REPORT OF 10th JCRB MEETING, 3-4 MARCH 2003 [NMIJ, JAPAN]

1. OPENING AND WELCOME BY THE CHAIRMAN

The JCRB Chairman and Dr Imai, Chairman of APMP, welcomed those present. Following general introductions, the Chairman requested comments on the Draft Agenda. Drawing attention to the Terms of Reference of the JCRB (Appendix E of the CIPM MRA), he noted that the future operation of the JCRB would be discussed further under Agenda Item 12, "Date and Place of Next Meeting". [The Final Agenda is given in Appendix 1 incorporating all modifications, and providing references for all working documents.] **The Chairman also noted that the Annual Report for 2002 (reporting on the two preceding meetings) would be sent out to the Committee shortly after the 10th JCRB Meeting.**

ACTION 1: JCRB Exec Secretary is to send the Committee the Annual JCRB Report.

2. MATTERS ARISING

The Chairman referred to Document JCRB-10/2. He invited the JCRB Executive Secretary to review outstanding matters. The following specific Actions were discussed.

Action 1: The Exec Secretary requested information regarding RMO Yearly calendars – Dr Castelazo noted that these are included with each RMO report. However, please see Appendix 3 for a summary of available information.

ACTION 2: RMO-JCRB Representatives are asked to review Appendix 3 of the Report of the 10th JCRB Meeting and inform the JCRB Executive Secretary at which events attendance by senior BIPM staff is sought.

Action 4: The Chairman informed the Committee of the CIPM view that the Working Groups on CMCs should not be undertaken within the Consultative Committees (CCs), but that meetings should be encouraged to take place at the same time as CC Meetings. Dr Semerjian suggested that the subject be discussed further under Agenda Item 6.3.

Action 8: Mr Hetherington stated that he has not received any feedback on how information about NMIs' approaches to Clause 7.3 should be made available on the BIPM website. He questioned the necessity of providing this and it was agreed that there was no significant added value.

Action 10: **The Chairman urged APMP and EUROMET to resolve the review of the Thai NMI's Electricity and Magnetism CMCs during this meeting.**

Action 16: The Exec Secretary demonstrated the draft version of the flowchart being developed to provide links to procedural documents regarding key, supplementary and bilateral comparisons and other relevant information. **The intention is to make this accessible on the website by mid-2003.**

Dr Semerjian requested that a deadline be provided before each JCRB meeting for the submission of documents, to provide RMO-JCRB representatives with time to review these before the meeting.

ACTION 3: JCRB documents that are to be tabled at each meeting are to be submitted to the Executive Secretary *no later than one week in advance of the meeting* so that they can be made available on the JCRB webpage.

3. REPORT BY THE CHAIRMAN

The Chairman reminded the Committee that the end of the transition period of the CIPM MRA is approaching. A formal document is being prepared that draws together the outcomes from the last four years of operation of the JCRB. This will be sent to the Committee well in advance of next JCRB meeting and will also be posted on the website.

ACTION 4: JCRB Chairman and Exec Secretary are to prepare the CIPM Report on the JCRB and to forward this to the Committee and post it on the JCRB website.

The Chairman expressed his concern that not many CMCs have been published since the last JCRB Meeting (see Report by the KCDB Coordinator [Document JCRB-10/4]. In the field of Thermometry, in fact, progress has been completely stalled and it is essential that the problems be resolved.

He informed the Committee of a request for a JCRB policy statement on the appropriate use of the Statement referring to the CIPM MRA on NMIs' calibration certificates. **The Committee agreed that the Statement referencing the CIPM MRA should only be included on calibration certificates for NMIs' CMCs that are published in Appendix C of the KCDB.**

Finally, he informed the Committee that a letter has been sent to NMI Directors seeking nominations for a replacement for Dr Samuel in the role of JCRB Executive Secretary. He added that the scope of the position is now somewhat broader than when Dr Samuel began. Expressions of interest have been requested by the end of March 2003.

Dr Semerjian requested that the Committee's thanks to Dr Samuel be noted in the Meeting Report. This is so noted.

4. KCDB REPORT

In the absence of Dr Claudine Thomas, the KCDB Coordinator, the Chairman read out the KCDB Report (Document JCRB-10/4).

The Chairman highlighted the recommendation by Dr Thomas, that "RMOs submit subsets of CMCs as soon as they are ready, rather than waiting for the whole set of CMCs covering a Metrology area to be drawn up."

He also expressed his concern that, on some occasions, technical experts become overly obsessed with details and thereby hold up the finalisation of Key Comparisons. Although not specifically within the scope of the JCRB, he requested this concern to be taken back to the RMOs.

Dr Castelazo informed the Committee that the SIM Working Group on Length has requested that the reporting process for Key Comparisons be simplified. Currently, the drawing up of the detailed comparison report takes a lot of time and the Comparison Coordinator is often not very skilled in preparing the document. Perhaps the report could just consist of Excel spreadsheets of the comparison results with, if necessary, a covering document accompanying this.

The Chairman invited comments from the Committee on how to address this request.

Dr Semerjian stated that the NIST E&M Group is concerned that Key Comparison reports are now not only expected to provide results but to also make comment on related CMCs. On the one hand, the laboratories are being asked to produce the reports in a timely way but at the same time more work is being asked from the Working Groups and pilot laboratories. The Chairman responded that in his view it is the responsibility of the pertinent NMI to follow up when the results of a Key Comparison impact on its CMC claims and it is only when this does not occur that it becomes the responsibility of the RMO. This is not a task that should be asked of the Working Groups or pilot laboratories. Dr Semerjian replied that he had thought this was the driver for setting up the Working Groups on CMCs. It was agreed that this issue would be re-visited under Agenda Item 6.3.

For information, Dr Kaarls noted that there is an *Ad Hoc* Working Group on Viscosity that has undertaken a Key Comparison, the results of which are currently in draft B form.

Prof Kühne asked whether details were available on the KCDB on how links were made between CIPM and RMO key comparisons. The Chairman agreed that relevant documents should be accessible. Dr Semerjian proposed that a general guidance document, which used examples showing its application, would be useful.

ACTION 5: A general guidance document describing how linkages have been made between CIPM and RMO key comparisons is to be provided on the KCDB, using existing technical procedures on linkages as examples.

Some discussion took place on the value of trying to track visitors to the site. It was noted that this would be provided as an optional request when visitors subscribe to the new KCDB Newsletter.

The Chairman noted that Dr Thomas will be participating in the annual PittCon Conference shortly, and thanked NIST for its generosity again in providing space in its booth for the BIPM.

