IAPWS. The President then asked the Head of the Russian National Committee, Professore Konstantin Orlov to provide a few details of the planned IAPWS week.

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 Technical Guidance Documents

The Executive Secretary indicated that four documents had been circulated to the National Committees during the year since the Greenwich meeting for approval or final review prior to being approved during the current EC Meeting. The Executive Secretary reminded the EC of these documents:

- ICRN 25: *Corrosion Mechanisms that are Related to the Presence of Contaminants in Steam / Water Circuits, Particularly Boiler Water*. Distributed 29th April 2014. No comments had been received. The document will be reviewed by the PCC working group during the week prior to approval at the Friday EC.

- Revised Advisory Note Number 3: *Thermodynamic Derivatives from IAPWS Formulations*. Distributed 14th May 2014. No comments had been received. The document will be reviewed by the TPWS working group during the week prior to approval at the Friday EC.
- Revised IAPWS Release: *Surface Tension of Ordinary Water Substance*. Distributed on 8th May 2014. No comments had been received. The document will be reviewed by the TPWS working group during the week prior to approval at the Friday EC.
- Technical Guidance Document (TGD): *Corrosion Product Sampling and Analysis for Fossil and Combined Cycle Plants*. Distributed on 31st January 2014 for a postal ballot as agreed by the EC in Greenwich. A few comments had been received by 30th April 2014 and were dealt with by the PCC Task Group.

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 McCann and Orlov 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 8.

2.3 Evaluation Committee on International Collaboration.

The President indicated that no proposals had been received by the Executive Secretary prior to the meeting, and that any 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 any proposals received would consist of the WG Chairmen, with the President and Executive Secretary as ex. officio members. A chairman would be chosen by the Committee.

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 2015 award would consist of a member from BIAPWS, Canada, Czech Republic, Germany and Japan. BIAPWS will provide the committee chairman. The President asked delegate McCann to organize the committee and to report back to the EC on Friday with the names of the members of this committee (Minute 15.1).

2.4.2 Honorary Fellow Award Committee

The President requested that Bellows and Kretzschmar remain on the Committee with Bellows as the Chairman for 2015. The President would be ex. Officio.

2.5 IAPWS Website and Web Space for Working Group Documents.

2.5.1 IAPWS Website (Feedback from Greenwich Minutes 2.5 and 17.2)

The President requested Harvey to briefly report on the activities since Greenwich. First on the issue of improving the visibility of IAPWS documents in search engines, Harvey reported that suggestions had been made by an external consultant at NIST. These suggestions had been adopted in December 2013 and it appeared that there were improvements. He requested feedback and that the Working Groups should provide text on good keywords for each IAPWS Release and TGD.

Harvey then indicated that NIST had hosted the IAPWS Website since 1998 and was happy to continue. But a 2.5 week partial shutdown of the US Government in 2013 had precluded access. He suggested that alternatives would cost in the range of \$100 – 500USD per year.

2.5.2 Web Space for WG Documents

Kretzschmar reminded the EC that TPWS and IRS have used a password protected part of web space on OPAL located at Hochschule Zittau, and that PCC had also used the same site for WG presentations. The site is available for other WGs. This raised a question from the BIAPWS delegate on whether members of National Committess could also access this site. After some EC discussion an Action was placed on the PCC Chairman for the PCC to discuss during the week and provide feedback at the EC on Friday.

2.6 Report on CCQM / CCT / BIPM Interfaces and BIPM with IAPWS Working Groups

2.6.1 CCQM / CCT / BIPM Interfaces

The President reminded the EC that approval was provided at the 2013 EC meetings for travel of two SCSW Members to BIPM meetings. She then asked Hellmuth to provide a short update in the absence of Pawlowicz, the SCSW Chairman.

- Pawlowicz attended CCQM / EAWG (Electrochemical Working Group) and CCQM / plenary Meetings (April 2014, Sevres France). The topics discussed were salinity / density link and pH issues. The major outcomes were that there is a need for further discussion, and that the next step involves finalization of a common Metrologia position paper as a basis for further discussion.
- Feistel attended CCT / WG-6 and CCT / plenary Meetings (May 2014, Sevres France). The topic discussed was relative humidity (RH), and cooperation with IAPWS gives a boost to solving the problem with the RH definition and a joint position paper is considered as a 'milestone'. Feistel is now a confirmed member of BIPM CCT / WG – Humidity and new CCT Taskgroup “Environment”.

