

Bureau international des poids et mesures

Comité international des poids et mesures

102nd meeting (June and October 2013)

Report of the 102nd Meeting of the International Committee for Weights and Measures 2013

This Report of the 102nd meeting of the International Committee for Weights and Measures (June and October 2013) is one of a set of three documents issued annually by the CIPM and the BIPM which collectively cover the formal reporting to Member States, the other two reports in the set being the:

- Director's Report on the Activity and Management of the BIPM 2013, and the
- *Rapport annuel aux gouvernements des hautes parties contractantes sur la situation administrative et financière du Bureau international des poids et mesures 2013.*

Note on the use of the English text

To make its work more widely accessible the International Committee for Weights and Measures publishes an English version of its reports.

Readers should note that the official record is always that of the French text. This must be used when an authoritative reference is required or when there is doubt about the interpretation of the text.

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MEMBER STATES AND ASSOCIATES OF THE GENERAL CONFERENCE

as of 18 October 2013

Member States

Argentina	Malaysia
Australia	Mexico
Austria	Netherlands
Belgium	New Zealand
Brazil	Norway
Bulgaria	Pakistan
Canada	Poland
Chile	Portugal
China	Republic of Korea
Colombia	Romania
Croatia	Russian Federation
Czech Republic	Saudi Arabia
Denmark	Serbia
Dominican Republic	Singapore
Egypt	Slovakia
Finland	South Africa
France	Spain
Germany	Sweden
Greece	Switzerland
Hungary	Thailand
India	Tunisia
Indonesia	Turkey
Iran (Islamic Republic of)	United Kingdom of Great Britain and Northern Ireland
Ireland	United States of America
Israel	Uruguay
Italy	Venezuela (Bolivarian Republic of)
Japan	
Kazakhstan	
Kenya	

Associates of the General Conference

Albania	Malta
Bangladesh	Mauritius
Belarus	Mongolia
Bolivia (Plurinational State of)	Montenegro
Bosnia and Herzegovina	Namibia
Botswana	Oman
CARICOM	Panama
Chinese Taipei	Paraguay
Costa Rica	Peru
Cuba	Philippines
Ecuador	Republic of Moldova
Estonia	Seychelles
Former Yugoslav Republic of Macedonia	Slovenia
Georgia	Sri Lanka
Ghana	Syrian Arab Republic
Hong Kong (China)	Ukraine
Jamaica	Viet Nam
Latvia	Zambia
Lithuania	Zimbabwe

**International Committee
for Weights and Measures**

Proceedings of Session I

of the 102nd meeting

(19–21 June 2013)

Executive Summary

Session I of the 102nd meeting of the CIPM (19 to 21 June 2013)

Science strategy

The CIPM endorsed the work carried out by the Consultative Committees (CCs) in preparing the strategy documents. It acknowledged the useful and supportive feedback from Directors of National Metrology Institutes (NMIs). It supported the Director of the BIPM regarding the direction of the initiative and instructed him to continue to develop a global perspective.

The CIPM encouraged Presidents and Executive Secretaries of the CCs to reflect on comments received from NMIs specific to their CC strategy and to decide, in consultation with their CC (and/or appropriate Working Groups), whether revision is necessary.

The CIPM welcomed the analysis of the rationale for the laboratory activities at the BIPM.

CCM roadmap

The CIPM endorsed the initiative of both the President of the Consultative Committee for Mass and Related Quantities (CCM) and the CCM in developing a roadmap showing the steps required in mass metrology to achieve a redefinition of the SI by 2018.

New CIPM election procedure

The CIPM approved the new procedure for the election of CIPM Members with a few amendments. The procedure had been prepared by the CIPM *ad hoc* Working Group on CIPM Membership.

The CIPM decided to charge the CIPM *ad hoc* Working Group on CIPM Membership with developing procedures for the election of CC Presidents, CC Working Group Chairs, CC Deputy Chairs, CIPM Vice-Presidents, Honorary Members of the CIPM and Emeritus Directors of the BIPM.

IPK campaign

The CIPM approved the plans for an extraordinary campaign of measurements with the international prototype of the kilogram (IPK). The Director of the BIPM will have access to the vault to remove the IPK for use in the campaign of measurements.

**MEMBERS OF THE
INTERNATIONAL COMMITTEE FOR WEIGHTS AND MEASURES**

As of 19 June 2013

President

1. B. Inglis, National Measurement Institute (NMI), Lindfield, Australia.

Secretary

2. R. Kaarls, Zoeterwoude, the Netherlands.

Members

3. B.R. Bowsher, National Physical Laboratory (NPL), Teddington, United Kingdom.
4. H.S. Brandi, Instituto Nacional de Metrologia, Qualidade e Tecnologia (INMETRO), Rio de Janeiro, Brazil.
5. K. Carneiro, Holte, Denmark.
6. K.H. Chung, Chungnam National University, Daejeon, Republic of Korea.
7. Y. Duan, National Institute of Metrology (NIM), Beijing, China.
8. L. Énard, Laboratoire National de Métrologie et d'Essais (LNE), Paris, France.
9. V.N. Krutikov, *Rosstandart*, Moscow, Russian Federation.
10. W. Louw, National Metrology Institute of South Africa (NMISA), Pretoria, South Africa.
11. W.E. May, National Institute of Standards and Technology (NIST), Gaithersburg, United States of America. *Vice-President*.
12. J.W. McLaren, Ottawa, Canada. *Vice-President*.
13. H.O. Nava-Jaimes, *Centro Nacional de Metrología* (CENAM), Querétaro, Mexico.
14. A. Sacconi, *Istituto Nazionale di Ricerca Metrologica* (INRIM), Turin, Italy.
15. H. Uğur, Mugla, Turkey.
16. J. Ullrich, *Physikalisch-Technische Bundesanstalt* (PTB), Braunschweig, Germany.
17. T. Usuda, National Metrology Institute of Japan (NMIJ/AIST), Tsukuba, Japan.
18. J. Valdés, *Instituto Nacional de Tecnología Industrial* (INTI), Buenos Aires, Argentina.

Honorary members

1. E. Ambler, Hilton Head Island, United States of America.
2. W.R. Blevin, Glenhaven, Australia.
3. L.M. Branscomb, La Jolla, United States of America.
4. J.V. Dunworth, Ramsey, Isle of Man, United Kingdom.
5. K. Iizuka, Tokyo, Japan.
6. D. Kind, Braunschweig, Germany.
7. J. Kovalevsky, Grasse, France.
8. J. Skákala, Bratislava, Slovakia.

Agenda

1. Opening of the meeting; quorum; agenda
2. Confirmation of the minutes of the sessions held in 2012
3. Report of the Secretary and activities of the Bureau of the CIPM, including an update on new and prospective Members and Associates
4. Director's Report
5. Report from the Chair of the CIPM Standing Sub-Committee on Finance
6. Financial and administrative matters
 - 6.1 Financial statements of the BIPM for 2012
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 - 6.3 Quietus for 2012
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 - 7.1 Draft resolution 'On the election of the International Committee for Weights and Measures' for the CGPM (see item 13)
 - 7.2 Re-appointment of CC Presidents after the 25th meeting of the CGPM
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10. Minuting of decisions made and consensus reached during the discussions on Thursday 20 June
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11. Plans for the meeting of NMI Directors and Government Representatives (23 to 24 October 2013)
12. The development of the BIPM Programme of Work (2016 to 2019)
13. Plans for the 25th meeting of the CGPM (2014), including possible resolutions
 - 13.1 The election of the CIPM
 - 13.2 The adoption of a 'new SI' (see CCU Recommendation CCU 1 (2013))
 - 13.3 Changes to the BIPM Pension and Provident Fund
 - 13.4 The BIPM dotation
 - 13.5 Review of the CIPM MRA

14. Report from the Chair of the CIPM Standing Sub-Committee on the BIPM Pension Fund and Health Insurance
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18. CIPM Recommendations
 - 18.1 Recommendation 1 (CI-2013): Updates to the list of standard frequencies
19. Any other business
 - 19.1 'In camera' session
 - 19.2 Approval of modifications to JCRB/CIPM documents
 - 19.3 Endorsement of the revised 'BIPM Mission, Role and Objectives' text
20. Date of next meeting
21. Closure of the meeting

**1. OPENING OF THE MEETING;
QUORUM;
AGENDA**

The International Committee for Weights and Measures (CIPM) held Session I of its 102nd meeting from Wednesday 19 June to Friday 21 June 2013 at the International Bureau of Weights and Measures (BIPM) in Sèvres.

Present: B.R. Bowsher, H.S. Brandi, K. Carneiro, K.H. Chung, Y. Duan, L. Énard, B. Inglis, R. Kaarls, V. Krutikov*, W. Louw, W.E. May, J.W. McLaren, M.J.T. Milton (Director of the BIPM), H.O. Nava-Jaimes, H. Uğur, J. Ullrich, T. Usuda, J. Valdés.

Apologies were received from A. Sacconi.

Also attending the meeting were: C. Fellag Ariouet (Personal Assistant to the Director), T.J. Quinn (Emeritus Director of the BIPM) and A.J. Wallard (Emeritus Director of the BIPM).

The following were in attendance for parts of the meeting: S. Arlen (Legal Adviser of the BIPM), A. Henson (Director of the International Liaison and Communication Department), C. Kuanbayev (JCRB Executive Secretary), B. Perent (Financial and Administrative Director of the BIPM), C. Planche (Librarian/Drafting Officer) and R. Sitton (Publications Officer).

The following were present for the session on Thursday 20 June only: E.F. Arias (CCTF Executive Secretary and Director of the Time Department), R. Davis (CCM Interim Acting Executive Secretary), J.M. Los Arcos (CCRI Executive Secretary and Director of Ionizing Radiation Department), S. Picard (CCAUV Executive Secretary), P. Richard (President of the CCM), L. Robertsson (CCL Executive Secretary), M. Stock (CEM and CCPR Executive Secretary, Director of the Electricity Department and Director of the Mass Department *par interim*), C. Thomas (CCU Executive Secretary and KCDB Coordinator) and R. Wielgosz (CCQM Executive Secretary and Director of the Chemistry Department).

Dr Inglis, President of the CIPM, opened Session I of the 102nd meeting of the CIPM. With 16* out of 18 members present the quorum was satisfied according to Article 12 of the Regulations annexed to the Metre Convention. The President of the CIPM welcomed the new members of the CIPM, Prof. Brandi, Dr Louw and Prof. Ullrich, and asked each to introduce themselves. He also welcomed Dr Quinn and Prof. Wallard who attended the meeting in their capacity as Emeritus Directors of the BIPM.

The President of the CIPM congratulated Dr Milton on being awarded an Honorary Professorship in the Department of Chemistry at the University of York, UK.

There were two changes to the agenda. An *in camera* session was proposed for the afternoon of 19 June and a proposal for an honorary member of the CIPM was added to agenda item 8 on 'Membership of the CIPM'.

* V. Krutikov was absent on Wednesday 19 June.

2. CONFIRMATION OF THE MINUTES OF THE SESSIONS HELD IN 2012

The President of the CIPM reviewed the minutes of the sessions held the previous year. He asked the Director of the BIPM to comment on two decisions that were still outstanding.

Decision CIPM/101-62 *The CIPM decided to recommend to the JCGM the development of an on-line, annotated version of the VIM3 as a work item for JCGM WG2.*

A report was given under agenda item 17.5.

Decision CIPM/101-45 *The CIPM accepted Recommendation CCTF 1 (2012), agreed to make it a CIPM recommendation and asked the BIPM Director to prepare a Draft Resolution for the 25th CGPM meeting and submit it to the CIPM bureau in March 2013.*

A report was given under agenda item 18.1.

The minutes of the 101st meeting (2012) were approved by correspondence and the CIPM agreed that the printed version tabled is a true copy of the circulated document.

Decision CIPM/102-1

The CIPM agreed that the minutes of the 101st meeting (2012) were confirmed by correspondence.

3. REPORT OF THE SECRETARY AND ACTIVITIES OF THE BUREAU OF THE CIPM, INCLUDING AN UPDATE ON NEW AND PROSPECTIVE MEMBER STATES AND ASSOCIATES OF THE CGPM

Dr Kaarls, the Secretary of the CIPM, gave his report (see Appendix 1) for the period October 2012 to June 2013. The President of the CIPM invited questions on the report and the following points from the discussion were noted.

Dr Quinn said that he would have liked to have had the opportunity to make a statement regarding the staff issue mentioned in the Secretary's report but was unable to do so because the issue would only be discussed later by the CIPM during an *in camera* session (see §19.1).

The favourable remarks on the BIPM outreach activities in the Secretary's report, for example its work with the DCMAS Network, were welcomed. They served to highlight the importance of increasing the number of Associates of the CGPM and Member States. The critical role of the Regional Metrology Organizations (RMOs) in promoting the BIPM and the Metre Convention was acknowledged. The importance of personal contacts by senior staff of the BIPM and the Executive Secretaries of the Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB) in attracting Member States was emphasized. The work of the Director of the International Liaison and Communication Department in promoting and facilitating outreach was praised.

4. DIRECTOR'S REPORT

Dr Milton, Director of the BIPM, gave a report on his activities since taking up the position on 1 January 2013.

A priority has been to visit and meet senior staff at as many National Metrology Institutes (NMIs) as possible. This has included the LNE (France), the METAS (Switzerland) and the PTB (Germany). A series of visits to NMIs in Asia, including the NIM (China), the KRISS (Republic of Korea) and the NMIJ (Japan), are planned for July and August 2013.

He reported that he had the privilege of greeting His Excellency Gustavo Carvajal, the Ambassador of the Republic of Colombia in France on 15 May 2013 during the signing of the CIPM MRA by the Director of the *Instituto Nacional de Metrología de Colombia* (INM). The Ambassador gave the Director his perspective on the benefits to Colombia of having acceded to the Metre Convention.

His direct involvement in the scientific work of the BIPM has included discussions on the use of the international prototype of the kilogram (IPK) and the case for the purchase of a linear accelerator. Improving the laboratory conditions in the Observatoire building is a priority.

The BIPM purchasing rules have been revised and the financial accounts have been reviewed. Work will continue on the long-term financial plan for the BIPM.

Criticism of the timeliness of BIPM publications made by some Member States and NMIs is being addressed. The length of most reports has been reduced and online publication is being used before hard copies are published.

The development of the new consolidated planning process is under way. Five CCs met during the first half of 2013: the Consultative Committee for Mass and Related Quantities (CCM), the Consultative Committee for Electricity and Magnetism (CCEM), the Consultative Committee for Ionizing Radiation (CCRI), the Consultative Committee for Amount of Substance - Metrology in Chemistry (CCQM) and the Consultative Committee for Units (CCU). Each has been charged with improving the efficiency and planning of its activities. For example, the CCQM meeting in 2014 will be limited to the maximum number of attendees that can be hosted on-site at the BIPM. This will present a challenge to the CCQM Working Groups. It was noted that the CCU meeting on 11 to 12 June 2013 had been particularly important because of the work towards the 'new SI', although the CCU had not been requested to develop its own strategy document.

The President of the CIPM thanked the Director for his report and invited questions. There were none.

5. REPORT FROM THE CHAIR OF THE CIPM STANDING SUB-COMMITTEE ON FINANCE (DR BOWSHER)

Dr Bowsher gave a report on the progress of the CIPM Standing Sub-Committee on Finance. The first meeting of the CIPM Standing Sub-Committee on Finance was held in October 2012. Subsequently, it had held a teleconference on 22 May 2013. The CGPM had issued strong guidance for clarity on financial issues. Recent issues considered by the Sub-Committee included updating the treatment of depreciation, in particular, the treatment of the watt balance, the KCDB and the T-soft software.

Review of the long-term financial plan for the BIPM is a critical task for the Sub-Committee. However, more clarity is needed on the BIPM strategy since it has important financial implications. It will be necessary to present the long-term financial plan to the Government Representatives and NMI Directors at their meeting in October 2013 and early sight of the draft to the CIPM was encouraged.

Dr Bowsher asked the Director of the BIPM to introduce the financial statements in greater detail. The BIPM has continued with its policy of adopting IPSAS standards and will anticipate the application of three new standards on financial instruments (IPSAS 28, IPSAS 29 and IPSAS 30) which are mandatory for financial statements starting on 1 January 2013.

Since the introduction of accrual accounting the value of the buildings has been calculated using the reproduction cost approach, which assumes buildings are valued in near to perfect condition. A consequence of using the reproduction cost approach is that it gave the impression that the BIPM had made a large financial loss; but the actual cost of maintenance was significantly less. In order to improve the accuracy of the accounts, the buildings will now be valued using the depreciated replacement cost approach. Introduction of the depreciated replacement cost approach in the restated statement of financial position for 31 December 2011 valued the BIPM's buildings at 19 236 thousand Euros compared to 22 373 thousand Euros in the audited statement of financial position on the same date. This valuation leads to depreciation that is more in line with actual expenditure on building maintenance.

During the year it had become apparent that the KCDB, JCRB and the JCTLM databases would be replaced in the long term. These databases had previously been considered to have an indefinite useful life which has been revised to 4 years, 4 years and 9 years respectively.

Some prototype components of the watt balance will not be used in the final version and have therefore been written off. These components amount to 2 004 thousand Euros. The new watt balance has been installed in its new dedicated room and is now recognized as scientific equipment under development currently valued at 768 thousand Euros.

In addition, the superconducting watt balance will be written off the balance sheet now that it is considered a completed project that will not be used in the future.

Development of the T-soft software started before the introduction of the current accounting system and as such there is no documented evidence of its development cost. The external financial auditor had commented that this had been accepted in previous years, but would not continue to be acceptable. The development of the new Rapid UTC (UTCr) software has allowed the value of T-soft to be estimated as it is a similar project. This estimate of the value of T-soft will allow the external financial auditor to issue unqualified accounts for the BIPM in 2014, although the qualification would remain on the accounts in 2013.

Another item discussed was the different views regarding the heritage buildings. However, the issue is linked to the long-term financial plan and the long-term use of the buildings. It would therefore be reconsidered in the future when a formal building strategy is adopted.

The Financial and Administrative Director of the BIPM alleged she had not been fully involved in the preparation of the BIPM financial statements and that essential documents had not been submitted to her for the teleconference on 22 May 2013. She claimed that this made it impossible for her to fulfil her role because she had not been kept fully informed of the discussions and outcomes on several issues and of various meetings. She commented that this was the case for the issue of adopting new accounting policies. She questioned the process applied and emphasized that the possible de-recognition of the heritage buildings was not in compliance with the *Convention de concession* signed between the CIPM and the French authorities and that there was no rationale to support that change. She further alleged that she had not been made aware of the outcome of discussions between the external financial auditor and the Director of the BIPM.

It was commented that the CIPM bureau and the Secretary of the CIPM can propose changes to the BIPM accounting policy but they cannot give final approval for such changes. The CIPM has to agree any changes; the CIPM bureau alone does not have the authority to change accounting policy.

The Director noted that the external financial auditor had reviewed the rules regarding changes very carefully and had taken the view that changes could be approved by the CIPM at the same time as they approved the statements. The Financial and Administrative Director of the BIPM stated her view that it is not the external financial auditor's role to interpret the rules.

The President of the CIPM summed up the discussion. He then asked the CIPM to approve the revised Terms of Reference of the Sub-Committee. After a brief discussion, the Terms of Reference were approved and placed on the website.

Decision CIPM/102-2

The CIPM approved the revision of the Terms of Reference of the CIPM Sub-Committee on Finance for it to oversee, on behalf of the CIPM, the effective and timely preparation of the BIPM financial statements, including appropriate due diligence.

6. FINANCIAL AND ADMINISTRATIVE MATTERS

6.1. Financial statements of the BIPM for 2012

It was noted that the external financial auditor was not able to attend Session I of the 102nd meeting of the CIPM to report on the 2012 audit. He sent his apologies.

The Financial and Administrative Director of the BIPM presented the financial statements of the BIPM for 2012, including the statement of financial performance and the budget outturn. She claimed that the necessary data for the presentation had only been received two days previously. Full details of the financial statements are available in the *Rapport annuel aux gouvernements des hautes parties contractantes sur la situation administrative et financière du Bureau international des poids et mesures en 2012*.

Rescheduling agreements were concluded with the Dominican Republic and the Islamic Republic of Iran during 2012 and they have started to settle their arrears.

Total assets amounted to 48 616 thousand Euros at 31 December 2012 compared to 53 201 thousand Euros at 31 December 2011. Total liabilities were 12 570 thousand Euros and 13 510 thousand Euros for the same periods respectively. The net loss for 2012 was 3 654 thousand Euros compared to 194 thousand Euros for 2011. Operating expenses totalled 16 839 thousand Euros in 2012 including 7 358 thousand Euros for staff costs.

