

Report of the 47th Meeting of the JCRB

Held on 12 / 13 September 2023

LACOMET, San Jose, Costa Rica

<u>Item</u>	<u>Page</u>
1. Welcome by the Chairman and confirmation of delegations' representatives with voting rights.....	3
2. Approval of the agenda	3
3. Approval of the minutes of the 46 th meeting of the JCRB and review of actions... 3	
4. Comments on the BIPM progress since the 46 th JCRB meeting.....	4
5. Comments on the report from the CIPM	5
6. Comments on the RMO reports to the JCRB.....	6
7. Comments on the KCDB report: providing statistical insights	10
8. Comments on issues regarding the CMC review since the 46th JCRB	10
9. Update on digital transformation of BIPM services	12
10. Any Other Business.....	14
11. Next meetings and meeting closure.....	14

Participants

BIPM / CIPM

Dr Martin Milton
Mr Ibrahim Ahmed
Dr James Olthoff, CIPM representative to the JCRB
Dr Janet Miles (online) – Agenda Item 9
Mr Chingis Kuanbayev (online) – Agenda Item 10.1

AFRIMETS

Dr Henry Rotich (online)
Prof Dr Noha Khaled (online)
Mrs Lerato Ntatamala

APMP

Dr Hyun-Min Park
Dr Victoria Coleman
Dr Sam Yong Woo
Ms Tae-Yi Hong
Ms Rugkanawan Wongpithayadisai (online)
Dr Chunhui Li (online)

COOMET

Mr Nikita Zviagin
Mrs Ainur Rakhadinova (online)

EURAMET

Dr Jörn Stenger (online)
Dr Julien Vuillemin-Toledo (online)
Dr Davor Zvizdić (online)
Mr Robert Gunn

GULFMET

Eng Amina Hassan AlBastaki (online)
Dr Ismail A. AlFaleh (online)
Mr Omar Kanakrieh (online)
Mr Jon Greg Bartholomew (online)
Ms Asma Al Hosani (online)

SIM

Mr Lucas Di Lillo
Mr Javier Arias
Ms Sally Bruce (online)
Dr Marina Gertsvolf
Dr Fernando Andres Monge

The 47th meeting of the JCRB was conducted over two days, between 09:00 and 16:50 (UTC-6) on day 1 and 09:00 and 11:35 (UTC-6) on day 2. The items were generally addressed in the order indicated on the Agenda with items 1 to 6 and 8 on the first day, and items 7, 9, 10 and 11 on the second day. The only exception was the presentation of the AFRIMETS report on day 2.

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

The JCRB Chair, Dr Milton opened the meeting by welcoming all to the 47th JCRB meeting, noting that it would be a hybrid meeting. He then went ahead to thank Dr Fernando Monge and his team at LACOMET for organizing the meeting and looked forward to a successful meeting. The Chair made a special welcome to Mr Ibrahim Ahmed, the JCRB Executive Secretary to his maiden JCRB meeting. The Chair then asked heads of RMO delegations to introduce themselves and their teams starting with the Head of the host RMO, SIM. The rest followed suit. He then asked the CIPM representative to the JCRB to introduce himself and concluded by introducing the two BIPM staff participating remotely.

2. Approval of the agenda

The Chair read through the agenda noting the order would be the presentation of the various reports from the BIPM, CIPM and RMOs on day one as listed. Day two would be dedicated to reports on the KCDB and status of CMCs submission and review, a presentation on digital transformation activities and an update on the "Young metrologists' 2050+ vision" under AOB. The Chair indicated that the agenda would be concluded by discussing the last item 11 (future meetings and meeting closure).

The Chair then invited further agenda items from the delegates. Mr Nikita Zviagin proposed an item for adoption on delays in review of comparison reports at the consultative committee level. The Chair indicated that the matter would be discussed under AOB together with the issue of RMOs submitting links for their QMS documentation. With that, the agenda was unanimously approved by the delegates.

3. Approval of the minutes of the 46th meeting of the JCRB and review of actions

The JCRB Chair recalled that the draft minutes of the 46th meeting of the JCRB had been circulated after the meeting. He reported that all the comments received had been incorporated and the revised file version 1.3 was uploaded as working document to the BIPM website. Since no further comments were raised during the 47th JCRB meeting, the minutes were approved.

[The report of the 46th 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 from the 46th meeting:

Resolution JCRB/46-1 (2023) *The 47th meeting of the JCRB will be held in Costa Rica (Laboratorio Costarricense de Metrología); tentative dates are the week 18-22 September 2023.*

This resolution has been completed.

Recommendation JCRB/46-1 (2023) *Noting the availability in the KCDB of a unique and persistent identifier for each CMC (and each version of a CMC), the JCRB recommends use of these CMC identifiers by the participating NMIs/DIs (for example in their quality documentation) and asks the BIPM Headquarters to make available appropriate training material to encourage this.*

This action is ongoing.

Action JCRB/46-1 (2023) *The JCRB asks each RMO to nominate (one or two) RMO coordinators for the “Young metrologists’ 2050+ vision” foresighting exercise and to send their names to C. Kuanbayev (BIPM) by 31st March 2023.*

This action has been completed.