IAPWS is expected to prepare a document on calculation of fugacity of water in humid air.

2.6.2 Continuing CCQM / CCT / BIPM Interfaces for IAPWS

The report on the two interfaces with BIPM lead to two further discussion items. The first was raised by Cooper who requested that an item is added to the Friday EC agenda to discuss IAPWS's continuing interface with BIPM. The second item was raised by the US delegate, Friend, who requested that all the WGs discuss during the week whether there could be other interfaces with BIPM than those with the SCSW.

2.7 Cover Page of IAPWS Documents.

The President requested that the US Delegate address this item. Friend reported that there were a few inconsistencies in the front page of IAPWS documents. The President suggested that a small committee be appointed consisting of Harvey as the Chair of Editorial Committee and the WG Chairs and should report back to the EC on Friday (Minute 17.3).

2.8 Other Business Requiring Extensive Discussions

No other business was raised by the EC.

3. EC Mandate to Working Groups and Membership

The President then 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 2014 and thus needed attention by the WGs during the week: #16 on thermophysical properties of seawater, #17 on amines, #20 on sensors for elevated temperatures, #22 on steam chemistry in the phase transition zone (PTZ), #26 on behavior of aluminium, #27 on thermodynamic properties of humid gases, and #28 on thermodynamic properties of metastable steam and homogeneous nucleation.

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 Petrova 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 10 (Attachments 4 to 7).

The President closed the opening session of the EC at 10:15am.

Activities During the Week in Moscow

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

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

The IAPWS Symposium was held on Wednesday, 3rd October 2012. The overall theme was on “*Water and Steam: Industrial and Scientific Application*”, and the Symposium Program is shown in Attachment 3.

Executive Committee Meeting. Friday, 27th June 2014

President Petrova opened the continuation of the EC Meeting at 8:30 am. Each of the Member and Associate Member countries of IAPWS was in attendance as well as Associate Member, New Zealand. In total there were 18 people assembled for the EC meeting. Petrova 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 Petrova asked for comments and changes to the minutes of the EC meeting held in Greenwich, UK in 2013. No changes were noted, thus the 2013 Minutes were accepted.

6. President's Report

President Petrova indicated that the 16th ICPWS in Greenwich had been a huge success with over 250 scientists present from 25 countries. Over 150 papers had been presented on all aspects covered by IAPWS. She reported that 66 people from 13 countries had been in attendance during the Moscow meetings. She was very pleased with the interfaces that IAPWS has made with BIPM and hoped that this can be strengthened further.

7. Report and Recommendations of the Thermophysical Properties of Water and Steam (TPWS) Working Group and the Subcommittee on Seawater (SCSW)

TPWS Chairman Harvey opened this item by indicating that he would report on activities relating to joint meetings of TPWS, IRS and SCSW during the week. 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 TPWS WG activities had been conducted jointly with the exception of a separate meeting for IRS which is reported in Minute 8. Full Minutes and the Agenda for TPWS can be found in Attachment 4.

- 7.1 Revised Advisory Note Number 3: *Thermodynamic Derivatives from IAPWS Formulations*. As per Minute 2.1 this document had been circulated to National Committees prior to Moscow. The TPWS and IRS Working Groups (WG) and the SCSW had reviewed and approved the Advisory Note, and now recommend adoption by the Executive Committee (EC).

The EC approved Revised Advisory Note 3 Unanimously.

- 7.2 Metastable Water. A guideline is being prepared which is planned for approval in 2015. An evaluation Task Group has been formed (Hrubý (chair), Hellmuth, Feistel and Orlov) as well as a Task Group to prepare an ICRN (Hellmuth (chair), Holten, Hrubý and Sengers)
- 7.3 Revised IAPWS Release: *Surface Tension of Ordinary Water Substance*. The revision specifies that extrapolation is OK down to -25°C (based on new data from two laboratories in Czech Republic). The formulation remains unchanged. As per Minute 2.1 this document had been circulated to National Committees prior to Moscow. The TPWS Working Group had reviewed and approved the revised Release, and now recommend approval by the Executive Committee (EC).