Total revenue for 2012 was 12 760 thousand Euros compared to a budgeted figure of 12 569 thousand Euros. This included contributions for Member States of 11 875 thousand Euros compared to a budgeted figure of 11 814 thousand Euros.

There was a brief discussion about income from *Metrologia* and how this is forecast to change. In 2012 income from *Metrologia* significantly exceeded the budgeted income, mainly due to two very large archive deals; the budgeted income for 2013 is therefore closer to the budgeted income for 2012 rather than the actual result. It is difficult to predict the evolution of the income in the longer term but IOP

Publishing (IOPP) continue to be proactive in responding to market changes. A new contract is being negotiated with the IOPP and is expected to be signed before the end of 2013. Since April 2013 *Metrologia* has been operating a 'hybrid open-access' policy, which means that authors who wish to do so can pay an article processing fee in order for their paper to be made openly available.

Library expenditure at 42 thousand Euros in 2012 was due to a major order for journals being placed early in 2013 rather than late 2012. All journal subscriptions had been reviewed and there was a move towards buying individual journal articles on a case-by-case basis.

The President of the CIPM thanked Mrs Perent for her presentation.

6.2. Financial statements for the BIPM Pension and Provident Fund for 2012

The Financial and Administrative Director of the BIPM presented the financial statements for the BIPM Pension and Provident Fund for 2012. It was noted that the various discount rate assumptions have a significant impact on the estimated liabilities. Net assets of the pension fund were –68 million Euros at 31 December 2012 and the net assets of the pension fund have decreased by 10 million Euros since 31 December 2011. The BIPM Sub-Committee on the BIPM Pension and Provident Fund and Health Insurance is looking into the issue (see §14) and will report to the CIPM and the meeting of NMI Directors and Government Representatives in October 2013. It will probably submit a draft Resolution to the CGPM.

It was further observed that the level of liabilities is very serious but this is tempered by the fact that all pension funds faced similar difficulties because of the unusual financial situation world-wide.

6.3. Quietus for 2012

Decision CIPM/102-3

After due consideration of the 2012 audited BIPM financial statements, the CIPM approved the 2012 BIPM financial statements without objection and decided to transfer to 'Other reserves' the net result for the 2012 period which amounts to –3.654 million Euros.

The CIPM discharged the Director of the BIPM from all liability in respect of his administration for the 2012 financial period.

Decision CIPM/102-4

After due consideration of the 2012 audited BIPM Pension and Provident Fund financial statements, the CIPM approved the 2012 BIPM Pension and Provident Fund financial statements without objection and decided to transfer to 'Other reserves' of the Pension and Provident Fund the net result for the 2012 period which amounts to –10.105 million Euros.

The CIPM discharged the Director of the BIPM from all liability in respect of his administration of the BIPM Pension and Provident Fund for the 2012 financial period.

6.4. *Rapport aux Gouvernements for 2012*

The Draft *Rapport aux Gouvernements des Hautes parties contractantes sur la situation administrative et financière du Bureau international des poids et mesures en 2012* had been distributed for agenda item 5.

6.5. Update on income and expenditure for 2013

The Financial and Administrative Director of the BIPM gave a report of the execution of the 2013 budget as at 31 May 2013.

Total income was 8 million Euros (62 % of budget). Only 43 % of subscriptions from Associates and 63 % of contributions from Member States had been received. For comparison, on 31 May 2012 65 % of contributions had been received. Mongolia wishes to become an Associate of the CGPM; full payment of its first subscription has been made but formal notification of its association is still outstanding.

Total expenses amounted to 4.8 million Euros (34 % of budget). Operating expenses totalled 473 thousand Euros (43 % of budget). Heating, water and electricity costs amounted to 199 thousand Euros (79 % of budget) for the period. Electricity costs are a cause for concern and the Director commented that they were under review.

6.6. Member States in financial arrears

Payments towards their respective rescheduling agreements have been received from the Dominican Republic and the Islamic Republic of Iran.

The BIPM has contacted the French Ministry of Foreign Affairs and asked them to inform the Republic of Cameroon and the Democratic People's Republic of Korea of their exclusion. This follows their failure to negotiate rescheduling agreements by the deadline set in Resolution 6 of the CGPM (2011). Other Member States will also be notified of the situation.

There were three Member States in arrears for 2012: Uruguay, Venezuela and Pakistan. Pakistan is expected to settle its arrears by the end of June 2013.

There were four Associates of the CGPM in arrears for 2012: Costa Rica, Cuba, the Former Yugoslav Republic of Macedonia and Sri Lanka.

Following Resolution 4 of the CGPM (2011) and the subsequent increase of the subscriptions, the CIPM had encouraged eleven Associates to become Member States. At the time of Session I only two of these eleven (Belarus and Slovenia) have fully settled their 2013 subscriptions. It was noted that this situation will be monitored.

6.7. Amendments to the BIPM Staff Regulations, Rules and Instructions

The CIPM considered three amendments to the BIPM Staff Rules.

6.7.1. Notice of Resignation (Article 16.3)

Proposed changes to the Rule 16.3 'Notice of Resignation' were briefly introduced and were approved by the CIPM.

Decision CIPM/102-5

The CIPM approved the changes to Rule 16.3 'Notice of resignation' of the Regulations, Rules and Instructions applicable to staff members of the BIPM (RRI) without objection. The modifications were the insertion of two rules, 16.3.1 'Exemption from duty during the notice period' and 16.3.2 'Salary payment and exemption from duty'.

16.3 Notice of resignation

The notices of resignation mentioned in Regulations 16.1 and 16.2 shall be submitted in writing against a signed and dated receipt by the Director or his representative.

16.3.1 Exemption from duty during the notice period

The Director may on a discretionary basis excuse the staff member from actual duty during the period of notice served in the case of resignation.

16.3.2 Salary payment and exemption from duty

Where the staff member requests to cease work before the expiry of the notice period and where, before the end of the notice period, the staff member leaves the BIPM for another appointment, the emoluments corresponding to the remaining notice period shall not be paid.

6.7.2. Health and safety at work (Article 11.10.10)

A new Health and Safety Manual has been developed for the BIPM. The proposed amendment aims at facilitating the introduction of this new manual.

11.10.10 Health and safety at work

Health and safety are the ultimate responsibility of the Director. He shall issue and keep up to date the BIPM Health and Safety Manual ensuring that the staff members' health and safety are protected. It shall be his responsibility to ensure that the manual is in accordance with the BIPM's legislation on health and safety at work and that it is displayed and notified to staff.

I-11.10.10 *Health and safety organization at the BIPM*

The Director shall set up the health and safety organization at the BIPM specified in the BIPM Health and Safety Manual.

The discussion of the amendment to Article 11.10.10 centred on concerns that the rule implies that the Director of the BIPM is solely responsible for health and safety. It was confirmed that all BIPM staff have a responsibility and should be aware of their responsibilities for health and safety. This clarification will be incorporated into the amended rule.

Decision CIPM/102-6

The CIPM approved the principle of the changes to Rule 11.10.10 ‘Health and safety at work’ of the Regulations, Rules and Instructions applicable to staff members of the BIPM (RRI) without objection and will confirm the final draft text by correspondence.

6.7.3. Therapeutic part-time (Article 14.5.17)

A proposed change to the Rule 14.5.17[†] ‘Therapeutic part-time’ was briefly introduced. The change will be considered and the final draft confirmed by correspondence.

Decision CIPM/102-7

The CIPM approved the principle of the changes to Rule 14.5.17 ‘Therapeutic part-time’ of the Regulations, Rules and Instructions applicable to staff members of the BIPM (RRI) and will confirm the final draft text by correspondence.

7. REPORT FROM THE CHAIR OF THE CIPM AD HOC WORKING GROUP ON CIPM MEMBERSHIP (DR MAY)

Dr May gave a progress report on the CIPM *ad hoc* Working Group on CIPM Membership. The document *Draft Criteria and Process for Election of CIPM Members* has been developed since Session II of the 101st meeting of the CIPM in October 2012. The draft included changes to the criteria and technical requirements for CIPM membership. The draft has been reviewed by the CIPM and the *ad hoc* Working Group on the role, mission, objectives, long-term financial stability, strategic direction and governance of the BIPM and a further revised copy was sent to NMI Directors and representatives of Member States in March 2013 for comment.

The document and comments received were presented and discussed. The document *Draft Criteria and Process for Election of CIPM Members* is divided into five sections. Several minor amendments were made based on the discussions. Those changes are summarized below:

A. Preamble

A common theme for many of the comments was that the task of the CIPM is broader than simply providing direction and supervision of the BIPM. The wording was amended to address this concern[‡]: “The CIPM is composed of 18 individuals, each from a different State, elected by the CGPM and charged with providing direction and supervision of the BIPM and its activities *along with all metrological work that the Member States decide to execute in common*. In their capacity as members of the CIPM they therefore act within the framework decided by the CGPM and not on behalf of their own Governments. Whilst CIPM members are elected on the basis of personal merit, it is important that they

[†] The text of Rule 14.5.17 ‘Therapeutic part-time’ was not presented

[‡] Amendment shown in italics

have some connection to the national measurement systems in their respective States and the support of their governments to serve in this capacity”.

B. General considerations for establishing a recommended ‘slate’ of candidates

Several State Representatives recommended that the criteria for selection of members be modified such that Member States paying the maximum Dotation not be guaranteed membership on the CIPM, but rather that the level of contributions from a State be considered when establishing the ‘slate’ of candidates for membership. There were no objections from the CIPM. The text was changed accordingly.

C. Personal attributes and qualifications for membership

Discussions focused on whether to include criteria relating to the availability of support for candidates from their member states, including financial support. The CIPM *ad hoc* Working Group on CIPM Membership suggested this criterion because some members may not have the financial resources to attend meetings of the CIPM. It was suggested that this section should include the text “candidates for CIPM members should maintain a good relationship with their national metrology system”. This would help ensure that members are familiar with metrological issues in their country as well as current issues relating to the Metre Convention.

D. The Committee for Election of CIPM Members

A question was raised as to why the proposed Committee for Election of CIPM Members will consist of six members rather than five. Having five members would avoid the possibility of a tie. It was observed that the group will only provide advice to the CGPM so a tie should not be an issue when casting votes. It was clarified that the CIPM will receive nominations for CIPM membership and will select a ‘slate’ of candidates to put forward to the CGPM depending on whether or not they meet the criteria for membership. The ‘slate’ will include the names of the 18 preferred potential candidates plus any other names of candidates that meet the criteria.

E. Process for election of CIPM members

It was reiterated that the CIPM will compile a list of all qualified candidates and will supply a ‘slate’ of candidates to the Committee for Election of CIPM Members. The committee will consider this list and will make recommendations to the CGPM. The list will include the CIPM’s recommended ‘slate’ of candidates and the names of all candidates that meet the criteria for membership along with supporting documentation. This process answers criticism at the 24th meeting of the CGPM (2011) that there was the same number of candidates as there were positions. It was observed that it will be difficult to select an initial set of 18 candidates that is not biased towards the current members of the CIPM.

Decision CIPM/102-8

The CIPM approved the document ‘*Draft Criteria and Process for Election of CIPM Members*’ prepared by the CIPM *ad hoc* Working Group on CIPM Membership, as amended during the discussion. The CIPM agreed to present it to the representatives of States Parties to the Metre Convention and Directors of National Metrology Institutes at their meeting in October 2013.

7.1. Draft resolution ‘On the election of the International Committee for Weights and Measures’ for the CGPM (see item 13)

There was a comprehensive discussion of the Draft Resolution ‘On the election of the International Committee for Weights and Measures’ (see Appendix 2[§]). Two versions of the resolution have been developed, a ‘long’ version that includes detailed information on the timescales and an ‘abridged’ version.

The main points were:

- The composition of the Committee for Election of CIPM Members; should it consist of five or seven members rather than the six proposed in the Resolution. An odd number was suggested to avoid the possibility of a tie during voting.
- The Draft Resolution will be submitted to the CGPM and the CGPM will have the opportunity to make the changes it considers appropriate.
- The transition period to the new process; it was recognized that the current process will continue until November 2014.

It was recommended that the abridged version of the resolution be further developed for submission to the CGPM. A comprehensive and complete version will also be retained in the event that the CGPM requires more detailed information about the election process.

7.2. Reappointment of CC Presidents after the 25th meeting of the CGPM

The appointment of CC Presidents was discussed. It was suggested that CC Presidents should also be appointed on a fixed-term basis and that the appointment of CC Presidents should take place on a different cycle to the election of CIPM members. This would avoid the possibility that all CC Presidents might be lost if they were all drawn from the CIPM and the entire CIPM were to be replaced through voting at the CGPM. This could lead to a serious loss of continuity.

Decision CIPM/102-9

The CIPM decided to charge the CIPM *ad hoc* Working Group on CIPM Membership with developing procedures for the election of Presidents, Working Group Chairs and Deputy Chairs of Consultative Committees. It was also commissioned to draft the criteria and process for the election of Vice-Presidents of the CIPM, Honorary Members of the CIPM and Emeritus Directors of the BIPM.

[§] The version of the Draft Resolution ‘On the election of the International Committee for Weights and Measures’ shown in Appendix 2 was developed subsequent to the discussions in §7.1

8. MEMBERSHIP OF THE CIPM

8.1. Honorary Membership of the CIPM

The significant contribution of Prof. E.O. Göbel to the CIPM was recalled and the President proposed that he should be elected as an Honorary Member of the CIPM.

Decision CIPM/102-10

The CIPM agreed unanimously to elect Prof. E.O. Göbel as an Honorary Member of the CIPM in recognition of his contribution to the CIPM as a member from 1997 to 2012 and as President from 2004 to 2010. The CIPM President will inform Prof. E.O. Göbel.

It was observed that there is no formal process for electing Honorary Members of the CIPM and Emeritus Directors of the BIPM although it was recognized that candidates for these honours must have made a significant contribution during their time in office in order to be considered. It was observed that Honorary Members of the CIPM are not automatically invited to meetings.

A short piece of text was presented clarifying the role and election of Honorary Members of the CIPM for consideration by the CIPM *ad hoc* Working Group on CIPM Membership. The text was as follows:

Honorary member of the CIPM

*The CIPM noting the terms of creation of the category of Honorary Member at the 1884 meeting of the CIPM** , wishes to add the following notes:*

- 1. In electing retiring members to the category of Honorary Member it will base its decision on the contribution he or she has made to the work of the CIPM either by distinguished service as an officer of the CIPM, President of a CC, or distinguished in some other way.*
- 2. Honorary members, being entitled to take part in meetings, are nevertheless asked to inform the BIPM Director whether or not they intend to exercise their right so that working documents could be made available to them.*
- 3. Retiring Directors may be elected to the category of Emeritus Director with the same criteria and rights as Honorary Members.*

It was emphasized that election as an Honorary Member of the CIPM requires a candidate to have made an outstanding contribution to the work of the CIPM. If the honour is extended too widely it becomes an expectation by retiring members of the CIPM rather than an honour.

It was commented that the election of Vice-Presidents of the CIPM, Honorary Members of the CIPM and Emeritus Directors requires action by the CIPM *ad hoc* Working Group on CIPM Membership. This has been included in Decision CIPM/102-9.

** Procès-verbaux des séances de 1884, CIPM, p. 50 (only available in French): The President of the International Committee proposed that for members who retire there should be the possibility of appointing them Honorary Members having a consultative voice. In this way, he said, the Committee could continue, insofar as it was possible, to take advantage of their experience. This was agreed. [Translated by T.J. Quinn]

8.2. Planned resignations and possible future candidates

The Secretary recalled that it was the intention that all of the CIPM should resign by passing a decision at the next CIPM session.

Dr Chung confirmed that she will resign from the CIPM at the end of June 2013. There were no other announcements of planned resignations from the CIPM.

The current list of CVs received from candidates for CIPM membership was discussed. Three candidates have been removed from the list because they did not qualify according to the criteria for membership or have commented that they are no longer interested in serving on the CIPM. One new CV was added to the set of candidates. It was observed that more CVs from potential candidates are required. It was noted that there are currently no members of the CIPM with direct experience of metrology in the biological sciences.

Decision CIPM/102-11

The CIPM members were requested to consider potential candidates for CIPM membership and submit their names and CVs to the Secretary of the CIPM by the end of September 2013 in order for the CIPM to review the CVs at Session II of the 102nd meeting of the CIPM in October 2013.

9. DECISION MAKING WITHIN THE CIPM

Prof. Uğur presented his paper on the CIPM Decision Making System. He expressed the view that the CIPM does not have a work programme, any supporting information or documents on how to make decisions and often does not have enough time during its meetings to make fully informed decisions. He further noted that the CIPM decision making process could be improved and that mechanisms should be investigated to better utilize the intellectual capacity of the CIPM.

He discussed the role of the CIPM bureau. The majority of its tasks are in an advisory role to the CIPM. It also carries out certain tasks for the CIPM to give it more time in its meetings to review more important issues and prepares documents for further discussion by the CIPM. The CIPM bureau has been expanded to include two Vice-Presidents although more clarity and guidance is needed on how they are elected (see Decision CIPM/102-9). He recalled that the role of the CIPM in providing direction and supervision of the BIPM was criticized during the 24th meeting of the CGPM (2011).

He observed that discussions within the CIPM often focus on matters of governance and there is little time devoted to science. It was noted that if the CIPM includes more discussions on science its meetings may take longer. Guidelines are required on the topics that the CIPM should discuss and the areas in which it should be making decisions. It was observed that the description of the CIPM in the preamble of the document '*Draft Criteria and Process for Election of CIPM Members*' shows similarities between the CIPM and the management board of a company. The CIPM should determine which issues need to be dealt with at the 'board level' and which can be dealt with in other ways. Guidance is needed on whether some issues on the CIPM agenda could be delegated to other people.

It was suggested that the CIPM should try and develop new ways to conduct its business. It was noted that the new members of the CIPM may provide a fresh perspective. A strategic plan is needed to allow the CIPM to optimize its efficiency. When complete, this plan could be presented to the CGPM. Prof. Uğur, the author of the paper, was asked if he would be willing to study the decision making

process before the next meeting of the CGPM. He said that he would. The possibility of focusing on two specific examples of the work of the CIPM/CIPM bureau as a method of investigating possible improvements to the decision making process was discussed.

There was some uncertainty about the availability of information pertaining to the BIPM and the CIPM. Much of this information is contained in the 'Compendium of main rules and practices applicable to the BIPM'. The Director confirmed that the Compendium will be made available on the BIPM website.

Decision CIPM/102-12

The BIPM Director will provide electronic access to the 'Compendium of main rules and practices applicable to the BIPM' to CIPM members by the end of July 2013.

10. MINUTING OF DECISIONS MADE AND CONSENSUS REACHED DURING THE DISCUSSIONS ON THURSDAY 20 JUNE

During the session on 20 June 2013, the CIPM heard presentations from the Directors of the BIPM scientific departments and had a tour of the laboratories.

10.1. Progress report on the redefinition of the kilogram

Dr Richard, The President of the Consultative Committee for Mass and Related Quantities (CCM), presented information on recent progress in the CCM. He informed the CIPM about CCM Recommendation G1 (2013) 'On a new definition of the kilogram' which outlines four criteria that the CCM considered must be met before it could agree to the adoption of a 'new SI'. These criteria are that:

1. at least three independent experiments, including work from watt balance and X-ray crystal density (XRCD) experiments, that yield consistent values of the Planck constant with relative standard uncertainties not larger than 5 parts in 10^8 ,
2. at least one of these results should have a relative standard uncertainty not larger than 2 parts in 10^8 ,
3. the BIPM prototypes, the BIPM ensemble of reference mass standards, and the mass standards used in the watt balance and XRCD experiments have been compared as directly as possible with the international prototype of the kilogram,
4. the procedures for the future realization and dissemination of the kilogram, as described in the *mise en pratique*, have been validated in accordance with the principles of the CIPM MRA.

Dr Richard presented a 'roadmap' which is being developed by the CCM that shows the sequence of events that will be required to be met to achieve a redefinition of the International System of Units (SI). It included the calibration of the working standards at the BIPM against the IPK and the work required to develop the ensemble of reference mass standards at the BIPM. Dr Richard believes that it would be possible for the CGPM to approve the adoption of the 'new SI' in 2018.

Members of the CIPM asked whether the CCM's plans would withstand delays in some of the necessary activities. Dr Richard replied that it would be possible to modify the plans to carry out some elements in parallel in order to accommodate unforeseen delays.

