Report of the 49th meeting of the JCRB

Held on 23/24 September 2025, at UzNIM (Tashkent, Uzbekistan)

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Participants

BIPM / CIPM

Dr Martin Milton, Chair
Mr Hans Arne Frøystein, CIPM representative to the JCRB
Dr Annette Koo
Mr Chingis Kuanbayev
Dr Anna Cypionka (online for day 2)
Dr Kazuaki Yamazawa, JCRB Executive Secretary

AFRIMETS

Ms Lerato Ntatamala
Dr Henry Rotich (online)
Prof Dr Noha Emad Khaled (online)
Ms Soumaya Chaieb (online)
Mr Abdellah Ziti (online)
Mrs Penny Manganyi (online observer)

APMP

Dr Hyun-Min Park
Dr Sam Yong Woo
Ms Tae-Yi Hong
Dr Chunhui Li
Ms Rugkanawan Wongpithayadisai

COOMET

Mr Nikita Zviagin
Mr Lazizbek Saidoripov
Dr Azer Gurbanov
Mr Evgeny Lazarenko (online)
Mr Marat Yunusov

EURAMET

Dr Dolores del Campo (online)
Mr Robert Gunn
Dr Jaroslav Mucha
Mr Ömer Altan

GULFMET

Dr Ismail A. AlFaleh
Eng Abdulelah Alqarnas
Mr Jon Bartholomew
Ms Asma Al Hosani
Mr Sami Bin Jurbua

SIM

Mr Javier A. Arias Real
Mr Lucas Di Lillo
Mr Arquímedes Ruíz
Ms Sally Bruce (online)
Dr Rodolfo Souza (online)

The 49th meeting of the JCRB was conducted at the Uzbek National Institute of Metrology (UzNIM) in a hybrid format over two days, between 9:15 and 16:15 (UTC+5) on day one and 9:00 and 13:20 (UTC+5) on day two. The items were addressed in the order indicated on the adopted Agenda except for the two reports presented by Dr Anna Cypionka who participated online.

1. Welcome by the Chair and confirmation of delegations' representatives with voting rights

The JCRB Chair, Dr Martin Milton, opened the meeting by introducing himself and welcoming all to the 49th meeting of the JCRB including those participating online.

He invited Mr Akmal Jumanazarov, Minister of Uzbek Agency for Technical Regulation under the Cabinet of Ministers to give some opening remarks. Mr Akmal Jumanazarov expressed his welcome to the participants and gave a presentation introducing the recent developments for activities related to metrology of Uzbekistan.

Then, Dr Martin Milton asked the rest of the participants to introduce themselves.

2. Approval of the agenda

The JCRB Chair read through the agenda (document **JCRB/49-D1_2-a**) which was unanimously approved by the delegates.

3. Approval of the minutes of the 48th meeting of the JCRB and review of actions

The JCRB Chair recalled that the draft minutes of the 48th meeting of the JCRB (document **JCRB/49-D1_3-a**) had been circulated after the meeting. Since no further comments were raised during the 49th meeting of the JCRB, the minutes were approved.

[The report of the 48th JCRB meeting is available on the unrestricted BIPM website **https://www.bipm.org/en/committees/jc/jcrb** *]*

The Chair went on to review the actions of the 48th meeting:

Action JCRB/48-1

The JCRB noted the request from EURAMET to provide open access to information about the confirmation of CMCs including the technical evidence used and the dates of confirmation in the KCDB. The JCRB requested EURAMET to develop a detailed proposal including an outline timetable for implementation for consideration at the 49th JCRB.

As approved, this action item is to be discussed in an agenda item on day 2.

Action JCRB/48-2

The JCRB Executive Secretary was requested to send a list of comparisons older than 5 years to the CCs and RMOs that are overseeing them. The JCRB requests the CCs and RMOs to review the status of each of their comparisons in this category and to report to the 49th meeting of the JCRB on the cause of the delays and the actions they will take to address the delays.

This action item is to be discussed in an agenda item on day 2.

Action JCRB/48-3

The JCRB noted two forms developed by the JCRB Executive Secretary. The JCRB requests RMOs:

- to encourage CMC Writers to make use of the CMC checklist before submitting CMC claims for Intra-Regional review.
- to use the revised form for the nomination of Designated Institutes.

This action item is confirmed as completed.

Resolution JCRB/48-1

The JCRB approved the inclusion of a note at the end of section 5.2 of document CIPM MRA-G-13 addressing the automatic 3-week extension when RMO TC/WG Chairs do not declare interest on the KCDB web platform and/or relinquish their right to review a CMC.

This action item is confirmed as completed.

Resolution JCRB/48-2

The JCRB welcomed the invitation from the COOMET region to hold the 49th meeting in week 39 (beginning 22nd September) of 2025 in Tashkent, Uzbekistan.

This action item is confirmed as completed.

With the above confirmation, the JCRB approved the minutes with the following resolution.

Resolution JCRB/49-1 (2025)

The JCRB approved the minutes of the 48th meeting of the JCRB as a true record.

4. Comments on the BIPM progress since the 48th meeting of the JCRB

Dr Martin Milton presented the BIPM report, uploaded as document **JCRB/49-D1_4-a.** He shared the status of Member States and Associates, indicating that Cuba was reinstated as an Associate in October 2024. The CIPM MRA has been signed by 64 Member States, 37 Associates of the CGPM and 4 international organizations. He also noted that 109 of the 193 states listed by the UN participate in the BIPM's activities, covering around 98 % of the world's GDP according to 2023 IMF data.

Dr Martin Milton continued by noting the recent appointment of Dr Annette Koo as the Director Designate of the BIPM and the change of the JCRB Executive Secretary to Dr Kazuaki Yamazawa. Outlines of recent achievements with the liaisons (UNESCO, OECD, IPCC UNFCCC, WTO, UNIDO and CIE) as well as the BIPM Strategy documents were introduced. He recalled the 150th Anniversary events that were held in May as well as introduced the resources that are made available on YouTube, BIPM website and Linkedin.

On the universal adherence to the Metre Convention, he highlighted the challenges of engaging with the 84 UN Member States that do not currently participate. He indicated that 13 of these states have a UN coefficient > 0.02 % and would benefit from participation as Associate or Member States. He explained that the proposal to create a new status of "Observer" represented a way to engage with the remaining 71 UN states with UN coefficient < 0.02 %.

Short updates on the JCGM's preparation of the fourth edition of VIM, transition of Metrologia to open access and projects related to the JCTLM were provided. It was reminded that the 28th meeting of the CGPM will be held during the week beginning 12 October 2026. Furthermore, he recalled that APMP will be responsible for the next World Metrology Day poster.

Reacting to the BIPM's report, Mr Nikita Zviagin questioned the findability of the comparison reports after the transition from Metrologia. Dr Martin Milton explained that on the new website,

each report will have a DOI assigned and further details upon this transition are to be reported on an agenda item planned for day 2. Mr Jon Bartholomew questioned on the proposed "Observer" status and Dr Martin Milton explained that "Observers" will have the opportunity to become Associates or as Member States and such transition would be encouraged if it would benefit them.

