

## Minutes of the CCT Working Group for Strategic Planning Meeting

BIPM – Sèvres - 31 May 2017 14:00

### Participated:

Yuning	Duan	CCT President, CIPM member and WG-SP
Susanne	Picard	CCT Executive Secretary
Miltiadis	Anagnostou	TC-T GULFMET
Stephanie	Bell	WG-Hu
Jovan	Bojkovski	WG-CMC
Efrem Kebede	Ejigu	TC-T AFRIMETS
Bernd	Fellmuth	TG-K
Jean-Rémy	Filtz	TG-ThQ
Joachim	Fischer	TG-SI and WG-CTh
Graham	Machin	WG-NCTh and EURAMET
Edgar	Méndez-Lango	TC-T SIM
Andrea	Merlone	TG-Env
Andrea	Peruzzi	WG-KC
Anatolii	Pokhodun	TC-T COOMET
Li	Wang	TC-T APMP

### Excused:

White	Rod	TG-GoTh, TG-SMFPC
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### 1. Welcome, approval of agenda

Yuning Duan welcomed the participants to the meeting.

### 2. On the redefinition of the kelvin (J. Fischer)

Joachim Fischer reported that the set CCT criteria for the redefinition of the kelvin have been fulfilled. Recent additional result should generate a determination of the Boltzmann constant  $k = 1.38065X$  with an associated relative uncertainty of 0.35 parts in  $10^6$  (where X represents the still unknown last digits). He also presented a draft recommendation to the CCT for the redefinition of the kelvin, c.f. CCT/17-16 (restricted access). It was agreed to make a lighter modification of the text.

### 3. On the *Mise en Pratique* (B. Fellmuth)

Bernd Fellmuth reported that the new version of the *Mise en Pratique* is an extension of that already in force. The revised version now contains information on polarizing gas thermometry (covering dielectric constant gas thermometry and refractive index thermometry) and noise thermometry. The document is made to give a shorter main part but with a detailed Appendix. The main document will be submitted to the CCU for their September meeting, and the full paper will be completed by December 2017.

**4. Draft Recommendations to the CIPM (partly discussed in #1) and**

**5. Proposal on new TG: Realization of the (redefined) kelvin (Real K) (G. Machin)**

Graham Machin had before the meeting distributed a proposal for the creation of a new group to take hold of the redefinition and turn it into reality in small NMIs. Discussions followed. The importance of not losing tracks on the implementation of the redefined kelvin and maintain concentration on measurements of thermodynamic temperature were put forward. Jean-Remy confirmed LNE-Cnam's support for future work in this direction. On the other side, a fear to lose knowledge on how to realize ITS-90 and create confusion when emphasizing new methods was expressed. Yuning Duan underlined the need to explore new concepts and technologies but also the importance to pay attention to the needs from industry. More discussion was deferred to the agenda point 12.

**6. Status of the WG-CMC (J. Bojkovski)**

Jovan Bojkovski reported that the interpretation of the review protocols differs between RMOs and that CMC protocols for Thermophysical Quantities had been drafted. Next meeting of the WG-CMC will be at the TEMPMEKO conference in China October 2019.

**7. Status of the WG-KC (A. Peruzzi)**

Andrea Peruzzi thanked Ken Hill for his contribution as chair until 2015. Since 2015, 4 additional members have joined the WG-KC which now has 13 members. TC Chairs will be contacted to follow up uncompleted comparisons that have become old. Andrea Peruzzi also informed on the intent to follow the document CIPM MRA D-04 where a WG-KC review of supplementary comparisons is no longer mandatory but optional.

**8. Status of WG-Hu, WG-NCTh, WG-CTh, TG-Env, TG-GoTh, TG-SMFPC and TG-ThQ**

**WG-Hu** Stephanie Bell confirmed the publication of the CCT-K6 report and informed that the CCT-K8 is almost completed. The repeat of APMP.T-K6 has already started. The definition of relative humidity was discussed at the WG-Hu meeting earlier during the week and the uncertainty document for humidity is progressing however slowly.

**WG-NCTh** The CCT-K10 comparison is progressing. Three documents have been drafted within the group on uncertainty in primary radiation thermometry (P. Saunders), CMC review protocol (Y. Yamada) and uncertainty in high temperature fixed points (A. Todd).