The JCRB expressed its appreciation of the ongoing excellent work of the KCDB Coordinator and her staff.

5. RMO REPORTS

5.1 APMP

Dr Imai tabled Document JCRB-9/5(1), summarising the main points. He informed the Committee that on 20 May 2003, World Metrology Day, NMIJ/AIST would be holding a ceremony to celebrate its Centenary, at which the Nobel Prize winner in Chemistry, Dr Koichi Tanaka, will make a presentation.

The Chairman congratulated NMIJ/AIST and encouraged other NMIs to use such high profile speakers when possible to highlight the importance of metrology, in particular with younger people. He noted the increasing number of APMP members participating in the CIPM MRA, and highlighted the important role that the RMOs play in encouraging this.

Dr Imai informed the Committee that, at the request of the Director of the Sri Lankan NMI, he and the APMP Executive Secretary, Dr Usuda, had visited Sri Lanka in February 2003 to meet with the Secretary of the Ministry of Commerce and Consumer Affairs. It had been a very successful meeting in terms of highlighting the importance of metrology. A similar approach had also been made to the relevant Vietnamese government officials during the APMP General Assembly meetings in Hanoi in November 2002.

Dr Semerjian commented that participation in the CIPM MRA has been discussed within SIM, which has a large number of members but many represent quite small countries. There is general interest from the Caribbean grouping CARIMET, for example, but these countries cannot afford to join on an individual island basis. He requested advice from the Chairman on group membership in such cases.

The Chairman responded that he understood that any single country within CARIMET would never be responsible for more than one metrological quantity, so there is a distributed metrological infrastructure with the ensemble representing a distributed NMI. The question of joint Associate membership for such a case is being considered. It is important to be aware that each Associate is not to submit more than one set of CMCs in a particular field.

Dr Semerjian informed the Chairman that these States are formally establishing an economic entity called CARICOM. Since the text of Resolution 3 uses the word “economy”, it is a matter of how this is interpreted. The Chairman agreed that this should be approached with an open and flexible mind. He undertook to look into the *extension* of the interpretation of Resolution 3, to be considered at the 22nd CGPM.

ACTION 6: The Chairman is to recommend to the 22nd CGPM that the interpretation of the term “Economy” in Resolution 3 of the 21st CGPM be extended to include economic “entities” such as CARICOM.

Dr Hengstberger commented that the work of the JCDCMAS is also very important in providing a coherent and consistent message about the elements of technical infrastructure to politicians. Awareness seminars are held in the SADC region to inform politicians of the infrastructure elements and of existing structures, and a joint ISO, ILAC and OIML seminar/workshop is to be held shortly in the SADC region. SADCMET members are seriously considering becoming Associates of the CGPM and will do so when they have established the appropriate infrastructure. What is important at this stage is to create awareness and the Letter from the Director of the BIPM, sent out in January 2003, helps with this.

Dr Castelazo noted that a joint SIM-APMP proposal on Quality Systems has been approved for APEC funding, with two Workshops to be held, one in Canada and one in Malaysia.

5.2 COOMET

Dr Belotserkovskiy tabled Document JCRB-9/5(2) and Appendices 1-9 given in Documents JCRB-9/5(2a-i), summarising the main points.

The Chairman asked what new elements there are in the Organisational Structure. Dr Belotserkovskiy noted the Quality Forum and the Measurement Standards Joint Committee. Dr Imai asked about the function of the Quality Forum and it was explained that COOMET's Quality Forum undertakes a similar function to that of EUROMET.

5.3 EUROMET

Mr Hetherington tabled Document JCRB-9/5(3), summarising all Sections except Section 6, which was covered by Dr Sacconi. Mr Hetherington noted that at the meeting with APMP to discuss the Thai CMCs, he hoped to also discuss issues arising with chemistry CMCs from BAM regarding the lack of key comparisons. He mentioned the MERA project (1st Workshop held in Dec 02 "to discuss and highlight future metrological research trends in Europe which will drive the provision of metrological capability during the coming decade and also to develop future structural scenarios for the development of metrology in Europe").

In summarising Section 6, "Status of Quality Systems and Review Process", Dr Sacconi commented on the benefits of presenting Quality Systems in these fora in comparing and resolving problems.

The Chairman requested more information on the MERA project, in particular requesting details of the future research trends in Europe in metrology. Mr Hetherington responded that the 1st Workshop had tried to highlight expected future trends over the next 10 years. Three main groupings emerged:

- the existing areas within the physical sciences;
- nanometrology across all fields; and
- chemical and biological sciences.

From these, priorities were listed in terms of areas on which to focus in the MERA project. Also discussed were possible future framework scenarios for Europe. The four scenarios put forward ranged from, at one end of the spectrum, carrying on as at present (with every NMI doing its own activity independently) to the other end of having one "NMI" for Europe. The preferred scenario is in the middle of this spectrum. The main question is how resources can be used to achieve an optimal solution within Europe. More information is available on the EUROMET website (http://www.euromet.org/pages/projects/proj.htm). The next phase of the project is to present the outcomes at a workshop in Berlin in June, to which funding agencies of European NMIs will also be invited. Prof Kühne added that participants are looking at the issue of sharing calibration services, which would have the advantage of freeing technical experts to work in new areas. Dr Sacconi noted that two questionnaires are being used, one directed nationally to identify the perceived needs of customers, and another addressed to European stakeholders in metrology at a more general level, to ask them which of the four scenarios they prefer.

The Exec Secretary inquired whether other RMOs could participate in MERA activities as Observers. Mr Hetherington responded that, at this stage it is focused on EU discussions, but dissemination will certainly be part of the process at a later stage. Presentations on MERA outputs will be made at international conferences – for example, the identified trends will be presented at NCSLI 2003 in August; another presentation will be made at the metrology seminar in France in late 2003. Dr Semerjian commented that similar activities are being conducted by other NMIs, e.g., NIST, and he agreed that the sharing of information between countries and regions would be useful.

The Chairman noted the effect of the MRA in bringing the RMOs together. An advantage to be taken of this is in highlighting other areas where joint activities could be undertaken.

Mr Hetherington informed the Committee that the MERA project had highlighted the fact that information on CMCs provided via the MRA allows the identification of services being undertaken by a number of NMIs, so helps to determine how these could be rationalized/optimized in the future.

Dr Semerjian pointed out that, while the sharing of responsibilities is more of a short term matter, the challenges of future trends is a longer term process where the sharing of information would be very useful, and a Conference on the subject would be helpful. The US has a "Continuity of Operations Plan" (COOP) whose aim, among other things, is to consider how services would be provided in the event that something happened to NIST (e.g., due to terrorism, etc). The MRA provides a good framework for identifying other institutions that could take up tasks.