5. Comments on the report from the CIPM

Mr Hans Arne Frøystein, who was newly appointed as the liaison from CIPM, presented the report from the CIPM, which is uploaded as document **JCRB/49-D1_5-a**. He reported that the CIPM had met three times since the 48th meeting of the JCRB. The upcoming 114th meeting (Session III) would be held from 13th to 15th October 2025. Furthermore, he introduced the following topics with reference to the associated CIPM decisions; Appointment of BIPM Director (Decision CIPM/114-05), Membership (Decision CIPM/113-30, Decision CIPM/114-05), Quantum Technologies (Decision CIPM/114-13), Metrologia (Decision CIPM/113-29), BIPM Pension Fund (Decision CIPM/114-03), Appointments (Decision CIPM/114-04, Decision CIPM/114-08), Governance (Decision CIPM/114-02), Suspension of Member States (Decision CIPM/114-07) and 150th anniversary celebrations (Decision CIPM/114-14).

In response to a question from Ms Lerato Ntatamala, Dr Milton explained that suspension of Member States occurs after three years of not paying its contribution. He also remarked that the implementation under the CIPM MRA will be discussed on another agenda item planned for day 2.

6. Comments on the RMO reports to the JCRB

The RMO presentations in the agenda were made in the alphabetical order as reported below.

6.1. AFRIMETS (uploaded as JCRB/49-D1_6.1-a, -b and -c)

Ms Lerato Ntatamala presented the AFRIMETS report with the presentation uploaded as document **JCRB/49-D1_6.1-c**. Further detailed information is found in the general report and quality system written reports uploaded as **JCRB/49-D1_6.1-a** and **-b**, respectively.

She presented the membership status of AFRIMETS, with members either through their sub-regional metrology organizations or directly as ordinary members. AFRIMETS has 48 full members, 8 associates and 5 observers. Five are Member States while 8 are Associates of the CGPM. She also presented the status of membership to the OIML and showed the development by comparison of 2007 and 2025.

Recent changes of the Head of AFRIMETS Secretariat and the TC Chairs at the 18th General Assembly held in Ghana at the end of July 2025 were introduced. Activities related to the CIPM MRA were discussed: TC Workshops and meeting of technical experts in conjunction with the General Assembly, approval of Quality Management Systems for all countries, and international acceptance of ISO/IEC 17025, ISO/IEC 17043 and ISO 17034. She concluded her presentation with their future plans including their activities to further engage the 34 AFRIMETS Members that are yet to participate in the CIPM MRA, making AFRIMETS a legal entity and their interest in supporting metrology for medical devices.

Dr Martin Milton confirmed that 34 AFRIMETS Members are yet to participate in the CIPM MRA. Ms Rugkanawan Wongpithayadisai and Dr Jaroslav Mucha questioned the reason for the recognition of ISO/IEC 17043 that is not necessarily covered by the CIPM MRA. Ms Lerato Ntatamala answered that the institutes that claim capabilities under ISO/IEC 17043 are a minority, and that AFRIMETS will check whether ISO/IEC 17043 is covered or not. Dr Martin Milton

commented that ISO/IEC 17043 is very interesting, however the number of institutes still small; and he assumes that ISO/IEC 17043 is giving an added value for the AFRIMETS activity.

6.2. APMP (uploaded as JCRB/49-6.2-a to -h)

First, Dr Hyun-Min Park presented the General Report using document **JCRB/49-D1_6.2-g**.

He started with an overview of the current APMP, such as the membership with 46 member institutes from 26 economies and 10 associate member institutes, the organizational structure, Executive Committee members, changes in Committee Chairs, overview of CMCs and Comparisons in the KCDB and the Developing Economies Committee. He outlined the 2024 GA, the 2025 Mid-year meetings, some of their workshops and focus groups, the renewal of the APMP-APAC MoU, and the development of a course on "Hybrid Comparison" published on the BIPM e-learning Platform. The next General Assembly and related activities will be held during the period from 21 to 28 November 2025.

Dr Martin Milton remarked on the collaboration with APMP to develop the e-learning content for the topic "Hybrid comparisons" now available on the BIPM website. He emphasized that such e-learning can promote some of the processes in the JCRB and promote the benefits of the activities.

The APMP quality system report was presented by Ms Rugkanawan Wongpithayadisai using document **JCRB/49-D1_6.2-h**. The APMP TCQS has 46 delegates from 20 economies. Two WGs are placed under the TCQS; WG1 for Policy setting and documentation now having 11 members with 2 members newly appointed in April 2025, and WG2 for QS review team with 17 members with 3 of them newly appointed in April 2025. She emphasized the importance of having the new members trained for the consistent application of the process. Mr Kangyoung Sung was elected as the next APMP TCQS Chair.

She outlined three review processes: For "new entry", for "on-going monitoring", and for "5-year reapproval of existing entries". 31 review jobs were conducted during the period December 2024 until September 2025, further anticipating that about 35 jobs would be completed during the year of APMP's term. She further detailed the QMS review, which is deeply linked with the RMO's CMC review process, as well as the monitoring of the QS being done during their annual meetings. TCQS is planning to have two revised documents approved at the coming GA in November, which are RMO procedures relevant to CIPM MRA-G-11 and G-13.

Coordination is further deepened through international activities including the TCQS Hybrid Workshop 2024 and online participation in the 20th EURAMET TC-Q Meeting. Ms Rugkanawan Wongpithayadisai has also been invited as the reviewer for the review the BIPM quality system planned later this year.

She followed up on the issue reported at the previous JCRB meetings regarding 2 NMIs lacking record of the 5-year quality system confirmation. One of them has completed several peer reviews and under the reinstatement process for some of their greyed-out CMCs.

Dr Martin Milton recalled that the review of the BIPM Quality System is done on a rotating basis, Starting from APMP, then EURAMET, SIM and back to APMP. He added thanks for Ms Rugkanawan Wongpithayadisai's willingness to review the BIPM quality system this year. He also looks forward to working with Mr Kangyoung Sung as the next APMP TCQS Chair.

6.3. COOMET (uploaded as JCRB/49-D1_6.3-a, -b and -c)

Mr Nikita Zviagin presented the joint general information and quality system reports for COOMET using document **JCRB/49-D1_6.3-c**. He started by sharing the key milestones of the COOMET.

COOMET has 17 countries with two countries under preliminary consultations to join. Uzbekistan is in preparation to accede to the Metre Convention.

The organizational structure of COOMET was introduced with all the contact information of the committee members and chairs except for TG-CEEMS being currently open. COOMET is in collaboration with the BIPM to produce e-learning materials on 4 topics to be published on the BIPM e-learning platform.

Regarding the certification of the Quality management System (QS), a table of the scopes recognized with their expiry dates was presented. Two (AzMI and UzNIM) are valid until 2028, with several other institutes being valid until 2026. For those institutes expiring in 2026, a renewal project is already underway. COOMET is aware that the QS confirmation for the NMI/DIs of Cuba are expired and deemed to be unrecognized.

For the statistics on the KCDB, COOMET has 2281 CMCs in total, including 608 CMCs in QM and 382 EM, and the balance among the metrology areas is much the same as the entire KCDB. The distribution of the CMCs among the countries as well as the number of participations for comparisons for each metrology area was also shown. He concluded his presentation by referring to the 150th celebration where delegations from COOMET had delightfully participated, identifying locations for resources published by COOMET, giving an invitation to the roundtable event planned on 25 September aimed for emerging countries and highlighting the letter circulated from COOMET on sharing information on planned comparisons among the RMOs that COOMET would like to discuss further.

Dr Martin Milton welcomed the COOMET's activities in approaching two countries to join. Ms Rugkanawan Wongpithayadisai questioned COOMET's plans to reduce the number of CMC entries by using range or matrix for the scopes. Mr Nikita Zviagin replied that such changes for CMCs in electricity and magnetism have already been implemented, currently the work on modification and joining of CMC lines is going on in the field of Chemistry and Biology. For the last three years the significant number of COOMET CMCs in QM was revised and the number was reduced. Dr Martin Milton followed up with a comment that the situation may evolve by future improvements in machine readability of the data on the KCDB. Mr Javier Arias offered SIM's possible support on resolving the confirmation of the QS for Cuba. Mr Nikita Zviagin thanked him for the offer. Dr. Noha Khaled pointed out that 113 of CUBA's CMCs should be affected and asked what action COOMET would take. Mr Nikita Zviagin responded that COOMET is planning to conduct the QS confirmation in 2026.

