

1. INAUGURAL MEETING OF SAMET (SOCIETY FOR THE ADVANCEMENT OF METROLOGISTS)

Approximately eighty people attended the inaugural meeting of SAMET on 20 April 2001, at the CSIR Conference Centre, Pretoria, South Africa. Metrologists and interested parties coming from national, regional and international bodies attended. The following two photographs show some of the attendees.



The meeting followed months of planning and preparation by a core committee of metrologists from the CSIR, National Metrology Laboratory and throughout industry in South Africa. The core committee saw the need to form a body such as SAMET to improve the status and competence of metrologists, nationally and regionally.

The meeting began with opening remarks made by Ms Marba Visagie on behalf of Dr Tshenge Demana (Director of Standards and Environment, Department of Trade & Industry, South Africa). Keynote speakers included Dr Kai Stolle-Malke (Office for Technical Cooperation, Physikalisch Technische Bundesanstalt, Federal Republic of Germany), Dr Stephen B. Carpenter (Head of International & Academic Affairs, National Institute of Standards Technology, USA), Mr Bheki Mathe (Scientific & Industrial Development Corporation, Zimbabwe), Mr Francois Denner (Manager of CSIR, National Metrology Laboratory, South Africa) and Mr Steve Sidney (National Laboratory Association).

The draft constitution was adopted as the interim constitution and the council was given the mandate to refine it further and subsequently present the improved for adoption at the next Annual General Meeting.

A SAMET Council was elected, with Mr Moses Temba (CSIR-NML) being elected chairman, Ms Lisa Taylor (Natural Colour Centre), Vice-Chairperson, Mr Oelof Kruger (CSIR-NML), Treasurer and Mr Alan Moodley (CSIR-NML), Secretary. Mr Alec Stolz (SA Scale Co.) and Mr Kishore Hanuman (Reutech Defence Industries, Durban) were elected as ordinary members. Two more council members will be co-opted.

The first meeting of the Council was held on 29 May 2001.

SAMET will work closely with metrology-related organisations within South Africa and abroad, like the National Laboratory Association (NLA) in South Africa, the Metrology Society of Australia, Metrology Society of Thailand and the Metrology Society of India.

Interest was expressed by attendees on whether the organisation would extend membership to the whole of Africa. This will be addressed together with the finalisation of the constitution.

A panel session held toward the latter part of the day, chaired by Dr Carpenter, brought about discussions on the "way forward". The members of the council have already taken heed of the comments made. As a first step, a task team has been formed to address the concerns of analytical

chemists involved in chemical metrology. The Chemical Metrology Task Team, headed by Dr Rob Drennan of CSIR's BIO/CHEMTEK division, will embark on a "fact-finding mission" to establish ways to "create a common language" with analytical chemists and also to create an awareness amongst this community of the importance of metrology in their vocations. It is hoped that the output of this task team will provide inputs to CMeTSA (Calibration, Measurement, Testing, South Africa), which resorts under the National Laboratory Association (NLA).

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2. MASS AND VOLUME STANDARDS AND RELATED EQUIPMENT SUCCESSFULLY INSTALLED AT INNOQ (MOZAMBIQUE)

Mr Bennie van der Merwe, an NML mass and volume metrology expert, visited INNOQ in Maputo, Mozambique during May and June 2001 to assist in the upgrading of the metrology capabilities. The visit was part of a UNIDO sponsored project that included the selection of suitable donor equipment from [SABS](#), NML and [PTB](#), refurbishment of the INNOQ laboratories, shipment, installation and training. The first picture below shows some of the balances in the mass laboratory, while the second one depicts Bennie flanked by UNIDO personnel and in the foreground the Director of INNOQ, Mrs Gabriela da Silva, during a visit to the new laboratories. The Regional Coordinator of SADC MET, Dr F Hengstberger, has his back to the camera and is having a closer look at one of the balances.





Bennie in conjunction with Mr Sidonio dos Santos of INNOQ was able to assemble and install the equipment. While doing this, Sidonio received hands-on training in the principles and operation of precision equal-arm balances. The commissioning of the equipment was used to provide training on equipment performance and to determine the capabilities of the mass laboratory. Theoretical and practical training on balances, mass pieces and volume calibrations (both the gravimetric and volumetric methods) was provided. Following the successful implementation of the equipment and training, the INNOQ calibration capabilities were determined to be in the order of $\pm (50 \cdot 10^{-6} + 0.05 \text{ ml})$ for volume and $\pm (1 \cdot 10^{-6} + 0.05 \text{ mg})$ for mass calibrations.