The Chairman added that it is important to look more broadly to identify new priority metrology areas. For example, it is clear that the necessary metrology infrastructure does not exist in medicine. This will be discussed

further under Agenda Item 10, "Other Business". Dr Semerjian mentioned that this is identified in the "NIST 2010" Strategic Planning process.

Dr Semerjian then inquired about EUROMET's approach to Quality Systems for chemistry measurements. Dr Sacconi responded that, where chemistry represents a small part of the services delivered by an NMI, the same standard (ISO 17025) is applied. Prof Kühne added that large institutes, such as LGC and BAM, within countries present their own Quality System, so this is fully integrated into the QS Forum processes. Again the standard used is ISO 17025, although some also have ISO 9000 certification. Dr Sacconi noted that the institute's whole Quality System is presented at QS Forum, *including* all technical procedures.

Dr Semerjian asked whether the standard used for CRMs is also ISO 17025. Mr Hetherington responded that IRMM had a Quality System based on a system in place within the European Commission that is not ISO 17025 but is based on ISO 17025. Dr Sacconi added that this has only been completed in the area of radiation measurements. The Chairman commented that ISO 17025 is a general standard for calibration and measurement services. Institutes can apply other standards for CRMs, etc. Dr Ediriweera noted that, in the APMP region, ISO Guide 34 and ILAC Guide 12 (for the production and certification of reference materials) are being applied by NML-CSIRO and NARL in Australia and by NMIJ in Japan.

Dr Hengstberger commented that in EUROMET there is a requirement for an annual report regarding the maintenance of the Quality System but asked whether there is also a peer review/assessment cycle? Dr Sacconi replied that this is starting to be discussed but, given that there are 80 institutes involved, the actual periodicity of such a cycle is a difficult issue. However a re-accreditation/re-evaluation process is intended.

5.4 SADCMET

Dr Hengstberger tabled Document JCRB-9/5(4). The positions of both the SADCMET Chairperson and Regional Coordinator will be voted on at the April annual meeting. There had been some delay in obtaining APMP's intra-regional review of SADCMET's mass CMCs. Dr Usuda responded that the delays had been partly due to the change in Chairmanship of the APMP Technical Committee on Mass, but this should be resolved shortly. Dr Hengstberger thanked APMP for its assistance in these activities.

The Chairman suggested that the heading of the last column in Table 3 could be re-worded to avoid misunderstanding by government officials. Dr Hengstberger added that he would also add a column to identify the full members of the Metre Convention within SADCMET.
ACTION 7: Dr Hengstberger is to forward the updated SADCMET report to the JCRB Exec Secretary.

Dr Hengstberger noted that there is a process underway to help organizations set up their CMCs. This should lead to more SADCMET members applying to participate as Associates of the CGPM in time.

Dr Castelazo inquired whether Egypt is planning to submit CMCs and, if so, whether these will be reviewed within SADCMET? Dr Hengstberger responded that Egypt has prepared CMCs but is still in the process of putting together its Quality System. This is nearly complete in some fields. NML-CSIR would be part of the intra-regional review but would also bring in experts from other regions. Mr Lam, noting that Egypt is an Associate Member of both SADCMET and APMP, asked what the rule is in terms of which RMO the CMCs are submitted through. The Chairman responded that it is up to the NMI to state through which RMO it will be submitting *all* of its CMCs. Dr Hengstberger added that Egypt has said it will make its submission through SADCMET.
ACTION 8: The Chairman is to check which RMO Egypt has nominated for its CMC submissions.

Dr Castelazo noted that the SADCMET mass CMCs are now quite old. Dr Hengstberger clarified that these are undergoing another intra-regional review within APMP and will be re-submitted for a new round of inter-regional review.

5.5 SIM

Dr Semerjian tabled Document JCRB-9/5(5), summarising the main points. He noted that, as regards Quality Systems, Brazil has chosen self-declaration and Mexico and the US are also adopting self-declaration based on ISO 17025. NIST recently decided to base its declaration on ISO 17025 for all activities.

6. INTER-REGIONAL REVIEW OF CMCs

6.1 Status of CMC reviews

The Exec Secretary confirmed that Document JCRB-10/6(1) was for the information of the RMO-JCRB representatives only. The status of CMC reviews is provided within each RMO report.

6.2 Chemistry CMCs

The Chairman drew the Committee's attention to the report [Document JCRB-10/6(2)] submitted by Dr Willie May, Chairman of the "Amount of Substance Interregional CMC Review Group". CMCs in this area have, to date, not been submitted to the JCRB Exec Secretary to be posted on the website for inter-regional review but, instead, have been sent directly to the technical experts. In particular he highlighted the new proposed action of the Review Group, that the technical experts intend to undertake formal approval of the Cycle III CMCs currently on the JCRB CMC website at their April meeting at the BIPM. He asked Committee members to what extent they consider this process could be adopted in other fields as well.

Mr Hetherington noted that EUROMET MetChem Chair thought that the approach adopted in the QM area has been a good way to build confidence and deal with issues that arise during the review. Dr Kaarls agreed that it works well and, with the meeting held at the same time as the CCQM meetings, it is also a means of tying in the work of the Consultative Committee with respect to Key Comparisons. Dr Sacconi noted that it is not a shortcut but rather a more efficient path. Dr Semerjian added that in fact it is a much more rigorous process, in that it provides the opportunity for the RMOs to discuss common issues jointly.

Dr Castelazo suggested that any impression that this process is not as rigorous is perhaps based on a misunderstanding that the whole review is undertaken during the two-day meeting. This is not the case: after the meeting a conference call takes place once the experts have had a chance to consider the CMCs in more depth. Dr Semerjian pointed out that perhaps the fact that the CCQM has met annually for the last ten years is where it has an advantage over other areas.

Dr Hengstberger proposed that different review methods might be appropriate at different stages of the MRA. At this stage, when the bulk of the data is coming in, it is appropriate to bring people together, but when only a few lines of CMCs are being considered this may not be needed. Dr Semerjian responded that, since essentially the same people attend CC meetings, even the review of a few CMC lines could be better addressed at a face-to-face meeting, due to the pressure put on people by a meeting deadline.

Dr Sacconi inquired whether the group has had problems dealing with uncertainty statements. Dr Semerjian replied that this has definitely occurred but that having everyone look at the uncertainty statements jointly helps identify and resolve issues. Dr Kaarls added that uncertainties are reviewed when the results of the relevant Key Comparison become available.