Thermodynamic temperature is now being assigned to high temperature fixed points. Next WG-NCTh meeting will take place at the IMEKO conference on Northern Ireland in 2018.

**WG-CTh** A review of  $T-T_{90}$  at  $T < 0$  °C is progressing in view of a future temperature scale but no change to the ITS-90 is presently required.

**TG-Env** Andrea Merlone reported that the TG is now taking up technical tasks apart from its coordinating role. TG-Env members are active within the CIMO (WMO) and the membership is increased

**TG-SMFPC** Rod White (chair of TG-SMFPC) was excused. Bernd Fellmuth reported on the main outcome of the TG that sealed cells should be compared to open cells.

**TG-GoTh** Rod White (chair of TG-SMFPC) was excused. Bernd Fellmuth informed that uncertainty document CCT/08-19 is now superseded by Chapter 5 of *Guide to the realization*

of ITS-90 to which Rod White has contributed. The CCT/08-19 is now available by restricted access.

**TG-ThQ** Jean-Rémy Filtz reported that the approach to thermal expansion has now been clarified, also partly covered by the CCL. There is a short path from primary measurements to application in industry and environmental aspects, and several emerging NMIs are interested in the field of thermophysical quantities. There are presently discussions on how to consider heat flux density within the TG and the NIST will circulate a questionnaire on this issue.

#### **9. Revision of the CIPM MRA**

Susanne Picard gave a short summary of the present status of the revision of the KCDB 2.0. The main part consists of the creation of a web based CMC platform on which all actors may edit and exchange data.

#### **10. First revision of the CCT Strategic Planning**

It was agreed that Joachim Fischer will coordinate the first revision of the CCT Strategic Planning document, supported by the WG, TG and TC-T chairs. He will supply a planning after the meeting. The revision is to be completed before end of 2017.

#### **11. Policy for membership of the CCT**

Yuning Duan reported on the CIPM decision to enlarge access to the Consultative committees for member states of the BIPM. Each member state may now be represented at the meeting by one observer on request by the director of the institute in question.

#### **12. Update on the CCT WGs and TGs and chairs**

- a. The TG-SI fulfilled its mission and the task group is therefore now closed. Joachim Fischer was warmly thanked by the CCT President and all meeting participants for having successfully coordinated the work allowing redefining the kelvin.
- b. The TG-K fulfilled its mission and the task group is therefore now closed. Bernd Fellmuth was warmly thanked by the CCT President and received friendly greeting from all meeting participants for having supervised and accomplished the revision of the “red” book, now known as *Guide for the realization of the ITS-90*.
- c. Jovan Bojkovski, earlier on an interim basis, was appointed Chair for the WG-CMC.
- d. As Joachim Fischer soon will retire, the WG-SP members supported the proposal that Dr Christof Gaiser (PTB) will become chair for the WG-CTh. Joachim Fischer gave a brief description of Christof Gaiser’s work and achievements. The ToR were discussed. The ToR “considering the development of a new scale...” should be suspended and becomes the subject for a future TG. The “update of the MeP and Guide for the realization of the ITS-90” was added as a ToR.
- e. The discussion on the possible creation of a new group (cf. #4 and #5) retook. Yuning Duan expressed his desire to presently keep the groups as they are for the time being, for a possible evolution at the next CCT meeting. Graham Machin suggested drafting a recommendation on the realization of the redefined kelvin for the plenary meeting, which was supported by the WG-SP members.
- f. Graham Machin asked to mirror the same ToR stated for CTh on to the NCTh in the case for high temperatures and gained approval.

- g. A. Merlone highlighted the need to ensure long term planning and continuous interaction with the collaborating communities, on the subject of metrology for climate studies and environment. Yuning Duan proposed that the TG for Environment becomes a Working Group.
- h. Yuning Duan reported on a suggestion received earlier from the NIST on the creation of a new group on photonic thermometry. A discussion followed where it was noted that a group should be formed to explore the potentials of new techniques. It was agreed to ask Dr Zeeshan Ahmed (NIST) to present the concept at the plenary CCT meeting.
- i. A discussion on whether or not the TG-ThQ should evolve to a WG was held, where the outcome was to maintain the current status for the time being. Jean-Rémy Filtz will update the ToR.

The meeting closed at 18:00.

*Rapporteur : Susanne Picard, 14 June 2027*