Decision CIPM/102-13

The CIPM endorsed the initiative of both the President of the Consultative Committee for Mass and Related Quantities (CCM) and the CCM in developing a roadmap showing the steps required in mass metrology to achieve a redefinition of the SI by 2018.

Dr Stock, Director of the Mass Department *par interim*, presented plans developed by the BIPM for an extraordinary campaign of measurements with the IPK.

Decision CIPM/102-14

The CIPM approved the plans for an extraordinary campaign of measurements with the international prototype of the kilogram, presented by the Acting Director of the Mass Department, and confirmed their agreement that the BIPM Director should have access to the vault to remove the international prototype of the kilogram for use in this campaign.

10.2. Report from the Chair of the CIPM Sub-Committee for Strategy (Dr Milton)

The Director of the BIPM, who is the Chair of the CIPM Sub-Committee for Strategy, reported on the progress made in collaboration with the Director of the International Liaison and Communication Department towards the development of a strategy for the BIPM. He observed that the strategy was largely the 'consolidated planning process' requested by the *ad hoc* group. He reported that the draft strategy had been submitted to the NMIs and that responses had been received from ten. They were strongly supportive of the process being carried out by the BIPM and the CCs and have provided both generic comments and comments related to the individual CC strategies.

Decision CIPM/102-15

The CIPM endorsed the work done by the Consultative Committees in preparing the strategy documents. It acknowledged the useful and supportive feedback from the Directors of National Metrology Institutes. It supported the BIPM Director regarding the direction of the initiative and instructed him to continue to develop a global perspective.

Decision CIPM/102-16

The CIPM encouraged Presidents and Executive Secretaries of the Consultative Committees (CCs) to reflect on comments received from National Metrology Institutes specific to their CC strategy and to decide, in consultation with their CC (and/or appropriate Working Groups), whether revision is necessary.

The CIPM discussed the scope of work of the CCs. The President encouraged the CIPM to consider whether there might be important priorities for future metrology that were not adequately covered by the existing structure of CCs. The Director of the BIPM led a discussion on a number of possible areas ranging across the work of all NMIs. Two themes of particular interest emerged from the discussion: global climate change and materials metrology.

It was proposed that the CIPM could consider taking initiatives on a limited number of areas that presented 'grand challenges for metrology', for example, climate change. The leadership of the Versailles Project on Advanced Materials and Standards (VAMAS) will be invited to a meeting of the

CIPM bureau in 2014 to discuss whether there is any value in closer cooperation between the VAMAS and the CIPM. The CIPM bureau will report back to the CIPM.

Decision CIPM/102-17

The CIPM President will issue an invitation to the leadership of the Versailles Project on Advanced Materials and Standards (VAMAS) to a meeting of the CIPM bureau in 2014 to explore whether there would be value in closer collaboration between VAMAS and the CIPM.

Mr Henson, the Director of the International Liaison and Communication Department presented an initial analysis of the rationale for conducting laboratory work at the BIPM. The analysis was welcomed by many members of the CIPM who took the opportunity to consider the issues and to respond.

Decision CIPM/102-18

The CIPM welcomed the analysis of the rationale for the laboratory activities at the BIPM presented at the meeting. It requested the BIPM to circulate the analysis to the CIPM, and offered to provide its comments by the end of July 2013.

Decision CIPM/102-19

As part of the CIPM's intention to encourage a stronger strategic perspective, the CIPM will identify one or two cross-cutting "grand metrology challenges" considering potential liaisons with the ILAC, the ISO and the OIML and other relevant international organizations with missions complementary to the BIPM and charge the Presidents of the Consultative Committees to assess the implications to their strategies and future programmes.

11. PLANS FOR THE MEETING OF NMI DIRECTORS AND GOVERNMENT REPRESENTATIVES (23 TO 24 OCTOBER 2013)

The Director presented the draft agenda for the meeting of NMI Directors and Government Representatives to be held on 23 to 24 October 2013. The CIPM discussed whether the NMI Directors and Government Representatives should be more involved in developing the draft agenda for the meeting. It was noted that the draft agenda had been sent to the NMI Directors and Government Representatives in April 2013 for comment but no replies had been received. The agenda includes a balance of topics that will allow the CIPM to present progress made on important issues, to initiate discussions on these topics and to receive feedback, and demonstrate collaboration between NMIs to achieve a broader view of metrology and illustrate its benefits.

The Director of the BIPM commented that his introductory talk will provide a concise summary of the work of the BIPM as requested by the *ad hoc* Working Group on the role, mission, objectives, long-term financial stability, strategic direction and governance of the BIPM.

12. THE DEVELOPMENT OF THE BIPM PROGRAMME OF WORK (2016 TO 2019)

The Director commented that it was clear from the meeting of the *ad hoc* Working Group on the role, mission, objectives, long-term financial stability, strategic direction and governance of the BIPM that the criteria and rationale for the BIPM Programme of Work should be developed and discussed widely before the development of the programme itself. He reported that the criteria and rationale are due to be completed in July-August 2013 and development of the Programme of Work will start soon afterwards.

13. PLANS FOR THE 25TH MEETING OF THE CGPM (2014), INCLUDING POSSIBLE RESOLUTIONS

It was noted by the President that the CIPM has been charged with reducing the duration of CGPM meetings by the *ad hoc* Working Group on the role, mission, objectives, long-term financial stability, strategic direction and governance of the BIPM. A major hurdle to reducing the duration is the time required by the Working Group on the Dotation of the BIPM to conduct its work. The Working Group generally includes thirty to forty people and meets for two half day sessions during the meeting of the CGPM.

The Director reported that the possibility of holding a ‘pre-meeting’ on the Dotation of the BIPM on the Monday of the CGPM week at the BIPM is being investigated. The CGPM meeting could then be reduced to three days. This suggestion would rely on gaining some informal agreement on the composition of the pre-meeting before the formal opening. The pre-meeting could be combined with visits to the BIPM laboratories if required.

Other proposals for reducing the duration of the CGPM were discussed including:

- starting each day at 9:00 and finishing at 17:30 or 18:00
- reducing the duration of lunch breaks from two to one hour
- limiting the time allocated to CC Presidents for their presentations
- highlighting only the key points of reports provided in advance to the CGPM
- complementing the short oral presentations by the CC Presidents with posters.

Decision CIPM/102-20

The CIPM instructed the BIPM Director and the CIPM bureau to develop an agenda for the next CGPM in November 2014 based on a three-day meeting, preceded by a day for a ‘pre-meeting’ on the Dotation of the BIPM and for laboratory visits at the BIPM. The draft agenda should be presented to the next meeting of the CIPM and be ready for consideration by the representatives of States Parties to the Metre Convention and Directors of National Metrology Institutes at their meeting in October 2013.

13.1. The election of the CIPM

See §7.

13.2. The adoption of a 'new SI'

The Director introduced CCU Recommendation U 1 (2013) 'Proposal to the CIPM on elements for a draft resolution on the revision of the International System of Units, the SI, for the CGPM at its 25th meeting' (see Appendix 3).

The Recommendation draws attention to progress made towards the 'new SI' since the 24th meeting of the CGPM (2011). It highlights that the data is not yet sufficiently robust to revise the SI. The CCU specified in a final section to the Recommendation on how the CIPM, CCs, NMIs, the BIPM and other organizations will progress towards the adoption of the SI revision.

It was noted that CCU Recommendation U 1 (2013) was thoroughly reviewed by the CCU at its meeting in June 2013. It was commented that if criteria are met for accepting the proposed revision of the SI, the decision to adopt the 'new SI' will be very straightforward. However, it is unclear what would happen if the criteria were close to being met but were not met exactly. If this happens who will make a decision to proceed? It was concluded that the CIPM is ultimately responsible for making the decision.

It was agreed that a Draft Resolution on the SI revision will be prepared and included in the Convocation of the 25th CGPM.

13.3. Changes to the BIPM Pension and Provident Fund

See §14.

13.4. The BIPM dotation

The BIPM strategy has first to be developed, followed by the Programme of Work. This will allow a budget to be developed, leading to a Draft Resolution on the BIPM dotation.

13.5. Review of the CIPM MRA

The Director reported that many NMI Directors and some members of the JCRB had expressed an interest in there being a review of the operation of the CIPM MRA. He suggested that such a review could be initiated by a resolution at the next CGPM. The Secretary noted that the proposed addendum to the CIPM MRA that had been circulated to signatories of the CIPM MRA had not received consensus support and had been put on hold. The problems in gaining approval for the addendum now outweigh the benefits.

14. REPORT FROM THE CHAIR OF THE CIPM STANDING SUB-COMMITTEE ON THE BIPM PENSION FUND AND HEALTH INSURANCE (DR KAARLS)

Dr Kaarls gave a report on the CIPM Sub-Committee on the BIPM Pension Fund and Health Insurance and presented the outcomes of the meeting held on 7 May 2013. He noted that actuarial studies of the

BIPM Pension Fund are carried out regularly; the BIPM commissioned a new study with a new company which will be presented in English. The current liabilities of the BIPM Pension Fund are not covered by the assets of the Pension fund. The Sub-Committee has recommended that the CIPM develops a Resolution on the governance of the BIPM Pension Fund for presentation at the 25th CGPM (2014) that commits the BIPM to reaching 100 % coverage of pension fund liabilities over a period of, for example, 25 years. Other issues considered by the Sub-Committee included:

- The consequences of low interest rates on the BIPM Pension Fund compared to the findings of the actuarial studies
- The consequences for the pension fund of the BIPM employing fewer permanent staff and more staff on fixed-term contracts
- The unsatisfactory investment policy pursued for the pension fund.

The Sub-Committee has examined the governance of the BIPM Pension Fund. It concluded that it should be brought into line with current practices.

In particular, it was proposed that a supervisory board should be set up to strengthen the management of the BIPM Pension Fund. This could possibly include members of the CIPM, the Director of the BIPM, staff representatives and representatives of pensioners.

It was observed that the Sub-Committee had not considered the possibility of introducing a defined contribution scheme to replace the defined benefit scheme. The existing scheme could be closed to new members and a new defined contributions scheme opened. This would prevent the problems with the BIPM pension scheme from deteriorating further (see §6.2). The Chair of the Sub-Committee clarified that this option had been considered and rejected because it could create problems between new and existing staff, even though this option has been pursued by many organizations around the world.

The Chair of the Sub-Committee reported that although the current health insurance provision by Vanbreda is satisfactory there were concerns that it may run into problems in the future due to the increase in healthcare costs outside of the BIPM. Health insurance provision in other international organizations is being investigated.

The Sub-Committee is looking into the feasibility of BIPM pensioners having their healthcare costs reimbursed by national schemes. The practicalities of this proposal, including how it would work under different national systems will be addressed. It was observed that potential problems may arise when staff return to their home country if the healthcare provision is less satisfactory than the provision made to them during their employment at the BIPM.

The next meeting of the Sub-Committee is planned for October 2013.

Decision CIPM/102-21

The CIPM endorsed the activities of the CIPM Standing Sub-Committee on the BIPM Pension and Provident Fund and Health Insurance, and requested the Sub-Committee to present the results of its studies to the CIPM at its next meeting and to the representatives of States Parties to the Metre Convention and Directors of National Metrology Institutes at their meeting in October 2013.

15. REPORT FROM THE CHAIR OF THE CIPM *AD HOC* WORKING GROUP ON CONDITIONS OF EMPLOYMENT (DR McLAREN)

Dr McLaren gave a progress report on the CIPM *ad hoc* Working Group on Conditions of Employment. The *ad hoc* Working Group was charged with overseeing a review of the BIPM remuneration package (basic salary, allowances and benefits) in comparison to those offered in various employment markets, namely: other international organizations based in France and other western European countries, some major NMIs, and the public sector in France. Its terms of reference gave it a remit to develop recommendations regarding the remuneration package so as to ensure that the BIPM continues to be able to attract well-qualified staff.

It was noted that the *ad hoc* Working Group may wish to co-opt an external member for advice. The preliminary results of the *ad hoc* Working Group are expected before Session II of the 102nd meeting of the CIPM.

Decision CIPM/102-22

The CIPM endorsed the activities of the CIPM *ad hoc* Working Group on Conditions of Employment, and requested the *ad hoc* Working Group to present the results of its studies to the CIPM at its next meeting and to the representatives of States Parties to the Metre Convention and Directors of National Metrology Institutes at their meeting in October 2013.

16. TERMINOLOGY USED FOR THE BIPM AND THE CGPM

Dr Quinn gave a brief summary of his views on the terminology used for the BIPM and the CGPM. These referred back to a decision made by the CIPM in 2007.

He observed that the basis for the decision was the assertion that the abbreviation ‘23rd General Conference on Weights and Measures’ should be understood to mean only the meeting of the General Conference and not the Conference itself, made up of delegates from Member States, and that a meeting cannot take decisions. Since then in all BIPM publications and documents the language surrounding references to the General Conference, its name, deliberations and Reports has been changed. Furthermore, the names and references to all past General Conferences have also been changed.

Dr Quinn stated that the effect of the changes has been almost the opposite of what was intended. He also noted that the documents considered by the CIPM in 2007 did not propose that the new legal language should be used exclusively and on every occasion.

It was recognized that the terminology proposed and adopted in 2007 allows the practice mentioned by Dr Quinn. The Director confirmed that staff in the BIPM legal and publishing departments were collaborating on the matter.

17. INTERNATIONAL COOPERATION

The Director of the International Liaison and Communication Department, reported that the Republic of Albania, which became an Associate of the CGPM on 10 September 2007, has met the criteria outlined in Resolution 4 of the 24th CGPM (2011) 'On the status of Associate State of the General Conference' to be encouraged to become a State Party to the Metre Convention.

Decision CIPM/102-23

The CIPM decided, on the basis of the criteria it has previously adopted, that it would be appropriate for Albania to become a State Party to the Metre Convention. The BIPM will convey the Decision, recalling Resolution 4 'On the status of Associate State of the General Conference' adopted by the CGPM at its 24th meeting, and the implications regarding the increase in subscription should Albania choose to remain an Associate of the CGPM.

The Director of the International Liaison and Communication Department noted that he had attended a meeting of the Committee on Technical Barriers to Trade of the World Trade Organization (WTO) in March 2013 where he gave a statement on the mission, role and objectives of the BIPM, and the international measurement system. Many members of the WTO expressed an interest in the work of the BIPM and he considered the meeting to be a valuable opportunity for the BIPM to raise awareness of metrology.

17.1. ITU

The International Telecommunication Union (ITU) will hold a workshop with the BIPM on 'Future of the International Time scale', on 19 and 20 September 2013 in Geneva, Switzerland. It will provide an opportunity to explain the issues surrounding a possible abolition of the leap second.

17.2. BIPM, ILAC, ISO, OIML

The quadripartite meeting between the BIPM, the International Laboratory Accreditation Cooperation (ILAC), the International Organization for Standardization (ISO) and the International Organization of Legal Metrology (OIML) was held in March 2013 and was attended by all parties. The meeting was chaired by the Secretary General of the ISO. The meeting allowed the four organizations to share plans on issues of common interest such as responding to new requirements resulting from global climate change.

17.3. OIML

The bilateral meeting between the BIPM and the OIML was held in February 2013. There continues to be excellent cooperation between the two organizations. It was noted that the discussion on the possible co-location of the BIPM and the OIML had reached a conclusion. It will not be pursued and no further action is required on this issue.

World Metrology Day 2013 was very successful, with posters in 17 languages and events organized in 30 countries.

It has been proposed that the Regional Metrology Organizations (RMOs) will take it in turn to propose designs for the World Metrology Day poster from 2014 onwards. Each RMO will collaborate with its local legal metrology organization to develop a poster to reflect metrological issues in its region. In 2014, the responsibility will be shared by the Asia Pacific Metrology Programme (APMP) and the Asia-Pacific Legal Metrology Forum (APLMF). The BIPM and the OIML will retain editorial control.

17.4. VAMAS

See §10 and Decision CIPM/102-17.

17.5. JCGM

The meeting of the Joint Committee for Guides in Metrology (JCGM) was held in December 2012. It had discussed the development of an online, annotated version of the VIM3. The ISO expressed serious concerns about making the informative annotations (not submitted to the JCGM for formal approval) available online in an official JCGM document: the ISO fears it would lack clarity for users.

Following the feasibility study on the development of an international vocabulary for nominal properties (VIN) which the JCGM had asked its Working Group 1 (VIM) to carry out (a request which was supported by the CIPM in 2012) it became clear that it would be more efficient than what had been planned a few years ago if the JCGM Working Group 1 submitted a revised workplan on VIM4 for approval to the JCGM in December 2013. This revised workplan is supported by the BIPM Director.

The CIPM discussed whether the use of VIM3 terminology should be mandatory in all BIPM publications and those of the CCs. It was concluded that it was not.

18. CIPM RECOMMENDATIONS

18.1. Recommendation 1 (CI-2013): Updates to the list of standard frequencies

See Appendix 4 for the text of CIPM Recommendation CI-2013. There is no plan to transform this Recommendation into a Draft Resolution to be submitted to the next CGPM, since the CIPM has the authority to approve the standard frequencies on the list.

Decision CIPM/102-24

The CIPM adopted the Recommendation ‘Updates to the list of standard frequencies’ of the Consultative Committee for Time and Frequency (CCTF) as CIPM Recommendation CI-2013.

19. ANY OTHER BUSINESS

19.1. 'In camera' session

The President explained that an *in camera* session solely for elected members of the CIPM was necessary in order for him to give a full description of the situation with the Finance and Administrative Director referred to by the Secretary in his report (Appendix 1, Section 10.5). It would also give the CIPM the opportunity to agree how the President and the Secretary should progress towards a resolution of the difficulties.

He reported that several statements made by Mme Perent during the meeting were not consistent with his understanding. In particular the claim that she had not received the documents discussed by the CIPM Finance Sub-committee was not correct since the documents were actually documents that she had prepared herself. Also, her repeated claim that she had been deprived of essential information necessary for her to fulfil her duties was her personal view and was not consistent with the account given by the Director.

The CIPM agreed to let the President and Secretary seek an expeditious resolution to the difficulties.

19.2. Approval of modifications to JCRB/CIPM documents

Five documents were presented to the CIPM for approval. The changes were minor and were intended to clarify the text and update references. Changes to document CIPM MRA-D-04 involved the need to reduce time limits for Calibration and Measurement Capability (CMC) review stages.

The Director of the International Liaison and Communication Department expressed his thanks to the Executive Secretary of the JCRB for preparing the documents for approval.

Decision CIPM/102-25

The CIPM approved the changes proposed to the following CIPM documents:

- CIPM/2005-06REV 'The CIPM MRA: 2005 Interpretation Document'
- CIPM MRA-D-02 'Use of the CIPM MRA logo and certificates statement'
- CIPM MRA-G-01 'Guide to the implementation of the CIPM MRA'
- CIPM MRA-D-04 'Calibration and Measurement Capabilities in the context of the CIPM MRA'
- CIPM MRA-D-05 'Measurement comparisons in the CIPM MRA'.

19.3. Endorsement of the revised 'BIPM Mission, Role and Objectives' text

The Director requested final approval for the publication of the 'BIPM Mission, Role and Objectives' document.

Decision CIPM/102-26

The CIPM endorsed the text of the 'BIPM Mission, Role and Objectives' document presented by the BIPM Director.

20. DATE OF NEXT MEETING

Session II of the 102nd meeting of the CIPM will be held on 22 and 25 October 2013.

The meeting of NMI Directors and Government Representatives will be held on 23 to 24 October 2013.

21. CLOSURE OF THE MEETING

The President of the CIPM noted that this will possibly be the last meeting of the CIPM attended by the Financial and Administrative Director of the BIPM, Mrs Perent. He commented that Mrs Perent has requested the opportunity to say farewell to the CIPM. The President thanked her on behalf of the CIPM for all her contributions.

Mrs Perent thanked the President of the CIPM, commented that she has appreciated his support and read the following statement:

“Owing to the circumstances, I think this is the last time I attend a CIPM meeting. I wish to tell you that I have been honored to work in this institution. At this very moment, I think to those CIPM members with whom I have worked with during 25 years and who have placed trust and confidence in me. I am thinking in particular to Prof. Dieter Kind, Prof. Jean Kovalevsky, Prof. Ernst Göbel, Prof. Jan de Boer and Dr Bill Blevin. I wish also to thank those of my staff who have worked with me with the utmost devotion to respond successfully to the challenges. Finally a very special thanks to Terry [Quinn] for his constant support and his friendship.”

Dr Quinn commented that Mrs Perent has been a great support to all staff over the last 25 years.

The President of the CIPM observed that this is the last meeting of the CIPM for Dr Chung. He thanked Dr Chung for her contributions and commented that he had appreciated her comments and wise advice. Dr Chung added that it had been a great privilege to serve on the CIPM and having the opportunity to discuss the world's most important business.