4. Comments on the BIPM progress since the 46th JCRB meeting

Dr Milton presented the BIPM report, uploaded as **JCRB/47-04**. He started off by noting that there was no change in membership numbers from the last meeting with 64 Member States and 36 Associate States. He acknowledged that the 64th Member state was Costa Rica and went ahead to applaud Dr Fernando and his team at LACOMET for their effort that led to convincing the Government to accede to the Metre Convention.

He continued by saying that the BIPM had an elaborate process to encourage Associate States who are active in the CIPM MRA to change their status. Currently, 5 of the Associate states (Latvia, Panama, Vietnam, Peru and Philippines) at a higher level of the escalator stage and the amount of their subscriptions at 90% of the Member State contributions. The statistics on the institutes participating in the CIPM MRA were displayed including the number of comparisons and CMCs.

On World Metrology Day (WMD), it was reported that SIM and INTI developed the 2023 poster with the theme on the global food system. This year’s commemoration of the day was the most successful based on the statistics on the events and posters related to the day. This was largely because the BIPM now has a Communications Officer, Dr Dana Vlad responsible for reaching out to NMIs to encourage them to celebrate the day and report related activities to the BIPM. The CCQM had events and material uploaded on YouTube for the day. One unique and exciting element was that WMD was also celebrated by States outside the world measurement system like Bahrain, Tajikistan, Nigeria and Haiti. This shows a good level of enthusiasm for enlarging adherence to the Metre Convention as agreed at the CGPM in November 2022.

Since the posters are prepared on rotational basis by the RMOs, the next year’s poster would be prepared by EURAMET. The topic would be based on sustainability, with Dr Milton indicating that he looked forward to concluding the discussions on that. In 2025 there would be the 150th celebration of the signing of the Metre Convention and the poster would reflect on that showcasing the successes since then. Finally, Dr Milton gave an update on the uptake of the WMD as a UNESCO day. The UNESCO Executive Committee had already agreed to that, and the final decision would be ratified at the UNESCO General Conference in November.

Another topic of the report was on the CIPM’s strategy complementing the CIPM’s report by Dr James Olthoff. Some of the highlights was on the organization of CIPM’s work on focus groups (horizontal groups) that cuts across sectors. The first group was on Sectoral Task Group on Climate and Environment where a workshop was organized with the World Meteorological Organization and the report was already available on the BIPM website. The second group was on the Forum on Metrology and Digitalization where NMI Directors had been proposed to be considered as members and to nominate representatives for the kick-off meeting slated for November 2023. The last group was on Quantum Technologies where the full scope of the work was not fully agreed on but that would be discussed in a workshop to be held in March 2024 at the BIPM. The Young

metrologists' 2050+ vision initiative was presented the following day by Mr. Chingis Kuanbayev. The other section of the report concerned the celebration of the Metre Convention on 20th May 2025 where several events are planned to celebrate the achievements after the 150 years. There will be hybrid conferences and RMO delegates are encouraged to participate. There shall also be a conference inspired by the strategy developed by the CIPM on the future of the BIPM.

On digital transformation, one of the highlights was on the joint statement of intent signed by the key stakeholders in the international scientific and quality infrastructure. It was reported that the group met regularly to discuss digital transformation in quality infrastructure. The quick start document on CMC identifiers was presented and it was reported that more CBKT webinars would be organized on the same to support uptake by NMIs/DIs.

An update on key statistics from the CBKT activities was made which confirmed success of the programme. The latest event was the RMO Secretariat forum to be held at the end of September 2023. It was noted that the e-learning platform had been upgraded. Dr Milton stated that he was pleased in having 5 RMOs participating and discussions were well advanced with AFRIMETS.

The BIPM had jointly with the OIML published a brochure on National Metrology Systems. The intended audience was Governments from states that are not in the global metrology system to assist on how to come up with national measurement systems. This would be supplemented with e-learning material.

A reaction from the report was from Mr Javier Arias who raised an issue on the progress of upscaling of Panama as a Member State. The Chair promised to follow up on the matter.

5. Comments on the report from the CIPM

Dr Olthoff presented the report from the CIPM, uploaded as **JCRB/47-05**. He reported that the CIPM last met in June 2023 where its subcommittees made presentations on their work progress. On the Strategic planning subcommittee, NMIs had responded to surveys on how they would like the CIPM to support evolving metrology needs.

Discussions were still ongoing on how to progress towards universal adherence, and this would be presented in future. On governance, the specific subcommittee was drafting bylaws and was also working on the procedure on election of CIPM members. The progress and plans of the subcommittees would be discussed at the NMI Directors and State Representatives meeting in October 2023.

Dr Olthoff then presented the decisions approved by the CIPM and arising from them, the name adopted for the horizontal group on digitalization was "Forum on Metrology Digitalization". Thereafter, he presented a summary on other topics.

Finally, it was reported that the next CIPM meeting would be held in person on 17th and 18th October 2023 while the NMI Directors and Member State Representatives would meet on 19th and 20th October 2023.