6.4. EURAMET (uploaded as JCRB/49-D1_6.4-a to -f)

The EURAMET's joint general report was presented by Mr Ömer Altan using document **JCRB/49-D1_6.4-e**.

He started by sharing an update on the status of EURAMET membership. EURAMET is composed of 39 member NMIs that includes Ukraine as corresponding applicant, 82 Associate DIs and 13 liaison organizations. The latest entrants were four Ukrainian DIs in November 2024 and two new institutes from Slovenia with another from Czechia that were approved at the GA in 2025. EURAMET has created a new category of "Associate NMIs" for members of other RMOs, and the first Associate NMI is UzNIM (Uzbekistan).

He reported that the 19th GA was held in June at the PTB in Germany. Workshops aimed to help institutes communicate with their Ministry, and celebration of the 150th anniversary of the Metre Convention were held in conjunction to the GA. Dr Annette Röttger began her term for the vice-chair responsible for membership affairs. He also introduced the new board members as well the

new technical committee chairs. He then highlighted the 9 KCs and the 8 SCs registered by EURAMET since the last JCRB meeting. This was followed with a highlight on the published CMCs during the period. EURAMET is emphatically focusing on the comparisons older than 5 years. Having identified causes of the delays, TCs are considering measures to improve comparison processes, such as creating standardised report templates, achieving agreement on data treatment before beginning comparisons and co-piloting arrangements. EURAMET has reduced the number from 17 at the beginning of the year to 11 and further setting the aim to 10 for the end of this year as a KPI.

Mr Ömer Altan explained that EURAMET continues to be guided by several strategic objectives, and these include engaging stakeholders. He further introduced European Metrology Networks, the European Partnership on Metrology (EPM) in which research projects are open to participation from outside the region, publication of the white paper on "Future of Metrology in Europe", the digitalization projects run by TC-IM WG M4D, and capacity building activities including those funded by the Capacity Building Coordination (CaBuCo) project as well as their contribution to the BIPM CBKT where 7 e-learning courses from EURAMET are available and 5 more in development. He also introduced the EURAMET publications such as the EURAMET Calibration and Technical Guides and the full revision of the publication "Metrology in Short".

Dr Martin Milton welcomed EURAMET's activity to address comparisons older than 5 years, specifically their cataloguing the status and furthermore setting a KPI on their reduction. GULFMET questioned the possibility of participating in research projects funded by the EPM. Mr Ömer Altan answered that non-EU institutes are frequently eligible to directly participate as either unfunded or funded participants; however, RMOs as organisations are generally not. He suggested checking eligibility conditions for participation on the EPM website.

Then Dr Jaroslav Mucha provided the report from TC-Q with document **JCRB/49-D1_6.4-f**. He first provided a summary of the structure and operational procedures of the TC-Q, also available on their website. Procedures for "Initial reviews" and "Re-evaluation" were then shown with flow charts.

He reported the activities undertaken during the regular TC-Q meeting held in Oslo in March and then an extraordinary meeting held online in May. At the 20th TC-Q Meeting there was 1 initial QMS presentation and 24 QMS re-evaluation presentations. The Steering Committee reviewed 109 Annual Reports from 36 countries and one European Organisation, including those institutes whose QMS were re-evaluated at the meeting. 39 NMIs/DIs were given full confidence, 67 NMIs/DIs were asked for minor additional information, 3 NMI/DI were asked for major complementary information. All pending actions were closed by 20 August 2025. At the extraordinary meeting, initial reviews for applications from Kosovo and Ukraine were conducted. (The EURAMET Secretariat states the designation Kosovo is without prejudice to positions on status and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo declaration of independence.) As an outcome of these two meetings, confidence was given to all except for 2 institutes.

The 21st TC-Q Annual Meeting is to be hosted by FTMC in Lithuania on 25-27 March 2026 and representatives from other RMOs will be invited to observe. TC-Q decided that an update of the annual report template and the annual report guideline should be performed, since the number of NMIs/DIs to review is increasing and most of the time of the TC-Q meeting is devoted to the reviews. TC-Q agreed to streamline the oral re-evaluation presentation process, whilst initial reviews will remain as they are. Finally, he introduced that an EURAMET Training course on review of quality management systems will be held in INTA, Torrejón de Ardoz, Spain on 11-13 November 2025.

Dr Martin Milton questioned whether "application of AI for peer reviews" would be involved as a topic for the planned training course on review of quality management systems. Dr Jaroslav Mucha replied that it would of course be possible to include such topic, however the limitation of the premises would unfortunately give restriction to the number of participants to the training course.

6.5. GULFMET (uploaded as JCRB/49-D1_6.5-a to -f)

The GULFMET's general report was presented by Dr Ismail A. AlFaleh using document **JCRB/49-D1_6.5-f**. GULFMET started with members Saudi Arabia, Kuwait and Bahrain, then Qatar, United Arab Emirates, and after that, Oman and Yemen. Associate members from other regions, Turkey, Iraq, Bosnia, Korea and Hong Kong. Technical committees now cover most metrology areas. Technical committees for mass, electricity and magnetism and quality are especially active. GULFMET is also starting a working group for research and development.

The vision, mission and goals for the GULFMET's strategy pending approval by the GCC committee was explained. The proposed goals are "Recognize the calibration and measurement capabilities of the Member States", "Enhance the technical capacities of GULFMET TCs and WGs", "Support research and studies in the field of metrology", and "Develop partnerships with Gulf, Regional, and International organizations in the field of metrology."

GULFMET is developing partnerships with international organizations in the field of metrology, including OIML-CS, RLMO meeting, 15th meeting of Metrology Council MC of SMIIC (for Islamic countries), IMEKO – General Council Sessions and observing other RMO TCQs, specifically EURAMET and COOMET.

GULFMET now has 108 CMCs and has participated in 7 KCs and 32 SCs for comparisons. GULFMET is aiming to contribute by piloting comparisons by themselves in the future.

GULFMET is initiating a project to measure gravity in each country based on the recognition of capabilities for Saudi Arabia. Furthermore, there are three projects conducted under GULFMET funding, such as a program for torque. A list of recent programs for capacity building was also presented.

Ms Asma Al Hosani presented the QS report using document **JCRB/49-D1_6.5-e**. For the 26th meeting of the TCQS held online, 14 participants including Uzbekistan as a guest attended. The meeting was a valuable opportunity to exchange updates, review reports and set a direction for the next period.

GULFMET conducted their second cycle to train their lead assessors for peer reviews with inviting Dr Enver Sadikoglu. The outcome for this cycle is six qualified and certified peer reviewers. Ms Asma Al Hosani participated in the EURAMET TC-Q meeting.

At the GULFMET TC QS 26th Meeting, QMS Annual report of PAI (Kuwait) was accepted, the consideration of the QMS of BSMD was postponed to the next meeting, and the GULFMET TCQS issued a declaration for CMC coverage by QMS for NMCC-SASO. GULFMET TC-QS is also translating the EUROLAB "Cook Book" documents as well as establishing their platform.

Ms Asma Al Hosani concluded her presentation with showing the table for the status of member institutes' quality management systems and their approvals by GULFMET.