The Chairman summarised the Committee's view that the approach for reviewing CMCs being followed in the Amount of Substance area is an efficient way of proceeding, and that the JCRB recommends that this process be applied in other areas to the extent possible and appropriate.

Dr Kaarls noted that it is proposed that some CMCs be posted within both the CCQM section *and* the CCPR section. Dr Semerjian clarified that the intention is to ensure that multiple user communities are able to access the data in which they are interested. Dr Hengstberger suggested that there should be some mechanism to highlight the fact that the same capabilities have been published in different areas of the database. These activities are not necessarily undertaken within the same section in all NMIs, so experts need to know where to find all data relevant to their area. Prof Kühne proposed inserting a comment to the effect that the data are available in a different area rather than duplicating the data, which might become dangerous. The Chairman suggested that this might cause difficulties for people who are familiar with accessing data from a particular area of the database in one way, if they have to learn to access it from another area in a different way.
[NOTE: This issue has since been discussed with the KCDB Coordinator, Dr Thomas. Her recommendation is that the CMCs be published in one area only but that a link be provided between the two associated areas. The specific example given here will be considered further at the April 2003 meetings of the CCQM.]

The Chairman informed the Committee that consideration is being given to broadening the search engine strategies provided in the KCDB to make it more powerful and to help address RMOs needs. He invited views

on appropriate strategies to meet needs. Mr Van responded that broadening the ways in which to search the KCDB would be helpful for the APMP Developing Economies' Committee (DEC), which is trying to identify priority areas for comparisons for developing NMIs within APMP.

PROPOSED ACTION 9: The JCRB Exec Secretary and KCDB Coordinator will forward to RMO-JCRB Representatives some options on broadening the range of the KCDB Search Engines. RMO-JCRB representatives will be asked whether these adequately meet perceived needs of users or whether other options are (also) needed.

6.3 Working Groups on CMCs

The Chairman reiterated the CIPM view that these proposed Working Groups not be formed within the Consultative Committees. He drew the Committee's attention to the subsequently re-drafted Terms of Reference given in Document JCRB-10/6(3).

Dr Semerjian objected to the placement of the Working Groups outside the CC environment and requested that the Document created at the 9th Meeting be re-visited [this is Document JCRB-9/8(4)]. He sought clarification of the CIPM recommendation to remove the association with the CCs. Dr Kaarls responded that this had not been a strong point but the view was that it would lead to too much additional work for the CCs. However, Dr Kaarls stated that there is a missing link between these Working Groups and the CCs in terms of information on what Key Comparisons are needed. He referred to Dr May's report [Document JCRB-10/6(2)], which notes areas in which Key Comparisons are needed in the *Recommendations of the April 2002 meeting*.

The Chairman agreed that it is most important that CMC claims be closely linked to Key Comparisons and that, since Key Comparisons are undertaken through the CCs, this is a task that should be identified within the CC structure. He will refer this back to the CIPM with stronger arguments to retain the link with the CCs.[1]

Prof Kühne commented that it would be helpful to have some authority designated to state that "this Key Comparison can be used to check these CMC claims". Dr Tanaka added that he would be raising this issue at this year's CCM meeting so requests the JCRB's views. He had intended to propose some form of cooperation between RMOs to identify which CMC is supported by which Key Comparison.

It was agreed to revert to the original version of the Draft Terms of Reference [Document JCRB-9/8(4)], with two additional items added to the scope of the Working Groups:
"(d) To provide guidance on the range of CMCs supported by particular Key Comparisons
(e) To identify areas where additional Key Comparisons are needed".
The newly revised Draft Terms of Reference are now given in Document JCRB-10/6(3)_rev.

ACTION 10: JCRB Chairman is to re-submit the revised Draft Terms of Reference for "Consultative Committee Working Groups on CMCs" [Document JCRB-10/6(3)_rev] to the CIPM with the JCRB's recommendations for approval.

7. RELEVANT CC MATTERS

The Chairman read out Document JCRB-10/7, "A Note on Supplementary Comparisons".

Prof Kühne sought clarification on the purpose of supplementary comparisons: if they cannot be used to establish the degree of equivalence, do they help support CMCs? The Chairman gave the example of the high frequency area, where alot of comparisons are required for specific artefacts. It was decided that these should not be Key Comparisons, due to the amount of work involved, so they have been identified as Supplementaries. In this example, the purpose of the Supplementary is to cover measurements of specific artefacts and a Working Group within the CC undertook the work.

Dr Hengstberger stated that in Photometry and Radiometry, a comparison was required of the area of absolute radiometers. As a geometrical parameter, the measurement of area was not considered a Key Comparison measurement in photometry, so the measurement of detector areas that also have optical properties became a

[1] Mr Hetherington informed the Committee that a pertinent paper by Dr Marullo-Reedtz, the EUROMET TCEM Chairman, is currently being considered within EUROMET. This paper is discussed further under Agenda Item 9 (page 13). Please note that this is not an official JCRB Document so is not referenced here.

Supplementary Comparison. He recommended that the need for undertaking Supplementary Comparisons be left to each CC to determine.

Dr Semerjian stated that his understanding is that *any* comparison undertaken within a CC is a Key Comparison since these are comparisons at the highest level. There may be many NMIs within an RMO that do not use artefacts at the highest level, so a lower level comparison *related* to the Key Comparison is undertaken by the RMO. The Chairman agreed that the general principal outlined by Dr Semerjian is correct but that, as in the example above of the HF area, in particular cases the CC carries out activities that would normally be carried out by an RMO. He added that it is useful, for example, to have a formal protocol for an RMO comparison of thermocouples, however this is not a Key Comparison in support of CMCs. Supplementary Comparisons, thus, also provide flexibility for comparisons undertaken only at the regional level.
Dr Kaarls asked for clarification of the definition of bilateral comparisons in this context. The Chairman responded that there could be bilateral key *or* supplementary comparisons.

Dr Sacconi noted that the way the term Supplementary Comparison is used is not consistent across metrology areas. The Chairman responded that this is to be expected and that, in Part 1 of the MRA, "national measurement standards" are defined differently in each area. The goal of part 2 is to provide confidence in CMCs through, not only Key, but also Supplementary Comparisons. Dr Sacconi suggested that it would be useful to investigate how the term "Supplementary Comparison" is used in each metrology area.

ACTION 11: The JCRB Chairman is to check the types of Supplementary Comparisons that are currently listed in Appendix B of the KCDB, to help define the term "Supplementary Comparison".