3. KENYA BUREAU OF STANDARDS AND NATIONAL METROLOGY LABORATORY (SOUTH AFRICA) SIGN MEMORANDUM OF UNDERSTANDING

The National Metrology Laboratory (NML) of the CSIR has signed a Memorandum of Understanding (MoU) with the Kenya Bureau of Standards (KEBS) in Centurion, just outside Pretoria, subsequent to a joint South Africa - Kenya workshop addressing Technical Barriers to Trade (TBT) on 19 July 2001.



The MoU provides a mechanism for scientific and technical cooperation in metrology between the NML and KEBS, to augment their measurement capabilities in physics and chemistry. According to Mrs Margaret Rotich, CEO of KEBS, the exchange of personnel, scientific information, reference data and materials will enable the KEBS and the NML, to collaborate on scientific ideas of mutual interest. The MoU includes the exchange of scientists for collaborative visits, cooperation projects aimed at the development of reference standards, production of reference data, intercomparisons of national standards and the training of metrologists.

"In pursuing the ambitions of the New African Initiative, the NML has embarked on a process of strengthening our African relationship to facilitate the promotion of infrastructure to serve both the domestic and export markets," said François Denner, NML manager, subsequent to the signing ceremony. Mr Denner concluded by saying that the regional integration of economies within the African continent relied on a sound measurement infrastructure to demonstrate competence and effectively remove technical barriers to trade.

4. NATIONAL METROLOGY LABORATORY OF SOUTH AFRICA APPOINTS NEW HEAD OF MECHANICAL METROLOGY



Dr Mukayi Musarurwa, previously manager of the National Metrology Institute of Zimbabwe and past chairperson of SADC MET, was appointed as the Business Area Manager for Mechanical Metrology at the NML with effect from 1 May 2001. Born in Zimbabwe, Mukayi completed high School in Birmingham, UK, after which he successfully graduated with a BSc from the University of Wales and an MSc from the University of Newcastle-upon-Tyne. His further studies led him to Germany, where he completed a PhD in Materials Engineering at the Technical University of Berlin.

5. 7th MEETING OF THE JOINT COMMITTEE OF REGIONAL METROLOGY ORGANIZATIONS AND THE BIPM (JCRB), OCTOBER 2001 IN PARIS

The meeting was attended by the Regional Coordinator. He reported that the status of the calibration and measurement capabilities (CMCs) of the CSIR – NML (South Africa) submitted by SADC MET for entry into the global MRA database was as follows:

he submitted length CMCs (top services) are already in the MRA database.

The final versions of the CMCs for Electricity and Magnetism and for Acoustics and Vibration have been published in the MRA database.

The first set of Photometry and Radiometry CMCs were approved for entry in the MRA database at the 7th JCRB meeting.

CSIR-NML chose not to submit its regionally reviewed CMCs for gas mixtures for inter-regional review until more intercomparison evidence has been collected in support of the claims. Submission of the first CMCs in this area to the APMP review process (as agreed at the last JCRB and SADC MET meetings) is expected shortly.

CMCs for ionizing radiation have been circulated for inter-regional review already in October 2000. On the basis of the first comments, it was decided by the CSIR-NML (South Africa) to withdraw the entries in radiation dosimetry until further intercomparison evidence becomes available. The CSIR-NML CMCs for radioactivity were re-submitted to inter-regional review during May 2001 and agreement was obtained from COOMET. Final feedback from SIM, EUROMET and APMP is still being awaited.

The SADC MET CMCs for the CSIR-NML (South Africa) for mass, density, pressure, force, hardness and torque were submitted for inter-regional review during May 2001 but agreement from the other RMOs still has to be obtained.

The submission date for the inter-regional review of CMCs in temperature, rest of length and rest of Photometry & Radiometry is 15 November 2001.