The EC approved the Revised Release Unanimously.

Chairman Harvey then informed the EC that a Task Group has been appointed to conduct a complete reevaluation and revision of the release (Vinš (chair) Harvey, Hellmuth, Holten, Hrubý, Kalová and Mareš).

- 7.4 Revision of IAPWS-95 Release. Chairman Harvey indicated that there was no change in the formulation, but there were potential improvements in uncertainty estimates for the speed of sound and heat capacity based on recent experimental data. The TPWS WG approved the revision and request approval by EC for a postal ballot following a review by the Editorial Committee.

The EC approved a Postal Ballot for the Revised Release Unanimously.

- 7.5 Chairman Harvey then informed the EC on the following three items of interest:
- In supercooled water work, it has become clear that the melting curve of Ice Form III can be improved. A Task Group has been appointed (Holten, Harvey and Kretzschmar).
 - A new heavy water thermodynamic formulation is nearing completion. An Evaluation Task Group has been appointed (Duska, Kretzschmar, and co-opted expert Thomas Beuthe (AECL, Canada)).
 - A Task Group has been appointed for revision of heavy water transport properties (Assael, Sengers and co-opted expert M. Huber (NIST)).
- 7.6 ICRNs. Chairman Harvey indicated the following activity on ICRNs relating to the WGs:
- ICRN-16 (seawater thermophysical properties) was amended and renewed with a new expiration date of 2019. A separate ICRN on pH issues may be developed.
 - ICRN-27 (properties of humid gases and CO_2 -rich mixtures) will be closed. Span and Harvey will prepare a closing statement. A new ICRN on mixtures relevant for CCS may be prepared for next year.
 - ICRN-28 (metastable steam) was renewed without change with a new expiration date of 2019.

The EC approved the Changes to the ICRNs Unanimously.

7.7 Activities relating to the interface with BIPM. Chairman Harvey reported the following activities:

- Finalising of the common IAPWS / BIPM position paper on salinity, pH, and relative humidity (to be submitted to Metrologia) and of the Technical Report of the ICPWS 2013 Workshop on Humidity.
- Work on a draft guideline on virial equation for fugacity of water in humid air. An evaluation Task Group has been appointed (Cooper, Harvey and Kretzschmar).
- Ongoing development of a document to support BIPM / CCT WG, Relative Humidity decision process regarding Relative Humidity metrology.
- Feistel and Pawlowicz are involved in relevant working groups of CCT and CCQM.

Chairman Harvey then requested, on behalf of SCSW, that IAPWS provide funds to support two trips by IAPWS representatives to relevant BIPM working meetings.

The US Delegate suggested that this request should be reviewed after the IAPWS financial situation has been discussed (see Minute 17.2).

7.8 Miscellaneous. Chairman Harvey then reported on the following item which was raised at the WG meetings:

- TPWS member Ochkov has proposed to implement online calculations of IAPWS calculations for Knovel (owned by Elsevier publishing).
- He has requested an official IAPWS letter endorsing the project.
- The WGs considered that the project is OK and is welcomed by IAPWS without the need for any IAPWS letter as long as the formulations are attributed to IAPWS.
- However, the WGs were concerned about IAPWS endorsing such a project with one commercial entity, and wanted to raise the question to the EC of whether IAPWS should make many companies (not just one) aware of the possibility of using IAPWS formulations?

The EC considered that IAPWS products can be freely used as long as attribution is given to IAPWS, however a number of the delegates were not fully aware of the application proposed. After much further discussion, US Delegate Friend proposed that a small Group be formed to define the purpose of an IAPWS letter. It was suggested that the Group be composed of Orlov (Chair), Weber and Friend and that a document would be prepared within two months for circulation by the Executive Secretary.

The EC approved this Proposal Unanimously.