After the presentation Mr Arias posed a query to Dr Olthoff that there was a concern within SIM IAAC that there were some NMIs accrediting themselves based on ISO 17034 and 17043 instead of accrediting bodies. Dr Olthoff proposed that he could discuss that with Mr Kuanbayev and Dr Georgette MacDonald who would be attending the ILAC General Assembly. The Chair acknowledged that most NMIs offer many services including proficiency testing (PT) schemes and provision of certified reference materials and they usually sought accreditation on 17043 that is not covered by the CIPM MRA. Mr Arias explained the process of NMIs implementing those standards and self-declaring to offer the services. The Chair mentioned that SIM was unique in

approving quality systems based on ISO 17034 which was not specifically addressed by the CIPM MRA.

6. Comments on the RMO reports to the JCRB

The RMO presentations in the agenda were made in reverse order as earlier agreed with the exception of EURAMET which was granted the opportunity to present their report first.

6.1. SIM (uploaded as JCRB/47-06.1-1 and -2)

Mr Javier Arias presented the SIM report to the JCRB. In his presentation he highlighted the membership status of SIM, a legal entity comprising of 50 members; 34 Active Members, 13 Associate Members, and 3 affiliate Members (COPANT, IAAC and CARICOM). Mr Arias then described the SIM steering council membership and the roles.

Since the last JCRB meeting, SIM QSTF had approved over 25 QMS additional 20 QMS may be added in November 2023 when the SIM QSTF meets again. There were 32 CMC published from SIM. Several comparisons were in the process of completion, but the biggest concern was in the processing of Customs paperwork which at times was equivalent to the actual measurement time. He reported that SIM has 14 technical working groups and mentioned the recent changes in some of them. He then continued to summarize the various projects and activities undertaken by SIM.

Finally, Mr Arias presented three proposals and recommendations to the JCRB touching on the review process of CMCs and comparisons. The first was a proposal to modify the JCRB review process to allow the multiple iterations for the revision of a CMC during the JCRB review be captured in the KCDB 2.0 system. The second was on setting timelines for the review of comparison reports in the KCDB, similarly to the timelines for CMC reviews. The final one was a proposal to add a guidance document to help reviewers and writers effectively utilize the KCDB 2.0 "CMC comments section". There was a healthy debate on the issues raised with support for the proposals from Dr Marina Gertsvolf, Dr Victoria Coleman, Mr Nikita Zviagin and Dr Julien Vuillemin-Toledo. Eng. Omar Kanakrieh indicated that there were appropriate KCDB guidelines and video tutorials for the CMC Writers and Reviewers. The matter was later revisited under Agenda items 7 and 8. The Chair later concluded the debate and proposed to adopt an action to the JCRB ES and the KCDB Office to guide them. *This is included under the actions section of this report.*

6.2. GULFMET (uploaded as JCRB/47-06.2-1)

Eng. Amina H. AlBastaki presented the GULFMET report. She provided an update about GULFMET activities within the reporting period: GULFMET participated in 2 CIPM KCs, and would like to pilot some in the future, 33 RMO KC/SCs and published 74 CMCs. The number of JCRB reviews performed by GULFMET was not available and she proposed to contact the JCRB ES to request information. She reported that the GULFMET General Assembly (GA) was conducted in Riyadh on 13-14 June 2023. All Members and Associates participated, including representatives from RMOs (except APMP) and the BIPM and OIML. The next highlight was the outcomes from the GA. The first one was that GULFMET accepted the General Organization for Standardization and Quality in Iraq as a GULFMET Associate Member, GULFMET signed an MoU with IMEKO and received an invitation to participate in the IMEKO General Council Session, the GA also proposed to establish a technical working group on research and development in addition to TCs in Acoustics, Ultrasound and Vibration, and Time and Frequency. The GA also proposed a reward and honorarium scheme for TC Chairs, Secretaries and Members. Finally, there was a proposal to have the 2nd Metrology Symposium in Dubai in April 2024 where all were invited to participate.

She then summarized GULFMET's attendance of international and regional meetings and provided an overview on GULFMET CIPM MRA activities. At the GSO Technical Council, based on the GULFMET GA recommendation, it was agreed to change TC Chairs' terms from 2 to 3 years. Subsequently, all TC Chairs' terms had been extended by a year and accordingly, the TC Guideline had been updated.

From the presentation, there was a discussion on the review of reporting templates since most of the statistics and information was derived directly from the KCDB. That was supported by Dr Gertsvolf, Mrs Ntatamala and Mr Arias though he added that the RMO reports was a way of crosschecking the information available in the KCDB and BIPM reports. This matter was concluded under the Agenda item 11 on the JCRB meetings.

6.3. EURAMET (uploaded as JCRB/47-06.3-1 and -2)

In his presentation Dr Jörn Stenger reported on the membership structure that EURAMET is now cooperating with 39 NMIs, 81 DIs and collaborates with 16 Liaison Organizations. He highlighted the services offered by EURAMET to its members and the five thematic areas and strategies employed to improve on them. He pointed out the developments since the last JCRB meeting, which included the EURAMET GA on 30th May to 1st June 2023 in Estonia, further development of the European Metrology Networks (EMNs), the strengthened liaisons with partner organizations and stakeholders with the last one on implementation of the partnership on metrology. Dr Stenger mentioned that during the GA there were elections which led to changes in the leadership of some TCs.

Further, the presentation focused on the EMNs with a clear distinction between those that have already been established versus the ones yet to be established but important in future. He indicated that the EMNs liaise with key stakeholders within the EU and internationally.

