

**REVIEW OF NMI CALIBRATION AND MEASUREMENT CAPABILITIES
AND
AFRIMETS REPRESENTATION ON THE JCRB**

Acronyms and Definitions

BIPM	International Bureau of Weights and Measures
CMCs	Calibration and Measurement Capabilities
CIPM	International Committee for Weights and Measures
CIPM MRA	CIPM Mutual Recognitions Arrangement
JCRB	Joint Committee of the Regional Metrology Organisations and the BIPM
TC 1A	AFRIMETS Technical Committee for Scientific Metrology and BIPM /CIPM Affairs

A. Review of NMI Calibration and Measurement Capabilities (CMCs)

1. In terms of AFRIMET's membership in the JCRB and the regional implementation of the CIPM MRA between National Metrology Institutes (NMIs), AFRIMETS has to review the CMCs of member NMIs (intra review), and other RMOs (inter review), if these are submitted for inclusion in Appendix C of the CIPM MRA.
2. For this document, the term NMI includes Designated Institute (DI).
3. AFRIMETS TC-1A (for Scientific Metrology) and its Technical Working Groups (TC-WGs), which mirrors the Consultative Committees of the CIPM, shall deal with all technical actions pertaining to CMCs arising from AFRIMETS' membership of the JCRB.
4. The submission of a CMC for approval to the Key Comparison Data Base entails four basic steps:
 - a. The Quality Management System of the NMI must be approved by the AFRIMETS TC-QS,
 - b. The proposed CMCs must be covered by the Laboratory Quality System (QS) based on ISO/IEC 17025 and in the case of official 3rd party accreditation, the accreditation scope. In both cases the QS must be approved by the AFRIMETS TC-QS in accordance with the AFRIMETS Guideline for the Acceptance of a Quality System (AFR-13-014b),
 - c. The proposed CMC must be supported by key or supplementary comparison results or where this is not yet available, acceptable evidence must be supplied in accordance with the rules of the particular Consultative Committee (CC), and
 - d. The Chair of the relevant TC-WG must ensure that the proposed CMC conforms to the rules of the particular CC and conduct the intra-AFRIMETS

review according to AFRIMETS procedures and manage the inter-RMO review according to the JRCB and CC procedures.

5. An application by a member NMI for the inclusion of its CMCs in Appendix C of the CIPM MRA is done through the Quality manager (QM) or the person designated by the NMI for this purpose. Hereafter the term QM also means the designated person and vice-versa.
6. Once an application by the QM of the member NMI for the inclusion of its CMCs in Appendix C of the CIPM MRA is received by the AFRIMETS Secretariat, the following sequence of actions shall be initiated:
 - a) The Secretariat forwards the received application to the chairperson and vice-chairpersons of TC-QS to confirm the coverage of the request by the corresponding QS.
 - b) If the QS had not been approved by TC-QS, the request is returned to the Secretariat that returns it to the QM. The QM must revert to document AFR-13-014b "Approval of the QS of an NMI for the purposes of the CIPM MRA" and follow the relevant procedure for the approval of the QMS.
 - c) If the QMS had been approved, the application, with the relevant QS information is forwarded to the TC-WG Chair or in the case of WGs with sub-technical WGs, to the relevant sub-working group chair (sub-chair), CC'd to the WG Chair. The appropriate TC-WG Chair or vice-chair checks that the proposed CMC is appropriately covered by the approved QS. If not, it is reverted back to the Secretariat that reverts back to the QM.
 - d) On receipt of the documentation, the relevant TC-WG Chair, with the assistance of the relevant experts (see Appendix 1: Approved expert list), shall check whether the submitted CMCs are in the format required by the relevant CC and the JCRB. If necessary, the TC-WG Chair or sub-chair directly requests the required conversion to the correct format from the submitting NMI technical experts (CC'd to the QM).
 - e) As a next step, the relevant WG Chair or sub-chair shall discuss with the Working Group members the composition of the regional technical peer review panel, and augmented, if considered necessary or advisable by the WG members, by suitable international metrology experts. Instead of augmenting the review panel with suitable international metrology experts, the submitting NMI may also be granted permission (by TC-1A and the TC-QS) to submit its CMCs in for review by another RMO, provided the submitting NMI is a Member or Associate Member of such other RMO and has that RMO's prior agreement for this action. The results of such a review by another RMO shall be presented to TC-1A and the relevant WG as supporting evidence.