6.6. SIM (uploaded as JCRB/49-D1_6.6-a to -d)

Mr Lucas Di Lillo presented the general SIM report using document **JCRB/49-D1_6.6-a**.

He indicated that there were 33 active Members, 16 Associates and 4 Affiliate Members. For the 33 NMIs, 10 are Member States and 6 are Associates to the Metre Convention.

During the last GA, Mr Arquímedes Ruiz Orozco (CENAM – Mexico) was elected as Deputy President & New President 2026 – 2028. The Steering Council is composed by the President, Mr Javier Arias, the Deputy President Mr Arquímedes Ruiz Orozco, Mr Lucas Di Lillo as TC Chair, Ms Sally Bruce as the QSTF Chair alongside others. Ms Sally Bruce is planned to leave at the end of December 2025.

SIM has new CMCs; most of them are in chemical and biology, also one in time and frequency, 8 in length, and 8 in electricity. A table showing the status of comparisons for each metrological area was presented, with two further for thermometry being waiting for approval. Projects and activities for each metrological area were listed featuring the BIPM-SIM UTC Summer School with 34 participants, the SIM School 2024 with 47 students and 17 teachers which included 20 participants authoring selected monographies and being funded to visit other institutes in the region for two weeks, the SURAMET Project on Biogas-Biomethane and an activity to send selected presenters to the NCSLI.

The next General Assembly will be held during October in Canada.

Dr Martin Milton questioned whether the training activities be available for other RMOs. Mr Lucas Di Lillo answered that it is possible where the funding is appropriate and remarked that some of the lectures are video recorded for future availability and that most of the training is conducted in English.

Dr Sally Bruce presented the QSTF report using document **JCRB/49-D1_6.6-d** covering the period from July 1 to June 30th. Membership to the QSTF is comprised of one voting delegate from each SIM member NMI, which is also a signatory to the CIPM MRA. Each delegate represents their NMI, as well as any designated institute associated. QSTF is also involved in reviewing quality systems for international organizations that are signatories, such as IAEA where a 5-year review is anticipated in 2026. QSTF is responsible for reviewing and approving the quality management system of any SIM member or associate upon request, even the non-signatories of the MRA, with criteria of ISO/IEC 17025, ISO 17034 and additionally ISO/IEC 17043 for those tasked for conducting proficiency testing or measurement assurance programs for legal metrology by their government entities.

QSTF meetings are open to all SIM members. For the review, documents are assumed as confidential and provided to the delegates for the review 4 weeks in advance for 5-year reconfirmation and 6 weeks for initial reviews. Two of the review procedures have been recently revised. For ISO/IEC 17043 that has recently been revised, QSTF has set a transition period and conducted a training session with over 100 participants.

The QSTF held two meetings with the SIM Technical Committee, sharing information on the workload of the reviews where some abnormality for the cycle occurred due to the COVID 3 years ago.

QSTF has collected annual reports and quality management reports from 36 institutes within SIM using a template. 11 of those provided detailed information about major changes within specific metrology areas. Last year at the SIM General Assembly Week, the QSTF met for 2 days and reviewed 32 quality management systems over that time, resulting with all of them approved. And then in May of this year, when the meeting was held in Bogota, Colombia, 8 were approved. Most of them are the 5-year re-approvals, and about 20 % are first-time reviews.

Dr Sally Bruce concluded her presentation with thanking her colleagues within SIM for their tireless activities as well as declaring that her term will conclude in December 2025.

Ms Rugkanawan Wongpithayadisai, also recalling that she will also be outgoing soon, questioned whether there had been difficulties in collecting documents from the institutes 4 to 6 weeks in advance to the QSTF meetings for their review. Ms Sally Bruce replied that they have tolerated minor updates, and the activities have moved smoothly for the past years. Mr Javier Arias further commended Ms Sally Bruce's contribution. Dr Martin Milton commented that it is a significant change when two quality chairs move on at the same time, however, he is also sure that resources of the RMOs are deep enough that the JCRB has new people coming along who will be able to conduct these activities.

7. Comments on the Summary of BIPM QMS Review report

Dr Martin Milton presented the Summary of BIPM QMS Review focusing on the activities of 2024, uploaded as document **JCRB/49-D1_7-a**. The QMS has integrated risk management inspired by ISO 31000 with 5 general documents updated. During 2024, 4 internal audits with a focus on clause 6.2 of ISO/IEC 17025 (resulting in one minor nonconformity) and an external audit on Physical Metrology – Mass (resulting in two minor nonconformities) were conducted. For the customer feedback, besides the regular customer satisfaction survey, another survey for BIPM UTC customers and a survey on the KCDB have been conducted. The number of calibrations has decreased; however, this could be attributed to the effect of COVID pandemic that later caused a peak of calibration work appearing in 2023. The number of scientists visiting is increasing. The plans for 2025 were also presented.

Mr Jon Bartholomew questioned whether the number of calibrations would continue increasing in the future, considering that the services that BIPM provides are more aimed for smaller NMIs. Dr Martin Milton answered that the number may increase for calibration of mass and voltage standards with a remark that even larger NMIs are also customers for mass standards, and for chemistry, calibration is more associated with key comparisons that would result in a workload with a 4-years cycle. Ms Lerato Ntatamala questioned about whether BIPM experienced customers not responding during their customer satisfaction survey, sharing her experience using direct phone calls or even face-to-face meetings as a method. Dr Martin Milton explained the collection method utilizing electronic means. Ms Rugkanawan Wongpithayadisai questioned the reason why the KCDB had a lower customer satisfaction score of 4.2 which is surprisingly lower compared to other customer surveys reported. Mr Chingis Kuanbayev answered that despite it being a satisfaction survey, some responses turned out to be minor questions on the KCDB operation. Mr Javier Arias questioned how the BIPM is managing the increase/decrease in number of services. Dr Martin Milton answered the number of services is increasing in chemistry; however, it is still manageable due to the workload dynamics consisting of a baseline of continuous comparisons such as ozone and carbon dioxide and others being conducted with a 4 or 8-year cycle.

8. Comments on the KCDB report

Dr Kazuaki Yamazawa presented the KCDB report on behalf of the BIPM KCDB office using document **JCRB/49-D2_1-c**. A written report is uploaded as document **JCRB/49-D2_1-a** where more details could be found. There are 26 453 CMCs published in the KCDB on 1 September 2025 of which 19 854 are in Physics and 6 599 in Chemistry and Biology. The total number of published CMCs increased by 2 % across the domains, continuing a steady trend over the last ten years. 1982 comparisons have been published where SCs now constitute 38 % of all registered comparisons. 45 comparisons were newly registered during the past year. As of 1 September 2025, there were 703 greyed out CMCs, with a large number attributable to the field of Chemistry and Biology. He showed a list of 11 greyed-out CMCs due for deletion within the next six months.

Two software updates for the KCDB system, "Display of the CMC PID in Advanced Search" and "Update of CMC QUICK SEARCH" that allows placing 'AND' or 'OR' in search conditions for the CMC search on the KCDB were installed in 2024. For 2025, the KCDB Office is updating the software module for the CMC statistics on the JCRB Review performance. Furthermore, an update on the commenting function within the KCDB where the Writers, TC Chairs and Reviewers assigned to review the CMC can place their comments is planned. It aims to improve the accessibility and usability of the comment tool by writers for addressing reviewers' comments during the JCRB review process.

He concluded his talk with some additional remarks on the KCDB customer satisfaction survey, internal audit of the KCDB and a change planned for publishing final comparison reports.