Another area of focus was the European Partnership on Metrology whose objective was to create by 2030, a "world class sustainable and coordinated system for metrology at the European level". Most countries worldwide were eligible for funding in various programmes and a link was provided to access further information. The unique situation of the UK was being addressed and plans were underway for the UK to join the Horizon Europe and Copernicus programmes in 2024 making it eligible again for funding. The plan of action was presented for all the proposed projects running from 2021 to 2027.

6.4. COOMET (uploaded as JCRB/47-06.4-1 and -2)

Mr Nikita Zviagin started his presentation by sharing a summary of CIPM MRA activities carried out by COOMET member institutes. There was participation in 62 CIPM KC/SCs of which 2 were approved within the period between March and Septe 2023. The region piloted 18 CIPM KC/SCs while it conducted 133 RMO KC/SCs. There were 76 new KC/SCs projects initiated in 2023 in COOMET. 23 CMCs from COOMET were published within the region. In as much as Ukraine moved from COOMET to EURAMET, it was officially a member of COOMET as per procedure and would only cease to be a member on the 19th October 2023.

He then reported on the COOMET membership structure where currently there were 9 Full Members and an additional 5 Associate Members. The number of NMIs reporting their CIPM MRA activities through COOMET was 8. He clarified that Cuba was currently not an Associate member of the CGPM but was making efforts to return. There were three members of COOMET that were not members of the BIPM, namely Armenia, Kyrgyzstan and Tajikistan but were making effort towards membership with Tajikistan being active in World Metrology Day activities.

The 34th COOMET Committee met on 23rd and 24th May in Astana Kazakhstan in hybrid mode. There were three outcomes from the meeting where the new Strategic Task H on “Digital Transformation on Metrology” was approved. The Committee also approved the program COOMET P1/2023 “COOMET Development Program for 2023-2025” and finally the approval of Gabit Mukhambetov from Kazakhstan as the newly elected COOMET President with a three-year term of office from May 2024 to May 2027. However, as further reported, on 24th August 2023 Valery Hurevich resigned as the COOMET President owing to the termination of his employment at BelGIM (Belarus). On that note, the assumption to office by Gabit Mukhambetov would be decided at an extraordinary online COOMET Committee meeting on 19th September 2023. It was reported that the current COOMET secretariat would continue to perform its duties during the transition period to avoid suspension of activities. Mr Nikita Zviagin then presented recent changes on the COOMET structure.

There was a mention of knowledge transfer activities undertaken in online mode in addition to planned training activities for 2023-2024. He added that COOMET was also preparing the training courses for the e-learning platform hosted by the BIPM. One of the courses was on the evaluation of key comparison data. The objective was to have the maximum number of specialists from COOMET member countries involved. In addition, there was an intention to introduce certificates for the courses to attest the skills and knowledge of the experts in COOMET.

The Chair sought clarification on Cuba’s and Lithuania’s COOMET membership which was addressed by Mr Zviagin indicating that Cuba was indeed a member of COOMET despite not being an Associate of the CGPM. Lithuania had ceased to be a member of COOMET while Ukraine and Georgia joined EURAMET but were still official members till their term ends.

6.5. APMP (uploaded as JCRB/47-06.5-1, -2 and -3)

In his update, (in addition to JCRB/47-06.2-1) Dr Hyun-Min Park started by thanking LACOMET for hosting the JCRB meeting. He highlighted that APMP had remained unchanged since the previous JCRB meeting with 47 Full Members from 28 economies from the Asia Pacific region and 14 Associate Member Institutes from 13 economies from other regions. Further, he showed the APMP organizational structure.

Dr Park then reported the changes in the Executive Committee (EC) of APMP where Xiang Fang (NIM, China) and Tang Lin Teo (HAS, Singapore) would complete their term soon and there would be a call for two new members. As for Wei-En Fu (CMS-ITRI, Chinese Taipei) and Takehiro Morioka (NMIJ, Japan) there was a proposal to extend their terms until the next GA of 2024 as recommended by the EC. The changes in the working groups committee chairs were highlighted with some whose terms started in 2022 after the GA, others had their terms ending this year with replacements in place and the last category have elections proposed in the next GA in 2023.

In June 2023 APMP held its mid-year meetings in Mongolia to check on progress and discuss matters raised at the GA. It was also an opportunity to commemorate the 100th anniversary of Mongolian Agency for Standardization and Metrology (MASM)’s founding. Within the week there was also an International Symposium on the Role and Involvement of Metrology in Ensuring Food Safety. The coordinators of the BIPM Young Metrologist working group from APMP were introduced. On the latest news, Dr Park informed the JCRB that the renovated APMP website was officially launched in June during the mid-year meetings and that the 39th APMP GA and related activities would take place from 27th November to 3rd December 2023 in Shenzhen China.

Under APMP’s CIPM MRA activities, Dr Park summarized successes from APMP. There were 42/251 CIPM MRA participants, 6,763/25,807 CMCs published, and participation in 151/1143 key comparisons and 123/671 supplementary comparisons. During the reporting period APMP

member institutes had actively participated in 70 CIPM KCs including piloting of 25 KCs. Currently they were also participating in 67 APMP KC/SCs. 67 CMCs from APMP had been published in 2023. No CMCs had been deleted as of September 2023 but 109 had been greyed out. The KCDB Office had been asked to grey out a further 31 CMCs. He further clarified that 466 CMCs were in the process of being greyed out or revised. 153 CMCs from APMP were undergoing JCRB review. There was only one APMP KC/SC participation to report since the last JCRB meeting.

