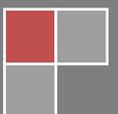


2016

**ACCREDITATION OF NATIONAL
METROLOGY INSTITUTES BY AFRAC
ACCREDITATION BODIES
AFRICAN ACCREDITATION COOPERATION**

*This document outlines the process to be followed by AFRAC
Accreditation Bodies when accrediting National Metrology Institutes.*

Publication reference: TP001-01



Authorship

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Classification

This document is classified as an AFRAC Technical Publication.

Authorisation

Issue Number: 01
Prepared by: AFRAC Technical Committee
Date: 4 December 2014
Approved by: Executive Committee
Issue and application date: 13 May 2016

Official language

The text may be translated into other languages as required. The English language version remains the definitive version.

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1. PURPOSE

- 1.1 The purpose of this document is to describe the specific requirements for the accreditation of National Metrology Institutes (NMIs) and Designated Institutes (DI) by Accreditation Bodies (ABs) who are Members of AFRAC.

2. ABBREVIATIONS

AB	Accreditation Body
AFRAC	African Accreditation Body
AFRIMETS	Intra-Africa Metrology System
CIPM	International Committee of Weights and Measures
CMC	Calibration and Measurement Capability
DI	Designated Institute
ILAC	International Laboratory Accreditation Cooperation
KCDB	Key Comparison Database
NMI	National Metrology Institute
RMO	Regional Metrology Organisation, e.g. AFRIMETS
RMP	Reference Material Producer

3. DEFINITIONS

- 3.1 A National Metrology Institute (NMI) is the institute designated by the appropriate national governmental or other official authority of the Member State of the Metre Convention, as being responsible for national measurement standards. Associate Members of the Metre Convention may participate in the Arrangement through their RMO. [4] The term NMI as used in the document includes both National Metrology Institutes and well as Designated Institutes.
- 3.2 Subsidiary Measurements are measurements not directly related to the measurement under consideration, e.g. measurements of environmental conditions. [5]

4. INTRODUCTION

- 4.1 National Metrology Institutes (NMI's) seeking recognition of the International Committee of Weights and Measures (CIPM) Mutual Recognition Arrangement (MRA) are required to satisfy specific requirements in order to have their Calibration and Measurement Capabilities (CMCs) accepted into Appendix C of the Key Comparison Database (KCDB).
- 4.2 The requirements include:
- 4.2.1 International comparison of measurements, known as key comparisons; or
 - 4.2.2 Regional key comparisons; or
 - 4.2.3 Other regional or bilateral comparisons, known as supplementary comparisons;
 - 4.2.4 Review of the competence, based on results of comparisons;
 - 4.2.5 Implementation and review of quality systems; and
 - 4.2.6 Demonstration of competence by NMIs. [1]
- 4.3 Accreditation of the NMI is one of the options available for a NMIs to demonstrate both competence of the NMI and confirmation of the implementation of a quality system that satisfies the requirements of ISO/IEC 17025 and where applicable ISO Guide 34.
- 4.4 In order for the Regional Metrology Organisation (RMO) to have confidence in the accreditation process, the AB must manage the assessment process in order to ensure that the technical assessors and/or experts used satisfy the requirements for on-site peer reviewers as recommended by the CIPM. [2]

- 4.5 AFRAC in consultation with AFRIMETS must establish a database of assessors who can be used with confidence during the assessment of NMIs or DIs. This database must list the technical capability of the assessors, their written and oral language capabilities, and their assessment experience. All assessors on the list must be qualified technical assessors within their local AB and either be current or recently retired employees of the NMI within which they are associated.
- 4.6 The inclusion of an RMO acceptable technical expert or assessor in the assessment team must be included during initial, and/or at least once per assessment cycle, preferably during re-assessment.
- 4.7 ILAC has established criteria for the traceability of measurement results. [3] Where the intention of the NMI is to seek acceptance of the CMCs within Appendix C of the KCDB, the AB will be required to apply criteria acceptable to the CIPM, this criteria may supersede requirements established by the ILAC P10 Policy on Traceability of Measurement Results.

5. SELECTION OF SUITABLE TECHNICAL EXPERTS / ASSESSORS

- 5.1 Regional technical experts/assessors used for the assessment of NMI's should be qualified assessors and have relevant assessment experience from their own AB.
- 5.2 Additionally in order for the selection of technical experts/assessors to be acceptable to the RMO, the following guidelines established by the CIPM [2] must be adhered to:
 - 5.2.1 The technical expert/assessor should normally have at least a degree qualification in a scientific or technological discipline. In some cases extensive relevant experience may be substituted for the formal education requirement; and
 - 5.2.2 The technical expert/assessor should generally have five years of relevant experience, in developing or responsibility for calibration or measurement services.
- 5.3 The following are also considered desirable attributes for technical experts/assessors to possess:
 - 5.3.1 Membership or past membership of the RMO Technical Committee(s);
 - 5.3.2 Participation in key or supplementary key comparison programs;
 - 5.3.3 Publication record in internationally refereed Metrology journals;
 - 5.3.4 Regional or international assessment experience; and
 - 5.3.5 Where relevant, knowledge and experience of ISO Guide 34 for Reference Material Producers (RMPs).
- 5.4 In cases where it is not possible to obtain the services of a technical expert who is also a qualified assessor, then the expert may be accompanied by a qualified local assessor having appropriate assessment and quality management experience.

6. TRACEABILITY OF MEASUREMENT RESULTS

- 6.1 ILAC has established the requirements for measurement traceability and these have been published in the ILAC P10 Document. The ILAC P10 makes provision for traceability to the SI system of Units via options 1, 2, 3a or 3b. [3]
- 6.2 An NMI may either seek metrological traceability from another appropriate source or they may realise the unit independently and then through their participation in key and regional inter-comparisons confirm these values.
- 6.3 In cases where the NMI intends to support their application for the submission of CMCs into the KCDB Appendix C, then the NMI seeking metrological traceability must be via another NMI (Option 1 as per the ILAC P10) except for subsidiary measurements.

7. REFERENCES

1. Guide to the implementation of the CIPM MRA – CIPM MRA-G-01, Version 1.2 Published June 2013;
2. Recommendations for on-site visits by peers and selection criteria for on-site peer reviewers. CIPM 2007-25;
3. ILAC Policy on the Traceability of Measurement Results, ILAC P10:01/2013;
4. Mutual Recognition Arrangement (MRA) – Mutual recognition of national measurement standards and of calibration and measurement certificates issued by national metrology institutes – drawn up by the CIPM under the authority of the Metre Convention;
5. ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories; and
6. ISO Guide 34:2009 General requirements for the competence of the reference material producers.