Referring to Section 5.1 of Document JCRB-10/7, Prof Kühne asked that the phrase "to meet specific needs" be clarified. Also, if supplementary comparisons do indeed support CMCs, then they also support degrees of equivalence. Dr Kaarls agreed that the first paragraph of Section 2 is incorrect, and that Supplementary Comparisons do have a reference value, which is used to underpin degrees of equivalence. Both requested that the last sentence in the first paragraph of Section 2 be removed.

ACTION 12: The JCRB Chairman is to remove the last sentence in the first paragraph of Section 2 of Document JCRB-10/7, "A note on Supplementary Comparisons".

Dr Semerjian reiterated that any comparison undertaken by a CC should be a Key Comparison because the CC establishes the protocol, evaluates the associated uncertainties, etc, and operates at the highest level. However, RMO comparisons fall into two categories: if they follow the same procedure as a Key Comparison and if there is a connection through one or more common participants, then it is an RMO Key Comparison; if an RMO does a comparison without an established protocol, then it is an RMO Supplementary Comparison. Supplementary Comparisons involve very different levels of standards, and address needs that may or may not be met within the context of the CCs. The Chairman responded that the problem lies in one sentence in the MRA, in Para T10, which states that CCs can also carry out Supplementary Comparisons. He resolved to recommend the removal of the words "Consultative Committees" when the CIPM MRA is revised. Mr Hetherington agreed that an error seemed to have been made in Para T10, since the situation is properly described in Sections 4 and 5 of the MRA.

Dr Hengstberger asked what problem this is solving. The Chairman responded that Dr Semerjian had just described the appropriate structure. Dr Hengstberger replied that he agreed in principal but, to use the example of the candela, the units (power/unit angle) include a geometrical quantity so photometrists have no choice but to bring in comparisons of dimensional quantities. **The Chairman stated that there is no reason why the CCPR should not undertake a Key Comparison of area.** Dr Tanaka inquired whether viscometry could be a Key Comparison undertaken by the CCQM. The Chairman and Dr Kaarls responded that, again, there is no reason why not.

ACTION 13: The JCRB Chairman is to recommend to the CIPM that the words "Consultative Committees" be removed from Para T10 when the CIPM MRA is revised.

Dr Semerjian inquired whether a Key Comparison can be declared null and void after the fact when it provides no valuable information. The Chairman replied that this is up to the participants and the CC. This option is given in the MRA if there is a "technical failure". Dr Semerjian stated that this could depend on the definition of "technical failure". The Chairman referred him to the third dot point in Section 9 on Page 3 of the "Guidelines for Key Comparisons": *"Note that once all participants have been informed of the results…"* Prof Kühne agreed

that the decision is made by the CC and Dr Kaarls commented that such a situation has occurred already in the CCQM.

8. INTER-REGIONAL HARMONIZATION OF QS REVIEWS

Mr Hetherington first informed the Committee that what is now Document JCRB-10/8(1) has not been changed since the revisions requested at the 9th JCRB Meeting were incorporated.

The Chairman then requested Dr Ediriweera to lead the Committee through APMP's comments to this document. [Please note: APMP's comments are given in Document JCRB-10/8(1b)]. Key points from this discussion were as follows:

1. *APMP's comments on Clause 2.1*

- It was clarified that, independently of how an NMI addresses Clause 7.3, it should provide a description of its Quality System. However, this is not intended to be a large report and can reference other documents. It is up to the RMO to determine if the description provided is sufficient.
- It was considered that the additional item specified by APMP under the statement "The QS operated by the NMI should be…" added unnecessary complexity.

2. *Amendments to the "Technical Requirements" listed on page 4:*

- Added: "CRM certification process (where applicable)"
- Fifth bullet modified: "Calibration and measurement traceability and uncertainty"
- Third bullet modified: "Calibration and measurement methods and method validation."

ACTION 14: Mr Hetherington is to forward the revised "JCRB Guidelines for the monitoring and reporting of the operation of Quality Systems by RMOs" to the Exec Secretary for posting on the website as a finalised JCRB document.
NOTE: Done - the final revised document is Document JCRB-10/8(1c).

9. REVIEW OF MRA DUE FOR 2003

(Please note that Agenda Items 9.1 and 9.2 were in fact discussed jointly.)

9.1 End of transition period of MRA – Interpretation of MRA text &
9.2 Review process for published CMCs and supporting Quality Systems

The Chairman noted that no changes had been made to the document [what is now Document JCRB-10/9(1)] as revised at the 9th JCRB Meeting.

Dr Kaarls commented that there is no statement requiring that CMCs also be reviewed. The Chairman referred him to Document JCRB-9/12, "End of Transition Period of CIPM MRA – Review of Published CMCs". However Dr Kaarls replied that a statement is still required on the need for an on-going review cycle. Prof Kühne commented that this is covered when Key Comparisons are repeated and by the on-going monitoring required by the Quality System. Dr Kaarls objected that this would not capture everything and that the CCs are not required to check CMCs.

Dr Semerjian stated that there are two scenarios that would lead to problems: the Quality System could be no longer effective, or the results of Key Comparisons could lead to CMC claims not being justified. It is not clear that, outside of these two circumstances, an on-going review mechanism for CMCs is needed, since there is a periodic review built into the Quality System. Dr Sacconi noted that Dr Schwitz had highlighted the importance of a connection between the Quality System and the associated measurements, and agreed that an effective Quality System should ensure that the NMI is able to monitor associated technical issues. The QS Forum process includes a check as to whether a procedure exists to re-align CMC claims based on the results of Key Comparisons. Dr Kaarls agreed that this problem is addressed by the Quality System if a real assessment is carried out, but not otherwise. Prof Kühne responded that the network of checks now in place is very good and is at the limit of what NMIs can undertake, so new requirements should not be introduced.

Prof Kühne then referred to the paper of Dr Marullo-Reedtz, the Chairman of EUROMET's TCEM. The Chairman repeated that, contrary to the view expressed in the EUROMET TCEM paper, he considers that the principal responsibility for monitoring the impact of Key Comparison results on CMC claims rests with the NMI itself. It is only when this does not happen that the responsibility should then be taken up by the RMO and the CC. It would involve a huge amount of work for the pilot laboratory to undertake this for each Key Comparison. The NMIs that have participated in the Key Comparison should know immediately if there is an impact on their

CMC claims. Prof Kühne replied that the pilot laboratory is the most qualified to provide information on the uses that can be made of the results of a Key Comparison. These issues must be considered when Drafts A and B of the Comparison are being written, so it should be straightforward to incorporate them in the report. Dr Sacconi agreed that this would simplify the consequent actions for the NMIs.