Mr Jon Bartholomew commented that he has used the new statistics feature to manage how the TC reviews are performing, and despite that he is not sure whether the figures the TC Chairs report agree with these newly implemented statistics, he is very pleased to see the new CMC statistics. He also identified that during the CMC review process comments don't seem to come back to the reviewers incurring a lot of confusion. Dr Kazuaki Yamazawa replied that he will report further details in a presentation later, however, misinterpretations of comments placed on the system may be one of the major causes of the delays during the review process. He also clarified that such issues are driving the improvement of the commenting system.

Dr Martin Milton highlighted the availability of the permanent identifiers (PIDs) for the CMCs. He emphasized that some of the NMIs are enthusiastic to put links to their calibration certificates to refer to the PID, which has significant importance to us by providing great visibility on what happens in the system, and how all the decision-making and the approvals link through.

9. Comments to the report on Comparisons older than 5 years

Dr Kazuaki Yamazawa presented a report on Comparisons older than 5 years, which is a follow-up on Action JCRB/48-2 (2024), using the document **JCRB/49-D2_1.1-a**. He recalled the historical background of this topic by referring to the two action items of the JCRB; Action 33/3 (2015) and Action JCRB/48-2 (2024).

For the Phase 1 study was conducted during the period October 2024 to June 2025, 72 comparisons were identified as being "older than 5 years". The list was presented to the CCs as well as the RMOs. In June 2025, the JCRB Executive Secretary observed that 32 (about 45 % of those listed) had progress since last October as a preliminary outcome.

The Phase 2 study was initiated from June 2025, broadening the definition to include those "planned" and those with "measurements in progress". 105 comparisons were listed in total. Each RMO and CC received an Excel file listing the relevant comparisons and were asked to collect information on "Cause of the delay", "Actions to address the delay" and further "Comments" to describe their status.

From the information collected during the period until August with a yield of about 90 % of those listed, the JCRB Executive Secretary extracted the main cause of delay. The delays could be categorized in three groups: Group 1 for persons and measurements, Group 2 for artefacts and Group 3 for data processing and reporting. The share of these three groups was found 40 %:10 %: 40 % while the remaining 10 % were identified as in preparation for completion or official abandonment. Dr Kazuaki Yamazawa also presented further analysis categorising CC/RMO comparisons and KCs/SCs. He also presented some of the raw comments extracted for each group.

Dr Kazuaki Yamazawa concluded that despite Chapter 4 of CIPM MRA-G-11 already specifying in detail what should be considered when planning a comparison, there is an opportunity to have

CBKT activities to provide training to future pilots. He also suggested the importance of continuing to collect information on the status to provide help to those who need it with no intent to criticize anybody.

Dr Martin Milton remarked that this is an important topic that the JCRB has discussed many times, that some NMI directors complain about it, and there is a need to act. Mr Jon Bartholomew pointed out that issues reported here are worth to share as a future training topic. Mr Nikita Zviagin suggested that timing of investigation may need to consider the activities conducted by the RMOs and the reporting cycle to the JCRB. Furthermore, for the common problem regarding data processing of comparisons, COOMET has recommendations prepared by their theoretical metrologists under their TC 1.1 "General Questions Considering Measurements" which are also available in English. These documents provide good guidance for evaluating key comparison data and supplementary comparison data. The recommendation for pilot studies is under development. Furthermore, COOMET can also contribute to the BIPM e-learning courses and CBKT activities. Dr Henry Rotich commented that the message “an activity with no intent to criticize anybody” is important to resolve the problems. He also mentioned that problems due to data processing could be prevented, and those due to artifact may be improved by communicating with customs authorities. Mr Lucas Di Lillo pointed out that having many comparisons may be another cause of this problem, and efforts to avoid duplication of comparisons in the same context by sharing information among RMOs may be beneficial. Dr Martin Milton commented that such effort should be carried out by CC WGs, and that the JCRB should convey this discussion to the CCs through the CIPM. Mr Jon Bartholomew further commented the possibility of benefitting from digital transformation and Dr Martin Milton responded that application of AI should be considered for the problems grouped as Group 3 (issues on data processing and reporting). Mr Nikita Zviagin also supported that possibility.

Dr Martin Milton conducted a ‘tour de tableau’ on the actions and KPIs for each RMO.

EURAMET explained that they have been monitoring the issue since 2015 by setting KPIs as described in their report (see section 6.4 of these minutes). EURAMET researchers have also proposed the development of validated key comparison software that handles the data analysis aspect of key comparisons, that may avoid some of the issues reported here. Dr Martin Milton supplemented that there exists other software with the same objective such as “NIST Consensus Builder”.

COOMET explained that the topic is permanently discussed at the Joint Committee on Measurement Standards as well as their TCs. Some problems may arise on change of RMO participation where contacts are lost. For data evaluation, as mentioned during the Q & A, COOMET has a good guidance, and is interested in software development being aware of the developments of other RMOs. For those comparisons listed in this report, COOMET has resolved many of them and only two are remaining, and in one case a decision has already been made.

APMP explained that the problem is occurring mostly in two specific TCs, mass and temperature, and the problem is mainly occurring in SCs. APMP is transferring the information provided from the JCRB Executive Secretary to the TCs and asking them for action. For issues on data processing, APMP is suggesting the use of NIST’s software. APMP will follow-up during the meetings during their GA in November to solve the problems before the next JCRB.

AFRIMETS mentioned that despite not having an explicit KPI now, they have noticed that the main cause in their region is due to movement of personnel and already have taken measures to switch the responsibilities.

SIM mentioned that they have started to monitor the situation under the TC Chairs and will aim to reduce the number to at least 50 % of the 11 comparisons identified.

GULFMET is in the process of drafting the KPIs now for their future strategy and will add this comparison issue as a KPI item. Furthermore, such analysis data is useful since considerations about prevention rather than cure is necessary; to go into the TC Chairs meeting and have a discussion of the issues that may occur and how it could be mitigated in advance, rather than trying to fix these events.

Dr Martin Milton concluded that the analysis should be repeated, scheduling an appropriate timing for the annularity of the reporting. He also pointed out that Supplementary Comparisons that are carried out by CCs were being reported, however, according to the CIPM MRA, that shouldn't happen. Work is needed so that it would be clear that Key Comparisons are carried out by CCs and then the results are spun out to the regions. Supplementary Comparisons should be regional initiatives addressing regional priorities. Another issue he pointed out was that there is a tendency in some CCs to allocate Comparison identifiers rather early. If actual activities are only initiated up to two years later upon further discussion at the next CC meeting the duration of comparisons is artificially extended. CCs need to consider finalizing the details of the comparisons before allocating the identifier. Mr Hans Arne Frøystein mentioned that he will convey the discussions here to the CIPM to be held in October 2025.

The JCRB agreed on the following action item.

Action JCRB/49-1 (2025)

JCRB Executive Secretary to continue providing lists of comparisons older than 5 years to the CCs and RMOs to collect information on the “cause of delay”, “actions to address the delay” and include this topic as an agenda item at JCRB meetings. CCs and RMOs are encouraged to adopt measures to address this issue including setting targets or KPIs, and RMOs to report them to the 50th meeting of the JCRB.

10. Status of CMC submissions and review

Dr Kazuaki Yamazawa presented the status of CMC review using document **JCRB/49-D2_2-a**.

