

**THE INTERNATIONAL ASSOCIATION
FOR THE PROPERTIES OF
WATER AND STEAM**

MEMBERS

Australia
Britain and Ireland
Canada
Czech Republic
Germany
Japan
New Zealand
Russia
Scandinavia (Denmark, Finland, Norway, Sweden)
United States of America

ASSOCIATE MEMBERS

Argentina and Brazil
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France
Greece
India
Italy
Switzerland

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Minutes of the Meetings

of the

Executive Committee

of the

International Association for the Properties of

Water and Steam

Banff, Canada

30th September – 4th October 2019

Prepared by Barry Dooley



CONTENTS

	<u>Page</u>
IAPWS Minutes	3

ATTACHMENTS

1	Agenda for EC.....	16
2	IAPWS Symposium Programme.....	17
3	Schedule for IAPWS Week.....	19
4	President’s Report	20
5	TPWS Minutes	22
6	IRS Minutes.....	32
7	SCSW Minutes.....	37
8	PCAS Minutes	40
9	PCC Minutes	43
10	International Collaboration Project	61
11	Press Release of IAPWS Meetings in Banff.....	64
12	Australia Report	67
13	BIAPWS Report of Activities	69
14	Czech Republic Report of Activities.....	75
15	Egypt Report.....	77
16	Germany Report of Current Research	79
17	Japan Report on Current Research	91
18	New Zealand Report.....	103
19	SIAPWS Report	105
20	Switzerland Report.....	108
21	USA Report on Current Research	109
22	List of Participants at IAPWS 2019	112

Minutes of the Meetings
of the
Executive Committee
of the
International Association for the Properties of Water and Steam
held in
Banff, Canada
30th September - 4th October 2019

Plenary Session. Monday, 30th September 2019. 9:00am

At 9:02 the President of IAPWS, Dr. Jan Hruby welcomed the Executive Committee (EC) and other IAPWS members to Banff for the Executive Committee (EC) and Working Group (WG) Meetings of IAPWS. He first asked the Chair of the Canada National Committee, Professor Willy Cook, to welcome the EC to Banff. Cook thanked the sponsors of this IAPWS meeting: CANDU Owners Group Inc., Canadian Nuclear Society, ChemTreat and OLI Systems Inc. The President then officially opened the 2019 EC Meetings by introducing the National Delegates. All of the Member and Associate Member countries of IAPWS were in attendance with the exception of Russia, Argentina/Brazil, Egypt, France and Greece. In total there were 45 people assembled for the EC meeting.

1. Adoption of Agenda

Provisional agendas had been posted on the IAPWS Website for all IAPWS members by the Executive Secretary in June 2019. There were no additions and the final 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 IAPWS Business Since Last EC Meeting in Prague, Czech Republic, September 2018

The Executive Secretary indicated that the following documents had been circulated to the National Committees during the year since the Prague meeting for postal ballot:

- *Revised Release on the IAPWS Formulation 1995 for the Thermodynamic Properties of Ordinary Water Substance for General and Scientific Use.* Prague EC Minute 7.1 indicated that the Revised Release would have an Editorial Committee review after the Prague meeting. This was completed, and the document was circulated for a Postal Ballot on 16th September 2018. No objections were received by 21st December 2018, so the Revised Release became an official IAPWS document (R6-95(2018)).
- *Revised Release on the IAPWS Formulation 2017 for the Thermodynamic Properties of Heavy Water.* Prague EC Minute 7.2 indicated that the Revised Release would have an Editorial Committee review after the Prague meeting. This was completed, and the document was circulated for a Postal Ballot on 23rd September 2018. No objections were received by 23rd December 2018, so the Revised Release became an official IAPWS document (R16-17(2018)).
- *Revised Advisory Note No. 3, Thermodynamic Derivatives from IAPWS Formulations.* Prague EC Minute 7.3 indicated that the Advisory Note would have an Editorial Committee review after the Prague meeting. This was completed, and the document was circulated for a Postal Ballot on 25th September 2018. No objections were received by 25th October 2018, so the Revised Advisory Note became an official IAPWS document (AN3-07(2018)).
- *Technical Guidance Document: Air In-leakage in Steam – Water Cycles.* Prague EC Minute 11.1 indicated that the TGD would have an Editorial Committee