Mr Hetherington noted that the paper by the EUROMET TCEM Chairman has not yet been discussed within EUROMET but only within the TCEM group. Dr Semerjian pointed out that the document has in fact been distributed to other RMOs. Dr Vasiliev proposed that it would be best to discuss this issue at the next CCEM meeting and, based on the outcomes, table it for discussion at the next JCRB meeting. He expressed concern about the additional workload implied for pilot laboratories. Dr Semerjian stated that he thought the JCRB had agreed that the Working Groups on CMCs would deal with this issue. The experts responsible for each Key Comparison should provide guidance on what areas the Key Comparison affects, but the implication of the results of the Key Comparisons vis-à-vis CMC claims should be undertaken by the Working Groups on CMCs. Dr Kaarls commented that CMCs are not only based on the results of Key Comparisons so it is necessary to review them on a broader basis. Dr Semerjian responded that the Working Groups on CMCs should be in a position to undertake this.

Mr Hetherington cautioned that there may be a slight danger of duplication of work. NMIs also have a responsibility for this, but this should be covered by their Quality System. The Chairman proposed that the EUROMET TCEM paper be considered within EUROMET first before being discussed further by the JCRB. If, in the light of experience, it becomes apparent that NMIs are not taking care of this issue, consideration should then be given as to how best to address it. Mr Hetherington responded that the paper would be tabled at the next EUROMET Executive Committee in late March 2003.

The JCRB confirmed Document JCRB-10/9(1).

10. OTHER BUSINESS

10.1 Distribution of Letter to Directors

The Chairman referred participants to Document JCRB-10/1, which outlines the distribution of the "Letter to NMI Directors of States not yet Members of the Metre Convention or Associates of the CGPM". On the basis of this distribution, two inquiries have been received to date – one from Guyana and one from Slovenia.

10.2 Progress on JCDCMAS

The Chairman informed the Committee that a meeting has been called of "NMI Representatives from Member States of the Metre Convention" to discussion participation in the JCDCMAS activity. It will be held at the BIPM on 21st March 2003. The draft Agenda and current list of participants are provided as Documents JCRB-10/10(2b) and (2c).

He noted that the Terms of Reference for the JCDCMAS were modified based on comments from the CIPM [the revised Document is JCRB-10/10(2a)]. The meeting on 21st March is also a response to the CIPM's comments that, as the BIPM is a treaty organization, it should be aware of Members' interests when representing them in such a forum. It is not the intention that the Joint Committee simply be a "talking shop" but that it should provide added value to developing States.

Mrs Marobela inquired whether States that are not Signatories of the Metre Convention could make their views known. The Chairman responded that this should be done through a participant in the meeting. Mr Lam noted that the memberships of the various organizations involved in the Joint Committee are quite different and that it is important that participation, for example, in any metrology projects identified not be restricted to member states of the Metre Treaty. He added that this is a very important initiative, in that it would help provide developing countries with a coherent consistent message. The Chairman noted that representation of the RMOs in the Joint Committee could perhaps be addressed through the JCRB. Mr Van suggested that the JCDCMAS activity could help encourage developing countries to join the MRA.

Dr Semerjian inquired about the type of assistance envisaged – would the Joint Committee be involved in obtaining funding? The Chairman responded that this is not to be the role of the Joint Committee. Rather, the Committee intends to work together to ensure that resources applied to these activities are complementary rather than duplicative. Mrs Marobela commented that it is important that resources applied are directed appropriately

and focused. Dr Kaarls noted that the main objective is to harmonise the activities of the partners, so that they are coherent, objective and coordinated. The aim is also to promote the importance of these activities among financial sponsors.

The Chairman informed the Committee that a closely related matter that arose from the joint meeting in late February 2003 between the BIPM, OIML and ILAC, is the proposal to hold a follow-up seminar in 2004 to the 1998 PTB event directed at developing countries. Dr Seiler of the PTB had suggested that the planned 2004 event involve more decision-makers, however the general view is that there is not much chance of attracting these people from developing countries. Instead, discussions should take place at the 2004 PTB meeting with metrology people from the developing world to identify the best mechanisms for making approaches to high profile decision-makers in developing countries.

Dr Castelazo noted that the SIM regional awareness seminars have a similar objective. He agreed that the RMOs should participate together in addressing the objectives of the JCDCMAS. It is difficult to bring the relevant people together to a meeting in Europe so the message could be conveyed by the RMOs through regional workshops.

Dr Hengstberger cautioned that, in the SADC experience, it is not helpful to promote one element like metrology alone to developing countries. What decision-makers should be told is how all the elements fit together to benefit a country's involvement in global markets, etc. The most impact can be achieved if all elements are delivered as a package, which is where the JCDCMAS can help. He added that the BIPM should also ensure that it promotes a coordinated message.

10.3 BIPM-ILAC MoU and related issues

The Chairman drew the Committee's attention to the paper provided by Prof Wallard [Document JCRB-10/10(3)]. He noted that EUROMET had produced a related paper on these issues.

Please note that, on Dr Semerjian's request, Prof Kühne's paper has been re-numbered as Document JCRB-10/10(4) – so the ILAC Report has become Document JCRB-10/10(5).

10.4 EUROMET strategy concerning CMCs

The Chairman invited Prof Kühne to introduce the EUROMET paper. Prof Kühne stated that this was based on the issue raised at the 9th JCRB meeting as to what ILAC bodies should do when they accredit a calibration laboratory that has a calibration certificate with an uncertainty significantly smaller than the uncertainty claimed in the corresponding CMC of the NMI as published in the KCDB. The responsibilities implicit in the first part of the MRA lie with RMOs and NMIs in terms of establishing the degrees of equivalence. However the responsibilities of accreditation bodies in accrediting calibration laboratories enter into the second part. Calibration laboratories do not maintain primary standards but must be traceable to standards that are internationally traceable to SI units. It is already understood that the currently listed capabilities in the KCDB are not necessarily at the highest level. Also some NMIs have "secondary" national standards traceable to other NMIs. An NMI gives traceability to calibration laboratories as a routine service covered by a CMC. If the calibration laboratory wants to back up its claims with the MRA and is claiming smaller uncertainties than the CMCs of its NMI, then it should follow the same procedure as the NMI, i.e., participate in comparisons to demonstrate its capabilities and establish its degrees of equivalence.