As an overview of the system, he presented a figure showing the dynamics of the input and output during a period of one year. During the reporting period from 28 August 2024 to 1 September 2025, approximately 2320 CMCs existed in the process, and the dynamics were shown in that figure. 1352 CMCs were published during that period and 881 CMCs remained in the JCRB review process to be carried over to the next reporting term. The minimum review duration has not changed much being 22 days, the average is slightly improving to about 140 days. The maximum is growing longer, attributable to a single CMC; it is 1557 days that is about 4 years and two months. One factor is the duration that the RMO TC sets upon accepting the invitation; some RMOs and TCs set the period as long as one year or six months.

For the CMC review performance, statistics on “loss of rights” that are categorized into three patterns, "No reply to review requested", "Accepted but did not complete the review" and "Reviewed but did not vote when requested" were shown for each RMO and metrology area. Dr Kazuaki Yamazawa explained that the phenomenon “CMCs slipping through JCRB review” also has some relation with “loss of rights”. From daily monitoring the review process and having communication with TC Chairs, it was found that CMCs where there are a limited number of NMIs having the capability tend to fall into such a situation. He also remarked that slipping through causes a burden to the TC Chairs since an additional review needs to be conducted manually outside the KCDB system using emails, with a risk of missing sufficient records of interaction that support the credibility to be preserved within the KCDB system. He hopes that the RMOs would further seriously consider measures to prevent “slipping thorough” happening.

He reported that about 180 CMCs, the so called "Hanging CMCs", had remained in the status "JCRB: Revision Requested" untouched for over 6 months. He further pointed out that there are also over 1000 CMCs in the drafting and RMO review stage for long durations. The ongoing visibility of CMCs with status "Revision Requested" on the dashboards of the TC Chairs and Reviewers affects their productivity. He also pointed out that the Writer should be aware not to misinterpret the comments placed by the reviewers and conduct their revision as requested by the reviewers.

Dr Kazuaki Yamazawa also highlighted the issue related to the "modification of CMCs (Chapter 8 of CIPM MRA-G-13)" where for some cases observed, the Writer had mistakenly skipped the procedures needed upon revising existing CMC. He noted that "a game just simply relying on goalkeepers is not sustainable".

Dr Martin Milton remarked that the number of "CMCs slipping through" have significantly decreased and now it could be said that it is resolved. For the "Hanging CMCs", the phenomenon is also observable from the Writers and TCs so that there is not much further that the JCRB can do other than expect the players to be further concerned on the issue. Mr Jon Bartholomew pointed out that the figures reported within the presentation may not be capturing the review system adopted for CCEM. Dr Kazuaki Yamazawa replied that he is aware about the sophisticated system the CCEM adopts, however, he explained that the figures reported in the presentation is capturing some instability that is probably due to the recent changes of the chairs involved. Mr Jon Bartholomew agrees that causes of the statistics being unexpectedly low for CCEM are worth investigating. Ms Rugkanawan Wongpithayadisai questioned why the review period is set relatively long (as long as 200 days) for chemistry and biology. Dr Kazuaki Yamazawa and Dr Martin Milton explained the special system that functions under chemistry and biology, having a yearly cycle which is possible since they meet annually. Mr Jon Bartholomew recalled the discussion on information not always returning to the reviewer during the CMC review process. Dr Kazuaki Yamazawa responded that this may happen since that in the current system, the TC Chair owes the responsibility to make the information flow to the reviewers. The KCDB Office of the BIPM shares the concern and would be welcome feedback to ensure the KCDB Office can correctly specify the planned improvement. Mr Jon Bartholomew further commented on the list of review duration that the RMO TC Chairs sets upon accepting the JCRB review may be informed to the CCs through the CIPM for possibly triggering their discussions at the relevant working groups under the CCs. Dr Martin Milton mentioned that the CIPM will be briefed about this issue.

11. Clarification on the withdrawal under the CIPM MRA in response to the Decision CIPM/114-7 (2025)

Mr Chingis Kuanbayev explained the proposal to update the policy document CIPM MRA-P-13 with document **JCRB/49-D2_3.1-a**. This proposal is created in response to the CIPM decision CIPM/114-7 (2025) which outlines the consequences for a Member State that is suspended, and to determine the details on the limitations to their participation to the CIPM MRA in such rare case.

In this proposal, specific procedures on how to handle the CMCs and comparisons for the institutes from the states in suspension and withdrawal will be added as an appendix of the policy document CIPM MRA-P-13, and Chapter 7 will be amended to accommodate this clarification.

Dr Martin Milton added that this clarification is not expected to be used very often and is a preparation for the very rare case. He also mentioned that the original CIPM decision was based upon a lot of legal research including how other international organizations address the status of suspension.

Without objections, the proposal was approved with the following resolution.

Resolution JCRB/49-2 (2025)

JCRB Executive Secretary to update CIPM MRA-P-13 to include the procedures agreed for the implementation of the CIPM decision CIPM/114-7 on the suspension of Member States.

12. Discussion on Action JCRB/48-1 (EURAMET's Proposal on confirmation of CMCs through successive comparisons)

Mr Ömer Altan explained the proposal which is a follow-up of Action JCRB/48-1 with the presentation (document **JCRB/49-D2_4-b**). The proposal is to adopt a procedure to record confirmations of existing CMCs through successive comparisons in the KCDB in a publicly visible format. Options to enable this on a reasonable timeline are detailed in document **JCRB/49-D2_4-a**. The rationale of the proposal is that, even when a successive comparison result is found as successful, there is no indication to the users of the KCDB that these CMCs have been retested through later comparisons.

EURAMET proposed the following three options. Common to all options is a "fast-track approval process" where only the RMO TC Chair is required to give approval.

1. Updating the "approval date" column in the CMC line in the KCDB to display the date of the CMCs confirmation through the results of the completed comparison.
2. The addition of a comment to the CMC line indicating that it was confirmed by the results obtained in a successive comparison, noting the comparison identifier and date of completion.
3. The addition of a new field to the CMC line to note the date on which the CMC was confirmed through a completed comparison.

Mr Ömer Altan explained the features of each option. He concluded that upon consideration, EURAMET's preference is the second option. He also emphasized that proposals ensured that no single actor within the processes were overburdened with additional work.

Mr Javier Arias started the discussion with the question "Why do we need this?", since as a result of this proposal, a closer date of confirmation may be shown to the user, however it does not add further value. He further mentioned that just to include a statement that "the CMCs published on the KCDB is confirmed every 5 years" could achieve the purpose.

Mr Ömer Altan reiterated that the confirmation process exists, but users can only see the original approval date. The proposal is intended to make confirmation of CMCs through repeated comparisons visible to the public. Mr Jon Bartholomew questioned how the existing comment field is used. Mr Ömer Altan answered that it is a free-format field and could be used for multiple purposes. Mr Jon Bartholomew continued with a second question why the proposal limits to successive comparisons, since there is another confirmation scheme for QMS. And he asked another question regarding why the existing system does not provide a linkage to comparisons that support the CMC claim available to users.

Dr Martin Milton responded to the latter question by saying that although he does not know the exact fraction of the 26 000 CMCs that are linked to key comparison data, he assumes that the fraction is low. For example, in chemistry, which is the largest single grouping, an enormous number of CMCs are published based on evidence other than comparisons. Excluding CMCs supported by other data from the proposal may save an enormous amount of work, however, it is

questionable whether a step that would disadvantage the use of other data is really in line with the agreements at the time of the CIPM MRA review in 2014.

Mr Jon Bartholomew pointed out that all CMCs are reviewed every 5 years and that review is the confirmation that the CMCs are correct, regardless of comparisons. He questioned whether a method to record the latest review date on the CMC exists alongside information for the users that these CMCs are all reviewed on a 5-yearly basis.