review after the Prague meeting. This was completed, and the document was circulated for a Postal Ballot on 26th October 2018. A few minor comments were received by 25th January 2019 and addressed, so the TGD became an official IAPWS document (TGD9-18).

- *Technical Guidance Document: Chemistry Management in Generator Water Cooling during Operation and Shutdown.* Prague EC Minute 11.1 indicated that the TGD would be developed following the Prague meeting. This was completed and the TGD had Working Group and Editorial Committee reviews. The document was then circulated for a Postal Ballot on 19th April 2019. A few minor comments were received by 1st August 2019 and addressed. So, the TGD is now ready for final PCC review and EC approval.
- *Revised Release on the Ionization Constant of H₂O.* The Revised Release had an Editorial Committee review after the Prague meeting and the document was circulated for a Postal Ballot on 23rd April 2019. No negative votes were received by 31st May 2019. So, the TGD is now ready for final TPWS review and EC approval.
- *Technical Guidance Document: Application of Film Forming Substances in Industrial Steam Generators.* Prague EC Minute 11.1 indicated that the TGD would be completed following the Prague meeting. This was completed and the TGD had Working Group and Editorial Committee reviews. The document was then circulated for a Postal Ballot on 22nd May 2019. A few minor comments were received by 23rd August 2019 and addressed. So, the TGD is now ready for final PCC review and EC approval.
- *Technical Guidance Document 2019 Revision: Application of Film Forming Substances in Fossil, Combined Cycle and Biomass Power Plants.* Prague EC Minute 11.1 indicated that the TGD would be completed following the Prague meeting. This was completed and the TGD had Working Group and Editorial Committee reviews. The document was then circulated for a Postal Ballot on 12th July 2019. A few minor comments were received by 12th August 2019 and addressed. So, the TGD is now ready for final PCC review and EC approval.

2.2 Press Release / IAPWS Highlights.

The President asked Cook to chair the development of the Highlights/Press Release on the IAPWS proceedings during the week. It was also suggested that Sparrey (BIAPWS) assist in this development. The Clerks of Minutes from each WG were asked to provide input. The Press Release is discussed in Minute 17.1 and is Attachment 11.

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. (See Minute 15.1 for further discussion on International Collaborations).

2.4 IAPWS Awards Committees

2.4.1 Helmholtz Award Committee

The Executive Secretary reminded the EC that the Helmholtz Committee for the 2020 award would consist of a member from Czech Republic, Germany, Japan, New Zealand and SIAPWS. The Czech Republic will provide the committee chairman. The President

asked the Czech Republic delegate, Nemeč, to organize the committee and to report back to the EC on Friday with the names of the members of this committee (see Minute 16.1).

2.4.2 Honorary Fellow Award Committee

The President requested that Nakahara (Chairman) and Harvey continue on the Committee for 2020. The President would be ex. Officio.

2.5 Report on 17th ICPWS and Host Country for 18th ICPWS

The President provided a short report and final financials on the 17th ICPWS held in Prague in 2018. There had been 140 participants from 27 countries. Although the conference budget had not been covered the Czech Republic National Committee returned £7,500.00GBP of the donation from IAPWS.

The President requested Friend (USA) to provide information on the 18th ICPWS. He indicated that the US National Committee have agreed in principal to host the next ICPWS but at this stage do not know the year, location or format. Also, in response to an EC request in Prague, Friend will chair a small committee during the week to discuss and formulate the format for future ICPWS. The committee will be: Friend (Chair), Hruby, Zohm (BIAPWS), Rziha and Henderson. See minute17.3.