SADC MET used a peer review process for all its current (first round) CMC submissions, in which a SADC MET panel of two metrologists, supplemented by observers from NIST, NPL (UK) and NML (Australia), spent one week at the CSIR-NML (South Africa), reviewing both the evidence for the submitted CMCs and the quality system. The CSIR-NML is currently in the process of being accredited for its measurement services by an Accreditation Body, which is a signatory to the ILAC MRA (SANAS). The CSIR-NML calibration services in air pollution, acoustics and vibration are already accredited by SANAS. It is also part of a CSIR Division, which has recently obtained ISO 9001 certification.

With regard to future (second round) submissions, modifications or additions to the CMCs of the CSIR-NML, the offer by the APMP at the last JCRB meeting, to allow the CSIR-NML (as an Associate Member of the APMP) to participate in the APMP review process in addition to any concurrent SADC MET review

process will be gratefully accepted. This assistance is required until SADC MET is in a position to conduct this process independently in the future.

Currently there are about 10 000 lines of data in the database. This is expected to grow to between 20 000 and 30 000 by the end of next year, with chemistry in particular adding a lot of new entries.

It was decided that the next meeting of the JCRB would take place at the CSIR-NML (South Africa) in Pretoria on 5 and 6 March 2002.

6. SADC MET REGIONAL COORDINATOR ELECTED TO MEMBERSHIP OF THE CIPM

Dr Franz Hengstberger was elected during September 2001, by international ballot, as a member of the prestigious International Committee of Weights and Measures (*Comité International des Poids et Mesures*, CIPM). A first for Africa, Franz's appointment recognizes the contributions that he and the CSIR-NML have made to metrology in the past.

The CIPM is made up of eighteen individuals, each from a different Member State. Its principal task as the custodian of the Metre Convention is to ensure world-wide uniformity in the units of measurement and to direct the operations of the International Bureau of Weights and Measures (BIPM).

7. SADCA, SADC MEL AND SADC MET SIGN MOU ON THE FORMATION OF A REGIONAL RESOURCE CENTRE FOR METROLOGY EDUCATION

The chairpersons of SADCA, SADC MEL and SADC MET signed a Memorandum of Understanding (MOU) on the joint establishment of a SADC Resource Centre for Metrology Education (SRCME) in Pretoria on 30 August 2001. The MOU is aimed at harmonizing and rationalizing the scarce educational resources in metrology in the SADC region and at using the existing national resources in this field within a common regional framework.



The picture shows Mrs Maureen Mutasa (Zimbabwe, left), Mr A H M Tukai (Tanzania, middle) and Mrs Masego Marobela (Botswana, right), the chairpersons of SADCA, SADC MEL and SADC MET respectively, after signing the MOU.

WORKSHOP OF SADC SQAM TASK-TEAMS IN PRETORIA

The project task teams appointed by the various regional SQAM structures at the April 2001 SQAM meetings in Maseru (Lesotho) were convened under UNIDO sponsorship during the last week of August 2001 in Pretoria (South Africa). They were tasked with the compilation of project proposals for the

achievement of an internationally credible standards and conformity assessment infrastructure in all SADC countries. The task team members attending the meetings were:

SADCA: Mr Beer Budoo (Mauritius), Mrs Maureen Mutasa (Zimbabwe) and Mr Mike Peet (South Africa).
SADCMEL :Mr A H M Tukai (Tanzania), Mr Francis Karani (Zimbabwe) and Mr Brian Beard (South Africa)
SADCMET: Mr Bhukumusa Mathe (Zimbabwe), Mr M A Makara (Lesotho), Dr Franz Hengstberger (South Africa)
SADCSTAN: Mr Samuel Mwambazi (Zambia), Mr Martin Kellermann (South Africa)
SQAMEG – Testing: Mrs Beatrice Mutabazi (Tanzania)

Staff members of the secretariats of the various SADC SQAM structures supported the task team members in their work. Dr Otto Loesener-Diaz and Mr A de Groot attended the meetings on behalf of UNIDO and the SADC secretariat in Gaborone (Botswana) observed the proceedings on the last day through Mr Robert Kirk.