7.9 TPWS Membership. Chairman Harvey requested that the following new TPWS WG members are approved:

S. Herrig (Ruhr-Universitaet Bochum, Germany).

H. Wolf (Physikalisch-Technische Bundesanstalt, Germany).

The EC approved these Membership Additions 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. Minutes for IRS and the Agenda can be found in Attachment 5. He covered the following two items with the EC.

8.1 Proposed Revised Supplementary Releases on “Backwards” Equations for IAPWS-IF97.

- The following clarifications and editorial changes for Supplementary Releases are suggested:
 - Backward Equations $p(h,s)$ for Region 3, Equations as a Function of h and s for the Region Boundaries, and an Equation $T_{\text{sat}}(h,s)$ for Region 4 of IAPWS-IF97
 - Backward Equations for $p(h,s)$ for Regions 1 and 2 of IAPWS-IF97
 - Backward Equations for $T(p,h)$, $v(p,h)$ and $T(p,s)$, $v(p,s)$ for Region 3 of IAPWS-IF97
 - Backward Equations for $v(p,T)$ for Region 3 of IAPWS-IF97
- The WGs had accepted the proposed revisions.
- Review by the Editorial Committee will be required.

Chairman Weber then requested EC approval for a Postal Ballot.

The EC approved a Postal Ballot for the Revised Supplementary Releases Unanimously.

8.2 Proposed Guideline “Guideline on the Fast Calculation of Steam and Water Properties Using Spline Interpolation (SBTL)”.

A draft guideline has been developed and an Evaluation Task Group presented a report which indicated that additional evaluation is required. The next steps are to complete this evaluation and circulate it to WG members by the end of August 2014. An electronic vote by WG members will be conducted followed by an Editorial Committee review.

Chairman Weber then requested EC approval for a Postal Ballot.

The EC approved a Postal Ballot for the Proposed Guideline Unanimously.

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

Chairman Anderko provided the PCAS Report to the EC. Full Minutes can be found in Attachment 6. He covered the following items with the EC:

9.1 Amine Properties. Chairman Anderko indicated that a Task Group has been formed (Bellows (Chair) and Anderko) to evaluate liquid / vapor distribution, acid or base

dissociation constants, and amine decomposition products. The Task Group will create a plan for IAPWS Guidelines and ICRNs and hope to have the draft Guideline ready for review by the WG before Sweden 2015. The WG also proposed an Evaluation Task Group (Tremaine, Guzonas, and a member of PCC).

- 9.2 Guideline for Thermal Conductivity of Seawater. Chairman Anderko indicated that a complete multi-component thermal conductivity model has been developed which includes a simplified formulation as a function of salinity. The plan is to submit this for publication and development of a guideline. An evaluation task group was formed at the 2013 WG meeting.
- 9.3 PCAS Membership. Chairman Anderko requested that the following new member be approved:

K. Yoshida (University of Tokushima, Japan)

The EC approved this Membership Addition Unanimously.

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

It was reported that PCC Chairman Rziha and PCC Vice Chairman Thomsen were not able to attend the Moscow meetings. The Executive Secretary had asked if PCC Member, Paul McCann could chair the PCC meetings during the week. McCann had enthusiastically accepted. He highlighted those activities that needed action / approval by the EC. A full written report of the PCC WG activities forms Attachment 7. He covered the following items with the EC

- 10.1 Technical Guidance Documents (TGD). Chair McCann provided the following information on TGD activities during the week.
- Amendments to three TGD will be made to cover the requirements of cycling and fast starts of HRSGs. A Task Group has been formed with Dooley as chair. This will address the small additions to each TGD for approval in Sweden in 2015.
 - New TGD proposed on “Ensuring the Integrity and Reliability of Demineralised Makeup Water Supply to the Unit Cycle”. A Task Group has been formed with Joy as Chair. This will develop the TGD for approval in Sweden in 2015.
 - New TGD proposed on “HRSG HP Evaporator Tube Sampling”. A Task Group has been formed with Dooley as Chair. The plan is to have this approved in Sweden in 2015.
 - TGD on Corrosion Product Sampling and Analysis. A number of the references in the new TGD will be updated. There are no content changes. A revised TGD will be sent to the Editorial Committee and the amended version will be placed on the IAPWS website.