3. EC Mandate to Working Groups and Membership

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

3.1 IAPWS Certified Research Needs.

The Executive Secretary indicated that five ICRNs needed attention during the week:

- ICRN #16 on Thermophysical Properties of Seawater.
- ICRN #22 on Steam Chemistry in the Phase Transition Zone (PTZ)
- ICRN #25 on Corrosion Mechanisms Related to Contaminants
- ICRN #26 on Behaviour of Aluminum in Steam / Water Cycles
- ICRN #28 on Thermophysical Properties of Metastable Steam

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 Working Group (WG) Chairmen of the Week's Activities

President Hruby 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 5 to 9).

Following this item, the President closed the opening session of the EC at 9:45am.

Activities During the Week in Banff

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 IAPWS Symposium was held on Wednesday, 2nd October 2019 and the Symposium Program is shown in Attachment 2.

The full IAPWS program for the week is shown in Attachment 3.

Executive Committee Meeting. Friday, 4th October 2019

President Hruby opened the continuation of the EC Meeting at 9:00 am. All of the Member and Associate Member countries of IAPWS were in attendance with the exception of Russia, Argentina/Brazil, Egypt, France and Greece. In total there were 30 people assembled for the EC meeting.

Hruby then asked the EC if there were any additional items that should be added to the EC Agenda. None were suggested.

5. Acceptance of Minutes of Previous Meeting

President Hruby asked for comments and changes to the minutes of the EC meeting held in Prague, Czech Republic in 2018. No changes were noted; thus the 2018 Minutes were accepted.

6. President's Report

President Hruby next provided his report and highlighted items of importance for the future for each Working Group. The full report is Attachment 4.

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

TPWS Chairman Harvey opened his report by indicating that he would report on the activities relating to TPWS although a joint meeting with IRS and SCSW had taken place during the week. Full Minutes and the Agenda for TPWS can be found in Attachment 5.

- 7.1 The WG had considered a draft ICRN: *New Thermodynamic Data for Ordinary Water*. The WG voted to approve the ICRN, subject to some editorial corrections and addition of an item on surface tension. The WG requested the EC to authorize a Postal Ballot for the ICRN, to be conducted after these small edits.

The EC approved this Request Unanimously.

- 7.2 Harvey next provided an informational item for the EC. A Task Group had presented a draft Release for viscosity of heavy water. An evaluation Task Group had been appointed (Meier (chair), Blahut and Kretzschmar). They will report by end of 2019 and are aiming for EC approval in 2020. A release on heavy water thermal conductivity may also be ready in time for a 2020 Postal Ballot.

- 7.3 The WG (along with PCAS) had considered a Revised Release on the Ionization Constant of H₂O as identified in Minute 2.1. The WG voted to approve the Revised Release, and Harvey requested the EC to approve the Revised Release, which was circulated to the EC in April/May.

The EC approved this Request Unanimously.

- 7.4 ICRN-28: *Thermophysical Properties of Metastable Steam and Homogeneous Nucleation*, will be allowed to expire in 2019. A Task Group was appointed (Hrubý and Senoo) to work toward a new ICRN focused on nucleation for 2020.

7.5 TPWS Membership.

Chairman Harvey requested EC approval for one new TPWS WG member who had been approved by the WG:

- Alberto Giuliano Albo (INRIM, Italy).

Harvey also informed the EC that the WG had voted to elect Maier (Helmut Schmidt University, Hamburg) as Chair and Harvey (NIST) as Vice-Chair, effective 1st January 2020. He requested approval from the EC.

The EC approved these Membership Changes Unanimously.

The Chairman also indicated to the EC that it had been requested to remove two TPWS members from the WG: Patek (Czech Republic) and Levelt Sengers (USA). One member had deceased, Jacobsen.