He finally reported that the APMP TC Chairs became aware of an issue with two NMIs/Dis having no record of peer review approvals for the past 5 years. The affected NMIs/Dis had since been contacted and APMP was working with them to have their CMCs greyed out and to assist in organizing relevant peer reviews. The APMP TCQS subsequently surveyed all APMP NMIs/Dis requesting the date of last technical peer review for their CMCs which uncovered 2 additional NMIs/Dis that were in breach of the CIPM MRA guidelines. The affected NMIs/Dis have since been contacted and are in the process of contacting the KCDB Office. As a corrective action, APMP is now reviewing its quality processes to ensure such issues are detected more rapidly in future.

6.6. AFRIMETS (uploaded as JCRB/47-06.6-1 and -2)

In the absence of Dr Rotich, Mrs Ntatamala was tasked with the responsibility of presenting the AFRIMETS report.

She provided highlights of membership since 2021 with the current numbers for 2023 being 49 full members, 9 associates and 11 observers of AFRIMETS. There were 5 States Parties to the Metre Convention and 8 Associates. She went further to report that Ethiopia had already initiated the process of becoming an Associate while Uganda, Nigeria and Rwanda had enquired about the process of membership.

She went on to highlight how a State that is not a party to the Metre Convention or an Associate of the CGPM could achieve traceability through NMIs that are members of the BIPM or Associates of the CGPM CIPM MRA. On the CIPM MRA, the AFRIMETS TCs organized more than 14 comparisons of the national measurement standards, the technical experts met during the AFRIMETS General Assembly from 16th – 20th July 2023 in Egypt. On the sidelines of the GA a digitalization workshop was held whose outcome was the formation of the AFRIMETS Joint Forum for Digitalization (AJFD). Some of the primary foci for NMIs/Dis was on digital calibration certificates and digital conformity assessment certificates, automation services such as online handling of calibration requests among others.

The Technical Committee on quality systems approved quality management systems (QMS) for all countries with CMCs and completed QMS for Namibia, Zimbabwe, Tanzania and Ethiopia. The review of Botswana (BOBS), Ghana (GSA) and Zambia (ZMA) QMS was underway in 2023 while Morocco and Tunisia (DEFNAC) were due for 2024. All that was based on the 5-year review cycle. AFRIMETS had 753 CMCs published in the KCDB. All the services offered in the region are further supported by third-party accreditation to ISO/IEC 17025, 43 and ISO/IEC 17034.

Other activities on the CIPM MRA involved the establishment of the AFRIMETS Capabilities Services Database (ACSD) to support the mutual recognition of the metrological capabilities for the African Continental Free Trade Area (AfCTFA). The testing of the database had commenced and was expected to go live in December 2023. Comparisons with the KCDB 2.0 were ongoing with the most notable being adding digital identifiers to the services. She clarified that the State parties to the Metre Convention and the Associates of the CGPM will continue publishing their CMCs in the KCDB for international recognition of their services and that the information of the ACSD was to help AFRIMETS to better identify gaps for better strategic planning for the AfCTFA. She concluded on

activities by describing a plan to establish an African Time Network to support various socio-economic activities in the digital era.

Mrs Ntatamala went on to showcase CBKT and other activities geared towards implementation of AfCTFA. Other actions undertaken by AFRIMETS included the signing of the MOU with IMEKO, verification and analysis of precious stones and heavy metals piloted by NIS of Egypt, the registration of AFRIMETS as a legal entity and introduction of membership fees to support its operations. She concluded by listing various challenges encountered by the RMO.

The first reaction from the report was from Dr Olthoff who asked about what the new database was meant to achieve that was not currently covered by the KCDB. Dr Noha, clarified that it was meant to fill the gap in the African continent for countries that were not in the formal metrology community to make it easy for trade under AfCTFA by using capabilities listed in the database. Mr Ahmed asked on the African Time Network project implementation timelines and Dr Noha responded that was still in conceptual stage and so there was nothing firmly concluded.

Lastly, Mr Zviagin asked if AFRIMETS was using the KCDB API to get information from the database and Dr Noha responded that AFRIMETS was using the KCDB in addition to using the newly formed ACSO. Dr Milton clarified that anyone could use the KCDB API to extract data and place it in their own database.

7. Comments on the KCDB report: providing statistical insights

The JCRB Executive Secretary presented the highlights of the KCDB report to the JCRB (uploaded as JCRB/47-07.1). The report had already been uploaded as a working document in the JCRB space on the BIPM website and later uploaded on the website's public domain after approval by the JCRB under the link <https://www.bipm.org/en/cipm-mra/kcdb-reports>. He went ahead to showcase the statistics on unpublished CMCs with various statuses. The most concerning status were CMCs with status JCRB: Revision requested, since that lies with Writers and there was no deadline tied to it. It was clarified that the statistics varied dynamically due to the scheduling of CMC review campaigns by the various CCs.