10.2 ICRNs. McCann provided the EC with the following information for approval.

ICRN 17 on Amines. This ICRN will be closed and a Closing Statement prepared. A new ICRN will be prepared for approval in 2015.

ICRN 20 on Sensors for Use at Elevated Temperatures. This ICRN will be closed and a Closing Statement prepared.

ICRN 22 on Steam Chemistry in the Phase Transition Zone. It is requested that this ICRN is extended for one year to allow a more detailed review.

ICRN 25 on Corrosion Mechanisms that are related to the presence of contaminants in steam / water circuits, particularly in boiler water. As per Minute 2.1 this document had been circulated to National Committees prior to Moscow. The PCC WG reviewed the ICRN during the week and now request approval from the EC.

ICRN 26 on Aluminum. It is requested that this ICRN is extended for five years to 2019.

The EC approved the new ICRN 25 and the Changes to the other ICRNs Unanimously.

10.3 PCC Membership. McCann requested that the following new members be approved:

O. Yegoshina (MPEI, Russia)
P. Dyachenko (Aminotek, Russia)
A. Saeidipour (Siemens, Iran)
S. Hanawa (JAEA, Japan)

The EC approved these Membership Additions Unanimously.

10.4 IAPWS Website. Chair McCann reported on the following discussions by PCC during the week. PCC will provide short summaries for the website of the TGDs to include key words which hopefully will improve any search engine “hits” to identify the TGD to potential users. PCC members will “test” out the changes made to the IAPWS website as reported at the Monday EC meeting (Minute 2.5.1).

With regards to the OPAL web space for WG documents discussed at the Monday EC Meeting (Minute 2.5.2), PCC would like to use the OPAL website to hold Working Group presentations, white papers and TGDs. PCC developed two proposals for consideration by the EC:

First Proposal: PCC would like to request permission to provide access to all PCC Working Group members and National Committees. This effectively would make it a public website, so Password Protection may not be necessary.

Second Proposal: PCC would like to use the OPAL website to manage Task Sub-Group documents (white papers and early drafts), for which PCC would like to propose that folders with controlled access are set up.

Much discussion followed these two proposals. Finally US Delegate Friend proposed that the EC is happy to allow any WG to deposit any open documents such as presentations from meetings in a WG folder on the IAPWS Website, and that the WG folder on the OPAL website can be used for documents that need to be password protected such as working documents or drafts.

The EC approved this Proposal Unanimously with the caveat that each WG Chairman needs to approve any open documents before they are placed on the IAPWS website. Approval from the authors of presentations also will be required.

- 10.5 Front Page of IAPWS Documents. McCann informed the EC that the PCC WG had discussed this item as requested at the Monday EC (Minute 2.7), and that a proposal had been developed. The President suggested that this item be deferred until later on the agenda (see Minute 17.3).

11. Editorial Committee Report

Editorial Committee Chairman Harvey reported that in the preceding year, the Editorial Committee had reviewed the following documents:

- Revised Release on Surface Tension of Ordinary Water Substance
- Revised Advisory Note 3: Thermodynamic Derivatives from IAPWS Formulations
- 4 Revised Supplementary Releases for IAPWS-IF97 “backward” formulations
- Technical Guidance Document for Corrosion Product Sampling
- Informal Review of ICRN-25 (Corrosion related to contaminants)

Harvey then indicated that a large number of documents will need editorial review over the next year and requested early notification.

12. Membership and Associates

12.1 Member Dues.

The Executive Secretary indicated that all IAPWS Members have paid their 2014 dues.

12.2 Reports on Associate Members

The Executive Secretary indicated that this year there were two items associated with Associate Members. The first addresses the recent associate members that are working towards membership. The second addresses those members that have been inactive for a number of years.

12.2.1 Recent Associate Members.

Australia. Chairman Joy provided a short presentation which Addison presented to the EC. The Australian National Committee (AUSAPWS) has continued to focus on the Power Cycle Chemistry area but has also tried to seek a wider focus in seawater, carbon sequestration and thermodynamics. AUSAPWS has 45 members and has developed an

initial Statutes. Discussions are taking place for AUSAPWS to link with API. An Australian wide steering committee has been formed. Joy indicated that they are planning to apply for IAPWS Membership at the Sweden Meeting in 2015.