The purpose of the Technical peer review shall be to enable AFRIMETS to make a fair and objective judgement whether the submitted CMCs meet the requirements of the CIPM MRA as interpreted and explained in the JCRB rules of procedure in

accordance with CIPM-MRA-D04. The JCRB rules of procedure require that the following points should be taken into account in evaluating CMC submissions:

- a) Results of key and supplementary comparisons;
- b) Documented results of past CC, RMO or other comparisons (including bilateral comparisons);
- c) Knowledge of technical activities by other NMIs;
- d) Active participation in RMO projects;
- e) Appropriate measurement procedures and equipment;
- f) Scientific and technical qualifications of staff;
- g) Other available knowledge and experience;
- h) Quality system existing or in preparation, brief description;
- i) Any peer assessment, third party accreditation or self-declaration including the name of the accreditation body; membership of a multilateral agreement/arrangement; scope of accreditation and names of peer reviewers.

The regional Technical peer review panel shall apply these criteria when evaluating the submitted CMCs.

TC-1A, the TC-QS and the WG Chair or sub-chair shall also be responsible for the format and scope of a possible review visit by an appointed Technical peer review panel, should such a visit be regarded as necessary.

In case the submitted CMCs from an NMI are covered by third party accreditation and/or if the WG members are familiar with the applicant NMI through previous visits or interactions, the WG may waive the requirement for a review visit. In this case, the WG Chairs shall refer the submitted CMCs to their members and, if considered necessary, international experts for comment, together with a specified deadline for these comments of no longer than one month.

- a) Should visits by peer review panels be necessary, the details and duration of these visits shall be discussed between the TC-WG Chair or sub-chair and the member NMI concerned to allow the member NMI to estimate the cost of the review, if any, which it shall be required to cover;
- b) The reviewers' comments, if any, shall be discussed by the WG Chair or sub-chairs involved with the applicant NMI and the NMI shall be given an opportunity to revise the submitted CMCs accordingly;
- c) Once the applicable TC-WG is satisfied that the submitted CMCs meet the requirements of the CIPM MRA, the TC-WG chair or sub-chair shall inform the TC-QS Chair and vice-chairs and the Chair of TC-1A in writing (e-mail is sufficient);
- d) Otherwise, the regional intra-review process and the discussions between the applicant NMI and TC-WG shall continue until the matter is resolved to the satisfaction of the Chair of TC-1A and the Chair and vice-chairs of TC-QS;
- e) The relevant TC-WG Chair, in consultation with the AFRIMETS JCRB representative, shall forward the reviewed CMCs together with an appropriate

covering letter outlining the procedure followed and the conclusions reached to the JCRB Secretary for distribution to JCRB members, or place it on the relevant JCRB review site –depending on the procedure outlined by the relevant CC.

B. AFRIMETS REPRESENTATION ON THE JCRB

AFRIMETS representation on the JCRB shall be by a delegation from the members of the BIPM and Associates of the CGPM (participating in the CIPM MRA) consisting of all or any of the following (but at least two), and a maximum of five, as per JCRB rules:

- a) The official AFRIMETS appointed representative to the JCRB;
- b) The AFRIMETS Chair (if from the Scientific metrology community, otherwise the Vice-Chair Scientific metrology);
- c) The Chair of TC-1A (if not one of the above);
- d) The Chair of the TC-QS;
- e) If not already five, representatives of member sub-RMOs can be invited, if necessary selected in consultation between a), b) and c) above, using the criterion of maximum representivity.

It is expected that the respective NMI funds the attendance of a member of its staff to the JCRB.