From the report, it was noted that the ratio of Supplementary Comparisons (SCs) with respect to Key Comparisons (KCs) remained stable at approximately 37%. The number of incomplete KCs had decreased by nearly 50% while the number of SCs had remained unchanged. The chair noted from the report that it was the RMO KCs that were experiencing delays, and the main reason was in preparation of reports. The CC based KCs were few and mainly were from EM and an action would be taken through CIPM to fast track the completion. The CMC review durations had reduced significantly compared to KCDB 1.0 both in the long and the short term. There were 5 CMCs and additional 21 from EURAMET that were greyed out and due for deletion.

8. Comments on issues regarding the CMC review since the 46th JCRB

As guided by the CIPM MRA-G-13, section 5.2 to continuously monitor the review status of CMCs, Mr Ahmed reported the outcome of monitoring on:

- (i) the "loss of rights" in CMC review;
- (ii) current CMCs with the status JCRB: Revision requested otherwise known as "hanging CMCs" and
- (iii) on the phenomenon of CMCs "slipping" through the JCRB review.

On the loss of rights, he showed data from all RMOs of “not-replied” requests for review and of “accepted but not completed” reviews for all metrology areas for the last 12 months. The data was available in the KCDB to all logged in users. The first reaction on the data from Mr Di Lillo was that the data on loss of rights from not-replied requests may not be accurate since some CCs chose different paths to review CMCs and some RMOs may not be invited to review some CMCs and the system may still count them as lost rights. Another concern from Dr Coleman was that some metrology areas (such as EM and QM) had very high numbers of CMCs to review and might not acknowledge the notifications. The Chair reminded the JCRB that the decision on voting on all CMCs by all other RMOs was agreed upon many years ago and the establishment of the KCDB 2.0 was to make the process more efficient. He further stressed that each RMO that does not intend to review CMCs should indicate its intention.

On the loss of rights due to accepting but not completing a review, Dr Coleman raised the issue on the limit set on the comments section since most discussions are done offline and some went beyond the allocated review window. Mr Zviagin reminded the JCRB that the KCDB had a special section where TC/WG Chairs distribute CMCs to RMOs and Mr Di Lillo indicated that once the batch of such CMCs are to be reviewed, they were simply ticked by the RMOs as reviewed when the process is over. Dr Gertsvolf recommended that there should be proper internal communication between the TC/WG Chairs and reviewers prior to allocation of CMCs for review. Eng Omar proposed that the statistics on CMC review performance by RMOs should focus on the number of CMCs reviewed per RMO. It was concluded that more emphasis would be on the loss of rights on accepting and not reviewing a CMC.

Mr Ahmed then presented data on CMCs that had stayed for long in the KCDB with the status JCRB: Review Requested - otherwise known as “hanging CMCs”. These were defined as CMCs that had been returned to the Writers for revision, but the Writers took very long to act thereby not concluding the JCRB review. The Chair reminded the JCRB that the problem could have been caused by CCs not having a standardized way of reviewing CMCs. Dr Bartholomew indicated that at times the CMC Reviewers and Writers do not know what to do with CMCs with issues that remain unresolved. Mr Di Lillo reminded the JCRB that it was the responsibility of RMOs to have all queries regarding CMCs addressed since it was an RMO problem. The Chair tasked the Executive Secretary to ensure that CBKT highlights this point for CMC Writers. This was supported by Dr Olthoff and Mr Arias.

Dr Olthoff also proposed that a deadline is put on the Writer in the system while Mr Zviagin proposed an option of sending notification to the Writers similar to the greying out process. The Chair clarified that the system has had many deadlines and when people failed to adhere to the deadlines, they would lose the rights and unless the Writers were inconveniencing other people there shouldn't be a problem that would warrant additional deadlines being set for them. Mr Di Lillo suggested that further investigations were needed to identify the root cause of the problem before any remedial action is taken. This was probably because, if most of the hanging CMCs originated from one NMI, it would mean that the system was working well, and the problem would be with the originating NMI. If it was a global RMO problem, then there would be issues within the RMO. Mr Arias supported Mr Zviagin's proposal and added that at times Writers would lose control of the CMCs and act on them later or abandon their publishing altogether since they may have been superseded by better CMCs. Dr Bartholomew and Mr Di Lillo opined the same. The Chair supported them by saying that the number of hanging CMCs was extremely low and was not a big issue compared to the successful publication of more than 25,000 CMCs but still would advocate the training of CMC Writers and recommended improvement on the quality of intra-RMO review.

On the phenomenon of CMCs slipping through the JCRB review, Mr Ahmed presented the statistics indicating that only three metrology areas EM, L and M were affected - with EM dominating. Dr

Olthoff was concerned that if the 183 CMCs might have slipped through without a JCRB review that would raise a credibility issue to the KCDB 2.0 system. Mr Di Lillo clarified that at the CCEM a working group chair can review CMCs without involvement of RMOs. Mr Zviagin also mentioned that L and M may be following a similar approach. The Chair raised a concern that an individual would review so many CMCs and approve them yet there has been an observation that the quality of intra-RMO review was low at times. Mr Di Lillo clarified, citing his example, that the CC WG chairs send new CMCs directly for JCRB review and only approve modified with very small changes or the ones with a higher uncertainty based on supporting evidence and the ones with improved uncertainties were still subjected to JCRB review. Dr Bruce supported Mr Di Lillo confirming that the process was working since the CC WG chair was only approving low risk CMCs. The chair concluded that the analysis should still be maintained for oversight and the intention should not be to make the process inefficient. The Executive Secretary was tasked to continue analysis to establish if there were any CMCs that slipped through the JCRB review.