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

8.1 IRS Task Groups. IRS Chairman Okita reported on four informational items from IRS Task Groups. Minutes for IRS and the Agenda can be found in Attachment 6.

- The Task Group “Categories of Industrial Requirements” will continue
- The Task Group “Wet Steam Properties Calculation” will continue
- The Task Group “Wet steam Data from Operating Turbines” will continue
- The Task Group on ICRN for Acid Gas Dew Points will continue

8.2 IRS Membership.

Chairman Okita indicated to the EC that the WG had approved removal of three members from the WG: Gachon (France), Le Neindre (France) and Parry (USA).

9. Report and Recommendations of the Sub-Committee on Seawater (SCSW)

SCSW Chairman Pawlowicz reported on the following items. Minutes for SCSW and the Agenda can be found in Attachment 7.

9.1 Joint SCOR/IAPSO/IAPWS Committee on the Properties of Seawater

The Chairman proposed to the EC that the JSC sponsorship is renewed for another six years. There are no changes to the terms of reference. IAPSO and SCOR have already supported the renewal.

The EC approved this Request Unanimously.

9.2 Guideline on the Surface Tension of Seawater.

The new Guideline had been written by Nayar and Harvey. The Evaluation Task Group (Feistel and Duska) had reviewed the document. Now the joint WGs (TPWS and SCSW) propose it for a Postal Ballot once editorial changes have been completed.

The EC approved this Request Unanimously.

9.3 ICRN 16: Thermophysical Properties of Seawater.

The SCSW voted to close this ICRN in 2020 and a closing statement will be written, so that its closure coincides with the development of a new ICRN in the same general area but targeted more at the relevant parts of JCS aims. A Task Group has been formed: Pawlowicz (Chair), Feistel, Seitz, Camoes, Kayukawa and Harvey.

9.4 SCSW Membership.

The Chairman requested EC approval for one new SCSW WG member who had been approved by the WG:

- Alberto Giuliano Albo (INRIM, Italy).

The EC approved this Membership Addition Unanimously.

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

Chairman Yoshida provided the PCAS Report to the EC. Full Minutes can be found in Attachment 8.

10.1 Guidelines.

- Self-diffusion in High Temperature and Supercritical Water over Wide Density Ranges is in an advanced stage of development.
- Volatility and Dissociation Constants of Amines and Amine Decomposition Products. No progress over the last year so the WG voted to delete this from the list of guidelines under development.

10.2 Possible ICRNs

The chairman informed the EC that discussions had taken place on:

- Film forming substances (in collaboration with PCC). Task group members from PCAS are Yoshida and Tremaine.
- Replacement of Archer's model for aqueous NaCl solutions by incorporating the current formulation for the dielectric constant of water
- Dielectric constant of heavy water

10.3 PCAS Membership.

Chairman Yoshida requested EC approval for two new PCAS WG members who had been approved by the WG:

- Dr. Jane Ferguson, (University of New Brunswick, Canada)
- Dr. Václav Vinš, (Institute of Thermomechanics, Czech Republic)

The EC approved these Membership Additions Unanimously.

The Chairman also indicated to the EC that it had been requested to remove Levelt Sengers (USA) from the PCAS membership.

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

Chairman Rziha provided the PCC Report to the EC. Full Minutes can be found in Attachment 9. The following items were covered:

11.1 Technical Guidance Documents (TGD).

The PCC working group had reviewed and discussed extensively all the TGD developments. The TGD Task Group (Chair: Dooley) activities can be summarized as follows.

- *Application of Film Forming Substances (FFS) in Industrial Plants.* This TGD had received National Committee Approval (see Minute 2.1) and final review by the PCC during the week. Chairman Rziha requested EC final approval.

The EC approved this TGD Unanimously.

- *Technical Guidance Document 2019 Revision: Application of Film Forming Substances in Fossil, Combined Cycle and Biomass Power Plants.* This TGD had received National Committee Approval (see Minute 2.1) and final review by the PCC during the week. Chairman Rziha requested EC final approval.