The President of the CIPM thanked the members of the CIPM for their contributions and closed the 102nd meeting of the CIPM.

Appendix 1

REPORT OF THE SECRETARY AND ACTIVITIES OF THE BUREAU OF THE CIPM

(October 2012 - June 2013)

1. Meetings of the bureau of the CIPM (“the bureau”)

The bureau of the CIPM (hereinafter referred to as “the bureau”) has met on two occasions since the previous meeting of the CIPM: 3-5 March 2013 and 16-18 June 2013. These meetings took place at the BIPM headquarters. The Secretary made additional visits to the BIPM headquarters during October 2012 - May 2013.

The bureau held its regular annual meeting with the International Organization of Legal Metrology (OIML), the International Laboratory Accreditation Cooperation (ILAC) and the International Organization for Standardization (ISO) on 6-7 March 2013.

2. CIPM Membership

At the end of 2012 the CIPM had three vacancies, due to the resignation of Prof. Dr Göbel, Dr Hengstberger and Dr Schwitz.

New candidates to fill these vacancies have been selected following the process described in the ‘Draft Criteria and Process for Election of CIPM Members’, which was developed during October to December 2012 by the CIPM *ad hoc* Working Group on CIPM Membership, and was provisionally agreed by the Representatives of Member States on the CIPM *ad hoc* Working Group on the role, mission, objectives, long-term financial stability, strategic direction and governance of the BIPM (AHWG), established by the CIPM following the 24th CGPM (2011).

A list of four candidates qualifying for CIPM Membership was developed; three candidates were selected by secret majority voting. The list of qualified candidates together with the ‘slate’ of the three selected candidates and all CVs were forwarded to the Representatives in the AHWG for their consideration. By written procedure the Representatives agreed with the ‘slate’. Prof. Dr Brandi, Dr Louw and Prof. Dr Ullrich were elected as Members of the CIPM.

It should be noted that by the end of the 25th CGPM (2014) all CIPM Members will resign and, as far as they are available for a new term, may be re-elected by the CGPM.

The bureau has been informed that Dr Chung will resign from the CIPM on 30 June 2013.

Dr Kang, currently President of the Korea Research Institute for Standards and Science (KRISS), Republic of Korea, has been proposed as a new candidate for the CIPM. His CV has been distributed to the Members of the CIPM for their consideration and for assessment against the new criteria for membership.

3. **Member States of the BIPM (Member States) and Associates of the CGPM (Associates)**

As a consequence of not complying with the conditions mentioned in Resolution 6 (2011) of the CGPM, the Republic of Cameroon and the Democratic People's Republic of Korea have been excluded. Therefore, at the end of October 2012, the number of Member States was reduced to 54.

On 6 February 2013 the Republic of Colombia acceded to the Metre Convention, bringing the number of Member States to 55.

During the period October 2012 - June 2013 no further States signed up as Associates of the CGPM. Therefore, the number of Associates of the CGPM remains at 37. Mongolia is expected to sign up as an Associate to the CGPM in the near future, bringing the number of Associates up to 38.

The BIPM is in contact with a number of potential Member States and Associates. Details will be presented later in the agenda of this meeting.

4. **Member States in financial arrears for more than three years**

As a consequence of the adoption of Resolution 6 (2011) of the CGPM there are no Member States in arrears for more than 6 years.

Apart from the outstanding contributions rescheduled in agreements signed with the Dominican Republic and the Islamic Republic of Iran, no other outstanding contributions of more than three years are noted.

5. **Outreach**

As a consequence of the accession of Saudi Arabia to the Metre Convention and the continued development of GULFMET it is expected that a number of other States in the Gulf area will continue with preparations to become Associates of the CGPM or Member States.

The BIPM continued its cooperation with other international organizations and bodies within the scope of the DCMAS Network with an interest in assisting developing economies in setting up and improving their national infrastructures in the fields of metrology, accreditation and standardization.

6. **Ad hoc Working Group on the role, mission, objectives, long-term financial stability, strategic direction and governance of the BIPM (AHWG)**

Following the meeting of the Representatives of the Member States and NMI Directors on 16-17 October 2012 the AHWG was consulted and asked for its comments and approval of the 'Draft Criteria and Process for Election of CIPM Members'.

After agreement on the criteria and process had been obtained, the CIPM started the election process for three new members of the CIPM, following the process applicable during the transition period from 2012 through to October 2014, as described in the Draft mentioned above.

Finally, in early May 2013 the participants in the AHWG were again consulted for their comments on the list of qualified candidates and requesting their agreement with the proposed 'slate' of three candidates to fill the three existing vacancies in the CIPM. Full agreement was obtained on 13 May 2013.

7. CIPM Sub-Committees and CIPM *ad hoc* Working Groups

The three CIPM Sub-Committees and two CIPM *ad hoc* Working Groups have started their work.

The CIPM *ad hoc* Working Group on CIPM Membership, chaired by Dr May, has delivered the 'Draft Criteria and Process for Election of CIPM Members'. Procedures have been discussed and agreed and are now being implemented. The CIPM *ad hoc* Working Group on CIPM Membership is considering the development of criteria and the process for election/appointment of CIPM Consultative Committee Presidents and Consultative Committee Working Group chairpersons.

The CIPM *ad hoc* Working Group on Conditions of Employment, chaired by Dr McLaren, has started a benchmarking process with other comparable organizations to the BIPM.

The CIPM Sub-Committee for Strategy, chaired by Dr Milton, has drafted a new BIPM Mission, Role and Objectives document. It has also started to address the general strategy of the BIPM.

The CIPM Sub-Committee on Finance, chaired by Dr Bowsher, met for the first time in October 2012. The Chairman consulted the Director of the BIPM during the preparation of the accounts for review by the external financial auditor. A teleconference was held in May 2013.

The CIPM Sub-Committee on the BIPM Pension and Provident Fund and Health Insurance, chaired by Dr Kaarls, held its first meeting on 7 May 2013. Available actuarial study reports have been discussed and a list of activities has been agreed. A second meeting is scheduled for 18 October 2013. The results will be presented to the CIPM and the meeting of State Representatives and NMI Directors in October 2013.

Details of all three CIPM Sub-Committees and two CIPM *ad hoc* Working Groups will be given later in the meeting under the respective agenda points.

8. CIPM Consultative Committee Strategic Plans

In 2012 all CIPM Consultative Committees were invited to draw up their long-term strategies using a template developed by the BIPM. The Strategic Plans developed by the nine Consultative Committees involved had been delivered to the BIPM by the end of 2012. The BIPM has compiled a summary document based on these strategic plans. This summary, together with the individual Consultative Committee Strategic Plans, are on the agenda of the CIPM for discussion. The Strategic Plans have been sent to the State Representatives and NMI Directors for consideration, comment and further suggestions, while the Consultative Committees concerned can discuss and complete their plans if needed.

9. New Director of the BIPM

Prof. Dr Kühne retired as the Director of the BIPM at the end of December 2012. He has been succeeded by Dr Milton from 1 January 2013.

10. BIPM administrative and staff matters

- 10.1 At each meeting, the bureau receives reports on the financial situation of the BIPM. The Financial and Administrative Director presented the draft 2012 BIPM and BIPM Pension and Provident Fund Financial Statements to the bureau. Discussion focused on proposed changes in the accounts.

The Director of the BIPM and the BIPM Financial and Administrative Director have met informally with the external auditor as part of the reconsideration of the BIPM accounts.

- 10.2 The CIPM Sub-Committee on Finance has been consulted during the preparation of the financial statements. The final audit reports were only delivered by the external financial auditor during the week commencing 10 June 2013 due to a lengthy debate on changes in the accounting policy.

Both the audit reports for the BIPM and the BIPM Pension and Provident Fund, were provided by the auditor with a “qualified opinion” and with an “opinion” respectively, each will be presented and discussed by the CIPM later in the meeting.

- 10.3 Mrs Joly retired at the end of December 2012. Mrs Fellag Ariouet has been promoted to the position of Personal Assistant to the Director.

- 10.4 Mr Maggi joined the BIPM as Quality, Health and Safety Manager on 22 February 2013 following the departure of Mr Coelho on 31 December 2012.

- 10.5 In 2012, the bureau and the BIPM management started to investigate possible improvements in the administrative and financial processes at the BIPM. Unfortunately, this has led to tensions in the relationship between the Financial and Administrative Director and the BIPM Director and other senior staff. The members of the CIPM have been informed by the bureau about this situation and subsequent developments in information dated 12 March 2013 and 15 May 2013. The CIPM President and the CIPM Secretary made many attempts to come to reconciliation, but until today all these attempts have failed. The Financial and Administrative Director is continuously taking the position that there is no other solution than to leave, either by negotiation or by litigation. Continuation of the present situation is untenable.

Currently the BIPM is advised in the further process by external legal counsels.

11. The CIPM MRA

The CIPM MRA was signed by the CEO of the Namibian Standards Institution (NSI), Namibia, on 16 October 2012 and by the Director of the *Instituto Nacional de Metrología de Colombia* (INM), Colombia, on 15 May 2013. This brings the number of signatories of the CIPM MRA to 92 institutes from 52 Member States, 36 Associates and 4 international organizations, and covering a further 146 institutes designated by the signatory bodies.

A report on the activities of the Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB) will be given to the CIPM later in the agenda.

12. Relations with other bodies

12.1 The cooperation with the OIML is continuing very well, addressing all issues of common interest, while the BIPM is able to support the OIML with a number of administrative and IT issues.

12.2 The cooperation with the ILAC is continuing in a satisfactory way. The report of the most recent meeting is available.

12.3 A brainstorming session to discuss possible joint activities of interest to common stakeholders was held during the quadripartite meeting on 7 March 2013. The meeting was chaired by the Secretary General of the ISO, Mr Steele. No clear activities were agreed but some of the ideas suggested will be considered further.

13. Preparations for the 25th meeting of the CGPM

The bureau has prepared a draft agenda for the upcoming meeting of the Representatives of the Member States and the NMI Directors on 23-24 October 2013 for consideration by the CIPM.

As a result of the NMI Directors and Representatives of the Member States requesting more timely involvement in the development of future BIPM Programmes of Work and their wish that these programmes be drafted with a wider and long-term view, the long-term Strategic Plans of the Consultative Committees have been sent to the State Representatives and NMI Directors for consideration.

Appendix 2^{††}**On the election of the International Committee for Weights and Measures**

Draft Resolution

The General Conference on Weights and Measures (CGPM), at its 25th meeting,

considering

- the provisions of Articles 7, 8 and 9 of the Regulations Annexed to the Metre Convention on the election and composition of the International Committee for Weights and Measures (CIPM),
- the decision made by the CGPM at its 17th meeting (1983), upon recommendation of the *ad hoc* Working Group it had created at its 16th meeting (1979), that the CIPM should – in general – ensure that the candidate is acceptable to his or her government at the time of provisional election,
- Resolution 10 adopted by the CGPM at its 24th meeting (2011) on the role, mission, objectives, long-term strategy and governance of the BIPM, in which the CGPM invited the CIPM to establish an *ad hoc* Working Group charged with conducting a Review of the role, mission, objectives, long-term financial stability, strategic direction and governance of the BIPM, and to report to the CGPM at its 25th meeting on recommendations from the Review of the *ad hoc* Working Group, actions consequently taken by the CIPM and proposals for additional actions that require the approval of the CGPM,
- the findings and recommendations of the said *ad hoc* Working Group relating in particular to the election and composition of the CIPM,

noting

- Decision xxx/xx of the CIPM, adopted by unanimity, of collective resignation of all CIPM members as from xx November 2014,

decides that

- CIPM members shall from now on be elected for a renewable term, the duration of which is defined by the period between meetings of the CGPM,
- a Committee for CIPM Election is set up in order to assist the CIPM and the CGPM in the election of CIPM members pursuant to a procedure which shall be defined by the Committee for Election of the CIPM in accordance with the applicable principles and provisions,
- the Committee for CIPM Election shall be composed of five representatives of Member States with maximum, intermediary and minimum contributions, properly balanced to represent all regions, elected by the CGPM by majority vote, as well as the CIPM President and CIPM Secretary; and that it shall be chaired by one of the Member States' representatives,

^{††} This version of the Draft Resolution 'On the election of the International Committee for Weights and Measures' was developed subsequent to the discussions in §7.1

- the CGPM shall proceed at each of its meetings to the election of the five Member States' representatives of the Committee for CIPM Election,

welcomes

- the revision by the CIPM, at its xth meeting (xxxx), of the principles it follows in making elections, which had been adopted by the CIPM at its 94th meeting (2005),

invites

- Member States to participate actively to the CIPM election process.

Appendix 3

CCU Recommendation to the CIPM U 1 (2013)

Proposal to the CIPM on elements for a draft resolution on the revision of the International System of Units, the SI, for the CGPM at its 25th meeting

- **Revision of the International System of Units, the SI**

Draft Resolution

The General Conference on Weights and Measures (CGPM), at its 25th meeting,

recalling

- Resolution 1 adopted by the CGPM at its 24th meeting (2011), which takes note of the intention of the International Committee for Weights and Measures (CIPM) to propose a revision of the SI that links the definitions of the kilogram, ampere, kelvin, and mole to exact numerical values of the Planck constant h , elementary charge e , Boltzmann constant k , and Avogadro constant N_A , respectively, and which revises the way the SI is defined including the wording of the definitions of the SI units for time, length, mass, electric current, thermodynamic temperature, amount of substance, and luminous intensity so that the reference constants on which the SI is based are clearly apparent,
- the many benefits summarized in Resolution 1 that will accrue to science, technology, industry, and commerce from such a revision, especially from linking the kilogram to an invariant of nature rather than to the mass of a material artefact, thereby ensuring its long-term stability,
- Resolution 7 adopted by the CGPM at its 21st meeting (1999), which encourages work at the National Metrology Institutes (NMIs) that can lead to such a redefinition of the kilogram,
- Resolution 12 adopted by the CGPM at its 23rd meeting (2007), which outlines the work that should be carried out by the NMIs, the International Bureau of Weights and Measures (BIPM), and the CIPM together with its Consultative Committees (CCs) that could enable the planned revision of the SI to be adopted by the CGPM,

considering that there has been significant progress in completing the necessary work, including

- the acquisition of relevant data and their analysis by the Committee on Data for Science and Technology (CODATA) to obtain the required values of h , e , k , and N_A ,
- establishment by the BIPM of an ensemble of reference standards of mass to facilitate the dissemination of the unit of mass in the revised SI,
- the preparation of *mises-en-pratique* for the new definitions of the kilogram, ampere, kelvin, and mole,
- awareness campaigns to alert user communities as well as the general public to the proposed revision of the SI,
- the preparation of a new edition of the SI Brochure that presents the revised SI in a way that can be readily understood by a diverse readership,

that despite this progress the data do not yet appear to be sufficiently robust for the CGPM to adopt the revised SI at its 25th meeting,

encourages

- continued effort in the NMIs, the BIPM, and academic institutions to obtain data relevant to the determination of h , e , k , and N_A with the requisite uncertainties,
- the NMIs to continue acting through the CCs to discuss and review this data,
- the CIPM to develop a plan to provide the path via the CCs and the CCU for implementing Resolution 1 adopted by the CGPM at its 24th meeting (2011), and
- continued effort by the CIPM, together with its Consultative Committees, the NMIs, the BIPM, and other organizations such as the International Organization of Legal Metrology (OIML), to complete all work necessary for the CGPM at its 26th meeting to adopt a resolution that would replace the current SI with the revised SI, provided the amount of data, their uncertainties, and level of consistency were deemed satisfactory.

Appendix 4

RECOMMENDATION ADOPTED BY THE INTERNATIONAL COMMITTEE FOR WEIGHTS AND MEASURES

RECOMMENDATION 1 (CI-2013): Updates to the list of standard frequencies

The International Committee for Weights and Measures (CIPM),

considering that

- a common list of “Recommended values of standard frequencies for applications including the practical realization of the metre and secondary representations of the second” has been established,
- the CCL-CCTF Frequency Standards Working Group (FSWG) has reviewed several candidates for inclusion into the list,

recommends the following changes to the list of “Recommended values of standard frequencies for applications including the practical realization of the metre and secondary representations of the second”:

- that the following transition frequency be added to the list:
 - the unperturbed optical transition $6s^2\ ^1S_0 - 6s\ 6p\ ^3P_0$ of the ^{199}Hg neutral atom with a frequency of 1 128 575 290 808 162 Hz and an estimated relative standard uncertainty of 1.7×10^{-14} ;
- that the following transition frequencies be updated in the list:
 - the unperturbed optical transition $4s\ ^2S_{1/2} - 3d\ ^2D_{5/2}$ of the $^{40}\text{Ca}^+$ ion with a frequency of 411 042 129 776 395 Hz and an estimated relative standard uncertainty of 1.5×10^{-14} ;
 - the unperturbed optical transition $1S - 2S$ of the ^1H neutral atom with a frequency of 1 233 030 706 593 518 Hz and an estimated relative standard uncertainty of 1.2×10^{-14} ;

Note: This frequency corresponds to half of the energy difference between the 1S and 2S states;

- that the following transition frequencies be updated in the list and endorsed as secondary representations of the second:
 - the unperturbed optical transition $6s\ ^2S_{1/2} - 4f\ ^{13}6s^2\ ^2F_{7/2}$ of the $^{171}\text{Yb}^+$ ion (octupole) with a frequency of 642 121 496 772 645.6 Hz and an estimated relative standard uncertainty of 1.3×10^{-15} ;
 - the unperturbed optical transition $6s^2\ ^1S_0 - 6s\ 6p\ ^3P_0$ of the ^{171}Yb neutral atom with a frequency of 518 295 836 590 865.0 Hz and an estimated relative standard uncertainty of 2.7×10^{-15} ;

- that the following transition frequency be added to the list and as a secondary representation of the second:
 - the unperturbed optical transition $3s^2\ ^1S_0 - 3s\ 3p\ ^3P_0$ of the $^{27}\text{Al}^+$ ion with a frequency of 1 121 015 393 207 857.3 Hz and an estimated relative standard uncertainty of 1.9×10^{-15} ;
- that the following transition frequencies be updated in the list and as secondary representations of the second:
 - the unperturbed optical transition $5d\ ^{10}6s\ ^2S_{1/2} - 5d\ ^96s^2\ ^2D_{5/2}$ of the $^{199}\text{Hg}^+$ ion with a frequency of 1 064 721 609 899 145.3 Hz and an estimated relative standard uncertainty of 1.9×10^{-15} ;
 - the unperturbed optical transition $6s\ ^2S_{1/2}(F=0, m_F=0) - 5d\ ^2D_{3/2}(F=2, m_F=0)$ of the $^{171}\text{Yb}^+$ ion (quadrupole) with a frequency of 688 358 979 309 307.1 Hz and an estimated relative standard uncertainty of 3×10^{-15} ;
 - the unperturbed optical transition $5s\ ^2S_{1/2} - 4d\ ^2D_{5/2}$ of the $^{88}\text{Sr}^+$ ion with a frequency of 444 779 044 095 485.3 Hz and an estimated relative standard uncertainty of 4.0×10^{-15} ;
 - the unperturbed optical transition $5s^2\ ^1S_0 - 5s5p\ ^3P_0$ of the ^{87}Sr neutral atom with a frequency of 429 228 004 229 873.4 Hz and an estimated relative standard uncertainty of 1×10^{-15} ;
- that the following transition frequency be updated as a secondary representation of the second:
 - the unperturbed ground - state hyperfine transition of ^{87}Rb with a frequency of 6 834 682 610.904 312 Hz and an estimated relative standard uncertainty of 1.3×10^{-15} .

Note: The value of the estimated standard uncertainty is assumed to correspond to a confidence level of 68 %. However, given the very limited number of available data there is a possibility that in hindsight this might not prove to be exact.

International Committee
for Weights and Measures

**Proceedings of Session II
of the 102nd meeting**

(22 and 25 October 2013)

Executive Summary

Session II of the 102nd meeting of the CIPM (22 and 25 October 2013)

New CIPM election procedure

The CIPM approved the latest draft of the document 'Criteria and Process for Election of CIPM members'. To initiate this new Election Process, current CIPM Members have collectively agreed to vacate their Appointments congruent with the first meeting of the newly elected CIPM if not re-elected.

The next CGPM

The next meeting of the General Conference on Weights and Measures (CGPM) will be held over three days, preceded by a preparatory day at the BIPM on the Monday of the same week. The venue for the 25th CGPM is the Palais des Congrès de Versailles.