The proposal by Mr Di Lillo on the modification of the JCRB review process to allow for multiple iterations during the JCRB review be captured in the KCDB was revisited. The chair stated that he saw no need to change the JCRB review process to cover for the inadequacies at the intra-RMO review as this would just add a burden to the JCRB review phase. He further stated that in the past there had been attempts to monitor the quality of intra-RMO reviews but it had not been easy. Dr Coleman added that at times the problem emanated from unclear supporting evidence or different styles employed by reviewers at different RMOs. The chair elaborated that there were different methods employed by different CCs to iron out issues related to the JCRB review citing examples of CCQM, CCT and CCL. Dr Gertsvolf and Mr Di Lillo still supported the idea of the multiple iterations be captured in the KCDB, but the Chair maintained that it would just normalize more work at the JCRB and in a few years to come there would be more statistics on the same problem that was being addressed. The Chair concluded that CCs should emulate the ones with successful mechanisms on the multiple iterations and Dr Coleman was tasked with drafting an action point for discussion the following day. *The action is indicated under action section of this report.*

9. Update on digital transformation of BIPM services

Dr Janet Miles, Head of Digital Transformation, BIPM gave an update of digital transformation activities since the 46th JCRB meeting in March 2023 under the following subcategories:

9.1 CMC Digital Identifiers - Implementation of Recommendation JCRB/46-1

The QuickStart document, a guide on the practical use of the CMC digital identifier was developed and published on the BIPM website. With the unique CMC identifier, a new digital service was launched to display the data corresponding to a particular CMC. This was demonstrated using a real CMC from LACOMET. The advantage of the service is that it gives the status of each CMC (past and present) whereas the KCDB provides only the latest status regarding a CMC.

The link used is: [si-digital-framework.org/kcdb-cmc/CMC - ID](https://si-digital-framework.org/kcdb-cmc/CMC-ID)

For printed documents, the CMC identifier could be linked with a QR code while for electronic documents, one could use a link to return Json, XML or a HTML webpage. Examples of the uptake of the service were shown from two NMIs, KazStandard and KEBS.

9.2 Service Category Identifiers

Dr Miles reported on updates on the service category identifiers that could be used in a similar way as the CMC identifiers. This would also be included in any other documentation whether or not an

institute had published CMCs in the KCDB. She explained that the service category identifiers used a link similar to the CMCs link but using the format below:

si-digital-framework.org/kcdb-sc/metrology area (e.g. RI)/

This would return a list of the service categories similar to the pdf document issued by the CCs.

The ontological modelling (how different categories relate with each other) for Physics part was already done, to be followed by Ionizing Radiation by the end of 2023 and later for Chemistry. Currently her team was working in collaboration with CCs to map the CC service categories with associated quantities. She encouraged linkage to NCSLI MII taxonomy work and all other institutions such as accreditation bodies and NMIs could link to these internationally accepted service categories so that it became easy to digitalize them.

9.3 Digital Identifiers for NMIs

These digital identifiers are available to return machine readable information regarding an NMI. Dr Miles gave an example from Research Organization Registry (ROR) and queried the details of an NMI, INMETRO. Other systems such as Wikidata were introduced. When all the NMIs/DIs, IOs Member States etc. registered, it would be possible to publish the list of the CIPM MRA participants in machine readable format. She requested the RMOs and NMIs to help with the information such as dates of membership from beginning to termination etc.

9.4 SI Reference Point

On this, Dr Miles expounded that the SI reference point was meant to be the authoritative digital reference for the International System of Units. This would be the digital version of the SI Brochure in machine readable format. Eventually this would provide a common reference for all unit representation systems currently in use. She then highlighted the SI digital framework components. She concluded by mentioning other digital services offered by BIPM. The next task was to make all that machine readable.

9.5 Liaisons and Collaborations

On this, she reiterated that secondees to assist her at the BIPM and joint projects were still welcome. She commended METAS, NPL and PTB for providing staff. She later made announcements on the various upcoming meetings and activities.

Dr Coleman raised a query on what would happen to greyed out CMCs in the context of digital identifiers. Dr Miles responded that the digital service would indicate the date from which the CMC was valid until the date of greying out and if a CMC was archived and superseded by another one, the digital service would indicate all the appropriate dates maintaining the historical trail. This was supported by Mr Zviagin. Dr Miles explained that it was possible to know the version of a CMC by using the links and use decrementing numbers at the end the identifier. However, the previous versions of CMCs were currently not built into documents.

Eng. Omar asked for further information on RORs and a query on who validated the data provided to them. Dr Miles responded by describing the registration process. She sought the help of NMIs and RMOs to identify the ones without RORs registered with the BIPM. The Chair then proposed an action point on this matter. *This point is captured under the actions section of this report.*

Further debate on digital transformation services continued, including the need for support from RMOs on CMCs and service categories identifiers. Dr Zvizdić raised a query on service categories not fully used within the global metrology community. To promote the new digital service, Dr Miles recommended promotion by including scopes when displaying CMCs. The Chair stressed that he

had been advocating for the use of service categories in accreditation for some years. He recommended that accreditation bodies uptake the service for compatibility with the SI reference point.