Dr Castelazo asked where EUROMET considered the results of such comparisons should be published. Prof Kühne replied that this should be done as per any other Key Comparison. Dr Semerjian inquired whether the discussion is about comparisons or traceability. Prof Kühne responded that, in the case of NMIs, it is clear that traceability is through participation in Key Comparisons, whether the NMI maintains primary standards or secondary standards traceable to another NMI. An appropriate MRA mechanism is needed for the case where a calibration laboratory, as required by ISO 17025, establishes traceability to the SI through calibration by an NMI which is maintaining the national standard but the corresponding CMC entry of that NMI in the KCDB has an uncertainty that is larger than the calibration certificate.

The Chairman stated that if an NMI issues a certificate with uncertainties smaller than those in its CMCs, but within those arising from the corresponding Key Comparison there is no problem. However, questions arise if they are smaller than the Key Comparison uncertainties as well. Prof Kühne inquired why an NMI would not claim the smaller uncertainties from key comparison results in its CMCs. The Chairman responded that CMCs

are defined as the services that the NMI *normally* provides. Dr Kaarls added that the Key Comparison is a snapshot of capability.

Prof Kühne commented that, at present, the NMI world leaves it to the accreditation bodies to judge whether higher levels claimed by calibration laboratories are justified, which does not make sense. The Chairman asked what is the extent of this problem. Prof Kühne responded that that is a question for the accreditation community to answer. Dr Kaarls replied that he understood that the accreditation community has come up against this problem.

Dr Semerjian stated that, from the discussion at the 9th JCRB Meeting, he understood that the issue concerned an NMI that undertakes a calibration for another NMI, to meet a particular request, with a lower uncertainty than given in its CMCs. This situation occurs quite often, but is substantiated when the second NMI has to demonstrate its capabilities by participating in a Key Comparison. If this situation occurs with respect to a calibration laboratory that needs a higher level measurement, there is no way of substantiating this. However, unless the measurement in question becomes *routine*, this should be considered a special case that it is up to the accreditation body to investigate properly. Such special cases should not be ruled out, but the MRA is to facilitate international trade, to give confidence in the general capabilities of NMIs and to recognize calibration certificates.

The Chairman agreed that, as a special case, this is the responsibility of the accreditors. The MRA states that what are covered are "services ordinarily available", which could be at different levels up to the top level of those services *ordinarily* available. Dr Sacconi agreed that it is outside the scope of the MRA to include these cases.

Prof Kühne asked whether it is true that an NMI may not be performing at its highest level even in a Key Comparison, so that it could provide traceability at a level higher than demonstrated in a Key Comparison. Dr Semerjian responded that this was a matter of the resources it was appropriate to put into the Key Comparison participation. For example, it cannot be expected that PTB or NIST would perform at their highest possible level.

Prof Kühne reiterated that the question is the confidence that people outside the metrological community can have in the measurements and that the NMI community should aim to provide this confidence at the highest possible level. It is putting all of this effort into establishing this confidence at the *routine* level, but should also be establishing this confidence in the best possible measurements being made. The accreditation community is looking to the NMI community to check that the traceability is valid because it has the expertise. Such calibration laboratories should have the same requirements placed on them (i.e., participation in comparisons) to claim the smaller uncertainties. The issue to be addressed is the international recognition of the calibration certificate: who should provide the peer review and the international confidence in this? The goal of the MRA was to give confidence to people outside the metrology community. Dr Sacconi responded that the MRA is about mutual recognition not about scientific capability. By including this in the MRA when it is a special case, it introduces a dangerous loophole/precedent. He requested a JCRB statement on this matter to clarify it.

The Chairman stated that one-off capabilities should always be possible, but these do not enter into the areas covered by the MRA. He pointed out that the difficulty arises in the top two paragraphs on the second page of Prof Kühne's paper, which seem to imply that NMIs provide calibrations at a higher level *on a regular basis* to calibration laboratories. What is being discussed is a special case. If such services are given on a *regular* basis then they should be included in the MRA. The Chairman concluded the discussion by saying that he and the Exec Secretary will draw up a short report on the discussion to clarify the JCRB's views on this subject. He repeated that the scenario described in the first two paragraphs of Prof Kühne's paper should not happen "on a regular basis". Dr Semerjian added that if these measurements do happen on a regular basis, then it is very appropriate that the issue is raised here but this can't be done for a hypothetical case.

Mr Lam suggested that the provisions in ISO 17025 may provide the solution to this problem, since it asks for the scope of measurements provided by an NMI, in terms of developing method validation.

ACTION 15: The Chairman and Exec Secretary are to draft a document to outline the JCRB's views on the situation when a calibration laboratory claims uncertainties smaller than those claimed in the associated NMI's CMCs published in Appendix C of the KCDB. This document will be tabled for discussion and approval at the next JCRB meeting.

10.5 ILAC Report

The Chairman noted that the essential points from Dr Benyon's paper (Document JCRB-10/5) had been discussed under the previous Agenda Item.

10.6 CIPM-WHO MoU

The Chairman provided the background to this Agenda Item, in the establishment of the Joint Committee on Traceability of Laboratory Medicine (JCTLM), driven largely by the future implementation of the EU Directive on in-vitro diagnostic devices. At the June 2002 Workshop on Traceability in Laboratory Medicine, it became clear that a more formal metrological structure is required. Also, the related ISO standard (ISO 15195) is making clear reference to an international measurement system that does not exist. A Memorandum of Understanding (MoU) has now been established between the WHO and the CIPM, to formalise the agreement that the BIPM and the WHO will collaborate to put the appropriate system in place. One consequence is that the MRA in due course will include more of these quantities and therefore, the associated tasks (comparisons, etc) will need to be undertaken to provide the technical basis. In most countries there is no clearly recognized system of traceability in this area. This is being investigated by one of the two JCTLM Working Groups. The two Working Groups are to operate under the authority of the CCQM and the WHO has agreed to be represented on the CCQM to make the necessary technical links. What is missing is the higher level contact, so the BIPM will work with the WHO to make this contact between national ministries of health and the NMIs.

Dr Semerjian requested that the two documents referenced by the Chairman become JCRB documents. **Please note that these are now Documents JCRB-10/10(6a) and (6b).**

Dr Semerjian noted the importance of *all* RMOs participating in these activities since health-related issues clearly do not have boundaries. He informed the Committee that, in the US, a trillion-and-a-half dollars is spent on health-care, of which 25% is related to measurements. In Germany, the numbers are comparable. The sad part is that about 20% of those dollars are spent on non-diagnostic purposes – repeat, i.e., redundant, measurements. There are clearly significant trade implications. Participation in these activities needs to be expanded outside Europe. This is being helped by the work of the Chairman with the WHO. Everyone will benefit if this is approached as a global effort. Broader participation by the international metrology community will also provide greater credibility for the cooperation with WHO.