CCQM proposal to address biology

The CIPM approved, in principle, the proposal from the President of the Consultative Committee for Amount of Substance: Metrology in Chemistry (CCQM) to reorganize its structure and change its name to better address biology within its scope.

CIPM MRA review

The CIPM noted the need to review the effectiveness and efficiency of the CIPM MRA with some urgency and decided to request the Consultative Committees and the Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB) to initiate their individual reviews of its implementation and operation as soon as possible.

A formal overarching review of the effectiveness and efficiency of the CIPM MRA, taking into account the outcomes of the CC and JCRB reviews, will be conducted by a committee with membership and terms of reference to be established by the CIPM.

NMR facility and BIPM policy on soliciting and accepting support from third parties

The CIPM accepted the principle that the BIPM should establish an NMR facility subject to the availability of support from a third party.

The CIPM bureau will review the document 'BIPM Policy on Soliciting and Accepting Support from Third Parties'.

MEMBERS OF THE INTERNATIONAL COMMITTEE FOR WEIGHTS AND MEASURES

As of 22 October 2013

President

1. B. Inglis, National Measurement Institute (NMIA), Lindfield, Australia.

Secretary

2. R. Kaarls, Zoeterwoude, the Netherlands.

Members¹

3. B.R. Bowsher, National Physical Laboratory (NPL), Teddington, United Kingdom.
4. H.S. Brandi, *Instituto Nacional de Metrologia, Qualidade e Tecnologia* (INMETRO), Rio de Janeiro, Brazil.
5. K. Carneiro, Holte, Denmark.
6. Y. Duan, National Institute of Metrology (NIM), Beijing, China.
7. L. Énard, *Laboratoire National de Métrologie et d'Essais* (LNE), Paris, France.
8. V.N. Krutikov, *Rosstandart*, Moscow, Russian Federation.
9. W. Louw, National Metrology Institute of South Africa (NMISA), Pretoria, South Africa.
10. W.E. May, National Institute of Standards and Technology (NIST), Gaithersburg, United States of America. *Vice-President*.
11. J.W. McLaren, Ottawa, Canada. *Vice-President*.
12. H.O. Nava-Jaimes, *Centro Nacional de Metrología* (CENAM), Querétaro, Mexico.
13. A. Sacconi, *Istituto Nazionale di Ricerca Metrologica* (INRIM), Turin, Italy.
14. H. Uğur, Mugla, Turkey.
15. J. Ullrich, *Physikalisch-Technische Bundesanstalt* (PTB), Braunschweig, Germany.
16. T. Usuda, National Metrology Institute of Japan (NMIJ/AIST), Tsukuba, Japan.
17. J. Valdés, *Instituto Nacional de Tecnología Industrial* (INTI), Buenos Aires, Argentina.

¹ There were 17 members of the CIPM as of 22 October 2013 due to the resignation of K.H. Chung, Chungnam National University, Daejeon, Republic of Korea at the end of June 2013.

Honorary members

1. E. Ambler, Hilton Head Island, United States of America.
2. W.R. Blevin, Glenhaven, Australia.
3. L.M. Branscomb, La Jolla, United States of America.
4. J.V. Dunworth, Ramsey, Isle of Man, United Kingdom.
5. K. Iizuka, Tokyo, Japan.
6. D. Kind, Braunschweig, Germany.
7. J. Kovalevsky, Grasse, France.
8. J. Skákala, Bratislava, Slovakia.

Agenda

1. Opening of the session, quorum and approval of the agenda
2. Confirmation of the minutes of the first session
3. *In camera* session (CIPM members only)
4. Report of the Secretary and activities of the CIPM bureau, including an update on new and prospective Members and Associates
 - 4.1 Update on the activities of the BIPM by the Director
5. Reports from the Chairs of the CIPM Standing Sub-Committees and *ad hoc* Working Groups
 - 5.1 Finance
 - 5.2 Strategy
 - 5.3 BIPM Pension and Provident Fund and Health Insurance
 - 5.4 CIPM Membership
 - 5.5 Conditions of Employment
6. Adoption of a new CIPM election process
7. CIPM membership
8. Plans for the 25th meeting of the CGPM (2014), including discussion of proposed resolutions
 - 8.1 On the revision of the International System of Units, the SI
 - 8.2 On the election of the CIPM
 - 8.3 Dotation of the BIPM for the years 2016-2019
 - 8.4 On the Pension and Provident Fund of the BIPM
 - 8.5 On the importance of the CIPM MRA
9. BIPM/CIPM strategy
10. Depository of the metric prototypes
11. Review of matters arising from the meeting of NMI Directors and Government Representatives
12. Work of the BIPM
 - 12.1 Organizational structure
 - 12.2 Budget and finance
 - 12.3 Site and buildings
 - 12.4 Review of the BIPM safety and quality systems
 - 12.5 *Metrologia*
13. Reports from Presidents on meetings of the CCEM, CCM, CCQM, CCRI and CCU
14. Comments (if any) from the Presidents of the CCAUV, CCL, CCPR, CCT and CCTF
15. Proposed changes to CC membership

16. Report on the CIPM MRA and the JCRB
 - 16.1 Recommendations and resolutions of the JCRB
 - 16.2 Review of the CIPM MRA
17. Joint Committees
 - 17.1 JCGM
 - 17.2 JCTLM
18. Update on liaison with international organizations
19. Date of next meeting
20. Any other business
21. Closure of the meeting

1. OPENING OF THE SESSION; QUORUM; AGENDA

The International Committee for Weights and Measures (CIPM) held Session II of its 102nd meeting on Tuesday 22 October and Friday 25 October 2013 at the International Bureau of Weights and Measures (BIPM).

Present: B.R. Bowsher, H.S. Brandi, K. Carneiro, Y. Duan, L. Énard, B. Inglis, R. Kaarls, V. Krutikov², W. Louw, W.E. May, J.W. McLaren, M.J.T. Milton (Director of the BIPM), H.O. Nava-Jaimes, H. Uğur, J. Ullrich, T. Usuda, J. Valdés.

Apologies were received from: A. Sacconi, A. Wallard (Emeritus Director).

Also attending the meeting were: C. Fellag Ariouet (Personal Assistant to the Director), C. Planche (Librarian/Drafting Officer), T.J. Quinn (Emeritus Director) and R. Sitton (Publications Officer).

The following were in attendance for parts of the meeting: I. Andernack (Director's Office, Finance), E.F. Arias (CCTF Executive Secretary and Director of the Time Department), R. Davis (CCM Interim Acting Executive Secretary), A. Henson (Director of the International Liaison and Communication Department), C. Kuanbayev (JCRB Executive Secretary), J.M. Los Arcos (CCRI Executive Secretary and Director of Ionizing Radiation Department), I. Mills (CCU President), S. Picard (CCAUV Executive Secretary and CCT Interim Acting Executive Secretary), P. Richard (CCM President), L. Robertsson (CCL Executive Secretary), M. Stock (CEM and CCPR Executive Secretary, Director of the Electricity Department and *ad interim* Director of the Mass Department), C. Thomas (CCU Executive Secretary and KCDB Coordinator) and R. Wielgosz (CCQM Executive Secretary and Director of the Chemistry Department).

Dr Inglis, President of the CIPM, opened Session II of the 102nd meeting of the CIPM. With 16² out of 17 members present the quorum was satisfied according to Article 12 of the Regulations annexed to the Metre Convention.

There were two changes to the agenda:

- The *in camera* session proposed for 22 October was moved to 25 October at 8.30 am.
- An update on the activities of the BIPM by the Director of the BIPM was inserted as item 4.1.

2. CONFIRMATION OF THE MINUTES OF THE FIRST SESSION

The minutes of Session I of the 102nd meeting (2013), as approved by correspondence, were accepted as a true record.

The President reviewed the decisions from Session I. The following points were noted:

Decision CIPM/102-17 *The CIPM President will issue an invitation to the leadership of the Versailles Project on Advanced Materials and Standards (VAMAS) to a meeting of the CIPM bureau in 2014 to explore whether there would be value in closer collaboration between VAMAS and the CIPM.*

² V. Krutikov was absent on 22 October 2013.

An invitation will be sent to attend the CIPM bureau meeting on 4 March 2014.

Decision CIPM/102-19 *As part of the CIPM's intention to encourage a stronger strategic perspective, the CIPM will identify one or two cross-cutting "grand metrology challenges" considering potential liaisons with the ILAC, the ISO and the OIML and other relevant international organizations with missions complementary to the BIPM and charge the Presidents of the Consultative Committees to assess the implications to their strategies and future programmes.*

A workshop on carbon metrology has been scheduled for 2015.

Decision CIPM/102-27 The CIPM accepted the minutes of Session I of the 102nd meeting of the CIPM as a true record.

3. **IN CAMERA SESSION (CIPM MEMBERS ONLY)**

The *in camera* session was moved to 8.30 am on 25 October.

4. **REPORT OF THE SECRETARY AND ACTIVITIES OF THE CIPM BUREAU, INCLUDING AN UPDATE ON NEW AND PROSPECTIVE MEMBERS AND ASSOCIATES**

Dr Kaarls, Secretary of the CIPM, gave his report (see Appendix 1) for the period June to October 2013. He underlined the fact that the Former Yugoslav Republic of Macedonia (which became an Associate on 10 October 2006) and the Republic of Moldova (which became an Associate on 1 January 2007) have met the criteria to be encouraged to become States Parties to the Metre Convention. The CIPM decided to proceed with encouraging both States to become Member States.

Decision CIPM/102-28 The CIPM decided, on the basis of the criteria it has previously adopted, that it would be appropriate for the Former Yugoslav Republic of Macedonia and the Republic of Moldova to become States Parties to the Metre Convention. The BIPM will convey the Decision, recalling Resolution 4 'On the status of Associate State of the General Conference' adopted by the CGPM at its 24th meeting, and the implications regarding the increase in subscriptions should the Former Yugoslav Republic of Macedonia and the Republic of Moldova choose to remain as Associates of the CGPM.

The President invited questions on the report and the following points from the discussion were noted.

Accidents that involve BIPM staff while travelling to and from work are considered to be work accidents. There has been one accident of this type so far in 2013 and there was one in 2012.

The status of payments related to the rescheduling agreements signed with the Dominican Republic and the Islamic Republic of Iran were questioned. Neither State has repaid all of its sums due in 2013 as of 22 October 2013.

4.1 Update on the activities of the BIPM by the Director

The Director reported that he had made a number of visits to NMIs and Member States to discuss the BIPM strategy, to give talks and take part in conferences since Session I in June 2013. In this context he travelled within France and to China, Japan, Portugal, the Republic of Korea, Spain and the UK. Visitors to the BIPM included a high-level delegation from Bangladesh on 25 June, including Mr Musharraf Bhuiyan, the Cabinet Secretary, to discuss the possible accession of Bangladesh to the Metre Convention. The Director also received visits from Mr Aie, Director of the *Laboratoire National d'Essais, de Qualité de Métrologie et d'Analyses* (LANEMA), Ivory Coast, and Mr Jean Dedolin, the *Administrateur* of the *Domaine national de Saint-Cloud*, the latter to discuss matters of common interest relating to the estate and security. The Director and the BIPM Legal Advisor were invited to a meeting at the French Ministry of Foreign Affairs to discuss, among other things, plans for the 25th meeting of the CGPM.

Ms M.J. Martin retired from the Finance, Administration and General Services Department after 35 years' service. The position has been filled by a temporary staff member from a local agency.

Ms B. Perent, the Financial and Administrative Director, will leave the BIPM on 1 December 2013. A modification to the organizational structure of the BIPM was announced on 14 September 2013 by the Director and an organigram of the new structure was made available on the website. The reorganization resulted in the following changes in responsibility within the Director's Office: Ms Andernack is responsible for finance, budget and procurement matters; Ms Arlen is responsible for legal, administrative and human resources matters; and Ms Fellag Ariouet is responsible for the secretariat and housekeeping. The responsibilities of the Quality, Health and Safety Manager, Mr Maggi, were expanded to include the grounds and site security. New job descriptions are being developed to reflect these changes.

The headcount in administrative and support services has been reduced by three while the scientific headcount will increase by two when vacancies for a Physicist or Electrical Engineer for Quantum Electrical Metrology and a Principal Physicist for Mass Metrology are filled. Mr Picard, Director of the Mass Department, continues to be on long-term sick leave.

The lack of a strategy concerning the buildings has been addressed and work on the buildings in the immediate future will focus on the Observatoire: the laboratories are in good condition in the Observatoire but improvements are needed to the surrounding environment. Renovation of the meeting room in the Nouveau Pavillon has been completed. The Library has been reorganized, with many books and journal back issues being archived. The majority of journals are now accessed electronically.

The BIPM has made significant progress with streamlining its publications during 2013. The CIPM Report 2012, Director's Report 2012 and the *Rapport Annuel* 2012 were sent to stakeholders as a single pack for the first time. This saved postage costs, reduced duplication of information and ensured that all three reports were received at the same time. The Director's Report 2012 was one third the length of the 2010 report and was produced three months faster than the 2011 report. Decisions from the CIPM meetings are made available on the BIPM website after the meetings in both English and French. The report of Session I of the 103rd meeting of the CIPM (2014) will be made available online in English as soon as it is approved. The time taken to publish the report of the 24th CGPM was halved compared to the report of the 23rd CGPM.

Proceedings of the CGPM meetings dating back to 1889 are now available on the BIPM website. The Metre Convention (in French and English), the Concession Convention, the *Accord de Siege* and the Compendium are also available online. The CIPM web pages have been overhauled to include full details of the CIPM Standing Sub-Committees and *ad hoc* Working Groups, including membership and terms of reference. A new graphic design for the BIPM website is being developed.

The President thanked the Director for his report and invited questions.

Dr Usuda commented that the Director of the BIPM gave a presentation on the redefinition of the SI while visiting the NMIJ, Japan, in July 2013. The presentation was attended by many guests from the NMIJ and industry and was appreciated by all of those present.

It was queried whether there had been any contact between the BIPM and the World Trade Organization (WTO) since the meeting of the Committee on Technical Barriers to Trade of the WTO in March 2013. It was noted that the Director of the International Liaison and Communication Department had been unable to attend the last meeting on 19-20 June 2013 due to a timetable clash with Session I of the 102nd meeting of the CIPM. He will attend the next meeting in November 2013.

The reduction in the headcount for administrative support services was questioned, particularly whether this will compromise the quality of the services offered. The Director commented that one of the reductions was the position of Financial and Administrative Director. The responsibilities of this post have been redistributed among three existing members of staff as mentioned. Furthermore, the reorganization of the secretariat and housekeeping functions has enabled all aspects of running meetings to be brought under a single person. This is an important role and the running of meetings will be more efficient with all responsibilities handled by one person.

The improved relations between the BIPM and the new *Administrateur* of the *Domaine national de Saint-Cloud* were noted.

5. REPORTS FROM THE CHAIRS OF THE CIPM SUB-COMMITTEES AND AD HOC WORKING GROUPS

5.1 Finance

Dr Bowsher gave a report on the progress of the CIPM Standing Sub-Committee on Finance. He acknowledged the significant amount of work undertaken by the Director and Ms Andernack on behalf of the Sub-Committee. He noted the link between this Sub-Committee and that on the BIPM Pension and Provident Fund and Health Insurance and acknowledged that the financial plan for the BIPM cannot be developed in isolation: its development is linked to the BIPM strategy and the forward programme.

The BIPM is preparing a plan for the work programme for 2016-2019 and 2020-2023 to allow the required dotation to be calculated. Development of the financial plan took into account the following assumptions:

- French price inflation of 2 % per year which will be applied to all expenses except for energy (5 % per year) and for the return on cash and investments.
- The increase of the point value used to calculate salaries being capped at 1 % per year, as mandated by the CIPM for 2013-2015. The same value has been assumed for 2016-2019 and 2020-2023.
- Healthcare cost inflation is estimated at 10 % per year and the corresponding liability inflation is estimated at 2 % per year.
- The contribution to the Pension and Provident Fund approved by the CIPM for 2013 is 46.5 % of budgeted salaries. This is assumed to be constant for 2014-2023.

The BIPM moved to an accrual basis of accounting under IPSAS in 2009. However, the presentation of the budget and the accounts still ‘mirrors’ cash accounting. This practice will end in the 2013 financial statements. Depreciation forecasts were presented for buildings and scientific equipment over the period 2013-2023 and the personnel assumptions used in the development of the financial plan were given.

Four scenarios have been developed for the long-term financial plan. The scenarios assume a 0 %, 1 %, 2 % or 2.5 % annual increase in the dotation from 2016 to 2023, each of which includes details of the predicted impact on the BIPM and its work.

Zero-growth (in income) scenario

Under this scenario the BIPM can remain solvent, but with no replacement of retiring staff and thus a significant reduction in science capability. The financial state of the Pension and Provident Fund will deteriorate substantially.

1 % growth (in income) scenario

The long-term investment in the BIPM would be secured for 2016-2019 with constant science resources (compared with 2013-2015). No progress would be made in restoring the Pension and Provident Fund. A significant decline in assets is projected from 2020-2023 and new science initiatives would only be possible on a ‘one-in one-out’ basis. The number of secondees would be maintained at the 2013 level.

2% growth (in income) scenario

The long-term investment in the BIPM would be secured for 2016-2019, and some progress could be made in restoring the Pension and Provident Fund by injecting 4 million Euros (by 2023).

2.5% growth (in income) scenario

The long-term investment in the BIPM would be secured and sustained in the long term.

Under this scenario the budget can be balanced by:

- Replacing four key staff who retire with experienced recruits
- Replacing six other science retirees with young recruits
- Bringing in three additional secondees
- Supporting a new strategic priority with 48 person-months of staff time
- Generating 6 million Euros in cash (by 2023) to secure the long-term sustainability of the Pension and Provident Fund.

The President invited questions. It was questioned whether replacement of retiring staff with contract staff would result in cost savings for the BIPM. It was noted that this would result in modest savings and that certain posts are not suitable for replacement by contract staff.

The CIPM discussed whether the retirement age for BIPM staff should be raised. A decision on the retirement age had been made in 2009: for staff recruited after 1 January 2010 the retirement age is 65. Any decision to raise the retirement age would not have a significant impact on the BIPM Pension and Provident Fund in the short term because there are few recruitments planned in the immediate future.

It was noted that the work of the Sub-Committee on Finance and the development of the four scenarios had been driven by the BIPM strategy. The presentation of the Work Programme should also emphasize the value and benefits of the BIPM’s work as well as the importance of metrology as one of the basic infrastructures in the Member States.

The progress in developing the financial plan based on the BIPM strategy was welcomed as was the realism of the different scenarios. It was recognized that further work was needed to integrate the work

programme, the financial plan and the pension strategy. It would then need discussion with CGPM delegates to aid approval of the dotation.

5.2 Strategy

The Director, Chair of the CIPM Sub-Committee for Strategy, reported on the progress made in collaboration with the Director of the International Liaison and Communication Department towards the development of a strategy for the BIPM. The work of the Sub-Committee involved development of the BIPM Mission, Role and Objectives, which was completed in June 2013. This was followed by completion of the Consolidated Planning Process and formulation of the BIPM Strategic Priorities, which were presented at the meeting of NMI Directors and Government Representatives on 23-24 October 2013. The Consolidated Planning Process and formulation of the BIPM Strategic Priorities were based on an extensive and transparent strategic review by the Consultative Committees (CCs). This information has been used in the development of the key activities for the BIPM Work Programme 2016-2019. The review and update of financial processes and the long-term financial plan for the BIPM were essential elements in the development of the Work Programme. The CC strategy documents were developed in late 2012 and early 2013 and made available to Regional Metrology Organizations (RMOs), NMI Directors and Member States Representatives for comment. Feedback on the CC strategy documents has been received from a number of countries. It was noted that the CC Presidents should address and respond to any comments received on the strategies.

Decision CIPM/102-29 The CIPM will notify the CC Presidents that they should respond to any feedback received from NMI Directors, the RMOs or Member State Representatives with respect to their strategic plans. The CC Executive Secretaries will assist the CC Presidents in this task.

The Director presented seven strategic priorities for the BIPM for 2013-2015. After a comprehensive discussion of the order and content, he welcomed the feedback received and accordingly revised the list to six priorities to be presented at the meeting of NMI Directors and Government Representatives. The revised strategic priorities are:

1. To identify and deliver the highest value activities required by the Member States by:
 - operating a Consolidated Planning Process that assembles the views of the CIPM and of the NMIs.
 - developing a new and more effective approach to consulting on the content of the work programme.
 - improving the planning and monitoring of the outcomes of projects in the work programme.
2. To develop the staffing and funding environment at the BIPM to make it a preferred place for:
 - staff to work on secondment from the NMIs on projects contributing to their own and the BIPM's institutional priorities.
 - third parties to provide in-kind support for additional project activities.
3. To respond to changing requirements whilst maintaining the unique role of the BIPM by:
 - attracting, retaining and motivating staff who are able to adapt and are recognized as being among the best in their fields.
 - considering the need to reduce the average age of the scientific staff when recruiting.