9 .SADCMET / PTB MASS INTERCOMPARISON TRAINING COURSE HELD DURING THE LAST WEEK OF AUGUST IN GABORONE (BOTSWANA)

An experienced, retired metrologist from Germany – Mr Balhorn –conducted a training course for SADC mass metrologists on how to organize and perform a successful regional mass intercomparison. Mass metrologists from most of the 14 SADC countries plus the 3 Associate Members of SADCMET attended the one-week course in Gaborone at the end of August.

In order to fine-tune the course content, Mr Balhorn visited mass metrology facilities in Botswana, South Africa and Swaziland from 6 – 10 August and also took into account the results of several mass pilot intercomparisons conducted by SADCMET over the past few years.

A full regional mass intercomparison will commence soon after the training course.

10. KEBS METROLOGIST ON A SIX-MONTH ASSIGNMENT TO THE CSIR-NML

The Memorandum of Understanding (MoU) signed between between the NML and the Kenya Bureau of Standards (KEBS) in July 2001 is already starting to be implemented. In terms of the envisaged exchange of metrologists, scientists and engineers, Mr David Kimetto – head of the KEBS force laboratory - is spending six-months at the NML force laboratory. A Higher National Diploma graduate in Mechanical Engineering (Production), David will be performing a number of experiments and measurements and will receive specialist training within the discipline.

Benny Burke, head of the NML force laboratory, commented that David will be exposed to the calibration of load cells, hardness machines, hardness blocks (Rockwell, Vickers and Brinell scales) and torque transducers. Furthermore, he will receive training on programming, procedures and calculation of the uncertainty of measurement. Benny added that David will be accompanied on his return to Kenya by John Lefifi, an NML force metrologist, to complete a NML – KEBS force intercomparison that has already been initiated.

“The process the NML and KEBS have enthusiastically embarked upon will no doubt contribute to developing the metrology capabilities of the whole continent,” Benny concluded.



John Lefifi (NML, left) with David Kimetto (KEBS, right) in the NML force laboratory.

11. FURTHER METROLOGY TRAINING FOR INNOQ METROLOGY HEAD

Mr Sidonio dos Santos, in charge of the new metrology laboratories of INNOQ (Mozambique), underwent a further three weeks' training in practical mass and volume metrology at the CSIR-NML (South Africa) during September/October 2001. His training was supported by the United Nations Industrial Development Organization (UNIDO).

12. QUALITY WORKSHOP FORGES SADC MET APPROACH

Seventy local and international delegates explored international trends that Regional Metrology Organisations (RMOs) have adapted in reviewing the quality systems of their National Metrology Institutes (NMIs) during the Quality workshop held at the CSIR during March 2002.

In terms of the global [Mutual Recognition Arrangement](#) (MRA) between NMIs, RMOs like [SADC MET](#), [EUROMET](#), [APMP](#), [COOMET](#) and [SIM](#) – have to review the calibration and measurement capabilities submitted by NMIs for inclusion in the MRA database. This review includes technical verification of the claims as well as proof of an acceptable NMI quality system based on 3rd party accreditation or self declaration.



The photograph depicts Mr Bahle Sibisi, Deputy Directory General – DTI (South Africa), addressing the international delegation to the JCRB.

In opening the meeting, Dr Quinn – Director BIPM, highlighted the importance of NMI quality systems with respect to the requirements of the global MRA.

The workshop allowed SADC MET to gather information from regional metrology organisations around the world on their regional review systems. This information will be used by SADC MET to draft a Code of Procedure for its own regional review system, based on best practice internationally.

Following the successful workshop, a meeting of the Joint Committee of Regional Metrology Organizations and the BIPM ([JCRB](#)) was held at the CSIR under the chairmanship of Dr Terry Quinn.

13. COOPERATION BETWEEN THE NMIs OF SOUTH AFRICA AND ETHIOPIA

The desire to build up an internationally credible conformity assessment infrastructure has motivated the Quality and Standards Authority of Ethiopia (QSAE) to make their National Measurement Standards traceable to the National Metrology Laboratory of the CSIR in South Africa. This follows on a UNIDO project to strengthen the Ethiopian SQAM infrastructure, which was awarded to the CSIR–NML in 1999 and has since led to the establishment of close ties between South African and Ethiopian SQAM institutions.

Currently mainly a producer of raw materials (coffee, leather etc.), Ethiopia has a 300 strong QSAE organisation that is responsible for Quality, Standardisation, Metrology, Testing and Certification.