The Chairman added that he hopes that this activity will have made sufficient progress for a statement to be made at the 22nd CGPM but this will depend on the support of all NMIs.

Dr Hengstberger noted that this is an increasingly important area for most developing countries, for example, with respect to agriculture, etc. He urged that the strategy should not just focus on issues relating to human health, but also animal and plant health to take account, for example, of the WTO SPS (Sanitary and Phytosanitary Measures) Agreement. Again, these areas have huge trade implications. Nationally, South Africa has realized the importance already and contact has been made with the national health department. National actions will be supported by the international work. He added that it is worth the effort of re-organising what is being done at the BIPM to ensure that the opportunity is grasped.

The Chairman agreed that there is a small window of opportunity that needs to be taken advantage of. Dr Kaarls added that this activity also involves Codex Alimentarius and the FAO (the Food and Agriculture Organization of the UN).

Dr Sacconi inquired whether there had been any responses as yet from governments. The Chairman replied that it was too soon for responses. Dr Semerjian commented that NIST has had responses from the CDC (Centers for Disease Control and Prevention) and the FDA (Food and Drug Administration), the two principal US organizations (together with the NIH [the National Institutes of Health], but this is more research focused). He noted that one issue is that metrologists need to establish credibility with the medical community. NIST is also working with the Mayo Clinic for example, which has a huge hospital-patient population so can accumulate a lot of data. Such data can be used to demonstrate that measurement uncertainty translates into a lot of money and people, to highlight the importance of accurate measurement to the medical community. The Chairman noted that representatives from the CDC, FDA and the Mayo Clinic attended the June Workshop, as did a representative from the European Commission. The point about credibility is very important, and the collaboration with the WHO provides the necessary linkage.

Dr Sacconi pointed out that one difficulty is the obsolete structures in place in many countries and the very loose interactions between fields. In Italy, for example, the NMIs rely on one Ministry but the Metre Convention link is with the Trade and Commerce Ministry. This new linkage means working additionally with the Health Ministry. The Chairman suggested that the WHO-CIPM MoU could be used to show that the linkage is being made at the international level and should also be undertaken nationally. Dr Hengstberger added that there should already be a link with Health Ministries through an NMI's radiation dosimetry activities.

11. APPROVAL OF DOCUMENTS TO BE DISSEMINATED

The Committee agreed that the following documents could now be publicly disseminated:

- Doc JCR-10/0: Agenda
- Doc JCRB-10/01: List of Participants
- Doc JCRB-10/04: KCDB Report
- Docs JCRB-10/05(1-5): RMO Reports
- The modified version of Doc JCRB-10/07: A note on Supplementary Comparisons
- Doc JCRB-10/08(1c): the revised "JCRB Guidelines for the monitoring and reporting of the operation of Quality Systems by RMOs"
- Doc JCRB-10/9(1): Interpretation of Paragraph 11.3 of CIPM MRA concerning the end of the transition period

The Chairman added that the "Letter to Directors.." will be made available on the BIPM website.

12. DATE AND PLACE OF NEXT MEETING

12.1 Future operation of JCRB and associated meetings

The Chairman began by noting that most of the significant issues have been dealt with, so the question is how best to continue the work of the Committee. At this stage, six-monthly meetings are still appropriate but the Committee should being looking at broader topics.

Mr Hetherington stated that future meetings could be conducted in one day. He agreed that it is an ideal opportunity to discuss other topics of general interest, such as the medical area, future trends, etc. He proposed a full day's discussion on the strategic frameworks being put in place by RMOs.

The Chairman cautioned that some of these areas will be better covered by Directors' Meetings and that the JCRB discussions should be loosely connected with the MRA. Dr Semerjian suggested that perhaps the JCRB discussions could be coordinated with Directors' meetings, to take advantage of the synergies. Perhaps such joint discussions could be timed with the JCRB meeting early in the year rather than with both JCRB meetings. Prof Kühne agreed that having one meeting connected with the Directors' meeting would be a good opportunity to address strategic issues relating to the MRA. The Chairman agreed with linking the discussions with meetings of Directors. Dr Castelazo suggested that it preparatory discussions should be held before the meeting with Directors, with sufficient time between the two to discuss issues with Directors before the Directors' meeting.

The Chairman reminded the Committee that the next JCRB meeting is scheduled for Monday 6 and Tuesday 7 October, that 8-10 October are CIPM meetings and that a Directors' meeting is being held on 15 Oct.

Dr Imai stated that the ending of the transition period and the issues to be resolved regarding developing economies and laboratory medicine mean that the next JCRB meeting will need one-and-a-half to two days. **The Chairman agreed that the next meeting will take place over one-and-a-half days, beginning at 2 pm on Monday 6th October.**

Dr Hengstberger suggested that strategic planning be considered on how to effectively involve countries that are outside the net of the RMOs. Consideration is being given within SADCMET as to how best to contribute to other regions in Africa. One approach has been to select countries from outside SADCMET to be Associates (Nigeria) to help develop regional bodies in other areas. Dr Castelazo added that this will happen due to trade forces in any event and that similar developments are taking place in the SIM region. Smaller countries are developing laws, bureaus of standards and then physical standards - they may not be very active now but this will change in a couple of years. He came back to the issue of membership fees, stating that it would be good to know if this an issue within the APMP or SADCMET contexts.

The Chairman concluded that each RMO is to prepare a presentation on how it is addressing the issue of increasing participation in the MRA for the October JCRB meetings.

ACTION 16: RMO-JCRB Representatives to prepare presentations on the topic: "How to extend the range of participation of countries in RMO and MRA activities", to be presented at the October JCRB meetings.

Mr Hetherington noted that the MERA project is due to finish at the end of October, at which stage a report will need to be made to the European Commission. **He volunteered to make a presentation on the project at the 15th October Directors' meeting.** He suggested discussing this also at the joint JCRB-Directors meeting in April. The Chairman suggested that the next Directors' meeting, to be held at the end of April 2004, could be a two-day meeting with a focus on strategic directions.

Dr Semerjian proposed using the October meeting to prepare for a Workshop to be held in conjunction with the April meeting.

Mr Lam inquired about the agenda for the October Directors' meeting. The Chairman responded that the issues to be discussed include: formal approval of the continuation of the CIPM MRA and future strategies and measurement systems for medicine.

Dr Castelazo informed the Committee that CENAM would be interested in hosting a JCRB meeting, perhaps the second meeting in 2004.

13. CLOSE OF MEETING

The Chairman then thanked all participants for their contributions and closed the 10th meeting of the JCRB.