Mr Ömer Altan acknowledged the fact that the main mechanism for ensuring the vitality of existing CMCs is the QMS review, however, he mentioned that repeated comparisons demonstrate technically that the CMCs are valid and the institute still is capable of this measurement.

Mr Lucas Di Lillo mentioned that the users of the KCDB should know that a review process of the CMC is undertaken every 5 years, so all the CMCs that are published now should have been reviewed within the past 5 years. One solution may be to explicitly post on the KCDB that all the CMC that have been published has undergone such a peer review assessment process which includes consideration of comparisons. EURAMET's proposal focusing on comparisons will increase the workload for the entire system, thus SIM's suggestion is, instead of publishing the participation of the comparison that support the relevant CMC, to include a text on the KCDB in which explains the review process and to at least update the day in which the peer review was done.

Dr Chunhui Li also pointed out that, it is a fact that according to the current CIPM MRA document, the Key Comparisons are the significant evidence to support your CMC. However, there exist many other CMCs not supported by the Key Comparisons or Supplementary Comparisons, and possibly by some technical reports or peer review reports.

Mr Nikita Zviagin principally agrees with the EURAMET's proposal including the last approval date/last confirmation date, however, he mentioned that the initial approval date should not be replaced so that two dates will be available to the user. He also mentioned that a variety of tools should be included for that confirmation, such as including comparisons, peer reviews, and possibly records of pilot studies. The implementation should be discussed with the KCDB Office since even now the user interface of the KCDB may have some room for improvement upon scrolling the screen to view all the information published. A further proposal for addition of information should also involve deep considerations on the user interface for clarity and usability.

Ms Lerato Ntatamala mentioned that as part of the 5-year confirmation, the interlaboratory comparisons that the laboratory has participated in are checked, and whenever it is found to be not sufficient, the laboratory is asked to perform corrective actions. Regarding the proposal, AFRIMETS supports option 2 which just puts an update linking the CMCs with the relevant comparison report.

In summary, Dr Martin Milton said that overwhelming support to the EURAMET's proposal was not observed from the discussion, due to concerns raised for the increase of workload that the proposal may incur. He continued that, ideally, such a proposal should be preferred, however, as issues such as "Hanging CMCs" and "Old Comparisons" exists, the NMIs do not have sufficient time to work; a solution that works practically is needed. He also noted that a proposal to create a new data field will incur 26 000 new boxes to be filled and probably will not gain support from the NMI directors since the workload will be distributed to all the Writers of the CMCs who belong to the NMIs. He emphasized that a vast amount of effort in the 5-year confirmation is invested, and this is the main job of the JCRB to support the QMS processes. He endorsed the suggestion to include some text clarifying to the outside reader that the "vitality" of CMCs in the KCDB is maintained by a thorough five-year review process.

Mr Robert Gunn mentioned that in addition to EURAMET's proposal to add confirmation information, the proposal to add a common text should be further effective.

Dr Martin Milton continued with his concern that EURAMET's proposal would not obtain support from the NMIs due to the additional workload. Dr Martin Milton proposed to better highlight the relevance and importance of the QMS process in maintaining the vitality of CMCs.

Mr Hans Arne Frøystein mentioned that he sympathised with the need of this proposal, and on the other hand, also recognised the concern expressed by Dr Martin Milton regarding the workload incurred. In comparison to accreditation where merely the scope and the date is published, without further details, something in the line with the comment from Mr Lucas Di Lillo could be a possible solution that could reach this goal with a less work-intensive way. He will convey the discussions here to the CIPM meeting to be held on October 2025.

Dr Martin Milton and Mr Javier Arias suggested that application of Artificial Intelligence (AI) could be considered for future.

Mr Chingis Kuanbayev pointed out that all the options discussed here will require software changes since this will involve an additional workflow for the TCQS Chair. He emphasized that such issues also need to be carefully considered and assessed.

Dr Martin Milton concluded that we are open for suggestions in the future. The JCRB agreed on the following action item.

Action JCRB/49-2 (2025)

JCRB Executive Secretary to prepare a proposal for the 50th meeting of the JCRB on a way to highlight the processes in place to ensure the "validity" of CMCs on the KCDB.

13. Recent updates for Metrologia

Dr Anna Cypionka introduced the two major changes for the journal Metrologia using document **JCRB/49-D2_5-a**.

The first change is the transition to "open access" by January 2026. The publisher IOPP and the BIPM are in the final stages of preparing this transition. This transition has already been announced, and more details have been given to those with their article under review.

Secondly and independently from the first, is a change in the publication of the comparison reports. For historical background, the CIPM approved in 2001 the creation of the Technical Supplement of Metrologia, recognizing comparison reports as measurable outcomes of the work of institutes participating in the CIPM MRA. Since 2002 the Final Reports of key and supplementary comparisons organized under the auspices of the CIPM MRA have been published in this Technical Supplement. Having such publication form, comparison reports appear as if it is peer-reviewed as a scientific article, however in reality, they undergo a different reviewing process under the CIPM MRA. Moreover, these comparison reports have caused problems in the calculation of the impact factor of the journal in the past.

The CIPM decided in their decision CIPM/113-29 to raise the profile of the Metrologia, to maintain it as the most important publication channel, and to separate the technical supplement from the scientific articles published in the journal. The CIPM asked the BIPM to create a different entity to publish the technical supplement.

Dr Anna Cypionka displayed the screenshots of the new facility being created on the BIPM website to accommodate the comparison reports. She also explained the improvements on the workflow realised by this transition. The new entity will also accommodate reports for pilot studies. This

transition will only apply to comparison reports published from 2026 and those in the existing Metrologia Technical Supplement will not be affected.

She proposed naming this new facility "CIPM MRA Comparison Reports" and presented the changes needed to specify the entity in CIPM MRA-G-11 (the proposed text could be found within document **JCRB/49-D2_5-a**) including guidance on how to name comparison reports.

Without objections, the proposal was approved with the following resolution.

Resolution JCRB/49-3 (2025)

The JCRB agreed that the web page that will publish comparison reports is to be named "CIPM MRA Comparison reports". The JCRB approved the proposed amendments to CIPM MRA G-11 to clarify the new publication process on the new page as well as to implement the agreed format for the titles of comparison reports.

14. Update on digital transformation of BIPM services

Dr Anna Cypionka introduced the digital transformation of the BIPM services using document **JCRB/49-D2_6-a**.

BIPM is working to make the data in the KCDB, JCTLM and UTC available according to FAIR principles, machine-readable and machine-actionable, and equip them with application programming interfaces (APIs). All three databases give persistent identifiers (PIDs) to the data. NMIs can include such PIDs in their calibration certificates or in their service catalogues. The core of digital references is the SI reference point that provides PIDs for units in the SI brochure. Two years since its initial release, the SI reference point is still in its beta release. The team are working on a versioning of the source code of the reference point. This source code will be provided openly. The team has also worked on including Unit one into the SI reference point. An article about the SI reference point will be published shortly. The CCs are mapping quantities against the service categories aimed for future implementation within the KCDB.

The KCDB team is working on increasing the FAIR nature of the data and amended the CMC API to allows access to CMCs that are no longer published. In consultation with the CCs, the submission web forms will be updated to add control menus for CMC parameters and more participant metadata associated with comparisons. Furthermore, implementing a new API to query comparison data and streamlining the submission and publication processes for comparisons are also under CC consultation.

Dr Martin Milton commented that there is data suggesting that more than 85 % of the access made to the KCDB are from AI engines. Through monitoring and studying, the BIPM is trying to rationalize what can be interpreted from the data, and the BIPM is going to be bringing forward plans to make the KCDB more AI compatible, but even today, the KCDB does have some good visibility to the big AI models.