Mr Mesfin Teklehaimanot – head of the QSAE metrology laboratories - commented that the CSIR-NML has been selected to afford Ethiopia the opportunity of disseminating accurate, traceable measurements to industry.



In the photograph (left to right) Dr Mukayi Musarurwa (NML), Dr Franz Hengstberger (NML) and Mr M Teklehaimenot (QSAE) in discussion at the CSIR-NML mass laboratory.

“The relationship that has developed between the two organisations over the last few years, in addition to the international standing of the CSIR-NML, gives QSAE the confidence to partner with the CSIR-NML. It is planned to sign a Memorandum of Understanding in the near future to cement this partnership.

“Building recognized national SQAM capabilities and resources will give Ethiopian companies a competitive advantage on a global scale, especially within the manufacturing industry,” Mesfin commented.

During his two-week stay at the CSIR-NML, Mesfin observed the calibration of the Ethiopian national standards for temperature, mass, force and length at the CSIR-NML laboratories. He also paid a visit to the SABS, SAQI and SANAS.

Mesfin added that QSAE has recently applied for associate membership of SADC MET.

14. ATTENDANCE OF EUROMET MEETING

The meeting was attended by the Regional Coordinator of SADC MET, which has the status of a corresponding RMO with EUROMET. He was given an opportunity to make a presentation on SADC MET and the regional cooperation in SQAM.

The newly elected chairman of EUROMET is Paul Hetherington of the NML (Ireland). The name of EUROMET “Rapporteurs” was changed to “TC chairpersons” and the name “EUROMET Consultative Committee” changed to “EUROMET Executive Committee”.

Corresponding membership of EUROMET was subdivided into Corresponding Organisations - of which there is 1, Corresponding NMIs – of which there are 2 (including the CSIR-NML) and Corresponding Applicants for full membership – of which there are currently 6. A Membership fee for Corresponding NMIs and Corresponding Applicants was introduced to help finance the EUROMET secretariat.

Prof. Goebel (PTB) reported on the formation of Virtual Institutes in various fields of metrology:

Acoustics (DFM, Nmi, NPL, PTB), coordinator A Wallard. Funding – members and EU.
Virtual European Radionuclide Institute (VERMI). BNM-LNHB, IRMM, NPL, PTB. Contact Dietmar Reher. Funding by members.
Joint European Programme for Primary Isotopic Measurements (JEPPIM). BAM, IRMM, METAS, NPL, PTB. Coordinator Philip Taylor. Funding by members.
Collaboration of European Low-level underground labs (CELLAR). Low level radioactivity measurements.
Counting electrons one by one: Measurement of very small electric currents (COUNT).
European virtual institute for geometry measurements (EVIGeM).

Dr Andrew Wallard (NPL, UK) gave an overview of challenges for European metrology in the future. The vision is not a single NMI. Local service delivery, especially to SMEs, is vital and effective. A virtual NMI is possible direction for the future. A lot of traceability arrangements already exist in Europe. EUROMET wants to identify overlaps through CMC analysis. In such arrangements it is planned that the local NMI

should manage customer equipment, even if calibration is done at another NMI. This NMI interaction is further augmented by staff exchange and collaborative projects.

Dr Terry Quinn (BIPM) reported on progress with the implementation of the MRA. There are already 6 Associates of CGPM. A new JCRB CMC progress tracking facility has been installed on the BIPM website. The draft of the envisaged common statement on calibration certificates of MRA signatories can be viewed on the JCRB webpage. CC working groups are typically empowered by the CC to handle registration of Key Comparisons and Supplementary Comparisons. Some currently ongoing RMO intercomparisons seem to be approved by CCs in retrospect. A new look was needed at guidelines for bilateral intercomparisons.