The EC approved this TGD Unanimously.

- *Technical Guidance Document: Chemistry Management in Generator Water Cooling during Operation and Shutdown.* This TGD had received National Committee Approval (see Minute 2.1) and final review by the PCC during the week. Chairman Rziha requested EC final approval.

The EC approved this TGD Unanimously.

The Chairman informed the EC of the other TGD and White Papers under development:

- Application of Film Forming Substances in Nuclear Plants (White Paper). Attachment PCC B provides details of the sub-task group (STG)
- Monitoring Corrosion Products in Flexible (cycling and two-shifting) Plants (initial White Paper developed)
- Ensuring the Integrity and Reliability of Demineralized Makeup Water Supply to the Unit Cycle (TGD in Draft)
- Aspects of Geothermal Steam Chemistry (White Paper to be developed for 2020)
- Condensate Polishing for Combined Cycle Plants (No activity yet on White Paper)

- Flue Gas Condensation Proposed (New TGD to be developed in 2020)

11.2 International Collaborations (IC).

The chairman informed the EC of two IC:

- Corrosion Product Sampling, Analysis and Assessment. The PCC proposed this new IC which is shown in Attachment 10. The estimated budget is £25,000 (GBP). The PCC requested approval from the EC. The President indicated that this would be covered later in the EC agenda (see Minute 15.1).
- Examining the Effect of Combined Impurities (Chloride and Sulphate) on the Corrosion of Boiler Steels. The primary aim is to verify the boiler chemistry limits in the IAPWS TGD. The work is underway at the University of New Brunswick, Canada, and the apparatus has been built. Preliminary results were presented at ICPWS 17 in Prague. The project is on track and on budget.

11.3 ICRNs

The chairman informed the EC that discussions had taken place on the following ICRNs as instructed by the EC (Minute 3.1):

- ICRN 22 Steam Chemistry in the Phase Transition Zone. ICRN will be closed. Closing statement will be developed.
- ICRN 25 Corrosion Mechanisms related to the presence of contaminants in steam/water circuits, particularly in boiler water. Still ongoing as part of PCC IC project (Canada/NZ) (Minute 11.2). EC was asked for extension to 2024

The EC approved this ICRN Extension Unanimously.

- ICRN 26 Behaviour of Aluminium in the steam water cycle. Work has been completed. Results will be incorporated into a revision of the current TGD3-10(2015). The ICRN will be closed and a closing statement will be developed.

11.4 PCC Membership.

The PCC Chairman requested that the following new members be approved:

- Mr. Neil Fricke (Suncor, Canada)
- Dr. Tetsuya Sawatsubashi (Mitsubishi Heavy Industries, Japan)
- Mr. Shinichi Terada (Toshiba, Japan)
- Mrs. Arja Lehtikoinen (Valmet, Finland)
- Mr. Burkhard Zohm (Doosan Babcock, United Kingdom)

The EC approved these Membership Additions Unanimously.

The Chairman also indicated that one of the Vice Chairs, Leidich, has requested to step down from the position. The Chairman also informed the EC that he will continue as WG chair until 2021. In 2021 a transition to a new WG Chair will take place.

11.5 PCC Possible Future Sub-Committee.

The PCC Chairman wished to inform the EC that discussions had taken place concerning a possible future sub-committee in conjunction with the Canadian Water Treatment Development Centre and CRIN in regards initially to Oil and Gas processing.

12. Editorial Committee Report

Editorial Committee Chairman Harvey reported that in the preceding year, the Editorial Committee (Harvey, Cook and Cooper) had reviewed the documents in Minute 2.1.

13. Membership and Associates

13.1 Application of India for IAPWS Associate Membership

The Executive Secretary reminded the EC that the application documents for India to become an Associate Member had been forwarded to the Heads of National Committees on 10th September 2019. There was a quick review of the INDIAPWS Statutes, Minutes of the first Meeting, and IAPWS Application Form.