4. To increase the effectiveness of the coordination and liaison activities of the BIPM by:
 - supporting the CIPM and the CC Presidents in achieving their objectives of prioritizing and streamlining the structure and operation of Working Groups favouring those with the greatest strategic impact.
 - revising the strategy for the BIPM's international liaison role.
 - supporting a review of the CIPM MRA carried out by an *ad hoc* working group of the CIPM.
5. To minimize costs in the operation of the BIPM whilst maintaining its mission by:
 - developing a long-term financial plan together with plausible scenarios for decision by the CGPM.
 - improving financial controls and making increased use of independent expert actuarial and financial advice.
6. To improve the dissemination of information and increase transparency by:
 - delivering quicker and more focused publications.
 - providing more information accessible 'openly' from the website.

The Director presented details of the approach proposed for the presentation of the draft BIPM Work Programme 2016-2019. The draft Work Programme will include four themes:

- A single physical metrology theme from the merger of mass and electricity projects. This merger will facilitate sharing of staff between the Mass and Electricity Departments and the watt balance will become a project within the new physical metrology theme.
- Time projects.
- A thematic approach for the formulation of projects in chemical and ionizing radiation metrology. It was noted that there is no consensus on previous proposals for a linear accelerator (linac) at the BIPM.
- International coordination work combined into a single theme across all departments.

A review of internal calibration services will be carried out. The strategies developed for each of the four themes were presented.

There was strong support from the CIPM for the new approach to the presentation of the draft Work Programme 2016-2019 and the associated strategies. It was agreed that more detail could be included in the strategies, such as promotion of the new SI and the importance of RMOs in the global metrology system. It was proposed that this could be done after presentation to the meeting of NMI Directors and Government Representatives on 23-24 October 2013.

The Director presented details of the key activities proposed for the four themes within the draft BIPM Work Programme 2016-2019. The draft Work Programme, with costed options, will be presented and made available for comment on the BIPM website from May to October 2014.

The omission of proposals for a linac at the BIPM was questioned. The Director reiterated that no international consensus for a linac at the BIPM has been reached and accelerator dosimetry comparisons hosted at 'regional hubs' will be proposed as the most viable option in the draft Work Programme 2016-2019.

The CIPM noted that the resumption of activities that were previously undertaken at the BIPM but were subsequently halted has not been ruled out. For example, the Consultative Committee for Length (CCL)

would like to see the resumption of a comparison in length. The BIPM ceased length and photometry activities in 2002 following a reprioritization exercise. However, the resumption of such work would have to be subject to the same analysis applied to all programmes during the Consolidated Planning Process.

5.3 BIPM Pension and Provident Fund and Health Insurance

Dr Kaarls gave a report on the work of the CIPM Standing Sub-Committee on the BIPM Pension and Provident Fund and Health Insurance. The Sub-Committee held its second meeting on 18 October 2013 and a third meeting is planned for mid-November 2013. A new actuarial study was commissioned with an international actuarial company (Mercer) in early 2013 and the results were made available in mid-October 2013. The history of the BIPM Pension and Provident Fund was recalled.

The Sub-Committee investigated what would be necessary to achieve “100 % coverage” of the estimated liabilities of the Pension and Provident Fund over 25 years. It is estimated that this would require an extra 4 million Euros per year into the fund. This possibility was not considered realistic and it was decided to manage the scheme towards a target whereby it was sustainable on a “pay-as-you-go” basis where an equilibrium is maintained between pensions paid and payments received together with the interest from investments. It is estimated that an extra dotation of 400 thousand Euros per year would be needed to achieve a sustainable situation by 2028.

The mortality tables used to calculate the life expectancy of BIPM staff have a significant impact on the Pension Fund. The use of mortality tables based on staff working in international organizations gives a higher rate of mortality because these tables take into account staff working in countries where life expectancy is relatively lower than in France. It was recommended that the BIPM returns to using French mortality tables, with the result that staff will be estimated to live longer, requiring pensions over a longer period and a correspondingly higher budget. This is a more conservative and a more realistic scenario.

The rationale for retaining the defined benefits scheme was questioned, particularly because many organizations and companies around the world have changed to defined contribution schemes. Moving to a defined contribution scheme would create a two-tier system within the BIPM, with existing staff members on the defined benefits scheme and new staff paying into the defined contributions scheme. Introducing a defined contributions scheme would also lead to cash flow problems within the Pension Fund because new staff would no longer pay into the existing scheme, which relies on equilibrium between inflow and outflow to remain solvent. Pensions are currently paid from money being paid into the Fund as well as cash from the dotation and the return on investment. A move away from this equilibrium would ultimately lead to the Pension Fund becoming bankrupt.

The capital investment bank had recently visited the BIPM and said that it had never received a clear investment policy and mandate from the BIPM. Therefore, the BIPM has commissioned Mercer to carry out an additional capital investment strategy study, advising the BIPM on an optimum investment policy. The investment bank will then be mandated to implement the investment policy at the beginning of 2014. The capital of the Pension Fund is currently invested conservatively following a policy agreed by the CIPM, with 75 % in bonds and 25 % in equity. The arrangements with the BIPM's bank were questioned, particularly whether a more competitive offer could be found. It was commented that the existing arrangement is considered satisfactory.

It was recalled that the BIPM Pension and Provident Fund is governed by the Rules and Regulations as adopted by the CIPM and that a pay-as-you-go system was the basis under which the pension scheme was originally set up.

The BIPM will commission a study to compare its health insurance provision to that offered in other comparable organizations operating within France. A report will be ready by the end of 2014.

5.4 CIPM Membership

Dr May gave a progress report from the CIPM *ad hoc* Working Group on CIPM Membership and presented the latest version of the document ‘*Criteria and Process for Election of CIPM Members*’. Feedback from Canada and Norway on the previous draft was presented along with the changes made to the document since Session I in June 2013.

The feedback from Canada contained reservations about the proposal for the CIPM to create a slate of “recommended candidates” in spite of the advantages of having a standing Committee for Election of CIPM Members review the general considerations and restrictions on the collective Membership. Two potential problems in requesting the Committee to recommend some nominees over others were highlighted: a perceived loss of openness since there will, out of necessity, be a one-to-one correlation between the “recommended slate” and the number of vacancies; and the possibility that any individuals who satisfy the criteria but are not included on the “recommended slate” will withdraw their nomination.

The idea of creating specified terms of office for elected CIPM Members was welcomed by Canada. However, it was suggested that the process proposed in the Draft document does not appear to take into account the mechanism to ensure continuity of experience on the CIPM as specified in the Metre Convention (where up to 50 % of existing Members remain in office during the election of the remainder of the Committee at each CGPM). Although the Draft includes measures to mitigate the loss (e.g. through the “recommended slate”), Canada was not in favour of a process that requires the entire CIPM to resign at each CGPM. The feedback from Canada proposed an alternating six-year term for CIPM members with a cycle of General Conferences held every three years to maintain continuity of experience.

The feedback from Norway included a concern that all relevant documents should be handed over to the Committee for Election of CIPM Members instead of simply submitting a slate of candidates. There was also a recommendation that the meaning of the terms ‘list’ and ‘slate’ of candidates should be explained in the document. It was clarified that the proposed election process already included a requirement that all relevant documents be supplied to the Committee.

The concerns expressed by Canada and Norway were addressed as far as possible in the final document.

The proposed changes to *Section A: General Considerations for establishing a ‘recommended list’ of candidates* were replacement of the word ‘slate’ with ‘recommended list’ and addition of the sentence ‘only persons from Member States will be considered for CIPM membership’. In *Section C: the Committee for Election of CIPM Members*, the word ‘slate’ was changed to ‘recommended list’ in the Terms of Reference.

The following changes, shown in bold, were made to *Section D: Election process for CIPM Members*:

Step 1:

Nominations for membership of the CIPM will be sought (by the President of the CIPM) from all Member States through a call to government representatives, NMI Directors, and current members of the CIPM at the time of the Convocation preceding the CGPM. Nomination packages received are distributed to current CIPM members.

Step 2:

- *The CIPM assesses the documentation provided by each nominee against the “General Considerations for Membership” and the “Personal Attributes and Qualifications” provided in Sections A and B of this document.*
- *The CIPM compiles a **complete listing** of qualified candidates, discusses, and then recommends a **List** of candidates that in aggregate would allow the CIPM to carry out its duties most effectively and efficiently. The CIPM’s function in this case is to ensure that the proposed candidates meet the Personal Attributes and Qualifications criteria provided in Section B of this document.*
- *The CIPM provides the Committee for Election of CIPM Members with a **complete** list of candidates assessed as qualified by the CIPM, the CIPM’s **recommended List** of candidates and a package **with supporting documentation of all nominated candidates** for their further consideration and discussion at least two months in advance of the CGPM meeting.*

It was noted that the *ad hoc* Working Group has developed a process whereby the group of individuals selected would be chosen against the criteria for CIPM membership to ensure they constitute the best possible team. The Committee for Election of CIPM Members would not be obliged to select any of the candidates submitted to it on the recommended list since the CIPM can only make recommendations. It was further stated that when drawing up the recommended list of candidates for submission to the Committee for Election of CIPM Members, consideration would be given to candidates from Member States that pay the maximum, or close to maximum, contributions to the dotation.

There was a comprehensive discussion of the process for ‘Seating of a newly elected CIPM’. It was noted that introducing a time lag between the election of the CIPM and taking their seats would ensure continuity through the introduction of a handover period. Dr May summarized the discussion by noting that the election of the CIPM will take place during the CGPM meeting. The newly elected CIPM will take office at its first session following the CGPM. The final meeting of the outgoing CIPM will take place at the end of the CGPM meeting to finalize any ongoing work and to begin the process of succession. It was suggested that following the 25th CGPM (2014), Session I of the 104th meeting of the CIPM should be held in March 2015, which would represent the first session of the newly elected CIPM. The procedure for electing a new CIPM will be triggered by the collective resignation of the existing CIPM before the CGPM meeting. After this discussion, and following a meeting of the *ad hoc* Working Group on CIPM Membership on the evening of 22 October, a new draft of the procedure for seating of a newly elected CIPM was proposed:

*Step 5: Seating of a newly elected CIPM**

The prior CIPM will meet immediately following the CGPM to complete its business and begin planning for the succession. The newly-elected CIPM will begin its term six months following its election at the CGPM. A meeting of the CIPM will be arranged as soon as possible thereafter, to be Chaired by the most senior incumbent member of the previous CIPM. If no incumbent is re-elected, the CGPM will appoint a person to Chair this meeting. New Officers (President, Secretary, First Vice President, Second Vice President) shall be elected prior to completion of this first meeting of the newly elected CIPM.

** Note: To initiate this new Election Process, current CIPM Members have collectively agreed to vacate their Appointments congruent with the first meeting of the newly elected CIPM if not re-elected.*

The new criteria and process for the election of CIPM members includes a provision for voluntary resignation. It was noted that the Metre Convention contains no requirement for members of the CIPM to resign. The new process, commencing with the 25th CGPM, includes a provision that each member of the CIPM will be elected for a term that spans the time between meetings of the CGPM.

Decision CIPM/102-30 The CIPM accepted the changes proposed by Dr May to the document “Criteria and Process for Election of CIPM Members”. The revised version to be placed on the CIPM webpage dated 25 October 2013.

Decision CIPM/102-31 The CIPM requested the BIPM to draft a decision for approval at its next meeting that will bring the new procedure into effect as described in Step 5 of the document ‘Criteria and Process for Election of CIPM Members’ (To initiate this new Election Process, current CIPM Members have collectively agreed to vacate their Appointments congruent with the first meeting of the newly elected CIPM if not re-elected).

5.5 Conditions of Employment

Dr McLaren gave a progress report from the CIPM *ad hoc* Working Group on Conditions of Employment.

The *ad hoc* Working Group has collected information on the conditions of employment at the French, American and British NMIs (the LNE, the NIST and the NPL respectively). It also reviewed the 2008 salary study which was conducted for the BIPM by the OECD Inter-Organisations Study section on Salaries and Prices and has discussed the terms of reference for a new study by the same group, which is now known as the International Service for Remunerations and Pensions (SIRP).

The SIRP comparative study will be reviewed when it becomes available and recommendations will be developed for presentation to the CIPM.

6. ADOPTION OF A NEW CIPM ELECTION PROCESS

See §5.4 Reports from the Chairs of the CIPM Sub-Committees and *ad hoc* Working Groups – CIPM Membership.

7. CIPM MEMBERSHIP

The Secretary reported that Dr Chung resigned from the CIPM at the end of June 2013.

There were three candidates for the vacancy and following a ballot to determine the order of preference of the candidates. It was agreed to send the list of names and their CVs to the CIPM *ad hoc* Working Group on CIPM Membership for its consideration and comment.

8. PLANS FOR THE 25TH MEETING OF THE CGPM (2014), INCLUDING DISCUSSION OF PROPOSED RESOLUTIONS

The proposed dates for the 25th CGPM are 17-20 November 2014. Several initiatives to improve the efficiency of the meeting were presented (see §13 of Session I of the 102nd meeting of the CIPM). The conference will take place over three days, preceded by a ‘preparation day’ to be held at the BIPM. The Convocation will be published six months in advance of the CGPM meeting and re-drafting of the resolutions (and submission of new resolutions) will be handled via the BIPM website. It was recalled that resolutions can be submitted at any time, even during the CGPM meeting. A proposed timetable for the conference was presented and discussed.

The Director presented a timeline for the preparations for the 25th CGPM and proposed that the venue be the Palais des Congrès de Versailles. The French Foreign Ministry has previously contributed towards the cost of hosting the General Conference but the cost of the 2014 meeting will be borne by the BIPM. The Director asked the CIPM for its support for the plans for the next CGPM meeting and the proposed venue.

Decision CIPM/102-32 The CIPM supported the proposal to hold the next General Conference on Weights and Measures (CGPM) over three days, preceded by a preparation day to be held at the BIPM on the Monday of the week of the CGPM. The venue for the CGPM will be the Palais des Congrès de Versailles.

Proposed Resolutions

8.1 On the revision of the International System of Units, the SI

Draft Resolution A “On the revision of the International System of Units, the SI” is derived from the wording of the CCU Recommendation to the CIPM U 1 (2013) produced by the CCU at its 21st meeting in June 2013. During this meeting, the bullet point “[The CGPM encourages] *the CIPM to develop a plan to provide the path via the CCs and the CCU for implementing Resolution 1 adopted by the CGPM at its 24th meeting (2011)*” was added to Recommendation U 1 following discussions with the PTB, Germany, about whether some form of “quality control” is required before proceeding with the revision. The CIPM will ultimately need to take a decision about whether the criteria have been met and a plan is needed to know how this will be done.

The discussion on Draft Resolution A centred on whether it should convey a stronger sense of achievement with the work undertaken so far, for example the major advances made with determination of the Boltzmann constant. It was suggested that major achievements could be included in the presentations by the CC Presidents. There were concerns that this is the only scientific Resolution and it infers that little progress has been made and that it is necessary to wait for another four years before a decision can be taken on the revision of the SI. It was felt that because Draft Resolution A had been drafted, thoroughly reviewed and approved by the Consultative Committee for Units (CCU), there should be no change to the text. The CIPM thus approved Draft Resolution A “On the revision of the International System of Units, the SI”.

8.2 On the election of the CIPM

See §5.4 CIPM Membership.

8.3 Dotation of the BIPM for the years 2016-2019

The CIPM approved Draft Resolution C ‘Dotation of the BIPM for the years 2016-2019’ without comment.

8.4 On the Pension and Provident Fund of the BIPM

Draft Resolution D ‘On the Pension and Provident Fund of the BIPM’ was presented. The resolution was drafted by Mr C. Bock, the Director of METAS, Switzerland, and had been comprehensively reviewed by the CIPM Standing Sub-Committee on the BIPM Pension and Provident Fund and Health Insurance. Attention was drawn to the provision ‘that the dotation of the BIPM shall be at a level that enables the BIPM to sustain the Pension and Provident Reserve Fund in the long term’.

The CIPM approved Draft Resolution D ‘On the pension and provident fund of the BIPM’.

8.5 On the importance of the CIPM MRA

The NMI community has requested a review of the CIPM MRA and Draft Resolution E is intended to confirm the importance that the CIPM attributes to this. Following a discussion, the CIPM agreed in principle to Draft Resolution E ‘On the importance of the CIPM MRA’, subject to possible amendments arising from the meeting of NMI Directors and Government Representatives.

Decision CIPM/102-33 The CIPM decided to empower the CIPM bureau to develop and circulate the Convocation and Resolutions for the 25th CGPM based on the draft documents discussed at the meeting and incorporating the comments from the CIPM.

9. BIPM/CIPM STRATEGY

See §5.2 Strategy and §5.4 CIPM Membership.

10. DEPOSITORY OF THE METRIC PROTOTYPES

The visit to the depository of the metric prototypes at the Pavillon de Breteuil took place at 17:30 on 22 October 2013, in the presence of the President of the CIPM, the Director, and two representatives of the Curator of the *Archives nationales*, Ms Béchu and Mr Rousseau. (see Appendix 2).

The Director proposed some new measures to ensure that visitors to the caveau and photographers are controlled more strictly during the opening of the safe. He also reported that the Curator of the Archives and the President had agreed to leave their keys with him at the BIPM so that the IPK could be removed to take part in the weighings planned ahead of the proposed re-definition.

11. REVIEW OF MATTERS ARISING FROM THE MEETING OF NMI DIRECTORS AND GOVERNMENT REPRESENTATIVES

Four points were noted from the meeting of NMI Directors and Government Representatives that was held at the BIPM on 23-24 October 2013:

- There is a need to review the effectiveness and efficiency of the CIPM MRA. (See §16.2 Review of the CIPM MRA)
- The timing of the 2014 CIPM meetings and the meeting of NMI Directors and Government Representatives needs to be agreed. (See §19 Date of next meeting).
- The Draft Resolution ‘On the election of the International Committee for Weights and Measures’ requires more work.
- The CIPM was requested to reflect on the participation in the ‘pre-meeting’ on the dotation of the BIPM.

12. WORK OF THE BIPM

12.1 Organizational structure

See §4.1 Update on the activities of the BIPM by the Director.

12.2 Budget and finance

It was recalled that the recent decision to hold two CIPM Sessions each year, with the first in May or June and the second in October, was initiated to allow the BIPM financial statements to be signed off early in the year. It was proposed that the CIPM could delegate oversight for the financial statements to the Sub-Committee on Finance: this would allow more flexibility in the setting of CIPM meetings and the first session of the 103rd meeting of the CIPM could be brought forward to March 2014. All CIPM members would still have the opportunity to examine the financial statements and to make comments and the President and Secretary would still be required to sign-off the statements. The CIPM agreed to delegate oversight of the financial statements to the Sub-Committee and that it will approve the financial statements by correspondence based on the recommendation of the Sub-Committee.

Decision CIPM/102-34 The CIPM agreed to delegate responsibility for verifying the financial statements of the BIPM and the BIPM Pension and Provident Fund to the CIPM Standing Sub-Committee on Finance. Final approval of the financial statements by the CIPM will be decided by correspondence on the advice of the sub-committee.

The proposed budget for the BIPM for 2014 was presented. It was noted that all items in the budget are now presented on one sheet for ease of comparison. The 2014 budget requires the approval of the CIPM. It was noted that laboratory and building expenses will be sub-divided into operating and capital expenses from 2014 onwards. This is the final step in moving beyond the legacy “cash” accounting system.

There has been a significant increase in heating, water and electricity expenses from the 2013 budgeted

amount of 251 thousand Euros to a 2013 estimated budget outturn of 382 thousand Euros. This has been attributed to the commissioning of new laboratories in the Observatoire building and to the conditions of the electricity tariff which penalized the BIPM for exceeding peak demand, resulting in a doubling of electricity costs month-on-month. This issue has been addressed with the installation of an electricity consumption monitor which will allow actions to be taken in response to real-time monitoring. The BIPM is renegotiating its tariff with the electricity supplier and is investigating further energy efficiency measures.

The cost of meetings has been reduced significantly, with estimated savings of 20 thousand Euros so far in 2013. This reduction is credited to the organization of meetings being brought under the control of Ms Fellag Ariouet and the work by her team to reduce costs. It was noted that the cost of meetings will increase in 2014 due to the exceptional expense of organizing the CGPM.