10. Any Other Business

10.1 Young Metrologists 2050+ Vision

From the Action JCRB/46-1 of March 2023, Mr Kuanbayev reported that the RMO coordinators had already been nominated and were presented to the JCRB. The coordinators together with him had developed questionnaires and prompts to guide the respondents. The questionnaires had two themes with the first focusing on the challenges and opportunities within metrology with the second having broader questions. Two additional questions were possible with an option of an additional open question form to be used by respondents. The RMOs were asked to promote the work by conducting promotional events for their NMIs.

He went further to report that 6 regional virtual workshops were scheduled on diverse dates and an in-person consolidation workshop was slated for June 2024 to complement the CIPM strategy by October 2024.

10.2 RMO QMS Links

From the **JCRB Action 30/2 (2017)** on QMS links it was recommended that all the RMOs to update their links on the QMS guidelines and send them to the Executive Secretary and this would later be updated on the JCRB and CIPM documents pages.

10.3 General issues

Dr Victoria Coleman reported that the 47th JCRB meeting would be her last as APMP Lead TC Chair. The Chair commended her good contributions to the JCRB hoped she would be back in future.

11. Next meetings and meeting closure

11.1 Discussion on future meetings of the JCRB

The Chair stated that the initial proposal was that the 48th meeting in March be held following the usual sequence. However, it was observed that for the last few years there was not usually enough material for discussion in two meetings during a year. He pointed to the success of working systems maintained by an able team and well oversighted by the RMOs. He then posed whether the JCRB should move to a model where it only met face to face once a year and then possibly met for the second time online if needed or perhaps for the TC QS Chairs to meet at other times online.

He asked for views from the plenary. APMP through Dr Park supported one face to face meeting each year. COOMET through Mr Zviagin supported the proposal but based on alternate basis i.e., one year at the BIPM, the other at an RMO willing to host. Dr Olthoff supported the one meeting proposal reiterating the successes of working systems in the CIPM MRA activities. He added that the meeting be held at the BIPM rather than at the RMOs since the benefits slightly outweighed the RMO hosting.

AFRIMETS through Mrs Ntatamala supported one meeting be held physically, hosted by RMOs while the second one be hybrid. GULFMET through Dr Bartholomew reminded the JCRB that the second meeting was meant to be held on an "if needed" basis, so they supported one meeting. EURAMET through Mr Gunn proposed one physical meeting hosted by the RMOs to allow EURAMET delegations visit other RMOs since the BIPM is hosted by EURAMET though the rotation

between the BIPM and RMOs was a workable option. SIM through Mr Arias supported GULFMET's view.

The Chair asked all the delegates to consider holding the 48th meeting in September 2024 and deliberate overnight and then share feedback the next day for a firm action. *This matter led to an action as indicated in the actions section of this report.*

11.2 The 48th meeting of the JCRB

It was agreed that the 48th meeting should be planned for September 2024 in the week starting from 16th at the BIPM.

11.3 Reading of the Outcomes of the meeting

The draft Resolutions, Recommendations, and Actions were presented at the tail end of the meeting and circulated by the Executive Secretary in the subsequent week with the options for RMOs to comment. All RMOs' feedback supported the drafted texts with minor amendments:

Action JCRB/47-1 The JCRB Executive Secretary and the KCDB Office will review and improve the guidance materials relating to the use of the column "CMC comments" for example by providing "pop-ups" on the KCDB platform.

Action JCRB/47-2 The JCRB noted that there are sometimes multiple iterations of comments between reviewers and writers during the JCRB review. The JCRB encourages:

- the RMOs to ensure that the intra-RMO review is always carried out thoroughly so that points of detail are resolved before the JCRB review,
- the CC WGs on the CIPM MRA and RMO TC/WGs to consider providing a mechanism to exchange comments during the JCRB review in a way that is transparent, and
- the sharing of best practice between CC WGs on the CIPM MRA for efficient JCRB review.

Action JCRB/47-3 The JCRB recalled that each RMO can approve each CMC before it is published and has the opportunity to indicate whether it will review a CMC or not. The CMC review process is tied to the deadline of the latest review date indicated by an RMO. The JCRB requests the RMOs to respond promptly even if they do not plan to review, and to remind Reviewers that agreeing to carry out a review of a CMC but not completing the review causes delays to the CMC review process.

Action JCRB/47-4 The JCRB requests the RMOs to encourage all member NMIs and DIs to register with the Research Organization Registry (ROR) (ror.org) to facilitate the BIPM in using the RORs as digital references for them.

Resolution JCRB/47-1 The JCRB recalled its previous decision (**JCRB/32-2 of 2014**) that a second JCRB meeting should only be held in any year when it is considered necessary. The 48th meeting will be held in week 38 (beginning 16th September) of 2024 at the BIPM.

The Chairman, Dr Milton took the opportunity to thank the hosts for a successful meeting and all delegates for their attendance and contributions to the meeting.

He then closed the 47th meeting of the JCRB at 11:35h (UTC-6).