The Executive Secretary, on behalf of the Indian National Committee, then requested EC that INDIAPWS become an Associate Member of IAPWS.

The EC approved INDIAPWS as an Associate Member of IAPWS Unanimously.

13.2 Report on Membership and Member Dues.

The Executive Secretary indicated that all Members had paid the 2019 IAPWS dues.

13.3 Reports on Current Associate Members

Status Report on IAPWS Associate Member, China. The Chair of the China National Committee, Wang, provided a short status report on activities in China. He also indicated that the IAPWS Associate Member status of China Electric Power Plant Chemistry Standardization Technical Committee will expire in May 2020. In order to strengthen exchanges and cooperation between China and other countries, and to promote the internationalization of China power plant chemistry standard, he requested the EC for an extension of China's Associate Member status.

The EC approved an additional three years for China as an Associate Member of IAPWS Unanimously.

Status Report on IAPWS Associate Member, Egypt. The Head of the Egypt National Committee, Khalifa, unfortunately could not attend the IAPWS meetings in Banff. But he did provide a written report which can be seen as Attachment 15.

Status Report on IAPWS Associate Member, Italy. Italian Delegate Giuliano Alba provided a short report on activities of INRiM (Istituto Nazionale di Ricerca Metrologica) over the last year. He indicated that the Italian National Committee will need a little longer to become a full member of IAPWS and requested the EC for an extension of Italy's Associate Member status.

The EC approved an additional three years for Italy as an Associate Member of IAPWS Unanimously.

Status Report on IAPWS Associate Member, Switzerland. The Swiss delegate, Werder, provided a short report on the status of activities (see Attachment 20). Up to now, no team of sponsors to commit on mid- or longterm to a regular Swiss membership fee has yet been assembled. Activities were therefore limited to a few individuals. The board of SCPWS is currently planning a small event in Spring 2020 to find new participating institutions in Switzerland.

14. Executive Secretary's Report

14.1 IAPWS Bank Accounts, Financial, Auditors and IAPWS Dues

The Executive Secretary reported that IAPWS is on a sound financial footing with currently about £67,00.00GBP in total in the UK and US bank accounts. The status as at 15th September 2019 in the bank accounts had been provided to each National Delegate prior to the EC meeting.

The Executive Secretary next reported that the 2018 financial statements had been forwarded to the IAPWS Auditors in January 2019. Professor Savarik in Czech Republic and Dr. Delfs in Germany had reviewed and approved the financial statements. These approvals had also been provided to the Heads of all the National Delegates present prior to the EC meeting.

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 2020.

The EC Unanimously Agreed to this Proposal.

The Executive Secretary had also provided a rough estimate of the income and known planned expenditures for 2019 / 2020.

14.2 Time and Place of the 2020 and 2021 Meetings

2020 IAPWS Meetings. Italian Delegate Giuliano Alba indicated that the 2020 IAPWS meetings will be in Torino, Italy from 6th – 11th September 2020 at the Starhotel Majestic. There is a website for the meeting: <http://iapws2020.inrim.it/>

2021 IAPWS Meetings. The Head of the New Zealand National Committee indicated that the 2021 IAPWS meetings will be held in New Zealand. The dates and specific location details have not yet been worked out. The EC will be informed at the 2020 meetings in Torino.

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 Project.

The President requested the Chairman of the 2019 International Collaboration Committee (WG and SC Chairs) to report on the findings of that committee during the week. Chairman Pawlowicz reported that one collaborative project had been proposed. An overview of the proposed project was provided in the PCC Report (Minute 11) and the proposal details are provided in Attachment 10. The Chairman indicated that the Committee would like to propose funding the project. At this point the US Delegate asked questions about the amount of additional data that would be required to provide validation of the decay map approach for a new TGD. He also questioned the price tag. This led to further discussion and finally a proposal to fund the project up to a maximum of £25,000 (GBP) with the possibility to request the EC for an amendment at the 2020 Meetings in Torino.