PTB (Germany) reported that from 1 July 2001 DKD will be separated from PTB, reporting directly to the Ministry. SP (Sweden) stated that SP was the only NMI in Sweden, with merely Ionizing Radiation still outside its umbrella. A new SP Department of Measurement and Technology had been created, which involved 85 people and was headed by Hakan Nielson. NMI (Netherlands) informed the participants that all its shares had been transferred to TNO. In Italy there has been a further consolidation of NMI activities with the addition of two further groups. A possibility exists that accreditation might be consolidated into a single body. The representative from Belgium reported that accreditation (BELAC) had been separated from metrology. In France BNM ceased to exist from 27/1/2001. A new NMI will be created within the next few weeks. LCIE is no longer a member of BNM as its shares belong to a private organization (Bureau Veritas). Its activities will be transferred to other institutions. In Austria BEV was still unsure about the exact status of metrology in the SQAM infrastructure of the country. BEV can now by law contract other organisations to maintain certain national standards. This was an important step for chemistry in particular. In Spain three new labs were associated with the NMI. These include humidity and attenuation. Portugal reported that IPQ had a new charter and status (public institution, semi-private). Standardization is a new organisation. Metrology (legal and scientific) will be kept together. The new overall structure was still under development. Poland reported that there was a new law of measures. It is in line with EU requirements and accreditation is now separate. The NPL (UK) informed the participants that a review of its operations had been completed recently. It will be published on the UK government website. The new NPL labs are finished. The NPL management contract will be re-tendered in 2002.

The APMP informed EUROMET delegates that Japan had created a new organisation with the name AIST from 1 April 2001. It has 3200 staff (about 2450 scientists). It has a National Institute for Advanced Industrial Science and Technology. The NMIJ is within AIST and was formed from NRLM, parts of ETL and NIMC. It has a staff complement of about 250.

The BIPM reported that it planned to negotiate an MOU with the WMO. Similar discussions with the WHO were at an early stage. The new VIM vocabulary had a target for publication in the year 2002.

It was decided that the next EUROMET General Assembly would be held in Slovakia in 2002, and the one thereafter in Hungary in 2003.

15. FIRST JCRB MEETING IN AFRICA

The 8th meeting of the JCRB was held at the CSIR-NML (Pretoria, South Africa) from 5-6 March 2002. It was attended by the following SADC MET delegation:

Mrs M B Marobela (SADC MET Chairperson)
Dr F Hengstberger (SADC MET Regional Coordinator)
Mr K Morgan (for SADC MET TC-1 chairperson)
Mr A Hurdoyal (MSB, Mauritius)
Mr B Mathe (SIRDC-NMI, Zimbabwe)
Mr F Denner (CSIR-NML, South Africa)

The meeting was chaired by Dr Terry Quinn, the Director of the BIPM, and included representatives from the APMP, COOMET, EUROMET and SIM. It dealt mainly with the submissions of Calibration and Measurement Capabilities (CMCs) of member NMIs, but also addressed the following issues:

Status of the key comparison database
RMO representation at Consultative Committee meetings
Problem areas regarding "designated institutes"
Reports from RMOs

Clarifications on JCRB CMC review procedures
Harmonization of RMO review procedures
Uncertainty in chemistry CMCs
Transport uncertainty in CMC claims
Clarifications on CMC definitions
MRA review due for 2003
Definition for end of MRA transition period
NMI quality systems
ILAC-BIPM MOU
Assistance to developing countries

It was agreed that the next JCRB meeting would be held in Paris from 3-4 October 2002.



Official delegates to the 8th JCRB meeting

Back row (left to right):

Ing Q L Mussio (SIM), Dr K Seta (APMP), Prof A I Astashenkov (COOMET), Mr P Hetherington (EUROMET), Mr F Denner (SADCMET), Prof M Bily (COOMET), Dr S Bennett (EUROMET)

Next row (left to right):

Dr V I Belotserkovskiy (COOMET), Dr A Odin (EUROMET), Dr A Sacconi (EUROMET), Dr W Schwitz (EUROMET), Prof L K Isaev (COOMET)

Next row (left to right):

Dr T Usuda (APMP), Dr A I Pokhodun (COOMET), Dr F Hengstberger (SADCMET), Dr I Castelazo (SIM), Mr K Morgan (SADCMET), Mr B Mathe (SADCMET), Mr L Kong Hong (APMP)

Front row (left to right):

Dr H Imai (APMP), Dr R Kaarls (CIPM), Mrs M Marobela (SADCMET), Dr T Quinn (BIPM), Mr A Hurdoyal (SADCMET), Dr A Samuel (BIPM)