New Zealand. Chairman Addison provided an update on NZAPWS. They intend to apply for full IAPWS Membership at the Sweden Meeting in 2015. NZAPWS members have been heavily involved in the development of the latest IAPWS TGD on Corrosion Products, and will be leading the PCC Sub-Task Group on Geothermal Chemistry.

Switzerland. The Executive Secretary had received a note from the Swiss NC Chairman, Svoboda, that there were seven members, but the committee had not yet been able to acquire financial commitment.

12.2.2 Inactive Associate Members.

The Executive Secretary was requested at the 2013 EC meetings in Greenwich to contact those Associate Members that have been inactive in IAPWS for a number of years. During the year the heads of the Argentina / Brazil, France and Greece National Committees were contacted. Each provided the current status. These were presented to the EC. These generated lots of discussion by EC members in relation to the IAPWS Statutes and By-Laws. As some alternate delegates were representing some IAPWS members, the EC was not happy to vote on membership at the meeting. So the following motion was proposed. The information provided by the Associate Members will be forwarded to the Heads of National Committees. Each IAPWS Member will be asked to vote on whether to keep the Associate Member within IAPWS. This will be a Postal Ballot for Administrative Details which requires a majority and if a member does not respond within the 45 day period then the vote is considered affirmative.

The EC approved the proposal Unanimously.

13. Executive Secretary's Report

13.1 Financial, Auditors and IAPWS Dues

The Executive Secretary reported that IAPWS is on a sound financial footing with currently over \$97,000 in the US bank account. The status as at 10th June 2014 in the bank account had been provided to each National Delegate present at the EC meeting.

The Executive Secretary next reported that the 2013 financial statements had been forwarded to the IAPWS Auditors in January 2014. Both Dr. Hencke of VDI in Germany and Professor Savarik in Czech Republic had reviewed and approved the financial statements. Both approvals had also been provided to the Heads of 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 remains unchanged for 2015.

The EC Unanimously Agreed to this Proposal.

The Executive Secretary had also provided a rough estimate of the income and known planned expenditures for 2014 / 2015.

In the final item of this section, the Executive Secretary confirmed to the EC that his business office and thus the IAPWS Secretary's office had been moved to the UK in February 2014. As part of this move the Executive Secretary reported that the IAPWS Bank account was also in the process of being moved to a UK bank and that with the assistance and help of the BIAPWS Chair the new bank account will have him as a second signatory. The immediate result of this move will be that the IAPWS dues in January 2015 will be translated from Swiss Francs into UK Pounds.

13.2 Time and Place of the 2015, 2016 and 2017 Meetings

2015 IAPWS Meetings. The Head of SIAPWS, Hellman, provided a short presentation and indicated that SIAPWS will host the 2015 meetings in Stockholm on 28th June to 3rd July 2015 at the Hotell Scandic Ariadne.

2016 IAPWS Meetings. The German Delegate, Weber, indicated that the German NC would like to invite IAPWS to Dresden on 11th to 16th September 2016. He requested that national committees review this date and provide information before 1st August 2014 if it overlaps with any other related events.

2017 and the 17th ICPWS. The Head of the Czech Republic NC, Hruby, had already indicated at the 2013 EC Meetings that the Czech Republic National Committee will support the 17th ICPWS.

14. 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. Also no international collaborations had been suggested during the 2014 IAPWS meetings.

15. IAPWS Awards

15.1 IAPWS Helmholtz Award

The President reported that the 2014 Helmholtz Award had been presented to Dr. Ken Yoshida of Tokushima University at the IAPWS Symposium on Wednesday.

Petrova then asked the British Delegate, McCann, for the names of the 2015 Helmholtz Award Committee. The 2015 Helmholtz Committee will consist of: Chairman Cooper (BIAPWS), Cook (Canada), Vinš (Czech Republic), Kretzschmar (Germany) and Hirano (Japan).

Nominations will be due to the Executive Secretary by 1st January 2015.