The EC Unanimously Approved this Proposal for the International Collaborative Project..

16. IAPWS Awards

16.1 IAPWS Helmholtz Award

The President reported that Dr. Václav Vinš from the Institute of Thermomechanics of CAS, Czech Republic had received the 2019 IAPWS Helmholtz Award and presented the Helmholtz lecture during the IAPWS Symposium.

The President asked the Czech Republic Delegate, Nemeč, for the names of the 2020 Helmholtz Award Committee. The 2020 Helmholtz Committee will consist of: Chairman Nemeč (Czech Republic), Kretzschmar (Germany), Yasouka (Japan), Lovell-Smith (New Zealand) and Jensen (SIAPWS).

Action: Nominations will be due to the Executive Secretary by 31st January 2020.

16.2 IAPWS Honorary Fellowships

The President reported that Mr. Michael Rziha from PPChem in Switzerland had received the 2019 IAPWS Honorary Fellow Award.

The President reminded the EC of the Awards Committee for 2020 with Nakahara (Japan) as Chairman and Harvey (USA) as member with the IAPWS President as ex-officio member.

Action: Nominations are due to the Executive Secretary by 31st January 2020.

17. New Business

17.1 Press Release

The President mentioned that Cook (Chair) and Sparrey had been asked at the EC meeting on Sunday to develop a Press Release. This was developed with input provided by each WG and SC. Cook indicated that a document had been prepared. The final version is Attachment 11. 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 Canada National Committee Feedback on the 2019 EC and WG Meetings.

The Head of the Canadian National Committee, Cook, thought the IAPWS meetings had been a great success but it had been difficult to predict the number of attendees. There had been 62 full delegates from 16 countries and an additional 22 people attending for the symposium. This in total is about 15 to 20 people lower than historically. Cook suggested to the EC and to future organizers of IAPWS annual meetings that they will need to be proactive, and suggested that IAPWS WGs should develop informative agendas as early as possible so that local people not familiar with IAPWS will be able to review the technical topics in detail.

The IAPWS President thanked Cook and his extended team for organizing the IAPWS week in Banff. Applause from EC in appreciation.

17.3 Report on Committee for Future ICPWS

President Hruby asked Friend to provide the EC with feedback on the Committee's discussions during the week. Friend indicated this was a continuation of the Task Force formed in Prague (Friend (Chair), Dooley, Hruby, Henderson, Rziha and Zohm) and Minute 2.5. The Task Force had reviewed three options: a) no future ICPWS, b) reduced days for conference and c) keep ICPWS as historically. The overriding support was for a reduced ICPWS held within a normal IAPWS week of EC and WG meetings. There was also discussion on enhancing educational aspects and having virtual attendees.

Friend indicated to the EC that the US National Committee will report at the next meeting in Torino on how they plan to proceed. No dates have yet been discussed but Friend thought it could be 2023 or 2024.

17.4 Reports from National Committees.

Written reports on progress in member countries were not reported to the EC but were distributed to other members and the Executive Secretary electronically. They are attached to these minutes as follows:

Australia, AUSAPWS	Attachment 12
BIAPWS	Attachment 13
Czech Republic	Attachment 14
Egypt	Attachment 15
Germany	Attachment 16
Japan	Attachment 17
New Zealand	Attachment 18
SIAPWS	Attachment 19
Switzerland	Attachment 20
USA	Attachment 21

17.5 Participants

Attachment 22 provides a list of participants at the IAPWS EC and WG Meetings in Banff, Canada in September/October 2019.

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

18. Closing Remarks and Adjournment

No further business was raised by the EC. The President thanked everybody for participating at this EC meeting. Then he formally closed the 2019 EC meeting at 11:35 am.