15. CBKT Report

Mr Chingis Kuanbayev presented the report on capacity building and knowledge transfer (CBKT) programmes coordinated by the BIPM using document **JCRB/49-D2_7-a**.

As of today, the BIPM team has organised 81 activities, 40 of them in person, and 41 online, with the 5248 total participations. CBKT started in 2016 with in-person activities. Online activities started in 2020 and from 2024 the number of events held in-person and online are now much the

same. The e-learning activities launched with 4 courses and 400 users in 2021, now there are 32 courses with over 5000 users. He introduced the plans for 2025 and highlighted "INTRODUCTION TO THE BIPM" which is under development. He also introduced the plans for CIPM MRA Summer school – 2026 aimed for new or potential TC chairs and called for each RMO to send their delegations. Finally, he introduced the BIPM/RMO Officer's meeting to exchange information on training, with a first step to share calendars of training.

Mr Nikita Zviagin questioned whether it is possible to provide some training for quality persons and for peer reviewers. Mr Kuanbayev answered that a two-hour online course may be developed for such topic which covers CIPM MRA policies and each RMO's practice. Mr Nikita Zviagin questioned on the plans for the BIPM-TÜBITAK UME course in 2026. Mr Kuanbayev answered that discussions are ongoing. Mr Javier Arias commented that for training planned for the TC Chairs, it may be better to send colleagues with some experience rather than sending newly appointed Chairs. Mr Kuanbayev replied that the contents, of the school cannot be delivered only by BIPM staff and RMOs will be asked to contribute as lecturers. Ms Tae-Yi Hong acknowledged the support upon launching its first e-learning course published on the BIPM. Ms Rugkanawan Wongpithayadisai from the viewpoint as the TCQS Chair suggested to include the good practice on hand over of the role of the TC Chair as one of the new training topics.

16. Any Other Business

AFRIMETS: Ms Lerato Ntatamala mentioned that AFRIMETS is struggling to put up e-learning materials and thanked Mr Chingis Kuanbayev for his support.

APMP: No other business.

COOMET: Mr Nikita Zviagin referred to the issue of sharing information on comparisons, especially comparisons that could be of interest for CEEMS countries. As well including this topic within their RMO report, COOMET has sent a letter to all the RMOs on this issue and asked for a resolution or decision at the JCRB to agree on a specific tool to be used.

Dr Martin Milton thanked COOMET for this valuable suggestion; however, he recalled that this issue has been discussed within the agenda item on comparisons older than 5 years upon a suggestion from SIM and that this coordination goes on inside the working groups of the CCs. He also added that the CIPM representative is going to remind CCs they need to keep doing that as a mechanism existing for planning for Key Comparisons and Supplementary Comparisons.

EURAMET: Mr Ömer Altan opened the discussion on RMO reports, specifically the template. He pointed out that the current RMO report template asks for information that's in the KCDB, and it doesn't seem very useful. What is really needed from each other in terms of information at the JCRB meetings? The current general report template does not cover that.

Dr Martin Milton responded that the JCRB spent years discussing templates, and the template is now outdated because all the information's on the website. He mentioned that this issue will be on the agenda of the next meeting. The JCRB agreed with the following action item.

Action JCRB/49-4 (2025)

JCRB Executive Secretary to revise the templates used by RMOs for their reports to the JCRB on the activities related to the CIPM MRA and propose revisions at the 50th meeting of the JCRB.

GULFMET: No other business.

SIM: No other business.

17. Next meeting and meeting closure

17.1 The 50th meeting of the JCRB

Dr Martin Milton proposed that despite the next time slot available being March 2026, he doubts that there would be a lot to discuss on the topics that had been discussed during this meeting by then. He proposed the next meeting to be held in September 2026 online, upon consideration that the CGPM will be held in October 2026. The JCRB Secretary and Chair will commit to circulate a request to the RMOs in next March for agenda items. Furthermore, he proposed formalizing the online observers agreed during the COVID period. There were no objections to this proposal.

The JCRB agreed on the following action item and resolution.

Action JCRB/49-3 (2025)

JCRB Executive Secretary to revise CIPM MRA-P-12 document to formalize the participation of online observers in JCRB meetings, that had initially been agreed as Action JCRB/44-1 (2021).

Resolution JCRB/49-4 (2025)

The JCRB recalled its previous resolution (JCRB/32-2 (2014)) indicating a decision will be made on a "case by case" basis as to whether a second meeting is necessary each year. The 50th meeting of the JCRB is planned to be held in week 39 in September 2026. The format of the meeting will be based on the agenda items proposed by RMOs. The JCRB Executive Secretary is charged with collecting proposals for the agenda of the 50th meeting of the JCRB.

17.2 Reading of the Outcomes of the meeting

The Chair, Dr Martin Milton read through the list of the outcomes of the meeting to wind up the meeting. The draft texts of the Resolutions, Recommendations, and Actions were circulated by the JCRB Executive Secretary in the subsequent days with the options for RMOs to comment within two weeks. All RMOs' feedback supported the drafted texts:

Action JCRB/49-1 (2025)

JCRB Executive Secretary to continue providing lists of comparisons older than 5 years to the CCs and RMOs to collect information on the "cause of delay", "actions to address the delay" and include this topic as an agenda item at JCRB meetings. CCs and RMOs are encouraged to adopt measures to address this issue including setting targets or KPIs, and RMOs to report them to the 50th meeting of the JCRB.

Action JCRB/49-2 (2025)

JCRB Executive Secretary to prepare a proposal for the 50th meeting of the JCRB on a way to highlight the processes in place to ensure the "validity" of CMCs on the KCDB.

Action JCRB/49-3 (2025)

JCRB Executive Secretary to revise CIPM MRA-P-12 document to formalize the participation of online observers in JCRB meetings, that had initially been agreed as Action JCRB/44-1 (2021).

Action JCRB/49-4 (2025)

JCRB Executive Secretary to revise the templates used by RMOs for their reports to the JCRB on the activities related to the CIPM MRA and propose revisions at the 50th meeting of the JCRB.

Resolution JCRB/49-1 (2025)

The JCRB approved the minutes of the 48th meeting of the JCRB as a true record.

Resolution JCRB/49-2 (2025)

JCRB Executive Secretary to update CIPM MRA-P-13 to include the procedures agreed for the implementation of the CIPM decision CIPM/114-7 on the suspension of Member States.

Resolution JCRB/49-3 (2025)

The JCRB agreed that the web page that will publish comparison reports is to be named “CIPM MRA Comparison reports”. The JCRB approved the proposed amendments to CIPM MRA G-11 to clarify the new publication process on the new page as well as to implement the agreed format for the titles of comparison reports.

Resolution JCRB/49-4 (2025)

The JCRB recalled its previous resolution (JCRB/32-2 (2014)) indicating a decision will be made on a "case by case" basis as to whether a second meeting is necessary each year. The 50th meeting of the JCRB is planned to be held in week 39 in September 2026. The format of the meeting will be based on the agenda items proposed by RMOs. The JCRB Executive Secretary is charged with collecting proposals for the agenda of the 50th meeting of the JCRB.

The Chair, Dr Martin Milton took the opportunity to thank all delegates for their attendance and contributions to the meeting. He mentioned that this meeting was his 17th meeting as chair, and this will be his final. He mentioned that it is the great privilege about the JCRB that it is the only meeting in the system where a good representation of all the world is observed, and furthermore, regions bring together individuals from different countries.

He then closed the 49th meeting of the JCRB at 13:20 (UTC+5).