15.2 IAPWS Honorary Fellowships

The Executive Secretary reported that the IAPWS President had been elected an 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 to her at the IAPWS banquet by Friend as a past IAPWS president.

Petrova then reminded the EC of the Awards Committee for 2015 with Bellows as Chairman and Kretzschmar as member with the IAPWS President as ex.-officio member.

Nominations are due to the Executive Secretary by 1st January 2015.

16. Election of IAPWS Officers for 2015 and 2016

The Executive Secretary indicated that the President would step down at the end of 2014 and that Vice President Guzonas will assume the position of IAPWS President on 1st January 2015. According to the Statutes, the election of the next Vice President should be made at the end of the EC meeting in even years. The President and Executive Secretary had checked the recent history, and noted that it is 12 years since Germany has held the IAPWS Presidency and proposed that the German National Committee should be asked to nominate one of their committee members for the position. The Executive Secretary asked the EC if there were any other suggestions. None were suggested, so he then requested the EC to approve this selection.

The EC Unanimously Approved this Selection.

Action: The German National Committee should inform the Executive Secretary of their nomination for Vice President after the next meeting of their committee, and before the end of November 2014.

The Executive Secretary thanked the President for her leadership over the last two years, and indicated that her enthusiasm will continue under President Guzonas. The EC applauded Petrova.

17. New Business

17.1 Press Release

The President mentioned that McCann and Orlov had been asked at the EC meeting on Monday to develop a Press Release. This was developed with input provided by each WG and SC. McCann indicated that a draft document had been prepared. The Executive Secretary requested the Canadian Delegate, Cook, to review the document. The final version is Attachment 8. The President indicated that this release will be sent to all NCs and WGs of IAPWS and it should be distributed as widely as possible and sent to any journals and publications.

17.2 IAPWS Continuing Interface with BIPM

The President now returned to the interface with BIPM covered in the TPWS Report (Minute 7.7). She requested US Delegate Friend to propose a motion on supporting IAPWS members to visit BIPM working groups. The following proposal was developed. The IAPWS EC will authorize travel expenses not to exceed \$8,000 US for two people to attend WG meetings with BIPM to foster continuing relationships. Each visit will require a detailed report and work plans for the next year of work. The Chair of SCSW will select the people for the two visits and inform the Executive Secretary accordingly.

The EC Approved this Proposal by Majority vote with Russia voting negatively.

17.3 Cover Page of IAPWS Documents

The President now returned to this item which was introduced in the PCC Report (Minute 10.5). She requested the Editorial Committee Chairman, Harvey, to provide discussion.

Harvey indicated that not all WGs were concerned about the cover page but it was recognized that the TGD should provide information that these documents represented a consensus of a large number of countries which are members of both IAPWS and PCC. Any changes will only apply to documents going forward. Some discussion by the EC took place of what information should be on the front page and what could be placed on a second page. It was also mentioned that there could be confusion about having the President's and Executive Secretary's names on the front page. Finally a proposal was developed to allow the Editorial Committee to develop a new front page for IAPWS documents which will be common to all documents developed. This will be sent to National Committees for review before the end of 2014 so that the new cover can be used for 2015 documents.

The EC Approved this Proposal Unanimously.

Harvey also indicated a statement on the ICRNs which could be confusing about IAPWS providing financial support. The Editorial Committee will also provide a suggestion for review.

17.4 Russian National Committee Feedback on the Moscow Meetings.

The Russian Delegate, Gotovtsev, thanked everybody for attending and indicated that there had been no problems which needed to be reported to the EC.

17.5 Other New Business

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

17.6 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:

BIAPWS	Attachment 9
Canada	Attachment 10
Germany	Attachment 11
Japan	Attachment 12
Russia	Attachment 13
Switzerland	Attachment 14
USA	Attachment 15

17.7 Participants

Attachment 16 provides a list of participants at the IAPWS EC and WG Meetings in Moscow, Russia in June 2014.

17.8 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 Moscow Meetings. This will be forwarded electronically to the Head of each National Committee and the Working Group Chairs.

18. Closing Remarks and Adjournment

The President thanked everybody for participating at this EC meeting. Then she formally closed the 2014 EC meeting at 12:05pm.