Travel costs are being taken out of the BIPM central budget and placed under the control of Department Directors, to increase accountability.

The Director noted that many formal reports are now available on the BIPM website, with the exception of the *Rapport annuel aux Gouvernements des Hautes Parties contractantes sur la situation administrative et financière du Bureau international des poids et mesures*. The CIPM were invited to endorse online publication of the *Rapport annuel*.

Decision CIPM/102-35 The CIPM endorsed online publication of the *Rapport annuel aux Gouvernements des Hautes Parties contractantes sur la situation administrative et financière du Bureau international des poids et mesures*.

Decision CIPM/102-36 The CIPM approved the BIPM budget proposed for 2014, and endorsed the decision to present operating and capital expenditure separately.

In §5 of the report of Session I of the 102nd meeting of the CIPM it was noted that the BIPM has continued with its policy of adopting IPSAS standards and will anticipate the application of three new standards on financial instruments (IPSAS 28, IPSAS 29 and IPSAS 30) which are mandatory for financial statements starting on 1 January 2013. The CIPM was asked for formal authorization to implement these standards for the 2013 financial statements of the BIPM Pension and Provident Fund.

Decision CIPM/102-37 The CIPM gave the BIPM Director the authority to implement IPSAS 28, IPSAS 29 and IPSAS 30 on financial instruments for the 2013 financial statements of the BIPM Pension and Provident Fund.

12.3 Site and buildings

See §4.1 Update on the activities of the BIPM by the Director.

12.4 Review of the BIPM safety and quality systems

This agenda item was covered in the report by the Secretary of the CIPM (See Appendix 1).

12.5 Metrologia

The Impact Factor for *Metrologia* remains the highest of the comparable measurement journals: 2012 values were 1.902 for *Metrologia* compared to 1.435 for *Measurement Science and Technology*.

Forthcoming special issues of *Metrologia* include:

- Watt and joule balances, the Planck constant and the kilogram (2014); Guest Editor: Ian Robinson (NPL)
- Guide to the Expression of Uncertainty in Measurement: Past, Present and Future (2014); Guest Editor: Maurice Cox (NPL)
- Uncertainties in radionuclide metrology (2014/2015); Guest Editors: John Keightley (NPL), Lisa Karam (NIST), José María Los Arcos (BIPM)
- Boltzmann constant (2015); Guest Editors: Rod White (MSL), Joachim Fischer (PTB)
- NEWRAD 2014 (2015); Guest Editor: Erkki Ikonen (MIKES).

Review papers are encouraged; CIPM members are invited to help identify appropriate subjects and attract review papers to *Metrologia*. The Technical Supplement is also working well. The abstracts of 76 reports have been published so far in 2013. Thanks go to Dr Thomas who liaises with IOPP on all the reports published in the KCDB.

The publishing partnership with IOPP continues to work well. The 2013 annual meeting between the IOPP and the BIPM was held at the BIPM in March 2013 and an option allowing open-access publication was introduced in April 2013. The IOPP has stopped its 'free for 30 days' policy. The current contract with the IOPP finishes at the end of 2013. The BIPM is negotiating a new contract that should come into force at the beginning of 2014. The transfer to the IOPP's new manuscript-handling system, ScholarOne, has gone smoothly; the new system was implemented for *Metrologia* at the end of September 2013.

13. REPORTS FROM PRESIDENTS ON MEETINGS OF THE CCEM, CCM, CCQM, CCRI AND CCU

Consultative Committee for Electricity and Magnetism (CCEM)

Dr Inglis, President of the CCEM, presented his report on the 28th meeting of the CCEM, held at the BIPM on 14-15 March 2013 and other recent activities. It was noted from the report that there is concern with regard to the impact of the likely step change in the voltage unit following redefinition, as a consequence of the difference between the best available value of the Josephson constant and the 1990 conventional value. The CCEM saw a need to ensure that the likely impact is well communicated to users and a Task Group was established to consider the implications of the change. The CCEM also considered possible mechanisms to communicate the change to the user community.

Consultative Committee for Mass and Related Quantities (CCM)

Dr Richard, President of the CCM, presented his report on the 14th meeting of the CCM, held at the BIPM on 21-22 February 2013 and other recent activities. The report included three items for approval by the CIPM. The first was the new CCM activities statement, updated to include additional responsibilities: "Present activities concern matters related to the comparisons of mass standards with the international prototype of the kilogram, considerations affecting the definition and realization of the unit of mass, establishment of international equivalence between national laboratories for mass and a number of related quantities (density, pressure, force, fluid flow, viscosity, hardness, gravitational acceleration)

and advice to the CIPM on these matters". The second item for approval was the CCM Draft terms of reference for the Working Groups according to Appendix 2 of the report submitted by the CCM to the CIPM. The third item was approval of the new CCM structure and chairmanship according to sections 3.2.1 (Streamlining the CCM structure), 3.2.2 (Changes in the Working Group on Gravimetry (WGG)) and 3.2.3 (Changes in the Working Group on Hardness (WGH)) of the report. The President of the CCM noted that significant progress has already been made towards streamlining the structure of the CCM. The number of Working Groups has been reduced from 14 to 11 since February 2013 and further simplification of the CCM structure is planned before the end of 2014.

Dr Richard reported that the CCM has developed a strategic plan that takes into account comments and suggestions received by the BIPM from NMI Directors and Member State Representatives.

Dr Richard asked the CIPM to note CCM Recommendation G1 (2013) 'On a new definition of the kilogram'.

Prof. Valdés referred to experiments of atom interferometry linking the mass of an atom to its Compton-de Broglie frequency through the Planck constant that may imply a *mise en pratique* different to one that includes only the watt balance and the Avogadro experiments for the realization of the future definition of the kilogram. He asked if this possibility should be considered in the new SI Brochure that is being drafted, or in the roadmap for the redefinition of the kilogram, and when. Dr Richard commented that the *mise en pratique* does not exclude other realizations and the issue has been addressed with additional wording in Draft Chapter 2 of the SI Brochure.

Prof. Valdés also referred to a letter that he received from Prof. John Hall (NIST–University of Colorado–JILA), in which he referred to the possible new definition of the kilogram as a multiple of a suitable atomic mass in terms of the Avogadro number, in which case the experiments referred to above could be used to determine the Planck constant to a level of precision beyond what could be achieved with the watt balance approach. Prof. Valdés asked for the opinion of Dr Richard and the mass metrology community on the issue. Dr Richard commented that the CCM is aware of this issue and an atomic definition of the kilogram had been considered. However, the CCM has decided that the choice between a definition of the kilogram based on the mass of an atom or a definition based on the Planck constant will have negligible impact on mass metrology.

Decision CIPM/102-38 The CIPM noted Recommendation G1 (2013) "On a new definition of the kilogram" of the Consultative Committee for Mass and Related Quantities (CCM) and endorsed the new CCM activity statement, the CCM Draft terms of reference according to Appendix 2 of the CCM report submitted to the CIPM, and the new CCM structure and chairmanship according to section 3.2.1 to 3.2.3 of the CCM report.

Consultative Committee for Amount of Substance: Metrology in Chemistry (CCQM)

Dr May, President of the CCQM, presented his report on the 19th meeting of the CCQM and its Working Groups (WGs), held at the BIPM on 12-19 April 2013. It was noted from the report that the scope of activities undertaken by the CCQM was reviewed during the strategic planning exercise. A proposal will be made in 2014 to modify the name of the CCQM to include reference to 'Metrology in Chemistry and Biology', together with a realignment of existing WGs and a reorganization of the WGs active in Metrology in Biology.

Decision CIPM/102-39 The CIPM approved, in principle, the proposal from the President of the Consultative Committee for Amount of Substance: Metrology in Chemistry (CCQM) to reorganize its structure and change its name to better address biology within its scope.

Consultative Committee for Ionizing radiation (CCRI)

Dr Carneiro, President of the CCRI, presented his report on the 24th meeting of the CCRI, held at the BIPM on 17 May 2013. It was noted from the presentation that the CCRI(I) proposal on the evaluation of the Key Comparison Reference Value (KCRV) for the BIPM.RI(I)-K6 accelerator dosimetry comparison has been agreed. A CCRI recommendation on accelerator dosimetry was presented to the CIPM. It considered four possible scenarios for accelerator dosimetry comparisons. Discussion of the CCRI recommendation on accelerator dosimetry centred on whether the bullet point '*The CCRI recommends to the CIPM to ensure that the BIPM prepares for the implementation of the best scenario to be during the period 2016-2019*' could reopen the debate on whether there should be a linear accelerator at the BIPM if this was considered to be the best scenario. The CIPM considered the recommendation on accelerator dosimetry comparisons and supported the two points recommending the CIPM to ensure that the BIPM continues the current key comparison for accelerator dosimetry as planned during the period 2013-2015 and that during the same period the BIPM investigates thoroughly the feasibility of each of the four scenarios. However, the CIPM was unable to give its full and unconditional support for the BIPM to prepare for the implementation of the best scenario during the period 2016-2019.

The CCRI and the International Organization for Medical Physics (IOMP) are seeking closer collaboration in areas of mutual benefit. It was commented that the wording of a Memorandum of Understanding (MoU) with any potential stakeholders, such as the IOMP, should be very clear so that the role and responsibilities of each party are clear.

Decision CIPM/102-40 The CIPM considered the report from the President of the Consultative Committee for Ionizing Radiation (CCRI) and supported the continuation of the key comparison for accelerator dosimetry as planned during the period 2013-2015 and recognized that this should continue to be a priority for the Work Programme 2016-2019. The BIPM will maintain a watching brief on developments at the NMIs in this area.

Consultative Committee for Units (CCU)

Prof. Mills, President of the CCU, presented his report on the 21st meeting of the CCU, held at the BIPM on 11-12 June 2013. This was the first meeting of the CCU since the 24th CGPM, where Resolution 1 'On the possible future revision of the International System of Units, the SI' was adopted unanimously. The CCU discussed the timescale for the adoption of the redefinition. The delay in adopting the changes is at present uncertain, because the CIPM has decided to wait for the results of further experiments which are at present in progress, and will lead to improvements in the knowledge of the defining constants that are the basis of the new definitions of the SI. The values of the seven defining constants in the new definitions should be chosen to preserve continuity, so that there is no step change in the values of any of the SI units at the moment the redefinition is adopted. They are thus a critical element of the new SI. Prof. Mills observed that there will never be an ideal time to make the change, because experience suggests that there will always be new experiments in progress that may lead to improved values of the defining constants. However, it is agreed that we should wait for the anticipated new results, which are expected to be known by 2018. The CCU had drafted a recommendation (see §8.1 On the revision of the International System of Units, the SI) for the next CGPM.

The CCU reviewed a Draft of Chapter 2 for the next revision of the SI Brochure. The draft was produced by a Task Group that met in September 2013 and which followed these principles:

- producing a shorter and tighter document, presenting the definition of the SI in fewer words, in a more logical order.
- giving the global definition of the SI in terms of a scaling statement involving the fixed

- numerical values of seven ‘defining constants’ using this name throughout, then presenting the individual definitions of the base units and showing that both formulations are equivalent.
- moving most of the historical material concerning the development of the base units into a new section 5: ‘Historical perspective on the base units’.

The President of the CCU encouraged the CIPM to read the Draft of Chapter 2. He announced that he is standing down at the end of 2013 and that he has enjoyed his time as the President of the CCU. He urged the CIPM to “get on with the revision of the SI”.

The President thanked Prof. Mills for his presentation and formally thanked him on behalf of the CIPM for all the work he has done for the CCU and for his wisdom and contributions. It was recalled that Prof. Mills is only the second President of the CCU since its inception in 1964.

Following a discussion, the CIPM appointed Prof. Ullrich as President of the CCU from 1 January 2014.

Decision CIPM/102-41 The CIPM appointed Prof. Ullrich as President of the Consultative Committee for Units (CCU) from 1 January 2014.

14. COMMENTS FROM THE PRESIDENTS OF THE CCAUV, CCL, CCPR, CCT AND CCTF

Consultative Committee for Acoustics, Ultrasound and Vibration (CCAUV)

Prof. Valdés, President of the CCAUV, presented a report on its activities since the previous meeting of the CCAUV in June 2012. It was noted that the recent activities of the CCAUV have been dominated by the strategic planning exercise.

Consultative Committee for Length (CCL)

Dr Robertsson, Executive Secretary of the CCL, presented the report in the absence of Dr Sacconi. The previous meeting of the CCL was held in September 2012. The activities of the CCL since this meeting have focused on the development of the strategic planning document.

Consultative Committee for Photometry and Radiometry (CCPR)

Dr Usuda, President of the CCPR, presented a report on its activities since its previous meeting in February 2012. In April 2013, the Strategic Planning Working Group held a Workshop on Units for Photometry and Radiometry at the BIPM, to which representatives from the International Commission on Illumination (CIE) were invited. Both the CIE and the CCPR agreed that a change of the photometric SI base unit from the candela to the lumen would have no practical benefit and that the candela shall remain the base unit.

Since the last CCPR meeting took place in February 2012, the CCPR Strategy was developed by email correspondence.

Dr Usuda noted that although the BIPM’s activities in Radiometry and Photometry ceased in 2002, it should not be excluded that in the future, resumption of activities in this field (or in other fields), might be proposed by the Consultative Committees, if considered to be appropriate.

Consultative Committee for Thermometry (CCT)

Dr Duan, President of the CCT, presented a report on its activities since its previous meeting in May 2012. The strategic planning exercise has been completed and work has continued on determination of the Boltzmann constant. A new *mise en pratique* has been written for the proposed new definition of the kelvin.

Consultative Committee for Time and Frequency (CCTF)

Mr Énard, President of the CCTF, presented a report on its activities since its previous meeting in September 2012. Several highlights from the BIPM Time Department were noted in the report, including the joint BIPM and International Telecommunication Union (ITU) Workshop on the future of the International Time Scale, which was held in Geneva, Switzerland, on 19-20 September 2013. Other highlights were the relocation of certain time activities to the Laser Building, the successful start-up of Rapid UTC (UTCr) and advances with secondary representations of the second with the microwave rubidium standard maintained at the LNE-SYRTE being used in the estimation of the accuracy of TAI since July 2013.

15. PROPOSED CHANGES TO CC MEMBERSHIP

Decision CIPM/102-42 The CIPM approved the following changes in Consultative Committee membership:

- UME (Turkey) as a member of the CCEM
- INMETRO (Brazil) as an observer to the CCM
- HSA (Singapore) as an observer of the CCQM
- ENEA-INMRI (Italy) as an observer to the CCRI(III)

16. REPORT ON THE CIPM MRA AND THE JCRB

The summary report of the 31st meeting of the Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB) was noted. The meeting was held at the NIM, China, on 18-19 September 2013. The importance of the information declared in the KCDB was discussed in detail, including the results of comparisons and CMCs. All RMOs expressed positive comments.

The performance and vitality of designated institutes (DIs) was discussed, the situation being more complex in EURAMET compared with other RMOs. EURAMET is likely to adopt guidelines for DI participation in EURAMET activities.

The status of CMC submissions was reviewed.

The reformatting and rearrangement of EURAMET CMCs in Electricity and Magnetism was presented. It was carried out in accordance with the guidance of the CCEM to present information using tables of

values (known as ‘uncertainty matrices’), with the consequence that the total number of CMCs was reduced. Others RMOs were encouraged to follow a similar rationalization process.

16.1 Recommendations and resolutions of the JCRB

CIPM approval was sought for two recommendations adopted by the JCRB at its 31st meeting:

Recommendation 31/1: The JCRB recommends to the CIPM to approve changes to the guidance document CIPM MRA-D-04 by adding the new Section 12. ‘Greying-out of published CMCs’.

Recommendation 31/2: The JCRB approves the proposed form for the nomination of Designated Institutes (subject to two editorial improvements) and requests it be approved by the CIPM. (The editorial changes are: to allow space for the name of a legal entity for a DI, when necessary, and moving the listing of metrology areas to the footnote).

Decision CIPM/102-43 The CIPM approved the following changes to CIPM MRA documents:

- CIPM MRA-D-04: The inclusion of a new section (Section 12) addressing the temporary suspension and reinstatement of CMCs published in the KCDB (‘greying out’), plus some additional minor editorial changes.
- ‘Designated Institutes in the CIPM MRA’ A new document providing information on the expectations and obligations for Designated Institutes, together with a revised nomination form which requires clearer differentiation of areas of metrological responsibility for DIs. The new document replaces the old ‘Request for Designation Information’ form.

16.2 Review of the CIPM MRA

The CIPM noted that after 14 years of operation there is an urgent need to review the effectiveness and efficiency of the CIPM MRA. Following a discussion on how the review should be carried out the CIPM decided to prepare for the review process without delay and to inform the CGPM of the progress being made at its next meeting.

Decision CIPM/102-44 The CIPM noted the need to review the effectiveness and efficiency of the CIPM MRA with some urgency and decided to request the Consultative Committees and the Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB) to initiate their individual reviews of its implementation and operation as soon as possible. Guidelines and a timescale for these reviews will initially be based on the work initiated by the CCQM and will be circulated within two months. A formal overarching review of the effectiveness and efficiency of the CIPM MRA, taking into account the outcomes of the CC and JCRB reviews, will be conducted by a committee with membership and terms of reference to be established by the CIPM. Membership to include representatives from the CIPM, the regions and others. It was noted that Robert Kaarls, Luc Énard and Wynand Louw offered to serve as members.

17. JOINT COMMITTEES

17.1 JCGM

The report of the Joint Committee for Guides in Metrology (JCGM) was taken as read.

Revision of the Guide to the Expression of Uncertainty in Measurements (GUM) is progressing. Special effort is being made to review the current GUM examples and to gather new examples from different fields. The examples would be published in a separate document which could be easily updated and extended without involving a revision of the main document. JCGM Working Group 1 (WG1) has published a paper about the GUM revision (*Metrologia*, 2012, **49**, 702). A first Committee Draft is expected to be ready for circulation in 2014.

JCGM Working Group 2 (WG2) decided at its meeting in June 2013 that developing a stand-alone vocabulary on nominal properties is not the best solution for the scientific and technological communities. A “consolidated” vocabulary (fourth edition of the International Vocabulary of Metrology - VIM) that contains ‘measurement’, as well as concepts such as ‘examination’, ‘identification’, ‘classification’ and ‘ordering’, as related to nominal and ordinal properties would be preferable, in order to present options to the user in a coherent manner. As a consequence, WG2 has prepared a “Proposed Modified JCGM WG2 Plan of Work” to be presented for discussion at the JCGM plenary session in December 2013.

17.2 JCTLM

Dr Wielgosz gave a report on the Joint Committee for Traceability in Laboratory Medicine (JCTLM). It was noted from the report that the annual running cost of the JCTLM Secretariat is 100 thousand Euros, 50 % of which is funded by the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC). The IFCC is not expected to be able to maintain this level of funding after 2015. The issue will be discussed in December 2013.

Dr Wielgosz further noted that the BIPM has been approached about the possibility of a donation of a quantitative nuclear magnetic resonance (qNMR) device worth up to 500 thousand Euros. The terms of the donation have yet to be discussed, but it is expected that the device and its installation will be offered free of charge. The advantages and disadvantages of qNMR compared to the mass balance approach as a primary reference method were presented. The benefits include the short measurement and analysis time and the small number of universal primary standards needed for calibration, and that it provides an orthogonal to the mass balance method as the measurement is on the main component rather than the impurities. Operating a qNMR instrument at the BIPM would be a good fit with the current programme and would allow work to be undertaken at the BIPM that is currently sub-contracted to a university. The benefits of having a qNMR facility at the BIPM were highlighted. It is estimated that it would cost 75 thousand Euros to modify a laboratory to house the equipment and annual running costs are predicted to be 40 thousand Euros. Operating the qNMR device would require a current post-doc position in the Chemistry Department to be made permanent.

There was a discussion on the BIPM policy on accepting support from third parties. It was noted that donation of a qNMR device to the BIPM from a company would have to be philanthropic. A draft document ‘*BIPM Policy on Soliciting and Accepting Support from Third Parties*’ was presented. The CIPM was asked to endorse the principles in the document, which will require further review. The document will then be used to assess the qNMR offer.

Decision CIPM/102-45 The CIPM accepted the principle that the BIPM should establish an NMR facility subject to the availability of support from a third party and asked the CIPM bureau to review the document ‘BIPM Policy on Soliciting and Accepting Support from Third Parties’.

18. UPDATE ON LIAISON WITH INTERNATIONAL ORGANIZATIONS

The Director of the International Liaison and Communication Department gave a brief report. It was noted that the International Laboratory Accreditation Cooperation (ILAC) will ballot its members to decide whether to press for a work item at ISO CASCO to review ISO 17025 ‘General requirements for the competence of testing and calibration laboratories’.

It was mentioned in §17.3 of the report on Session I of the 102nd meeting of the CIPM that the RMOs will take it in turn to propose designs for the World Metrology Day poster from 2014 onwards. It was noted that KRISS has offered to design the poster for 2014, the theme for which is energy. The BIPM and the OIML will retain editorial control over the poster.

19. DATE OF NEXT MEETING

It was agreed that the CIPM will bring forward Session I of the 103rd meeting to March 2014, with 10-11 March 2014 suggested as a possible date and that Session II will be held the week before the 25th CGPM (2014).

Decision CIPM/102-46 The CIPM decided to hold its next meeting in March 2014.

The dates of the following CC meetings were confirmed.

CCQM	4-11 April 2014
CCPR	18-19 September 2014
CCT	19-23 May 2014

20. ANY OTHER BUSINESS

Terminology

Dr Quinn gave a summary of his discussions with Ms Arlen on the terminology used to refer to the BIPM and the CGPM. The following text was developed by them jointly and clarifies the policy:

Name of the organization

The Metre Convention and its Annexed Regulations created an intergovernmental organization named the BIPM, with its seat at the Pavillon de Breteuil. The organs of the BIPM are: the CGPM, the CIPM and the scientific and administrative organ, referred to in practice as the BIPM. This practice is valid when no legal or institutional issue is at stake.

The CGPM and its meetings

In view of the applicable provisions and practice developed since the early days of the BIPM, there have been two ways of referring to the CGPM and its meetings: the expression *réunion(s)* [meetings] or *session(s)* [sessions] *de la Conférence* [of the Conference] and the form *N^{ième} Conférence* [Nth Conference] or Nth CGPM. These two uses can coexist as appropriate to allow sufficient flexibility both in terms of accuracy, when it is necessary to differentiate between the organ and its meetings, and in terms of practicality when this differentiation is not necessary.

The CIPM welcomed and noted this clarification.

21. CLOSURE OF THE MEETING

The President thanked Ms Fellag Ariouet and her team in the Director's Office for their hard work in organizing the meeting. He thanked the CIPM members for their contributions and closed Session II of the 102nd meeting.

Appendix 1

REPORT OF THE SECRETARY AND ACTIVITIES OF THE BUREAU OF THE CIPM

(June 2013 – October 2013)

1. Meetings of the bureau of the CIPM ('the bureau')

Since the last meeting of the CIPM on 19-21 June 2013, the bureau met on 20-21 October 2013 at the Pavillon de Breteuil.

The Secretary made additional visits to the BIPM headquarters on 1-2 October 2013 to attend the annual Quality Management System Review and the Occupational Health and Safety Management Review meetings and on 17-18 October 2013 to chair the CIPM Sub-Committee on the Pension Fund and Health Insurance.

During June-September 2013 the President and the Secretary of the CIPM, together with the Director spent a considerable amount of time finalizing the Settlement Agreement with the former BIPM Financial and Administrative Director, and discussing the reorganization of some of the staff functions at the BIPM.

During June-October 2013 several email and telephone consultations took place between members of the bureau and Chairpersons of the CIPM Sub-Committees as well as with individual members of the CIPM in preparation of the meeting of the CIPM on 22 and 25 October 2013, and the meeting of NMI Directors and Government Representatives to be held on 23-24 October 2013.

2. CIPM Membership

Dr Chung resigned as a member of the CIPM at the end of June 2013, leaving a vacancy on the CIPM. In addition to a short list of potential CIPM members that had already been discussed, the Secretary invited the members of the CIPM to submit further names and CVs of potential candidates for the CIPM, preferably before 30 September 2013. These have been communicated to the members of the CIPM for their consideration and assessment against the criteria for membership.

3. Member States of the BIPM (Member States) and Associates of the CGPM (Associates)

Since June 2013 no States have acceded to the Metre Convention, keeping the number of Member States at 55.

On 7 August 2013 Mongolia signed up as an Associate to the CGPM, taking the number of Associates to 38.

With reference to the Resolution 4 "On the status of Associate State of the General Conference", adopted by the 24th CGPM (2011), Associate States, already being an Associate for more than five years and having results of comparisons published in the key comparison database (KCDB), and having one or

more Calibration and Measurement Capabilities (CMCs) listed in the KCDB, are encouraged to become a State Party to the Metre Convention. Currently, the Former Yugoslav Republic of Macedonia and the Republic of Moldova comply with the above mentioned criteria. Thus, the CIPM is requested, on the basis of the criteria it has previously adopted, that these two Associate States should now be encouraged to become State Parties to the Metre Convention. Staying as an Associate, starting in 2015 they will have to pay a progressively and irreversible increased amount of subscription.

So far, almost none of the other 12 Associates for which it would be appropriate to become Member States have indicated their intention to do so in the near future. The BIPM will monitor whether these Associates are paying their increased contributions.

4. Member States and Associates in financial arrears for more than three years

Currently none of the Member States and Associates have arrears for more than three years. The timely payment of the dotation by those Member States with which a rescheduling agreement has been signed, will be carefully monitored by the BIPM.

The payment of the required dotation and contribution by the Member States and Associates follows the yearly pattern expected.

5. Outreach

The BIPM continues to liaise with a number of potential Member States and Associates. This outreach takes place via direct contacts as well as via support to and information through the Regional Metrology Organizations concerned.

6. Implementation of the recommendations made by the CIPM *ad hoc* Working Group on the role, mission, objectives, long-term financial stability, strategic direction and governance of the BIPM, created by the 24th CGPM (2011)

The BIPM staff have continued to spend considerable time implementing the recommendations made by the CIPM *ad hoc* Working Group on the role, mission, objectives, long-term financial stability, strategic direction and governance of the BIPM.

This has already resulted in more efficient and concise communications and publications.

7. CIPM Sub-Committees and CIPM *ad hoc* Working Groups

The CIPM Sub-Committees for Strategy, Finance and the Pension and Provident Fund and Health Insurance, and the *ad hoc* WGs on CIPM Membership and Conditions of Employment, have been active and will report their findings and achievements later in the agenda of this meeting.

8. CIPM Consultative Committee Strategic Plans

The BIPM has drafted a document entitled 'The BIPM consolidated planning process, incorporating the CC strategy exercise'. This includes a significant amount of input from the NMIs. The document will be presented and discussed by the CIPM and the meeting of NMI Directors and Government Representatives later this week.

9. Presidency of Consultative Committees

Prof. Mills has informed the President of the CIPM that he will resign as President of the CCU at the end of 2013. Therefore, the CIPM has asked for the names of potential candidates for the Presidency of the CCU.

The names and CVs of proposed candidates have been made available to the members of the CIPM and will be discussed later in this meeting of the CIPM.

10. The CIPM MRA

Since June 2013 no further NMIs signed up to the CIPM MRA, keeping the number of signatories to 92 institutes from 52 Member States, 36 Associates and 4 international organizations, and covering a further 146 institutes designated by the signatory bodies. However, it is expected that the CIPM MRA will be signed by the Chairman of the Mongolian Agency for Standardization and Metrology (MASM), Mongolia, during the meeting of NMI Directors and Government Representatives.

The JCRB met on 18-19 September 2013 at the NIM, Beijing, China. It was decided to reduce the number of JCRB meetings to one in 2014. A report on JCRB activities will be given to the CIPM later in the agenda.

11. Relations with other bodies

- 11.1 The BIPM, CIPM and the Consultative Committees continue and are still broadening their relations with other international organizations and bodies with an interest in metrology.
- 11.2 As there is a growing interest expressed by various laboratories to participate in comparisons, the BIPM is developing a guidance document defining the conditions under which 'guest laboratories' (who are not NMIs or DIs) may participate in comparisons carried out by the BIPM or under the aegis of a Consultative Committee.

12. BIPM administrative and staff matters

- 12.1 By the end of August 2013 a mutually agreed Settlement Agreement for termination of appointment had been signed between the BIPM and its Financial and Administrative Director. The Financial and Administrative Director will leave the BIPM on 1 December 2013. In the meantime the BIPM Director has implemented a number of organizational changes to make the activities carried out by the administrative and financial staff more efficient and effective.
- 12.2 Due to the continued absence of the Director of the Mass Department, Dr Stock, Director of the Electricity Department, has continued as Director *ad interim* of the Mass Department.
- 12.3 The BIPM has commissioned an additional actuarial study, which is based on the current situation at the BIPM with respect to the expected numbers of staff, life expectancy, retirement age, return on investment, etc. This includes a number of sensitivity studies. The report was presented to the CIPM Sub-Committee on the BIPM Pension and Provident Fund and Health Insurance on 18 October 2013. An additional report concerning the investment policy of the Pension and Provident Fund and Health Insurance assets will be delivered and discussed in November 2013, after which the CIPM will be requested to decide on the investment policy for the BIPM Pension and Provident Fund and the Health Insurance.
- 12.4 The BIPM will commission a comparison study with respect to conditions of employment with the International Service for Remunerations and Pensions (SIRP). The report of this study will be discussed by the CIPM *ad hoc* Working Group on Conditions of Employment.
- 12.5 The BIPM has prepared a new BIPM policy document on Soliciting and Accepting Support from Third Parties for consideration and decision by the CIPM.

13. BIPM's Quality and Health and Safety Systems

- 13.1 The BIPM Quality Management System (QMS) has been reviewed at the annual management review meeting on 2 October 2013. This meeting was attended by the CIPM Secretary. This was the first meeting chaired by the new Quality, Health and Safety Manager of the BIPM, Mr Maggi.

Reports of internal and external audits were presented and discussed. No serious non-compliances have been reported. Corrective actions have been carried out addressing all reported non-compliances and recommendations.

It has been reconfirmed that the QMS is in agreement with ISO/IEC 17025:2005 and ISO Guide 34:2009, and covers comparisons, calibration and value-assignment activities of the BIPM.

A template for auditors addressing all the relevant paragraphs in ISO/IEC 17025 and ISO Guide 34, and requesting a clear attestation with respect to the audit results and the coverage of the BIPM services by the quality system will be developed.

The fulfilment of external audits would be made more efficient by inviting external scientific peer reviewers at the same time as the quality management system auditors. This will avoid unnecessary duplication in reviewing the quality manual.

A presentation of the BIPM QMS to the EURAMET TC-Q is planned for 2014.

- 13.2 The BIPM Occupational Health and Safety Management System has been reviewed at the annual management review meeting on 2 October 2013. This meeting was also attended by the CIPM Secretary.

The new OH&S manual is now in place.

Audits have been carried out, including a fire audit and an asbestos audit. Special attention has been given to the risks and risk assessments of chemicals and radioactive sources at the BIPM. The location of small amounts of asbestos in the buildings is now well documented. It is all well sealed, and does not represent a health risk. With respect to ionizing radiation and radioactive sources, safety measures will be reviewed so that all staff sharing the RI building are fully familiar with them.

The roles of the Safety Officers and Safety Advisors will be confirmed by letter in each case.

No serious accidents took place over the reported period. Accidents happening when staff are travelling to or from the BIPM are covered by the Health Insurance, and are therefore counted as 'work accidents'.

14. Preparations for the 25th CGPM

In consultation with the French Ministry of Foreign Affairs, the BIPM has drawn up a list of possible locations in the Paris area, including Versailles, for the meetings of the 25th CGPM in November 2014.

The bureau has reviewed five draft Resolutions for discussion by the CIPM.

Appendix 2

Visite du dépôt des prototypes métriques

PROCES-VERBAL

Le 22 octobre 2013 à 17 heures 30 en présence du Président du Comité international des poids et mesures, du directeur du Bureau international des poids et mesures et du Conservateur général du Patrimoine qui représentait les Archives nationales, il a été procédé à la visite du dépôt des prototypes métriques internationaux du Pavillon de Breteuil.

On avait réuni les trois clefs qui ouvrent le dépôt : celle qui est confiée au directeur du Bureau international des poids et mesures, celle qui est déposée aux Archives nationales, à Paris et que Madame Claire Béchu, conservateur général du patrimoine, chargée de mission pour la diffusion scientifique et Monsieur Emmanuel Rousseau, conservateur en chef du patrimoine, directeur des fonds aux Archives nationales avaient apportée, celle enfin dont le Président du Comité international a la garde.

Les deux portes de fer du caveau ayant été ouvertes ainsi que le coffre-fort, on a constaté dans ce dernier la présence des prototypes et de leurs témoins.

On a relevé les indications suivantes à partir des données enregistrées par une centrale d'acquisition placée dans la salle 104 de l'Observatoire reliée à un capteur de température et d'humidité placé dans la salle du coffre-fort :

Température actuelle : 20 °C
Humidité relative actuelle : 51,8 %

Indications enregistrées du 18 octobre 2012 au 22 octobre 2013 :

Température maximale : 20,3 °C
Température minimale : 18,8 °C
Humidité relative maximale : 60 %
Humidité relative minimale : 44 %

On a alors refermé le coffre-fort ainsi que les portes du caveau.

Le Directeur
du BIPM



M. Milton

Le Conservateur général
du patrimoine



C. Béchu

Le Président
du CIPM



B. Inglis

LISTE DES SIGLES UTILISÉS DANS LE PRÉSENT VOLUME / ACRONYMS USED IN THE PRESENT VOLUME

AHWG	<i>ad hoc</i> Working Group on the role, mission, objectives, long-term financial stability, strategic direction and governance of the BIPM / Groupe de travail <i>ad hoc</i> sur le rôle, la mission, les objectifs, la stabilité financière à long terme, la direction stratégique et la gouvernance du BIPM
APLMF	Asia-Pacific Legal Metrology Forum
APMP	Asia Pacific Metrology Programme
BIPM	Bureau international des poids et mesures / International Bureau of Weights and Measures
CC	Comité consultatif du CIPM / Consultative Committee of the CIPM
CCAUV	Comité consultatif de l'acoustique, des ultrasons et des vibrations / Consultative Committee for Acoustics, Ultrasound and Vibration
CCEM	Comité consultatif d'électricité et magnétisme / Consultative Committee for Electricity and Magnetism
CCL	Comité consultatif de longueurs / Consultative Committee for Length
CCM	Comité consultatif pour la masse et les grandeurs apparentées / Consultative Committee for Mass and Related Quantities
CCPR	Comité consultatif de photométrie et radiométrie / Consultative Committee for Photometry and Radiometry
CCQM	Comité consultatif pour la quantité de matière / Consultative Committee for Amount of Substance
CCRI	Comité consultatif de rayonnements ionisants / Consultative Committee for Ionizing Radiation
CCT	Comité consultatif de thermométrie / Consultative Committee for Thermometry
CCTF	Comité consultatif du temps et des fréquences / Consultative Committee for Time and Frequency
CCU	Comité consultatif des unités / Consultative Committee for Units
CEI	Commission électrotechnique internationale
CENAM	<i>Centro Nacional de Metrología</i> (Mexique / Mexico)
CGPM	Conférence générale des poids et mesures / General Conference on Weights and Measures
CIE	Commission internationale de l'éclairage / International Commission on Illumination
CIPM	Comité international des poids et mesures / International Committee for Weights and Measures
CIPM MRA	CIPM Mutual Recognition Arrangement / Arrangement de reconnaissance mutuelle du CIPM
CMC	Calibration and Measurement Capability / Aptitude en matière de mesures et d'étalonnages
CODATA	Committee on Data for Science and Technology

DCMAS	Network on Metrology, Accreditation and Standardization for Developing Countries / Réseau pour la coordination de l'assistance aux pays en voie de développement dans les domaines de la métrologie, de l'accréditation et de la normalisation
DI	Designated institute
ENEA-INMRI	<i>Istituto Nazionale di Metrologia delle Radiazioni Ionizzanti</i> (Italie / Italy)
EURAMET	European Association of National Metrology Institutes
GULFMET	Gulf Association for Metrology
GUM	Guide pour l'expression de l'incertitude de mesure / Guide to the Expression of Uncertainty in Measurement
HSA	Health Sciences Authority (Singapour / Singapore)
IEC	International Electrotechnical Commission
IFCC	International Federation of Clinical Chemistry and Laboratory Medicine / Fédération internationale de chimie clinique et médecine de laboratoire
ILAC	International Laboratory Accreditation Cooperation
INM	<i>Instituto Nacional de Metrología de Colombia</i> (Colombie / Colombia)
INMETRO	<i>Instituto Nacional de Metrologia, Qualidade e Tecnologia</i> (Brésil / Brazil)
INRIM	<i>Istituto Nazionale di Ricerca Metrologica</i> (Italie / Italy)
INTI	<i>Instituto Nacional de Tecnología Industrial</i> (Argentine / Argentina)
IOMP	International Organization for Medical Physics
IOPP	Institute of Physics Publishing
IPK	International prototype of the kilogram
IPSAS	International Public Sector Accounting Standards
ISO	Organisation internationale de normalisation / International Organization for Standardization
ISO CASCO	ISO Committee on Conformity Assessment / Comité pour l'évaluation de la conformité de l'ISO
ITU	International Telecommunication Union
JCGM	Joint Committee for Guides in Metrology / Comité commun pour les guides en métrologie
JCRB	Joint Committee of the Regional Metrology Organizations and the BIPM / Comité mixte des organisations régionales de métrologie et du BIPM
JCTLM	Joint Committee for Traceability in Laboratory Medicine / Comité commun pour la traçabilité en médecine de laboratoire
JILA	Joint physicist institute of the University of Colorado and the NIST (États-Unis d'Amérique / United States Of America)
KCDB	BIPM Key Comparison Database / Base de données du BIPM sur les comparaisons clés
KCRV	Key Comparison Reference Value
KRISS	Korea Research Institute for Standards and Science
LANEMA	Laboratoire national d'essais, de qualité de métrologie et d'analyses (Côte d'ivoire / Ivory Coast)
LNE	Laboratoire national de métrologie et d'essais (France)

LNE-SYRTE	Laboratoire national de métrologie et d'essais – Système de Références Temps-Espace (France)
MASM	Mongolian Agency for Standardization and Metrology (Mongolie / Mongolia)
METAS	Institut fédéral de métrologie / Federal Institute of Metrology (Suisse / Switzerland)
MIKES	<i>Mittatekniikan keskus Mätteknikcentralen</i> , Centre for Metrology and Accreditation (Finlande / Finland)
MoU	Memorandum of Understanding
NEWRAD	Conference on New Developments and Applications in Optical Radiometry
NIM	National Institute of Metrology (Chine / China)
NIST	National Institute of Standards and Technology (États-Unis d'Amérique / United States of America)
NMI	National Metrology Institute
NMIA	National Measurement Institute, Australia (Australie / Australia)
NMISA	National Metrology Institute of South Africa (Afrique du sud / South Africa)
NMIJ	National Metrology Institute of Japan (Japon / Japan)
NMIJ/AIST	National Metrology Institute of Japan, National Institute of Advanced Industrial Science and Technology (Japon / Japan)
NMR	Nuclear Magnetic Resonance
NPL	National Physical Laboratory (Royaume-Uni de Grande-Bretagne et d'Irlande du Nord / UK)
NSI	Namibian Standards Institution (Namibie / Namibia)
OCDE	Organisation de coopération et de développement économiques
OH&S	Occupational Health and Safety
OIML	Organisation internationale de métrologie légale / International Organization for Legal Metrology
OMC	Organisation mondiale du commerce
PTB	<i>Physikalisch-Technische Bundesanstalt</i> (Allemagne / Germany)
QMS	Quality Management System
qNMR	Quantitative nuclear magnetic resonance
RMO	Regional Metrology Organization
RRI	BIPM Regulations, Rules and Instructions
SI	Système international d'unités / International System of Units
SIRP	Service international des rémunérations et des pensions / International Service for Remunerations and Pensions
SRI	Statut, Règlement et Instructions applicables aux membres du personnel du BIPM
UIT	Union internationale des télécommunications
UME	National Metrology Institute / <i>TÜBİTAK Ulusal Metroloji Enstitüsü</i> (Turquie / Turkey)
UTC	Temps universel coordonné / Coordinated Universal Time
UTCr	UTC rapide / rapid UTC
VAMAS	Versailles Project on Advanced Materials and Standards

VIM	Vocabulaire international de métrologie – Concepts fondamentaux et généraux et termes associés (3 ^e édition) / International Vocabulary of Metrology, Basic and General Concepts and Associated Terms (3rd edition)
VIN	Vocabulaire international pour les propriétés qualitatives / International Vocabulary for Nominal Properties
WGs	Working Groups
WGG	CCM Working Group on Gravimetry
WGH	CCM Working Group on Hardness
WTO	World Trade Organization
XRCD	X-ray crystal density